



# Study on the application of the Interchange Fee Regulation

Final Report

Prepared by



Competition

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**Study**  
**on the application of the**  
**Interchange Fee Regulation**

Final report

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## GLOSSARY

### Member State Codes

AT	Austria	IE	Ireland
BE	Belgium	IT	Italy
BG	Bulgaria	LT	Lithuania
CY	Cyprus	LU	Luxembourg
CZ	Czech Republic	LV	Latvia
DE	Germany	MT	Malta
DK	Denmark	NL	Netherlands
EE	Estonia	PL	Poland
EL	Greece	PT	Portugal
ES	Spain	RO	Romania
FI	Finland	SE	Sweden
FR	France	SI	Slovenia
HR	Croatia	SK	Slovakia
HU	Hungary	UK	United Kingdom

### List of abbreviations

APR	Annual percentage rate
ATM	Automated Teller Machine
ATV	Average Transaction Value
bn	billion
DG COMP	Directorate General for Competition
EC	European Commission
ECB	European Central Bank
EEA	European Economic Area
EU	European Union
EUR	Euro
EU-28	Current 28 European Union MS (incl. UK)
GDP	Gross Domestic Product
IF	Interchange Fee
IFR	Interchange Fee Regulation
JCB	Japan Credit Bureau

M	million
MIF	Multilateral Interchange Fee
MS	Member States of the EU 28
MSC	Merchant Service Charges
NCA	National Competent Authority
POS	Point of Sale
PSP	Payment Service Provider
Trx	Transaction



## **ABSTRACT**

The objective of this study is to provide a comprehensive evaluation of the effects of the Interchange Fee Regulation (IFR) in line with its Article 17. The IFR became applicable in the EU between 8 June 2015 and 9 June 2016 and introduced a cap on interchange fees for consumer card payment transactions as well as several provisions aimed at enhancing market transparency, competition, and the functioning of the EU single market.

The study shows that the IFR has reduced the interchange fees for card-based payments and generated a decline in merchants' costs of accepting card payments. This has in turn led to higher acceptance of card payments and is in the longer run expected to lead to lower consumer prices. However, acquiring margins and scheme fees from international card schemes have increased, reducing some of the benefits. If they continue to increase, it may further reduce or eliminate the benefits of the IFR.

The IFR has facilitated entry into and competition on several payment markets, most notably on the acquiring market, but consumers and merchants do not seem yet to have reaped the full potential of the benefits.

## **ABSTRAITE**

La présente étude a pour objet de fournir une évaluation complète des effets du règlement relatif aux commissions d'interchange (RCI) en accord avec son article 17. Entré en vigueur dans l'UE entre le 8 juin 2015 et le 9 juin 2016, le RCI a instauré un plafond sur les commissions d'interchange pour les opérations de paiement liées à une carte consommateur ainsi que plusieurs dispositions visant à améliorer la transparence du marché, la concurrence et le fonctionnement du marché unique européen.

L'étude montre que le RCI a réduit les commissions d'interchange pour les paiements par carte et a entraîné une baisse des coûts des commerçants pour les paiements par carte qu'ils acceptaient. Cette situation a par conséquent amélioré l'acceptation des paiements par carte et devrait, à plus long terme, entraîner une baisse des prix pour le consommateur. Toutefois, les marges d'acquisition et les frais des schémas de cartes internationaux ont augmenté, ce qui a réduit certains avantages. S'ils continuent d'augmenter, cela pourrait continuer à éroder voire supprimer les avantages du RCI.

Le RCI a facilité l'entrée et la concurrence sur plusieurs marchés des paiements, principalement celui de l'acquisition, mais les consommateurs et les commerçants ne semblent pas encore avoir engrangé le plein potentiel des avantages.

## EXECUTIVE SUMMARY

### *Background and context*

- The Interchange Fee Regulation (IFR) became applicable in the EU between 8 June 2015 and 9 June 2016. The Regulatory Technical Standards on the separation of scheme and processing (article 7) were published in January 2018.
- The IFR introduced a cap on interchange fees for debit and credit transactions in the EU, which was expected to reduce merchants' costs of accepting card payments leading to higher card acceptance and lower consumer prices.
- The IFR also introduced supplementary technical provisions aimed at enhancing market transparency, market entry, and the functioning of the EU single market.
- Article 17 of the IFR requires the Commission to submit a report on the application of the IFR to the European Parliament and to the Council.
- The purpose of this study is to assess observable effects of the IFR on the EU card payments sector. The study does not cover the impact of the IFR Honour All Cards and Steering Rules, i.e. Articles 10(1) and 11.
- The study focuses primarily on the period 2015-17, but it uses earlier and later data, where available and appropriate. To enable the assessment, comprehensive qualitative and quantitative market information from this period has been collected from public and private stakeholders in all EU Member States (MS). Some stakeholders have pointed at effects beyond the period 2015-2017.

### *The state of the payment sector*

- The number and value of POS card transactions increased in all Member States, driven by technological development and consumer preferences. In total, the average card transaction value (ATV) declined, as card transactions are increasingly replacing also low-value cash payments.
- The number of ATM cash withdrawals declined while the value of ATM cash withdrawals increased slightly, but considerably less than for POS card transactions. This can be interpreted as further evidence of card payments gradually replacing cash payments.
- In Member States with domestic schemes, domestic schemes maintain the largest market shares for debit card transactions. In France, even for credit card transactions. In all other Member States, international four-party schemes have the largest market shares for both debit and credit card transactions. The presence of three-party schemes in EU is marginal, but stable.
- The issuing market structure has been relatively stable since 2012. One third of Member States have a highly concentrated issuing market, while the remaining Member States have more fragmented markets.
- The acquiring market has become more concentrated due to an ongoing consolidation process at the European and global level. The creation of large independent acquirers present in multiple Member States is likely to foster economies of scale.
- The rise in digital payments has spurred the entry of new payment methods, often from new market players. Most are still card based rather than account based, in particular for wallets. Overall, this has contributed to the growth of card payments. The extent to which non-card based payment methods will challenge the market position of the card schemes

remains to be seen. The greatest challenge may instead be the entry of BigTech-firms with payment applications as Apple Pay and Google Pay. However, for the time being, these applications are still card-based products.

*The effects of the IFR on fee and costs for card-based payments*

- The interchange fees for capped consumer debit and credit card transactions within EU-28 declined in most Member States from 2015 till 2017 in line with the IFR. The decline was particularly strong for domestic credit card transactions. The IFR Survey indicates that Member States in 2017 were already in compliance with the caps.
- Strong domestic schemes are present in nine Member States. Domestic schemes with low interchange fees in 2015 maintained low fees in 2017. Domestic schemes with interchange fees above the cap in 2015 reduced their fees below the cap in 2017.
- The overall decline in the interchange fee has led to a substantial reduction in interchange fees paid by acquirers to issuers. Between 2015 and 2017, the total annual interchange fees within EU-28 are estimated to have declined by around EUR 2,680 million. The decline is smaller than the EUR 6 billion decline estimated in the European Commissions Impact Assessment from 2013, partly because in that study 2013 was used as the benchmark year with higher interchange fee levels than in 2015.
- Scheme fees paid by issuers to schemes for consumer card transactions increased within EU-28 from 2015 to 2017 in a statistically significant manner. The total annual increase in issuer's scheme fee is estimated to be around EUR 270 million. The increase is driven mainly by increases in scheme fees from international schemes with particularly steep increases for cross-border transactions. Domestic schemes mostly charge relatively low and stable scheme fees. There is no statistically significant relationship between large reductions in interchange fees and decreases in issuer scheme fees. Thus, there is no evidence of schemes substituting lower interchange fees received for lower issuer scheme fees.
- Scheme fees paid by acquirers to schemes for consumer card transactions also increased within EU-28 from 2015 to 2017 in a statistically significant manner. The total annual increase in acquirer's scheme fee payments is estimated to be around EUR 280 million. The increase is driven mainly by increases in scheme fees for international schemes with particularly steep increases for cross-border transactions. Domestic schemes mostly charge relatively low and stable scheme fees. Schemes have reported the introduction of a range of new types of fees since 2015. There is no statistically significant relationship between large reductions in interchange fees and increases in acquirer scheme fees. Thus, there is no evidence of schemes substituting lower interchange fees paid for higher acquirer scheme fees.
- Based on IFR Survey data, there is no systematic evidence that issuers reacted on the decline in interchange fee payments by increasing real consumer banking fees or by making changes in issuing of cards.
- The cap on interchange fees has generated significant cost savings for acquirers. There is robust evidence that acquirers pass-through part of the cost savings to merchants through lower merchant service charges. Annual merchant service charges have declined in a statistically significant manner from 2015 to 2017 and the annual decline is estimated to be around EUR 1,200 million, in particular from lower charges for credit card transactions. The difference between acquirer's savings in interchange fee and the decline

in merchant service charge seems to be used for financing service improvements, higher acquirer scheme fees, and higher acquiring margin. Ignoring service improvements, the annual acquiring margin seem on average to have increased by around EUR 1,200 million, calculated as the residual of the MSC when subtracting the interchange fee and the acquirer scheme fee. There is a statistically significant relationship between the size of the interchange fee savings for an acquirer and size of the MSC subsequently charged to merchants: The larger is the interchange fee saving for an acquirer, the larger is the reduction in the MSC.

- The MSC differs between sectors depending on merchant size, bargaining power, and competition intensity. The IFR has aimed at improved pricing transparency by requiring acquirers to offer all merchants unblended fees and transparent information about the charge composition. Even though merchants can opt out, a majority of merchants stick to the default option of unblended fees. In the IFR Survey, smaller and larger merchants stick to the default option to the same degree, but the sample is not representative for the smallest merchants. Merchants who received unblended fees seem to have experienced the largest reduction in the MSC.
- Merchants have significantly increased their acceptance of card-based payments since 2015, both measured as number of merchant outlets accepting cards and number of POS-terminals. However, we find no evidence that the increase is larger after 2015 than before 2015, which means that the increase may not only be due to the IFR.
- Overall, the interchange fee savings generated by the IFR have been distributed in different proportions between stakeholders on the card payment market. *Schemes* have gained revenue of EUR 550 million per year coming from larger issuer and acquirer scheme fees, mostly for international schemes. *Issuers* have lost revenue of EUR 2,950 million per year coming from lower interchange fees and larger scheme fees – although increases in usage and acceptance would partly compensate for the lower interchange fees applying per transaction. *Acquirers* have gained revenue of EUR 1,200 million per year coming from lower interchange fee savings and offset by larger scheme fees and pass-through to merchants, the latter likely to increase over time. *Merchants* have saved costs from lower merchant service charges in the range of EUR 1,200 million per year, of which a part will eventually be passed-through to consumers. However, recent reports from merchants indicate that savings are being eroded by increases in other fees, for example scheme fees and interchange fees for commercial cards.

From/to	Schemes	Issuers	Acquirers	Merchants
Schemes		-270	-280	
Issuers	+270		+2,680	
Acquirers	+280	-2,680		+1,200
Merchants			-1,200	
<b>Total</b>	<b>+550</b>	<b>-2,950</b>	<b>+1,200</b>	<b>+1,200</b>

Source: IFR Survey, ECB.

Table 1: Net effect of fee changes on stakeholders, 2015-2017 (in EUR million)

*Effects of the IFR on consumer prices*

- Economic literature suggests that merchant cost changes over time will be passed-through, fully or partially, into consumer prices. However, the specific characteristics of the change in interchange fees, in particular its very small size per transaction, make it highly unlikely that a statistical analysis in itself will be able to determine the pass-through rate, not even with the best possible data. Therefore, such direct attempts have failed in the past. Instead, this study applies a novel approach combining the quantitative insight from a large number of existing European economic studies of pass-through with qualitative insight from interviews with pricing managers of European merchants.
- Economic literature has been used to build a statistical model for estimating the pass-through rate between merchant and consumer for various cost changes in five Member States (Germany, Denmark, Greece, Italy, and Poland) selected for their representative use of card payments and geographic location. The parameters of the model are based on insights from a comprehensive meta study of 23 empirical economic studies, covering 7 merchant sectors in 20 European countries, with a total of 164 pass-through estimation results.
- Empirical studies consistently confirm that pass-through takes place, but to different degrees for cost increases or decreases and for small or large cost changes. The statistical model estimates that cost decreases in the longer run are passed through by 66-72%. The reported pass-through rates and values presume that no fee changes take place, other than the changes registered in the IFR Survey for the period 2015-17.
- It means that pass-through of the interchange fee savings in the longer run is capable of generating consumer cost savings of around EUR 587 million per year in the five Member States, corresponding to approximately EUR 6.76 per household per year. For EU-28, the potential for total annual consumer cost savings can reach around EUR 1,930 million, assuming full pass-through from acquirer to merchant and around EUR 864 million with the lower bound pass-through from acquirer to merchant.
- Qualitative responses from the IFR Survey indicate that acquirers are passing-through cost savings into lower merchant service charges, and that merchants are passing-through cost savings into lower retail prices and a better shopping experience.
- Interviews with nine large merchants confirm that significant pass-through from merchants to consumers will take place in the longer run. Some merchants have pricing calculation models with regular updates, which explicitly consider card payment costs, securing fast pass-through. Most other merchants use irregular demand driven pricing, but the respondents strongly confirm that costs are costs and that competition in the longer run would force any variable cost saving or cost increase into either price reductions or price increases. The respondents confirmed that changes in card payment costs, for example changes in the interchange fee, as other small cost changes rarely cause a price adjustment by themselves, but that cost changes will accumulate and – together with other cost changes - release a price adjustment over time.

*Effects of the IFR on structure and competition in the card payment markets*

- The majority of installed POS terminals appears to be upgraded to meet the **technical requirements** of the IFR provisions, but the result may be overstated, as small merchants are underrepresented in the IFR Survey. The extent may also vary between MS. The key barrier to upgrading of terminals seems to be the technical difficulties of

identifying card types and securing proper channelling of the information in the value chain.

- The share of **co-badged cards** in issuers' portfolios stayed overall constant between 2015 and 2017. Issuers mostly offer either co-badged or single-branded cards that are both used for both domestic and cross-border transactions. Consumers in general, not only elderly and other vulnerable groups, do not request co-badged cards and do not use the option to choose their preferred payment brand or application when using co-badged cards. The reasons seem to be lack of awareness and incentives.
- The number of **commercial cards** in circulation has a stable and limited market share in EU around 3%. However, the value and in particular the volume of commercial card transactions is on the rise, as confirmed by a majority of responding merchants. Until 2017, there is no evidence of statistically significant changes in interchange fees and merchant service charges applied to commercial card transactions. Nearly all (large) merchants responding to the IFR Survey accept commercial cards. More than half of these merchants apply surcharges, where allowed, to steer cardholders towards less costly payment instruments.
- Eight Member States applied a different cap or cap structure for interchange fees for domestic debit or credit card transactions. These **special provisions** entailed lower interchange fee revenues that might reduce incentives to issue consumer cards if not countered by increases in usage and acceptance. However, there is no evidence that issuing of cards differs between Member States with and without special provisions. There is some evidence of higher merchant acceptance of cards and of higher growth in use of debit cards for domestic transactions in MS with special provisions.
- Overall, the prevalence of **cross-border acquiring** appears to have increased in the period 2015-2017, mostly for consumer debit and commercial card transactions. It is reinforcing a process of European market integration that is mainly used by large merchants. The main direct drivers seem to be higher service quality and company policies requiring the same acquirer in all MS. The merchant service charge for cross-border transactions was already in 2015 lower than the domestic charge, but the difference had declined in 2017.
- Since the implementation of the IFR, international schemes have created **functionally independent processing entities**. However, their lack of multi-brand authorization and clearing services indicate that separation between schemes and processing is still not complete. Part of the reason can be the recent and delayed entry into force (February 2018) of the Regulatory Technical Standards. The number of independent processors does not appear to have increased and no switching to independent processors has been observed among acquirers. Moreover, mainly international schemes are able to handle newer payment instruments as contactless and mobile payments. Consolidation is taking place in the processing market that enables parties to reap economies of scale and to lower merchant costs.
- The IFR calls for an assessment of setting the interchange fee cap for debit cards instead as the lower amount of EUR 0.07 per transaction and 0.2% of the transaction value. Such cap would lower interchange fees for **medium and high-value transactions** above EUR 35, might indirectly increase the frequency of such transactions, which would push upwards the average transaction value. Based on the IFR Survey, there is no empirical evidence of this, although use of debit cards increased more in Member States with a maximum interchange fee amount.

## RESUME

### *Contexte*

- Le règlement relatif aux commissions d'interchange (RCI) est entré en vigueur dans l'UE entre le 8 juin 2015 et le 9 juin 2016. Les normes techniques de réglementation relatives à la séparation du schéma et du traitement (article 7) ont été publiées en janvier 2018.
- Le RCI a instauré un plafonnement des commissions d'interchange pour les opérations de débit et de crédit dans l'UE, ce qui devrait réduire les coûts supportés par les commerçants pour accepter les paiements par carte, avec pour conséquences une amélioration de l'acceptation des cartes et une baisse des prix pour le consommateur.
- Le RCI a également instauré des dispositions techniques supplémentaires visant à améliorer la transparence du marché, l'entrée sur le marché et le fonctionnement du marché unique de l'UE.
- L'article 17 du RCI impose à la Commission de soumettre un rapport sur l'application du RCI au Parlement européen et au Conseil.
- La présente étude a pour objet d'évaluer les effets observables du RCI sur le secteur européen des paiements par carte. Elle ne couvre pas l'incidence de l'article 10, paragraphe 1, et de l'article 11 du RCI, à savoir la règle imposant l'obligation d'accepter toutes les cartes et les règles d'orientation.
- Bien que l'étude se concentre principalement sur la période 2015-2017, elle utilise des données antérieures et postérieures lorsqu'elles sont disponibles et pertinentes. Pour permettre l'évaluation, des informations qualitatives et quantitatives complètes sur le marché de cette période ont été collectées auprès des parties prenantes publiques et privées dans tous les États membres (EM) de l'UE. Certaines d'entre elles ont souligné les effets au-delà de la période 2015-2017.

### *État du secteur des paiements*

- Le nombre et la valeur des transactions par carte de paiement dans les points de vente ont augmenté dans tous les États membres, grâce à l'évolution technologique et aux préférences des consommateurs. Au total, la valeur moyenne des transactions par carte (VMT) a diminué, car ces transactions remplacent de plus en plus les paiements en espèces de faible valeur.
- Le nombre des retraits aux distributeurs automatiques de billets a diminué, tandis que leur valeur a légèrement augmenté, mais nettement moins que pour les transactions par carte de paiement en PDV. Cette tendance peut s'interpréter comme une preuve supplémentaire que les paiements par carte supplantent progressivement les paiements en espèces.
- Dans les États membres dotés de schémas nationaux, ces schémas conservent les plus fortes parts de marché pour les transactions par carte de débit. En France, c'est même le cas pour les transactions par carte de crédit. Dans tous les autres États membres, les schémas quadripartites internationaux détiennent les plus importantes parts de marché pour les transactions par carte de débit et de crédit. La présence de schémas tripartites dans l'UE est marginale, mais stable.
- La structure du marché émetteur est relativement stable depuis 2012. Un tiers des États membres ont un marché émetteur extrêmement concentré, ceux des autres États membres étant plus fragmentés.

- Le marché de l'acquisition a connu une concentration en raison d'un processus de consolidation permanent aux niveaux européen et mondial. La création de grands acquéreurs indépendants présents dans de nombreux États membres est susceptible de favoriser les économies d'échelle.
- L'avènement des paiements numériques a encouragé l'arrivée de nouveaux moyens de paiement, souvent proposés par de nouveaux acteurs du marché. La plupart d'entre eux sont encore basés sur la carte plutôt que sur le compte, en particulier pour les portefeuilles. De manière générale, cette situation a contribué à la croissance des paiements par carte. Il reste à voir dans quelle mesure les méthodes de paiement sans carte remettront en cause la position des schémas de cartes sur le marché. Le principal défi pourrait plutôt être l'arrivée de géants des technologies de pointe avec des applications de paiement comme Apple Pay et Google Pay. Toutefois, pour l'instant, ces applications restent des produits basés sur les cartes.

#### *Incidences du RCI sur les frais et les coûts des paiements par carte*

- Les commissions d'interchange pour les transactions plafonnées par carte de débit et de crédit dans l'UE-28 ont diminué dans la plupart des États membres entre 2015 et 2017, en accord avec le RCI. Ce recul a été particulièrement marqué pour les transactions par cartes de crédit nationales. L'étude sur le RCI indique qu'en 2017, les États membres se conformaient déjà aux plafonds.
- Neuf États membres ont mis en place des schémas nationaux solides. Les schémas nationaux pratiquant des commissions d'interchange peu élevées en 2015 ont maintenu les commissions à un faible niveau en 2017. Les schémas nationaux dont les commissions d'interchange dépassaient le plafond en 2015 ont ramené leurs commissions sous le plafond en 2017.
- La baisse globale des commissions d'interchange a entraîné une réduction substantielle des commissions d'interchange payées par les acquéreurs aux émetteurs. Entre 2015 et 2017, on estime que les commissions d'interchange annuelles totales au sein de l'UE-28 ont diminué d'environ 2,68 milliards d'euros. Ce déclin est inférieur aux 6 milliards d'euros estimés dans l'analyse d'impact de la Commission européenne à partir de 2013, en partie parce que, dans cette étude, 2013 a servi d'année de référence avec des niveaux de commissions d'interchange plus élevés qu'en 2015.
- Les frais de schéma payés par les émetteurs aux schémas pour les transactions par carte de crédit consommateur ont connu une augmentation statistiquement significative dans l'UE-28 entre 2015 et 2017. L'augmentation annuelle totale des frais de schéma de l'émetteur est estimée à environ 270 millions d'euros. Cette hausse s'explique principalement par des augmentations des frais des schémas internationaux, avec des hausses particulièrement marquées pour les transactions transfrontalières. Les schémas nationaux facturent la plupart du temps des frais de schéma relativement peu élevés et stables. Il n'existe aucune relation statistiquement significative entre les réductions importantes des commissions d'interchange et les diminutions des frais de schéma de l'émetteur. Par conséquent, rien ne prouve que des schémas substituent les commissions d'interchange moins élevées à des frais de schéma de l'émetteur moins élevés. Les frais de schéma payés par les acquéreurs aux schémas pour les transactions par carte de crédit consommateur ont également connu une augmentation statistiquement significative dans l'UE-28 de 2015 à 2017. L'augmentation annuelle totale des paiements des frais de schéma de l'acquéreur est estimée à environ 280 millions d'euros. Cette hausse s'explique principalement par des augmentations des frais des schémas



internationaux, avec des hausses particulièrement marquées pour les transactions transfrontalières. Les schémas nationaux facturent la plupart du temps des frais de schéma peu élevés et stables. Les schémas ont signalé l'introduction d'une gamme de nouveaux types de frais depuis 2015. Il n'existe aucune relation statistiquement significative entre les réductions importantes des commissions d'interchange et les augmentations des frais de schéma de l'acquéreur. Par conséquent, rien ne prouve que les schémas substituent les frais d'interchange moins élevés payés à des frais de schéma de l'acquéreur plus élevés.

- Sur la base des données de l'étude sur le RCI, il n'existe aucune preuve systématique que les émetteurs ont réagi à la diminution des commissions d'interchange en augmentant les frais bancaires réels pour les consommateurs ou en apportant des changements à l'émission des cartes.
- Le plafonnement des frais d'interchange a permis aux acquéreurs de réaliser d'importantes économies de coûts. Il existe des preuves solides que les acquéreurs répercutent une partie des économies de coûts sur les commerçants en réduisant les commissions de service acquittées par les commerçants. Les commissions annuelles de service acquittées par les commerçants ont connu une diminution statistiquement significative de 2015 à 2017, et l'on estime la baisse annuelle à environ 1,2 milliard d'euros, surtout en raison de la réduction des frais des transactions par carte de crédit. La différence entre les économies réalisées par l'acquéreur sur les commissions d'interchange et la baisse des commissions de service acquittées par les commerçants semble servir à financer l'amélioration des services, à augmenter les frais des schémas de l'acquéreur et à augmenter la marge d'acquisition. Si l'on fait abstraction de l'amélioration des services, la marge annuelle d'acquisition semble avoir augmenté en moyenne d'environ 1,2 milliard d'euros, le montant résiduel de la MSC étant calculé en soustrayant la commission d'interchange et les frais du schéma de l'acquéreur. Il existe une relation statistiquement significative entre le montant des économies réalisées sur les commissions d'interchange pour un acquéreur et celui de la MSC facturée par la suite aux commerçants : plus les économies réalisées sur les commissions d'interchange sont importantes pour un acquéreur, plus la réduction de la MSC est importante.
- La MSC diffère selon les secteurs en fonction de la taille du commerçant, du pouvoir de négociation et de l'intensité de la concurrence. Le RCI vise à améliorer la transparence des prix en exigeant des acquéreurs qu'ils offrent à tous les commerçants des frais non mélangés et des informations transparentes sur la composition des frais. Même si les commerçants peuvent décider de ne pas y adhérer, la majorité d'entre eux s'en tiennent à l'option par défaut des frais non mélangés. Dans l'étude sur le RCI, les petits et les grands commerçants s'en tiennent à l'option par défaut dans la même mesure, mais l'échantillon n'est pas représentatif pour les plus petits commerçants. Les commerçants qui ont reçu des frais non mélangés semblent avoir connu la plus forte réduction de la MSC.
- Les commerçants ont considérablement accru leur acceptation des paiements par carte depuis 2015, ces deux facteurs étant mesurés par le nombre de points de vente acceptant les cartes et le nombre de terminaux de PDV. Cependant, nous ne trouvons aucune preuve que l'augmentation est plus importante après 2015 qu'avant cette date, ce qui signifie que l'augmentation pourrait ne pas être uniquement due au RCI.
- Globalement, les économies de commissions d'interchange générées par le RCI ont été réparties dans différentes proportions entre les acteurs du marché du paiement par carte. Les *schémas* ont généré un chiffre d'affaires de 550 millions d'euros par an grâce à des

commissions plus importantes sur les schémas de l'émetteur et de l'acquéreur, principalement pour les schémas internationaux. Les *émetteurs* ont perdu un chiffre d'affaires de 2,95 milliards d'euros par an en raison de la baisse des commissions d'interchange et de l'augmentation des frais de schéma - bien que l'augmentation de l'utilisation et de l'acceptation compenserait en partie la diminution des commissions d'interchange applicables par transaction. Les *acquéreurs* ont généré un chiffre d'affaires de 1,2 milliard d'euros par an grâce à la baisse des économies réalisées sur les commissions d'interchange, compensée par l'augmentation des frais de schéma et la répercussion de ces derniers sur les commerçants, qui risque d'augmenter avec le temps. Les *commerçants* ont réalisé des économies de l'ordre de 1,2 milliard d'euros par an grâce à la baisse des commissions de service acquittées par le commerçant, dont une partie finira par être répercutée sur les consommateurs à long terme. Cependant, des rapports récents émanant de commerçants indiquent que, depuis peu, les économies sont érodées par l'augmentation d'autres frais, par exemple les frais de schéma et les commissions d'interchange pour les cartes commerciales.

De/À	Schémas	Émetteurs	Acquéreurs	Commerçants
Schémas		-270	-280	
Émetteurs	+270		+2,680	
Acquéreurs	+280	-2,680		+1,200
Commerçants			-1,200	
<b>Total</b>	<b>+550</b>	<b>-2,950</b>	<b>+1,200</b>	<b>+1,200</b>

Source : Étude sur le RCI, BCE.

Tableau 2 : Incidence nette des changements de frais sur les acteurs, 2015-2017

#### *Incidences du RCI sur les prix pour le consommateur*

- La littérature économique suggère que les variations des frais acquittés par les commerçants au fil du temps seront répercutées, en tout ou en partie, sur les prix pour le consommateur. Toutefois, les caractéristiques spécifiques de l'évolution des commissions d'interchange, en particulier leur très faible montant par transaction, rendent très improbable qu'une analyse statistique puisse à elle seule déterminer le taux de répercussion, même avec les meilleures données possibles. C'est pourquoi de telles tentatives directes ont échoué dans le passé. La présente étude préfère utiliser une approche novatrice combinant l'aperçu quantitatif d'un grand nombre des études économiques européennes existantes sur la répercussion et l'aperçu qualitatif d'entretiens avec les responsables des prix des commerçants européens.
- La littérature économique a été utilisée pour élaborer un modèle statistique permettant d'estimer le taux de répercussion du commerçant au consommateur pour plusieurs variations de coûts dans cinq États membres (Allemagne, Danemark, Grèce, Italie et Pologne) sélectionnés pour leur utilisation représentative des paiements par carte et leur situation géographique. Les paramètres du modèle sont basés sur les résultats d'une métaétude exhaustive de 23 études économiques empiriques, couvrant 7 secteurs

marchands dans 20 pays européens, avec un total de 164 résultats de répercussions estimés.

- Les études empiriques confirment invariablement qu'il y a répercussion, mais à des degrés divers en cas d'augmentation ou de diminution des coûts et de variations faibles ou importantes des coûts. Le modèle statistique estime que les baisses de coûts à long terme sont répercutées à hauteur de 66-72%. Les taux et valeurs de répercussion déclarés supposent qu'il n'y aura pas de changements de frais que ceux enregistrés dans l'étude du RCI pour la période 2015-2017.
- Cela signifie qu'à plus long terme, la répercussion des économies réalisées sur les commissions d'interchange peut générer des économies d'environ 587 millions d'euros par an pour le consommateur dans les cinq États membres, soit environ 6,76 euros par ménage et par an. Pour l'UE-28, le potentiel d'économies annuelles totales pour le consommateur peut atteindre environ 1,93 milliard d'euros, en supposant une répercussion totale de l'acquéreur au commerçant et environ 864 millions d'euros avec la borne inférieure de la répercussion de l'acquéreur au commerçant.
- Les réponses qualitatives de l'étude du RCI indiquent que les acquéreurs répercutent les économies de coûts sur les commissions de service acquittées par les commerçants, et que ces derniers répercutent les économies de coûts sur les prix de détail et sur une meilleure expérience d'achat.
- Les entretiens réalisés auprès de neuf grands commerçants confirment qu'à plus long terme, il y aura répercussion significative des commerçants sur les consommateurs. Certains commerçants ont des modèles de calcul des prix mis à jour régulièrement, qui tiennent explicitement compte des coûts de paiement par carte, ce qui garantit une répercussion rapide. La plupart des autres commerçants appliquent des prix irréguliers fondés sur la demande, mais les répondants confirment fermement que les coûts sont des coûts et qu'à plus long terme, la concurrence obligerait à transposer toute économie ou augmentation des coûts variables sous forme soit de réductions soit d'augmentations du prix. Les répondants ont confirmé que les variations des coûts des paiements par carte (par exemple au niveau des commissions d'interchange), tout comme d'autres variations mineures des coûts, entraînent rarement un ajustement des prix à elles seules, mais que les variations de coûts s'accumulent et — avec d'autres variations des coûts —, entraînent un ajustement des prix à la longue.

#### *Incidences du RCI sur la structure et la concurrence sur les marchés des paiements par carte*

- Il apparaît que la majorité des terminaux de PDV installés ont été mis à niveau de façon à répondre aux **exigences techniques** des dispositions du RCI ; néanmoins, le résultat pourrait être exagéré, car les petits commerçants sont sous-représentés dans l'étude sur le RCI. L'ampleur peut également varier d'un EM à l'autre. Le principal obstacle à la mise à niveau des terminaux semble être les difficultés techniques liées à l'identification des types de cartes et à la canalisation correcte de l'information dans la chaîne de valeur.
- La part des **cartes co-badgées** dans les portefeuilles des émetteurs est restée globalement constante entre 2015 et 2017. Les émetteurs proposent principalement des cartes co-badgées ou monomarkes qui sont utilisées tous les deux à la fois pour les transactions nationales et transfrontalières. Les consommateurs en général, et pas seulement les personnes âgées et les autres groupes vulnérables, ne demandent pas de cartes co-badgées et n'utilisent pas la possibilité de choisir la marque ou l'application de paiement de leur choix lorsqu'ils utilisent des cartes co-badgées. Ces comportements semblent s'expliquer par le manque de sensibilisation et d'incitants.

- Le nombre de **cartes commerciales** en circulation représente une part de marché stable et limitée d'environ 3 % dans l'UE. Cependant, la valeur et, en particulier, le volume des transactions par carte commerciale sont en hausse, comme l'ont confirmé la majorité des commerçants interrogés. Jusqu'en 2017, il n'existe aucune preuve de changements statistiquement significatifs dans les commissions d'interchange et les commissions de service acquittées par le commerçant appliquées aux transactions par carte commerciale. Presque tous les (grands) commerçants qui ont répondu à l'étude sur le RCI acceptent les cartes commerciales. Plus de la moitié d'entre eux appliquent des majorations, lorsque c'est autorisé, pour orienter les titulaires de cartes vers des instruments de paiement moins coûteux.
- Huit États membres ont appliqué un plafond ou une structure de plafond différente pour les commissions d'interchange applicables aux opérations nationales par carte de débit ou de crédit. Ces **dispositions spéciales** entraînaient des commissions d'interchange moins élevées pour certaines recettes, qui pourraient réduire les incitants à émettre des cartes consommateur si l'augmentation de l'utilisation et de l'acceptation ne s'y opposait pas. Toutefois, rien n'indique que l'émission cartes consommateur diffère d'un État membre à l'autre, avec ou sans dispositions particulières. Certains éléments indiquent que l'acceptation des paiements par carte et la croissance de l'utilisation des cartes de débit tend à être plus élevée dans les États membres qui appliquent des dispositions spéciales.
- Dans l'ensemble, la prévalence de l'**acquisition transfrontalière** semble avoir augmenté au cours de la période 2015-2017, principalement pour les transactions consommateur réglées par carte de débit et par carte commerciale. Elle renforce un processus d'intégration du marché européen qui est principalement utilisé par les grands commerçants. Les principaux facteurs directs semblent être l'amélioration de la qualité du service et les politiques de l'entreprise qui exigent le même acquéreur dans tous les EM. En 2015, les commissions de service acquittées par le commerçant pour les transactions transfrontalières étaient déjà inférieures aux frais nationaux, mais l'écart s'était réduit en 2017.
- Depuis la mise en œuvre du RCI, les schémas internationaux ont créé des **entités de traitement fonctionnellement indépendantes**. Toutefois, le fait qu'elles ne disposent pas de services d'autorisation et de compensation multimarques indique que la séparation entre les schémas et le traitement n'est pas encore totale. Ce fait peut s'expliquer en partie par l'entrée en vigueur récente (février 2018) et retardée des normes techniques de réglementation. Le nombre de services de traitement indépendants ne semble pas avoir augmenté et aucun passage à des services de traitement indépendants n'a été observé chez les acquéreurs. En outre, ce sont surtout les schémas internationaux qui ont la capacité de traiter les nouveaux instruments de paiement tels que les paiements sans contact et les paiements mobiles. Le marché du traitement est en train de se consolider, ce qui permet aux parties de réaliser des économies d'échelle et de réduire les coûts pour les commerçants.

- Le RCI demande une évaluation de la fixation du plafond des commissions d'interchange pour les cartes de débit comme étant le montant le plus bas entre 0,07 EUR par transaction et 0,2 % de la valeur de la transaction. Un tel plafond réduirait les commissions d'interchange pour les **transactions de valeur moyenne et élevée** supérieures à 35 euros, pourrait accroître indirectement la fréquence de ces transactions, ce qui augmenterait la valeur moyenne des transactions. D'après l'étude sur le RCI, il n'existe aucune preuve empirique de ce fait, bien que l'utilisation des cartes de débit ait davantage augmenté dans les États membres où le montant des frais d'interchange est maximal.

## RECOMMENDATIONS

- The study has evaluated the effects of the IFR in the period 2015-2017. Additional effects of the IFR are likely to arise beyond 2017. Within this framework, the overall conclusion is that the caps on the interchange fee work as intended. The interchange fees for both debit and credit card transactions have declined in line with the IFR. The lower interchange fee has led acquirers to lower merchant costs. The lower merchant costs are over time passed-through as lower consumer prices and greater card acceptance. **We recommend keeping interchange fee caps on consumer card transactions.**
- One concern is that scheme fees are on the rise. Both issuer and acquirer scheme fees have increased in the period, more for capped than for uncapped card transactions. If they continue to increase and become more complex, this may reduce or neutralize the merchant cost savings obtained by now. **We recommend monitoring the level, structure and transparency of scheme fees.**
- A second concern is that the acquiring margin has increased and limited the pass-through of interchange fee savings from acquirers to merchants. The IFR increases price transparency by stimulating the use of unblended prices and evidence confirms that use of simple and unblended prices increases pass-through. **We recommend strengthening the provision of transparent, simple, and unblended price information for merchants and investigating further the implied lack of competition.**
- Most POS terminals seem to have been upgraded such that merchants and consumers can choose their preferred card brand on co-badged cards. However, technical compliance such that terminals can identify card types is still not complete. **We recommend supporting a full harmonization of the technical features of POS terminals.**
- Merchants, but not consumers, seem to use the option to choose their preferred card brand or application when using co-badged cards at POS terminals. Consumers are reported to have limited incentives to make an active choice. **We recommend focusing on securing the active default choice of the merchant to increase competition between schemes.**
- There is no evidence of statistically significant increases in interchange fees or merchant service charges applied to commercial card transactions in the period 2015-17, but the value and volume of uncapped commercial cards seem to be on the rise. However, correct application of the definition of commercial card transactions in the IFR may be sufficient to hinder issuers and schemes from promoting commercial cards at the expense of consumer cards. **We recommend keeping commercial card transactions exempted from the IFR while firmly monitoring the correct application of all IFR rules relating to commercial cards.**
- Eight Member States have chosen to apply national interchange fee caps for domestic consumer card transactions in line with the special provisions of the IFR. There is no evidence of a particular relationship between the special provisions and the issuing of consumer cards, while there is some evidence that merchant acceptance of card payments tends to be higher. **We recommend analysing whether to eliminate the special provisions for national interchange fee caps in support of the single market.**
- The extent of cross-border acquiring has increased, driven by scale economies and market integration. The intensified competition has already pre-IFR led to lower merchant

service charges for cross-border transactions than for domestic transactions, but cross-border acquiring is still mostly used by large merchants. **We recommend monitoring the acquiring market and consider strengthening the provisions encouraging cross-border acquiring.**

- Schemes have functionally separated their processing activities. However, not all scheme-owned functionally independent processing entities are yet able to provide multi-brand processing, clearing, and interoperability. Part of the reason can be the late approval of technical standards for separation. **We recommend considering the need for harmonizing formats, standards, technical protocols and rules set by card schemes in order to improve interoperability, also for new digital payment instruments.**
- The IFR calls for an assessment whether to include a maximum interchange fee amount of EUR 0.07 for debit card transactions. This would result in lower interchange fees for transaction values larger than EUR 35. Four Member States have already set a maximum fee amount on domestic debit card transactions within the limits imposed by the IFR. There is no evidence of an impact on the level and structure of card-based transactions although use of debit cards increased more in these Member States compared to Member States that applied the standard IFR cap. **As the current study does not provide strong evidence for or against a maximum fee amount, we recommend collecting more information about the effects of maximum fee amounts.**

## RECOMMANDATIONS

- L'étude a évalué les incidences du RCI sur la période 2015-2017. D'autres effets du RCI devraient se faire sentir au-delà de 2017. Dans ce cadre, la conclusion générale est que dans l'ensemble, les plafonds des commissions d'interchange fonctionnent comme prévu. Les commissions d'interchange pour les transactions par carte de débit et de crédit ont diminué en accord avec le RCI. La baisse des commissions d'interchange a amené les acquéreurs à réduire les coûts appliqués aux commerçants. La baisse des coûts appliqués aux commerçants se répercute à la longue en raison de la baisse des prix consommateur et de l'acceptation accrue des cartes de crédit. **Nous recommandons de plafonner les commissions d'interchange sur les transactions par carte de crédit du consommateur.**
- Une première préoccupation est que les frais de schéma sont en hausse. Les frais de schéma, tant des émetteurs que des acquéreurs, ont augmenté au cours de la période, plus pour les transactions plafonnées par carte que pour celles qui ne le sont pas. S'ils continuent d'augmenter et de devenir plus complexes, cela pourrait réduire ou neutraliser les économies de coûts que les commerçants ont déjà réalisées. **Nous recommandons de surveiller le niveau, la structure et la transparence des frais de schéma.**
- Une deuxième préoccupation est que la marge d'acquisition a augmenté et limité la répercussion des économies réalisées sur les commissions d'interchange entre les acquéreurs et les commerçants. Le RCI accroît la transparence des prix en stimulant l'utilisation de prix non mélangés, dont il est prouvé que l'utilisation de prix simples et non mélangés accroissent la répercussion. **Nous recommandons de renforcer la fourniture d'informations sur les prix transparentes, simples et non mélangées à l'intention des commerçants, et d'examiner plus avant l'absence de concurrence qu'elle implique.**

- La plupart des terminaux de PDV semblent avoir été mis à niveau, de sorte que les commerçants et les consommateurs peuvent choisir leur marque de carte préférée sur des cartes co-badgées. Toutefois, la conformité technique permettant aux terminaux d'identifier les types de cartes n'est pas encore totale. **Nous recommandons d'appuyer une harmonisation complète des caractéristiques techniques des terminaux de PDV.**
- Les commerçants, mais non les consommateurs, semblent utiliser la possibilité de choisir leur marque ou application préférée sur leur carte lorsqu'ils utilisent des cartes co-badgées aux terminaux de PDV. Les consommateurs ne seraient que peu incités à faire un choix actif. **Nous recommandons de se concentrer sur la sécurisation du choix actif par défaut du commerçant afin d'accroître la concurrence entre les schémas.**
- Il n'existe aucune preuve d'augmentation statistiquement significative des commissions d'interchange ou des commissions de service acquittées par le commerçant appliquée aux transactions par carte commerciale entre 2015 et 2017, mais la valeur et le volume des cartes commerciales non plafonnées semblent être en hausse. L'application correcte de la définition des transactions par carte commerciale dans le RCI peut être suffisante pour empêcher les émetteurs et les schémas de promouvoir les cartes commerciales au détriment des cartes consommateur. **Nous recommandons de continuer à exempter les transactions par carte commerciale de l'application du RCI tout en contrôlant strictement la bonne application de l'ensemble des règles du RCI relatives aux cartes commerciales.**
- Huit États membres ont choisi d'appliquer des plafonds nationaux de commissions d'interchange pour les transactions nationales par carte de crédit, dans la logique des dispositions spéciales du RCI. Il n'existe aucune preuve d'un lien particulier entre les dispositions spéciales et l'émission et l'acceptation des cartes consommateur, bien que certains éléments indiquent que l'acceptation des paiements par carte par les commerçants a tendance à être plus élevée. **Nous recommandons d'analyser s'il y a lieu d'éliminer les dispositions spéciales relatives au plafonnement des commissions interbancaires nationales à l'appui du marché unique.**
- L'ampleur de l'acquisition transfrontalière s'est accrue grâce aux économies d'échelle et à l'intégration des marchés. L'intensification de la concurrence a déjà entraîné, avant l'introduction du RCI, des commissions de service acquittées par le commerçant moins élevées pour les transactions transfrontalières que pour les transactions nationales, mais l'acquisition transfrontalière reste encore principalement utilisée par les grands commerçants. **Nous recommandons de surveiller le marché de l'acquisition et d'envisager de renforcer les dispositions encourageant l'acquisition transfrontalière.**
- Les schémas ont séparé fonctionnellement leurs activités de traitement. Cependant, toutes les entités de traitement fonctionnellement indépendantes appartenant aux schémas ne sont pas encore en mesure de fournir le traitement multimarques, la compensation et l'interopérabilité. Cela peut s'expliquer en partie par l'approbation tardive des normes techniques de séparation. **Nous recommandons d'envisager la nécessité d'harmoniser les formats, les normes, les protocoles techniques et les règles établis par les schémas de cartes afin d'améliorer l'interopérabilité, y compris pour les nouveaux instruments de paiement numérique.**



- Le RCI requiert que l'on évalue s'il y a lieu d'inclure un montant maximal de commission d'interchange de 0,07 EUR pour les transactions par carte de débit. Il en résulterait des commissions d'interchange moins élevées pour les transactions d'une valeur supérieure à 35 euros. Quatre États membres ont déjà fixé un montant maximal de frais pour les transactions nationales par carte de débit dans les limites imposées par le RCI. Rien ne démontre qu'il y ait une incidence sur le niveau et la structure des transactions par carte, bien que l'utilisation des cartes de débit ait davantage augmenté dans ces États membres par rapport à ceux qui ont appliqué le plafond RCI standard. **Sachant que la présente étude ne fournit pas de preuves tangibles pour ou contre un montant maximal de frais, nous recommandons de recueillir plus d'informations sur les incidences des montants maximaux de frais.**

## 1 INTRODUCTION

Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft (EY) and Copenhagen Economics A/S (CE), as a subcontractor, have been mandated by the European Commission (Directorate General for Competition) to carry out this 'Study on the application of the Interchange Fee Regulation'.

### 1.1 Background

The European Commission (EC) is aiming at developing an EU-wide internal market for payments in line with Europe 2020 and the Digital agenda. With regulatory and legislative frameworks electronic payments shall become secure, efficient, competitive and innovative. For card-based payments the level of interbank fees varied substantially from one Member State (MS) to another. Although the amount of the fees might seem small for a given consumer, the amounts concerned are immense at industry level.

On 8 June 2015 the Interchange Fee Regulation (IFR) entered into force.<sup>1</sup> The objective of the Regulation is to help create a single market for card payments across the EU. Card payments are increasingly relevant for cross-border and internet payments. Thus, they are essential for the development of the internal market. The Regulation is intended to create a level playing field that allows more competition and spurs innovation in payments.

The first set of rules of the Regulation became applicable on 9 December 2015 and especially introduced EU wide maximum interchange fees (IF), charged by the cardholder's bank (issuer) to the merchant's bank (acquirers) when a consumer makes a purchase with its Debit card or Credit card within the EU. IFs constitute a major part of the fees charged to merchants for a card-based payments transaction.

The second set of rules, introducing a series of provisions enhancing market transparency, supporting market entry and improving the functioning of the EU market integration, became applicable on 9 June 2016.

Therefore, the interchange fees for card-based payments, which are paid by the merchant's bank to the bank which issued the card, have become more transparent and harmonised across the MS. The fee caps of 0.20% of transaction value for Consumer Debit card and 0.30% for Consumer Credit cards payment transactions have been applied across all MS.

Article 17 of the IFR requires the EC to review the application of the IFR and its market effects. The Commission shall submit a report by mid-2020 to the European Parliament and to the Council. The report shall, if appropriate, be accompanied by a legislative proposal that may include a proposed amendment of the maximum cap for interchange fees.

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<sup>1</sup> European Commission: The Interchange Fees Regulation. Competition policy brief - Occasional discussion papers by the Competition Directorate-General of the European Commission. Issue 2015-3 | June 2015.

## 1.2 Objectives of the Study and scope

This study is intended to inform the EC when preparing the report to the European Parliament and to the Council on the application of the IFR. The purpose of the study is to collect data and analyse key qualitative and quantitative market information from all MS since the date of application of the IFR, in order to examine the functioning and application of the IFR as well as to comprehensively assess its effects on the EU card payments sector. Following article 17 of the IFR (review clause), the study shall assess the application and market effects of the IFR related to:

1. Fees and costs development (articles 17(a) and 17(c));
2. Payment sector evolution (article 17(b));
3. Merchant pass-through of the reduction in interchange fee levels (article 17(d));
4. Technical requirements and their implications for all parties involved (article 17(e));
5. Effects of co-badging (article 17(f)) and co-branding;
6. Effects of the exclusion of commercial cards (article 17(g));
7. Effects of the special provisions for interchange fees for domestic debit card transactions (article 17(h));
8. Development of cross-border acquiring and its effect on the single market (article 17(i));
9. Application in practice of the rules for separation of card schemes and processing (article 17(j));
10. Interchange fees for medium and high value debit card transactions (article 17(k)).

The effects analysis shall encompass the perspectives of the different stakeholders involved in and impacted by card-based payments:

- International and domestic three- and four-party card schemes;
- Issuers;
- Acquirers;
- Merchants;
- Consumer associations and other relevant users' associations.

The Study covers the period from the first year of entry into force of the Regulation (2015) up until 2017. It focusses on domestic transactions within the 28 EU MS as well as on transactions within the European Economic Area (EEA). All empirical evidence in this report is based on this period, except for situations where data is available only for different periods. Additional evidence as well as general concerns by stakeholders on effects outside this period are – to the extent that survey stakeholders have provided such insights – considered but not part of the formal assessment.

## 2 APPROACH AND DATA COLLECTION

### 2.1 Approach

The study has been executed in two phases from September 2018 until December 2019 (Figure 1).

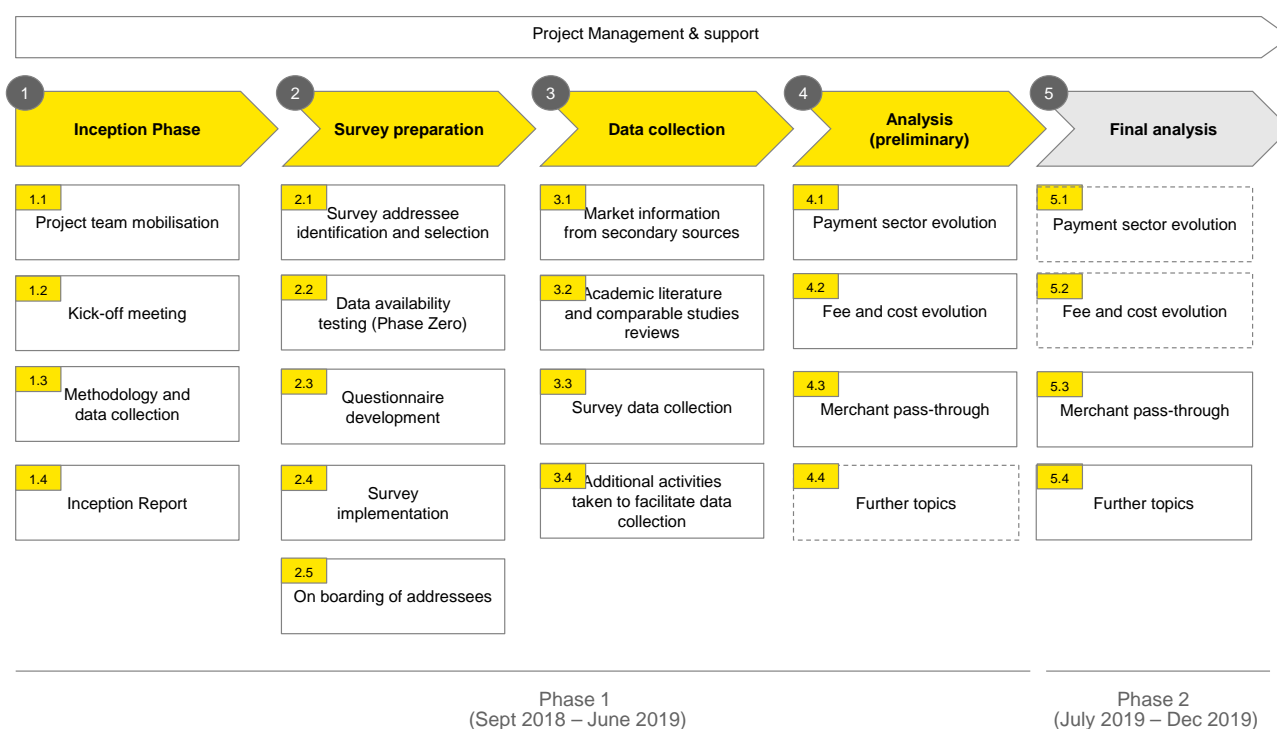


Figure 1: Overview on project approach

The main focus of Phase 1 has been on preparing and conducting a stakeholder survey along with collection of market data from secondary sources and preliminary analysis. Key challenges of Phase 1 were the questionnaire development as well as the survey preparation and implementation. Specifically, the study required specific questionnaires for each stakeholder category to address a broad list of topics. Due to their different characteristics, it has also been necessary to prepare different questionnaires for three-party and four-party schemes, thus adding an additional sub-category to be considered in the survey. The survey team also identified additional relevant issues during pre-consultations with selected addressees, such as the role of legal obligations not to disclose data to third parties which would potentially prevent addressees from providing specific information. Further details on the IFR survey are discussed in section 2.2.2.

Phase 2 has fully focussed on analysis of the impact of the IFR in relation to the ten topics as mentioned above. Further details on findings and results of the analysis are provided in sections 3 to 6.

## 2.2 Data collection

Data collection and establishing a data and information foundation for the analyses was another relevant challenge. Overall, the data foundation comprises data from different sources. The following table provides an overview on the relationship between topics to be analysed and primary (survey) and secondary data sources.

Article	Chapter	MS	Public data	Literature	IFR	IFR Survey					
						Issuer	Acquirer	Schemes	Merchants	Consumer Assoc.	Regulators
-	Payment sector evolution	All	X	X	X			X			
-	Fee and cost development	All	X	X	X	X	X	X	X		X
-	Merchants' pass-through of interchange fee reductions	Five <sup>a</sup>	X	X	X		X		X + Interviews		
8(6) & 9(2)	Identification and choice of card type and payment application at POS terminals	19 <sup>b</sup>			X		X		X		X
8	Co-badging and choice of payment brand or application	19 <sup>c</sup>	X		X	X			X		X
1(3)a	Effects of the exclusion of commercial cards	All	X		X	X	X	X	X		X
3(2-3)	Effects of special provisions for domestic debit card transactions	All	X		X		X	X			X
6	Development of cross-border acquiring	All			X		X		X		
7	Application of rules for separation of schemes and processing	All	X		X		X	X	X		
3(1)	Interchange fees for medium- and high-value debit card transactions	All			X		X	X			X

<sup>a</sup>: DK, DE, EL, IT and PL.

<sup>b</sup>: BE, DK, FI, DE, EL, HU, IE, IT, BG, LV, LT, MT, NL, PL, PT, RO, SI, ES and UK.

<sup>c</sup>: BE, DK, FI, DE, EL, FR, HU, IE, IT, LV, LT, MT, NL, PL, PT, RO, SI, ES and UK.

Table 3: Relationship between topics analysed and (primary and secondary) data sources

### 2.2.1 Public data and information

Public data sources used for this study are:

- ECB, Statistical Data Warehouse;
- RBR (2018). "Payment cards issuing and acquiring Europe 2018", Volume I and Volume II;
- Amadeus database (Bureau Van Dijk);
- Eurostat Database (2019);
- Statista (2017)<sup>2</sup>; and
- Federal Reserve Bank of Kansas City (2015)<sup>3</sup>.

<sup>2</sup> Statista (2017). 7 September 2017. 'Number of users of selected global mobile payment platforms 2017' [retrieved the 30 October 2019 from: <https://www.statista.com/statistics/744944/mobile-payment-platforms-users/>]

<sup>3</sup> Federal Reserve Bank of Kansas City (2015) "Credit and Debit Card Interchange Fees in Various Countries - August 2015 Update".

In addition, relevant IFR related studies have been identified, collected and reviewed. All studies are listed in the references (Annex 6).

### **2.2.2 IFR Survey**

The key source of information for the study is data from a comprehensive survey (the IFR Survey) that informs on fees, charges, costs, revenues and other relevant and accessible information, including changes in contractual terms and business rules.

#### *Survey approach*

Survey data and information has been collected from the following stakeholder groups:

- International and domestic three- and four-party card schemes;
- Issuer;
- Acquirer;
- Merchants;
- Consumer associations and other relevant user associations;
- National competent authorities.

For each stakeholder category, dedicated questionnaires were developed, which resulted in a list of 37 and 42 questions to (three-party and four-party) schemes, 51 questions addressed to issuers, 56 to acquirers and 52 to merchants. In addition, 36 questions were developed for consumer associations and 37 for national competent authorities.

Questionnaire responses were required to cover at least 30% of the total issuing and acquiring business in each MS, measured by either turnover, number of cards issued or number of transactions, respectively, in each MS. For merchants, the responses were required to cover at least large retailers with a turnover exceeding EUR 50 million each, and a representative sample of retailers active in the e-commerce, travel and accommodation sectors, covering at least 30 % of their turnover in each MS. Questionnaires were also sent to other relevant sectors such as fuel distributors. For consumer and user associations, responses were required to cover a representative number of users, but no less than one per MS.

For each stakeholder group, a sample of survey addressees was selected based on relevant criteria (by market relevance per MS, degree of internationalisation, company size) from all EU-28 MS. Invitations to participate in the IFR survey have been dispatched in four waves starting from January 2019. Following interaction with stakeholders and stakeholder associations, the list of addressees has been extended in all stakeholder categories throughout the survey period. Survey responses have been accepted until the end of June 2019.<sup>4</sup>

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<sup>4</sup> To secure maximal possible participation rates, the survey team has been as flexible as possible and extended the deadline for data submission several times upon request by individual survey addressees.

Overall, a total of 5,121 survey invitations were dispatched<sup>5</sup> to all categories (18 schemes, 484 issuers, 229 acquirers, 4,098 merchants<sup>6</sup>, 211 consumer associations and 81 national competent authorities) were invited to participate in the IFR Survey. A relevant proportion of the selected companies are market leaders with operations in multiple MS.

Securing sufficient levels of stakeholder participation turned out to be a significant challenge. Addressees across all categories showed unexpected limited ability and willingness to participate in the survey. The main reasons were the lack of relevant data, lack of resources, participation not considered relevant, participation not mandatory, not impacted by the IFR and lack of trust in the study actually being carried out on behalf of the Commission.

Substantial efforts were undertaken to increase participation levels. In particular, follow-up work has been undertaken from February to June 2019, including hundreds of calls, follow-up emails and deadline extensions. The Commission supported this process by sending direct messages to selected addressees. Overall, these efforts have considerably improved the response rates.

In total, 592 per-MS responses have been received (Table 4).

Stakeholder category	Survey invitations dispatched (# of addressees approached)	Received questionnaires (# of per-MS replies)	MS covered (#)
Schemes	18	94	28
Issuers	484	119	25
Acquirers	229	85	27
Merchants	4,098	270	28
Consumer Associations	211	5	5
National Competent Authorities	81	19	17
<b>SUM</b>	<b>5,121</b>	<b>592</b>	

Source: IFR Survey.

Table 4: Survey invitations and response rates

Survey responses have been stored in a dedicated database. Quality assessments have been performed on all received questionnaires related to data completeness, plausibility and consistency. Where necessary, the survey team contacted the respondents and asked for clarification, validation, or completion. More detail on the total survey process is provided in Annex 2.

<sup>5</sup> Where possible, survey invitations were sent by email. If email contacts were not available, invitations were sent by mail.

<sup>6</sup> About 63% of invited merchants (2,600) were Small and Medium Size Enterprises (SME) with a turnover below EUR 50 m (revenue data was taken from the Amadeus dataset).

*Survey outcome*

Survey responses by stakeholder category account for 9.2 to 75.3 billion POS-transactions with a value of EUR 280 to 3,096 bn (Table 5). These figures are linked to EUR 0.27 to 5.20 bn of interchange fees, EUR 0.04 to 0.75 bn of scheme fees and EUR 0.79 and 7.86 bn of merchant service charge (Table 6).<sup>7</sup>

	POS-transactions	Value of POS-transactions
	# bn	EUR bn
Schemes	75.3	3,096
Issuers	38.2	1,603
Acquirers	40.1	1,701
Merchants	9.2	280

Source: IFR Survey.

Table 5: Survey data overview: cards and transactions (2017)

	Interchange Fees EUR bn	Scheme Fees EUR bn	Merchant Service Charge EUR bn
Schemes	5.20	Issuing: 0.73 Acquiring: 0.75	n/a
Issuers	3.76	0.70	n/a
Acquirers	4.74	0.67	7.86
Merchants	0.27	0.04	0.79

Source: IFR Survey.

Table 6: Survey data overview: fee values (2017)

Targeted response rate of the survey is at least 30% of the total issuing and acquiring business in each MS. Figure 2 shows achieved coverage by category and MS, measured by number of transactions.<sup>8</sup> For issuers and acquirers, the survey data covers 55% and 58%, respectively, of the respective aggregate EU-28 card payment transaction volumes in 2017 as reported by the ECB Statistical Data Warehouse. This reflects that the IFR survey includes feedback from key card payment markets (FR, IT, NL, PL, ES, SE and UK) that together account for 65% (issuer) and 67% (acquirer) of the EU-28 market.

Broken down by MS, the survey achieved a coverage of at least 30% in 18 MS for card issuer and card acquirer. It must, however, be considered that the ECB data refers to all card-based transactions while the scope of the IFR survey is on domestic and intra-EU-28 transactions, while

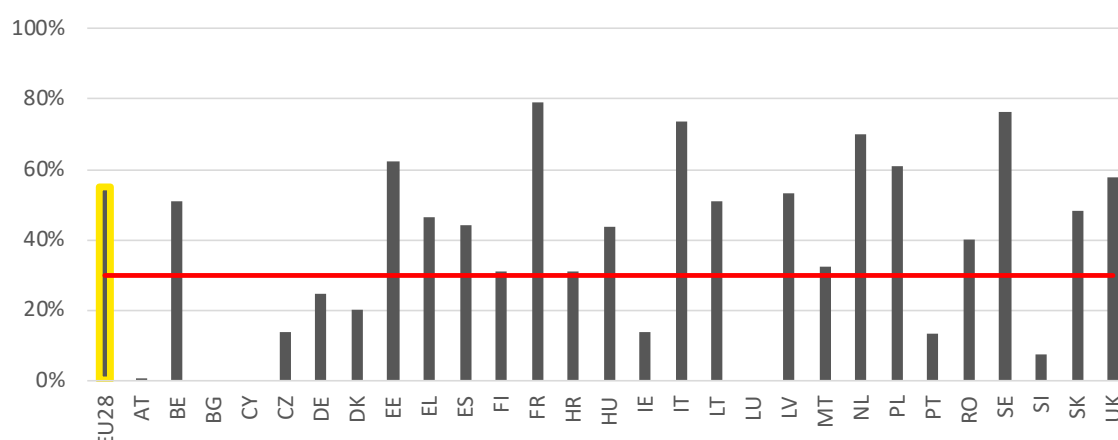
<sup>7</sup> Note that the not all survey responses include data on transaction values as well as on fees. Hence, the aggregate information in Table 5 and Table 6 cannot be readily used to calculate the respective fee rates in percent.

<sup>8</sup> The assessment based on value of transactions yields similar results.

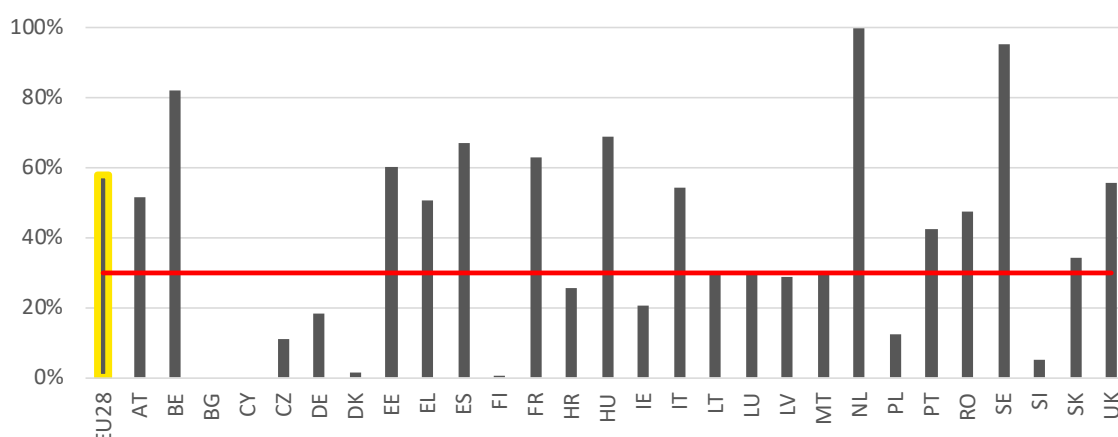


countries from outside the EEA are excluded. Accordingly, the effective coverage of the relevant business segments is slightly higher than shown in the figure.

### (a) Card Issuers



### (b) Merchant Acquirers



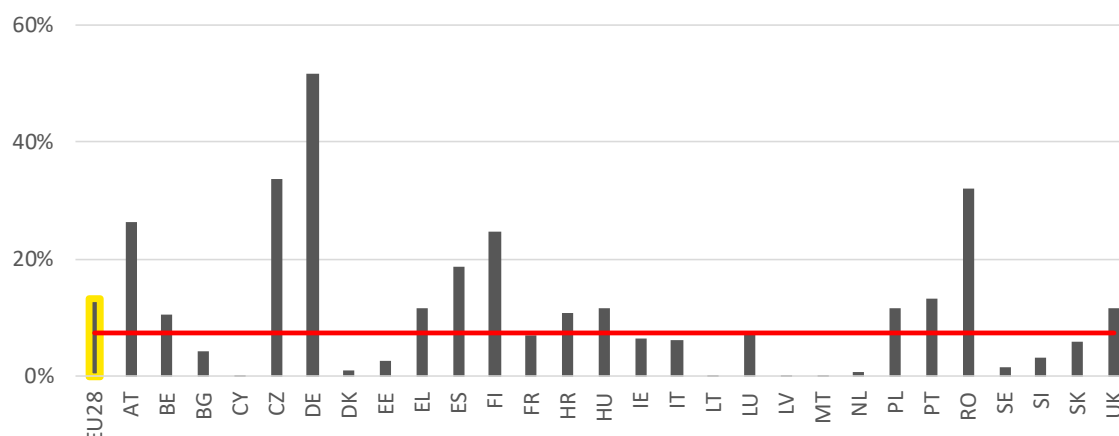
Source: IFR Survey, ECB.

Figure 2: Market coverage of the IFR Survey for issuer and acquirer (in % of number of card-based POS-transactions, 2017)

For Merchants, a similar assessment is not possible. The focus of the IFR survey was on three specific Merchant sectors, while the ECB data only reports on the overall number of transactions without further differentiation by merchant sectors. As a proxy, the three merchant sectors (E-Commerce, Travel and Accommodation) account for about EUR 1 trillion (25%) of the aggregated revenue of all merchant sectors in EU-28.<sup>9</sup> With respect to the objective of 30% total market

<sup>9</sup> Relevant Merchant sectors with respect to card payments are retail (Nace Rev. 2 G47), travel (N.79.1), accommodation (I56), passenger transport (H50 & 51) as well as E-Commerce (note that the latter has numerous intersections with the

coverage this implies a level of 7.5% of total POS-transactions<sup>10</sup>. As shown in Figure 3, the survey coverage exceeds this level for the EU-28 on aggregate as well as for 14 MS. As above, excluding international transactions involving countries from outside the EEA will further increase coverage levels.



Source: IFR Survey, ECB.

Figure 3: Market coverage of the IFR Survey for merchants (in % of total number of POS-transactions)

For schemes, the survey data base includes replies from the two market leading international four-party-card networks as well as relevant domestic schemes in Portugal, Spain, France, Germany, Italy and Belgium. The survey also includes data from three-party schemes. Overall, this secures sufficient coverage of almost the full market segment.

Consumer associations from five MS (Croatia, France, Italy, Portugal and United Kingdom) have participated in the survey. The majority of the Consumer Associations was not able to participate due to the lack of capacity and data. On the other hand, the IFR survey includes responses from 19 National Competent Authorities who have recently conducted surveys. This information substitutes information from Consumer Associations for 13 additional MS.

Reliability of the survey data as a basis for assessing the impact of the IFR can be assessed by its consistence with available official statistics, in particular with the ECB Statistical Data Warehouse. While the IFR survey covers only a fraction of the total EU markets as reported by the ECB, consistence still requires that annual changes of relevant indicators such as the number and value of transactions develop accordingly. This can be demonstrated based on the

previous ones). The aggregate turnover of those service sectors in EU-28 is about 4 trillion EUR. Travel, accommodation and E-Commerce account for about one quarter of this amount (source: Eurostat Structural Business Statistics and E-Commerce Europe).

<sup>10</sup> 30% x ¼; assuming that the relationship of turnover to number of POS-transactions for the three selected merchant sectors roughly matches that of all merchant sectors and across all 28 MS.

correlation between indicators obtained from the ECB data and from the IFR survey. The average transaction value (ATV) is such a relevant indicator, as it is calculated from two main survey variables: total value of transactions and number of transactions per year. Indeed, annual growth rates (CAGR 2015-2017) of ATV per MS<sup>11</sup> are positively correlated for all four categories, in particular for Schemes but also for Issuers and Acquirers (Table 7). The correlation is highly significant above the 1%-level for Issuers, Acquirers and Schemes and above the 5%-level for Merchants. This confirms that the data reported in the IFR Survey and the ECB data develop consistently. An important implication of this finding is that if survey data are generally consistent with the ECB data, it is very likely that the addition of further replies will not change the direction of results.<sup>12</sup>

	Change in ATV	
	Correlation coefficient	Significance
4p-Schemes	0.75	***
Issuers	0.77	***
Acquirers	0.45	***
Merchants	0.45	**

Significance is assessed based on the p-value: \* <10%; \*\* <5%; \*\*\* <1%.

Source: IFR Survey, ECB.

Table 7: Consistency between IFR Survey Data and official statistics

In addition to this quantitative assessment, further considerations support the sufficiency of the IFR Survey database as a basis for the requested analysis:

First, the survey is directed to more respondents than necessary for a statistically sufficient assessment of the EU markets. Therefore, the interesting response rate is not necessarily the response rate for Issuers, but rather the response rate for Issuers AND Acquirers faced with the same question. It means that responses to survey questions in a segment can contribute to reinforce the credibility of responses to the same survey questions in a different market segment. In very concrete terms, it means that IF passes the thresholds more frequently than for the Acquirers alone OR for Issuers alone.

Second, most questions would be covered by the schemes that have an overview of the whole market. Nevertheless, the survey also asked the other sides as well to complement and cross-check the replies from Schemes. For this reason, one should not assign the same weight on all groups of respondents. Schemes should be given a much higher weight in the overall pool of responses than the other groups. A certain coverage by the schemes is much more valuable than the same coverage by any of the other groups.

Based on these arguments, the survey data is considered to be overall and on an aggregate level relevant and representative for stakeholder categories and MS. In particular, the data is

<sup>11</sup> Annual growth rates per MS are calculated based on growth of median ATV per MS.

<sup>12</sup> Unless the added replies are significant outliers, in which case they would in any event not be suitable for the purpose of the survey.

considered to be sufficiently representative to allow assessing all elements of the required impact assessment.

### 3 PAYMENT SECTOR EVOLUTION

This chapter provides an overview of the developments in the issuing, usage and acceptance of payment cards in the EU in the period 2014-2018. It also assesses changes of the market structures and the level and development of competition among card schemes, card issuers and acquirers. Finally, the chapter explores how and to what extent e-commerce as well as the increasing adoption of digital payment methods might affect the development of card-based payments in the future. This chapter serves to set the stage and introduce the context for the assessment in section 5 of the development of payment fees and costs after the entry into force of the IFR. It does so by providing an overview of concomitant forces at play in the European payment sector during the period the IFR was introduced.

The analysis shows an overall increase in payment cards issuing and card-based payments transactions. Consumers are increasingly using cards also for small purchases. However, significant differences across MS are still present, though decreasing, with a positive correlation between card usage and economic development in most MS. The increase in card payments was in general higher in MS that were lagging behind. Acceptance of cards at point of sale (POS) has overall expanded as well, driven mainly by less mature card payment markets. As the use of cards for payments continued to grow, consumers less often source cash at ATM.

Domestic card schemes maintained a strong market position in their respective MS. Visa and MasterCard have by far the largest market shares in the other Member States and for cross-border transactions, each of them prevail in different MS. The presence of three-party schemes remained marginal and overall relatively constant. In the card issuing market the level of concentration varied across MS. The situation observed in 2016 did not change considerably from 2012 in most MS. At the European level, leading issuers did not increase their presence between 2014 and 2017. The acquiring market is more concentrated than the issuing one. An ongoing consolidation process is expected to further increase concentration at the European level. However, at MS level, market leaders generally did not increase their market presence substantially.

The growth in digital payments, with the increased use of digital wallets and bank transfers, is affecting the development of card transactions in two opposite directions. The adoption of digital wallets that are currently mostly based on card scheme networks indirectly fosters card payments, while the concomitant growth of alternative account-based bank transfers exercise competitive pressure on them. Mobile payments mainly based on cards are increasingly adopted not only for remote payments but also for face-to-face transactions. New entrants, such as BigTech and FinTech firms, have introduced proprietary digital payments products. At the present stage, BigTechs are relying on the established payments cards. However, they can exercise competitive pressure on payment sector incumbents through leveraging of their large customer base.

The chapter is mainly based on data from the ECB Data Warehouse in the period 2014-2018. When information is not available from the ECB, data is collected from other reliable sources with similar but not necessarily identical time coverage. Therefore, the periods analysed across this chapter may differ.

### 3.1 Development of card payments

Card payment transactions continue to be the most used non-cash payment instrument in the EU, gaining shares over credit transfers and direct debit transactions. Card transactions<sup>13</sup> increased across all MS in the period 2014-2018, both in terms of volume and value at a higher rate than card issuing. The gap between MS with different levels of card payment market maturity is narrowing as MS with the lowest level of card usage experienced the highest growth rates. As consumers are paying more purchases with cards, usage of cash withdrawals at ATMs decreased, with a significant level of variation across MS.

#### 3.1.1 Card issuing

In 2018, there were around 831 million payment cards in circulation in EU-28, with a number of cards per capita ranging from 0.8 in Romania to 4.5 in Luxemburg, with an average of 1.6, see Figure 4. Most cards have a debit function: 67% in 2018<sup>14</sup>. Credit cards are relatively more common in Spain, Luxemburg, Netherlands, Sweden and the UK where the share of debit cards was below 60%.

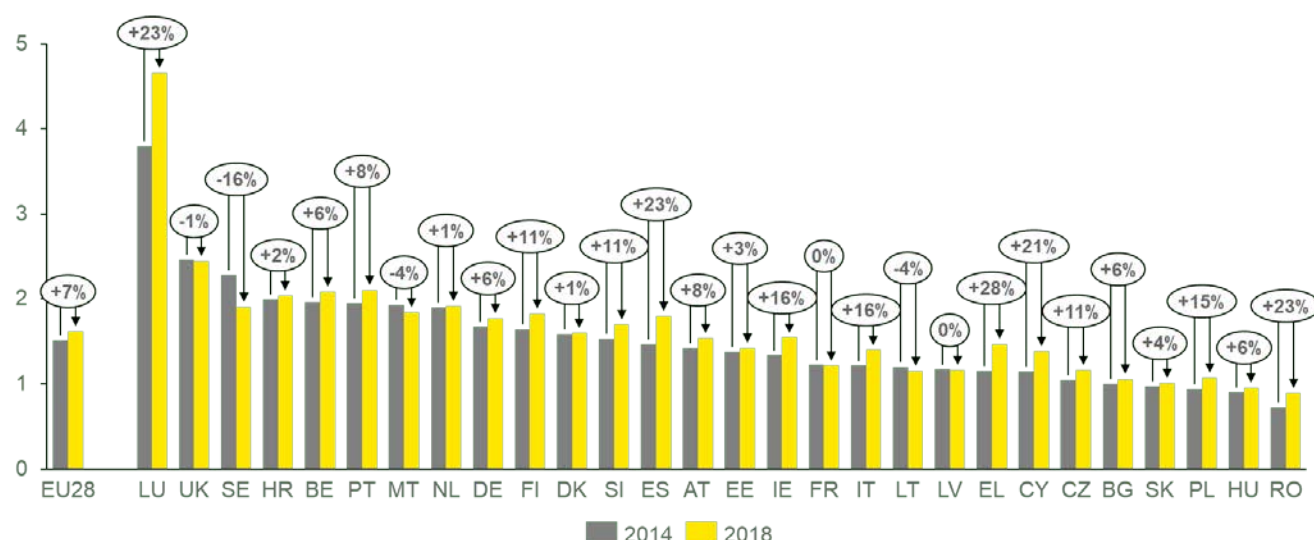
The number of payment cards per capita in EU-28 has increased by 7% in the period 2014-2018. The increase was driven by double digit growth rates reported in several MS, e.g. Greece, Romania, Spain, Luxemburg, Italy and Poland. Negative changes were reported only in UK, Sweden, Lithuania and Malta. Debit cards led the growth at EU level with an increase of 13% over the period, while credit cards issuing decreased by 2%.<sup>15</sup>

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<sup>13</sup> Throughout the following section card transactions refer to card-based payments at terminals or via other channels. Remote card-based payments are included. The ECB excludes cash advances at POS terminals.

<sup>14</sup> The number of payment cards in circulation in each MS by card type is reported in Table 69 to Table 72.

<sup>15</sup> The decrease is partially explained by the fact that UK and Finland are not reported in the EU-28 data for 2018 on cards with delayed debit function. Excluding the UK and Finland, credit card issuing instead increased by 1% between 2014 and 2018.



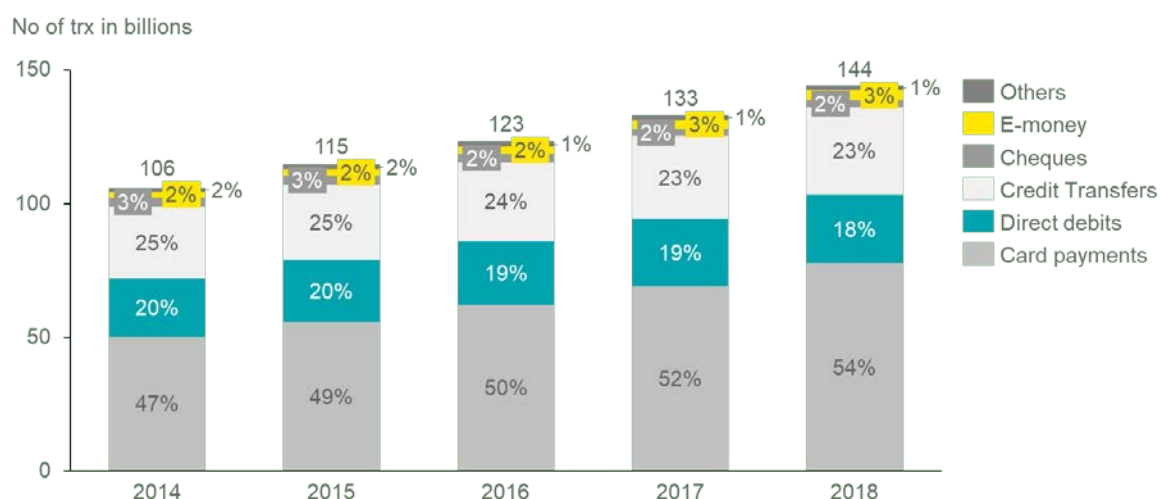
Note: Cards issued by domestic payment service providers, except cards with an e-money function. Number of cards in circulation at the end of the year. Number in circle indicate growth from 2014 to 2018.

Source: ECB.

Figure 4: Payment cards per capita, 2014 and 2018

### 3.1.2 Card-based payment transactions

Payment by card was the most widely used non-cash payment method in the EU with more than 77 billion transactions. Card payment transactions accounted for 54% of all non-cash payments in 2018, more than double of the share of credit transfers (23%) and direct debits (18%), see Figure 5. Between 2014 and 2018, growth in card payments (54%) considerably exceeded the growth in direct debits and credit transfers transactions, respectively 19% and 23%. Only e-money transactions reported a higher growth rate (92%), however their relevance remained marginal, with a share of only 3%.



Note: Cards issued by domestic payment service providers, except cards with an e-money function. EU data for direct debit and other payment services is calculated over reporting MS for 2014.

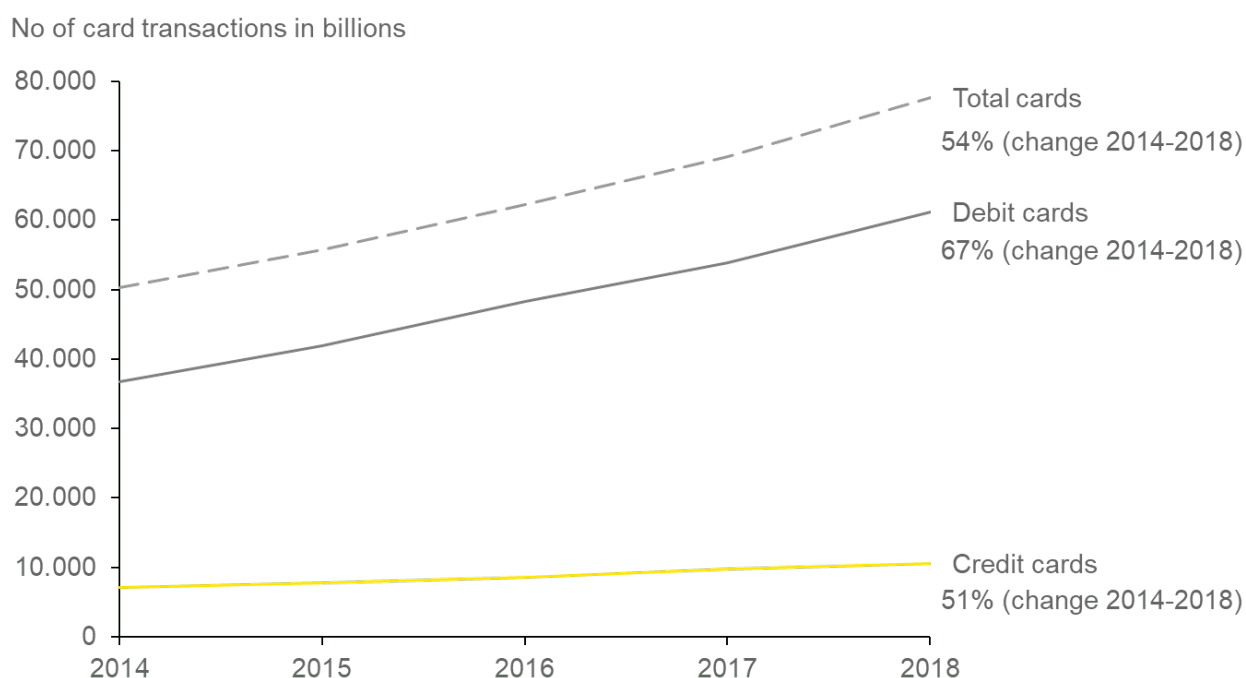
Source: ECB.

Figure 5: Non-cash payments development in the EU, 2014-2018

Few MS account for a large share of the overall number of card transactions in Europe. The United Kingdom and France together made up almost half (46%) of all card transactions in the EU in 2018, while the top eight MS accounted for 80% of the total. Within card payments, transactions with debit cards increased by 67%, while growth for transactions with credit cards set at 51%<sup>16</sup>, see Figure 6.

<sup>16</sup> Details on payment cards usage for each MS are reported in Annex 3.





Note: Cards issued by resident payment service providers (PSPs) except cards with an e-money function only. Credit cards include cards with a credit/delayed debit function. The sum of the debit and credit cards transactions does not equal the total due to certain MS not reporting figures for subgroups.

Source: ECB.

Figure 6: Number of card payments in EU-28, 2014 and 2018

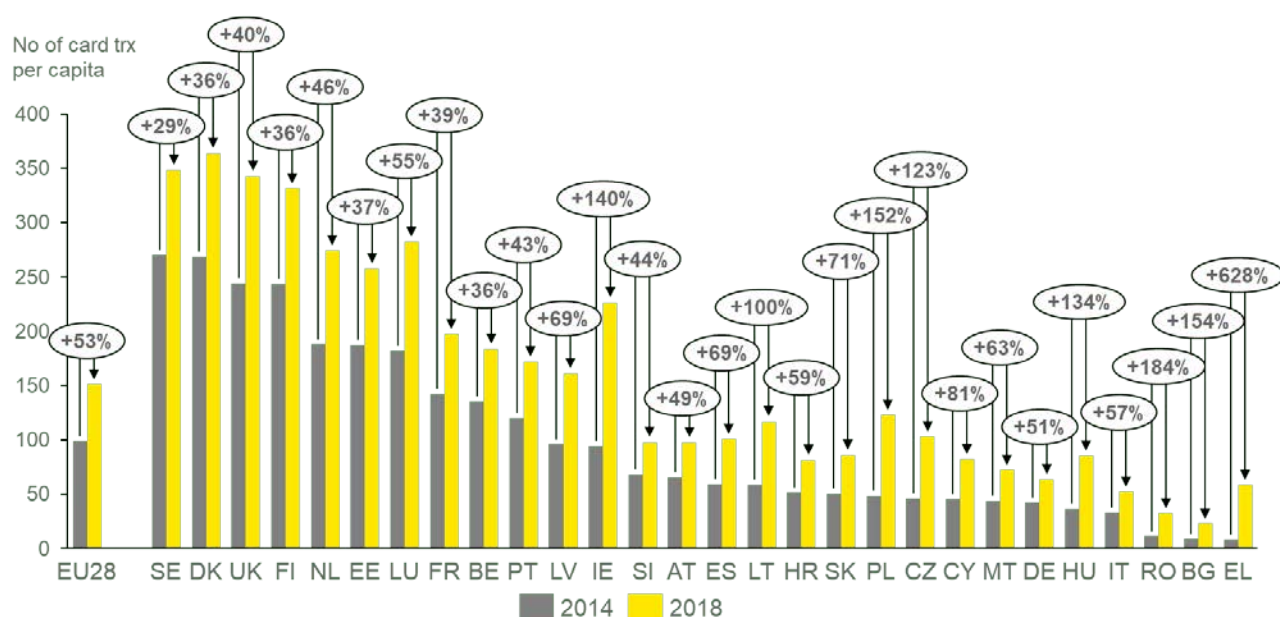
The value and number of card transactions per capita increased in nearly all MS in the period 2014-2018, see Figure 7 and.

Figure 8. In 2018, the average EU consumer made 151 card transactions with a total annual value of EUR 6,310. At EU level, the number of card payment transactions per capita grew at a faster pace (53%) than the value (25%<sup>17</sup>). This results in a decline of the average transaction value (ATV) associated with an increase in lower value card transactions.

Greece and Eastern European MS, such as Bulgaria, Hungary, Poland and Romania, experienced the fastest growth in both the number and the value of transactions. This points to a gradual catch-up of these MS that were characterised by relatively low card payments levels in 2014 (with an annual number of transactions lower than 50 and card payments value below EUR 2,000 per capita) due to a less developed payment sector. In Greece, the limit imposed on cash withdrawals during the sovereign debt crisis and the legal obligation for certain business sectors to install POS terminals have fuelled the exceptional growth in the use of payments cards<sup>18</sup>.

<sup>17</sup> Inflation adjusted growth rate of value of card transactions for EU-28 is 20%

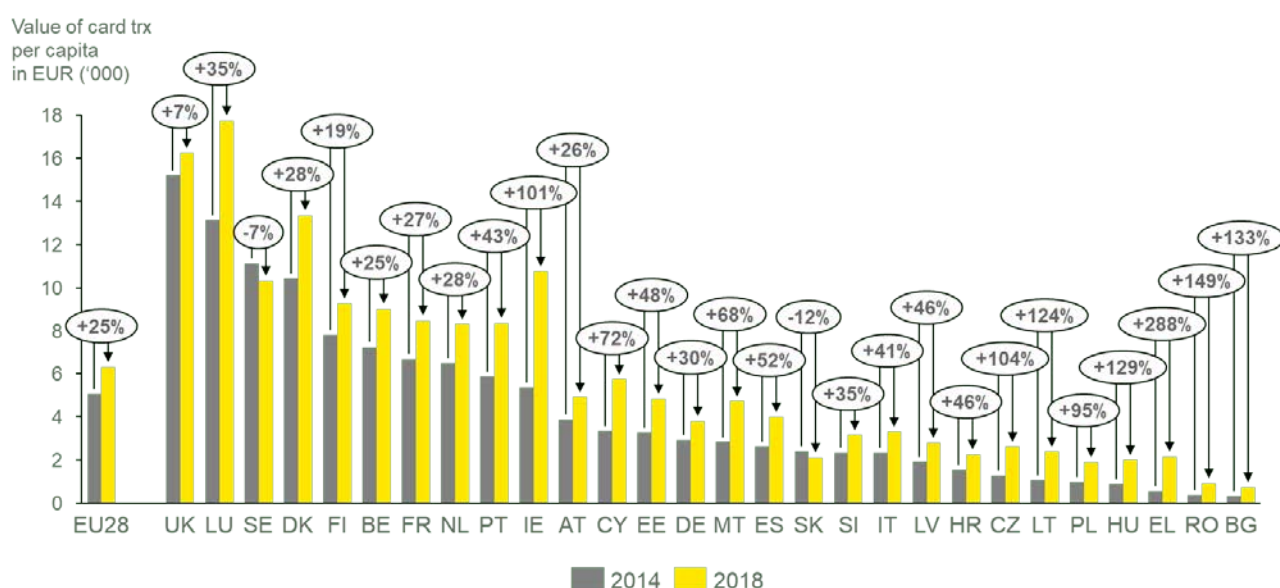
<sup>18</sup> European Payment Council. 21 September 2017. "Greece's progress towards a 'less cash' society". [retrieved from: <https://www.europeanpaymentscouncil.eu/news-insights/insight/greeces-progress-towards-less-cash-society>]



Note: Cards issued by resident PSPs, except cards with an e-money function.

Source: ECB.

Figure 7: Card payment transactions per capita, 2014 and 2018



Note: Cards issued by resident PSPs, except cards with an e-money function. The decrease observed in SE, and the modest increase observed in the UK are due to currency conversion. In national currency the two MS reported 5% and 17% growth respectively. RO and HU had also higher growth rates (160% and 136%) reported in national currency, while for CZ increase in national currency was 90% instead of 104%. Annex 3 reports values in national currency for MS outside the Euro area.

Source: ECB.

Figure 8: Card payments value per capita, 2014 and 2018

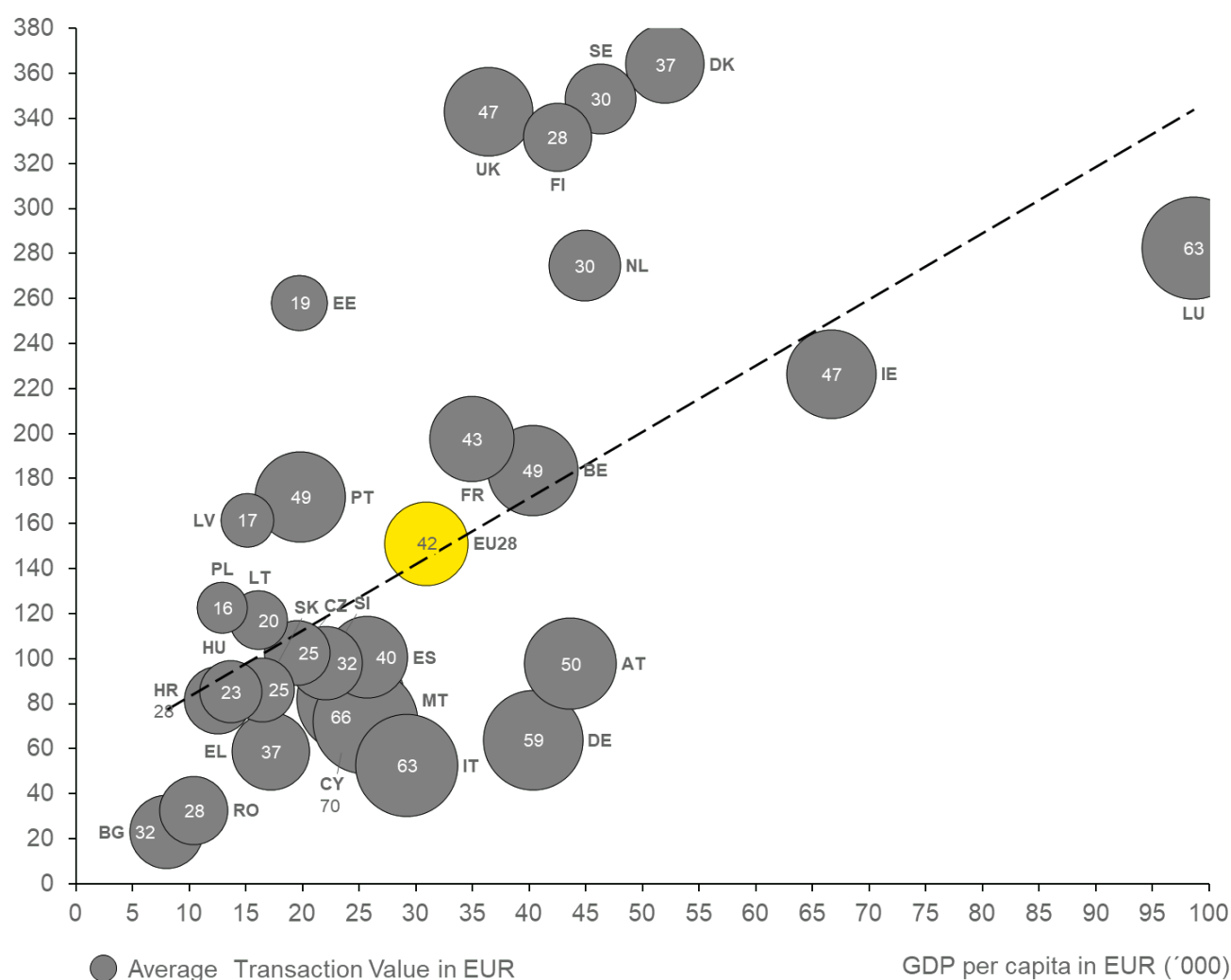
Large variations between MS in both value and volume of card transactions per capita exist. In 2018, the group of MS with the most widespread use of cards (with 300 annual transactions per capita or more), composed of the Nordic countries and the United Kingdom, registered card transaction volumes over five times higher compared to MS with the lowest levels (60 transactions per capita or less). The MS with low card transaction levels are Germany and Italy, traditionally characterised by a preference of the population for cash payments<sup>19</sup>, and the Eastern European countries, Bulgaria and Romania, with a less mature payment sector. Even though the Baltic countries introduced card payments more recently compared to other EU countries, they are already above or around the European average in terms of card payment adoption.

One key factor that drives the differences in card payment levels between MS is the level of economic development measured in GDP. MS with a higher GDP per capita generally tend to have higher volumes of card payments per capita, see Figure 9. However, GDP can only partially account for differences in card payment levels. For instance, leading countries of card-usage, such as Denmark, Sweden, Finland, and the UK still present a significantly higher usage of cards in comparison to countries with similar GDP levels, such as Austria, Belgium, Germany or Ireland. Moreover, Estonia also shows a high volume of card payments relative to its economic development, with a volume almost as high as the one reported in the Netherlands. The use of cards mainly for higher-value transactions is still prominent in MS like Malta, Cyprus, Italy, and Germany, which registered card payments' ATVs above the EU average, while having low card payments volumes.

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<sup>19</sup> In Germany, many retailers and petrol stations also accept card-initiated direct debit transactions (ELV), which are counted as direct debit. In 2017, those accounted for 1.481 billion transactions and a total value of € 76.5 billion. (Source: PCM: European Payment Card Yearbook (2018/2019), pg.508).

No of card trx per capita



Note: Cards issued by PSPs resident in the EU, except cards with an e-money function.

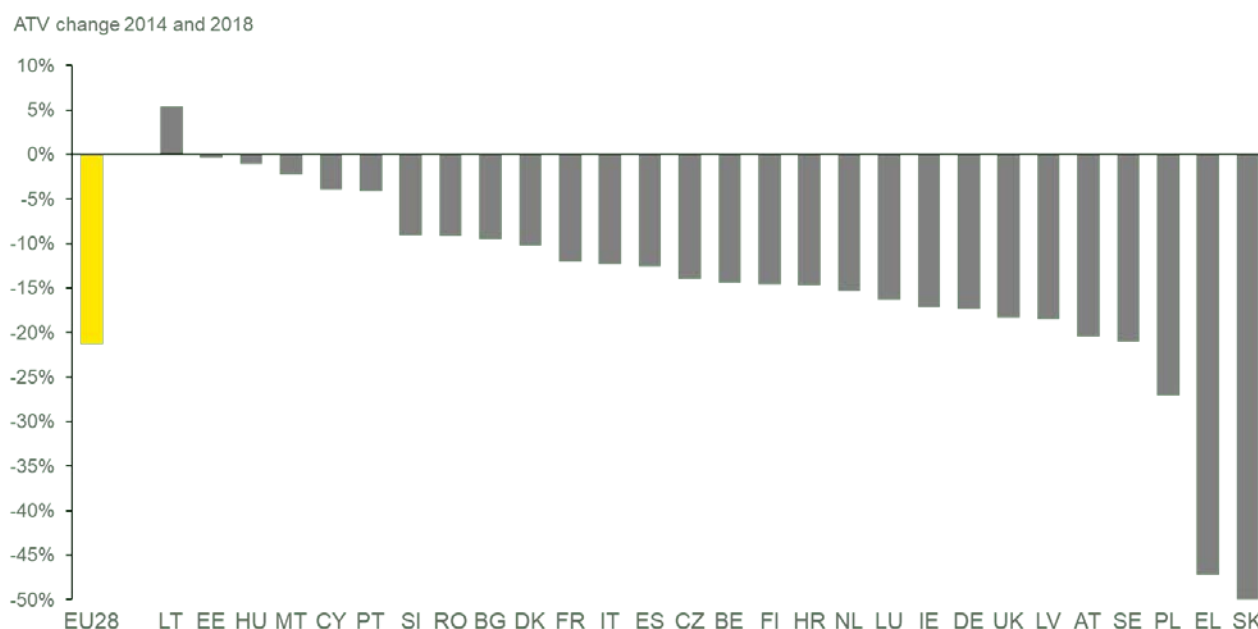
Source: ECB.

Figure 9: Correlation of card payments and GDP per capita, 2018

As the volume of card payments per capita has increased at a higher pace than their total value, the average transaction value of a card payment decreased overall by around 21% across the EU<sup>20</sup>, see Figure 10. This indicates that European citizens are increasingly using cards as a payment method for lower-value transactions. This observation is connected with the following trends: an increase in the acceptance of cards by merchants, an increase in the consumer preference to use card payments, and an overall increase in transactions. The increased adoption

<sup>20</sup> ATV decreased from 51 to 42 during the period 2014-2018.

of contactless cards and mobile payments solutions is another important driver of cashless low value payments<sup>21</sup>. In 2018, contactless card-based transactions accounted for almost half of the total card transactions processed by MasterCard, with around 100% year to date growth rates<sup>22</sup>. In certain MS, including Denmark, the Netherlands, Poland and Hungary, the share was above 50%.



Note: Cards issued by resident PSPs, except cards with an e-money function. ATV growth rates are calculated on national currency and adjusted for inflation (based on HICP Index).

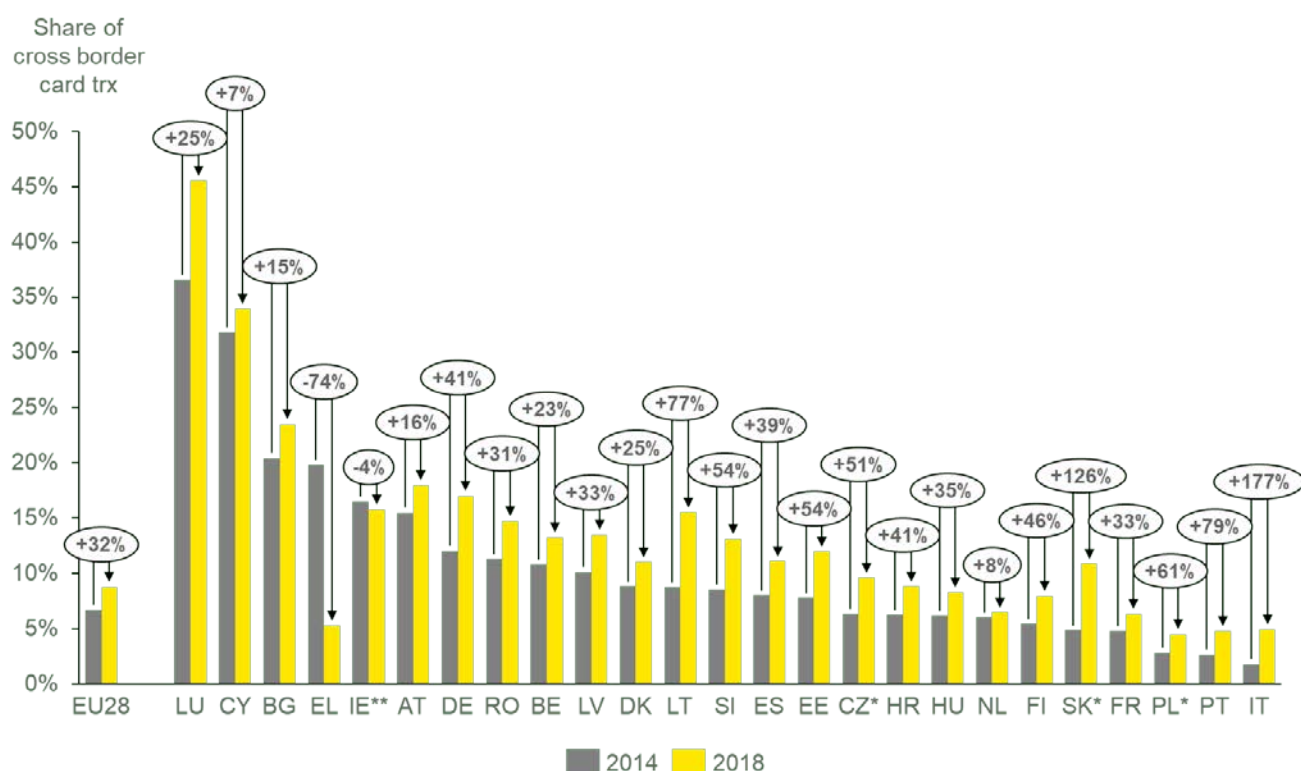
Source: ECB.

Figure 10: Growth of average transaction values of card payments, 2014-2018

The share of cross-border card transactions overall increased by 32% from 6.7% to 8.7% over the period 2014-2017 see Figure 11. The only MS where cross-border payments declined were Greece and Ireland. High growth rates are observed in countries where the initial share was relatively small, e.g. Italy, Portugal and Slovakia. Small MS like Luxemburg, Cyprus and Bulgaria show the highest share of cross-border payments, between 25% and 45% in 2018.

<sup>21</sup> PCM. 4 March 2019. "Payment Card Yearbooks: European payments continue to rise rapidly". [retrieved from: <https://www.paymentscardsandmobile.com/payment-card-yearbooks-european-payments-continue-to-rise-rapidly/> ]

<sup>22</sup> MasterCard. 17 September 2018. "Europe leads contactless adoption as almost 1 in 2 transactions are now contactless". [retrieved from: <https://newsroom.mastercard.com/eu/press-releases/europe-leads-contactless-adoption-as-almost-1-in-2-transactions-are-now-contactless/>]



Note: Cards issued by PSPs resident in EU, except cards with an e-money function.

(\*) = data for 2014 were not available at the time of the report, 2015 values are reported instead.

(\*\*) = data for 2018 were not available at the time of the report, 2017 values are reported instead. Consequently, percentage changes are not fully comparable. No data available for Malta, Sweden, UK.

Source: ECB.

Figure 11: Cross-border payments as a share of total card payments, 2014 and 2018

### 3.1.3 ATM cash withdrawals

ATM withdrawals are the most important source of cash acquisition for EU consumers, accounting for almost two thirds of the total value of cash sourced in the EU<sup>23</sup>. Other sources for consumers for obtaining cash are withdrawing cash at the bank counter, or, in some countries, withdrawing cash with payment cards at the POS. ATM withdrawals can indicatively inform on changes across MS in the use of cash to make payments.<sup>24</sup>

The level of ATM cash withdrawals might be driven by a number of factors: the increase in use of non-cash payment methods such as card-payments, the use of mobile payments (card and non-card based) and bank-account based methods (e.g. credit transfers and direct debits). Other factors such as ATM withdrawal fees and number of accessible ATM terminals, and national payment habits may also play a role.

The number of ATM cash withdrawals<sup>25</sup> per capita<sup>26</sup> in the EU-28 overall declined by 6% in the period 2014-2018 to 22 p.a., reflecting heterogeneous developments across MS, see Figure 12. The largest decrease for cash-withdrawal transactions can be found in Sweden (-60%) and the Netherlands (-28%). This reflects that the Nordic countries and the Netherlands continue to move away from cash payments. According to a recent survey from the Swedish Central Bank, the share of respondents using cash for their last purchase decreased by 15% between 2010 and 2016, with 40% of survey participants declaring they have not used cash at all during the past month<sup>27</sup> in 2018. This development was supported by the fast adoption of Swish, an account-based mobile payment service developed by Scandinavian banks. A comparable study conducted in the Netherlands reported a decrease in the share of cash payments at POS from 65% in 2010 to 45% in 2016, with cash overtaken by payment cards as the most common payment instrument since 2015.<sup>28</sup> For online purchases, instead, Dutch consumers rely mostly on iDeal, an account-based payment system owned by banks. IDeal is now increasingly adopted to make other types of payments, e.g. energy bills, local taxes, top ups for mobile credit<sup>29</sup>. In the UK the number of cash-withdrawal transactions declined by 17% in the period 2014-2018. According to the British Retail Consortium the total value of cash transaction decreased by 1.6% from 2017 to 2018, while the total volume of cash transaction decreased by 3.5%. For the first time, the value of card payments exceeded the value of cash payments in 2018. The share of payments in the retail sector made in cash decreased from 52% to 38% between 2014 and 2018.

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<sup>23</sup> Esselink, H., & Hernández, L. (2017). "The use of cash by households in the euro area". ECB Occasional Paper,, p.37.

<sup>24</sup> Therefore, for the purpose of the following analysis the different shares of cash allocated to hoardings or sent abroad, and the relative importance of other sources of cash (e.g. over-the-counter withdrawals) are assumed stable over the studied period across Member States

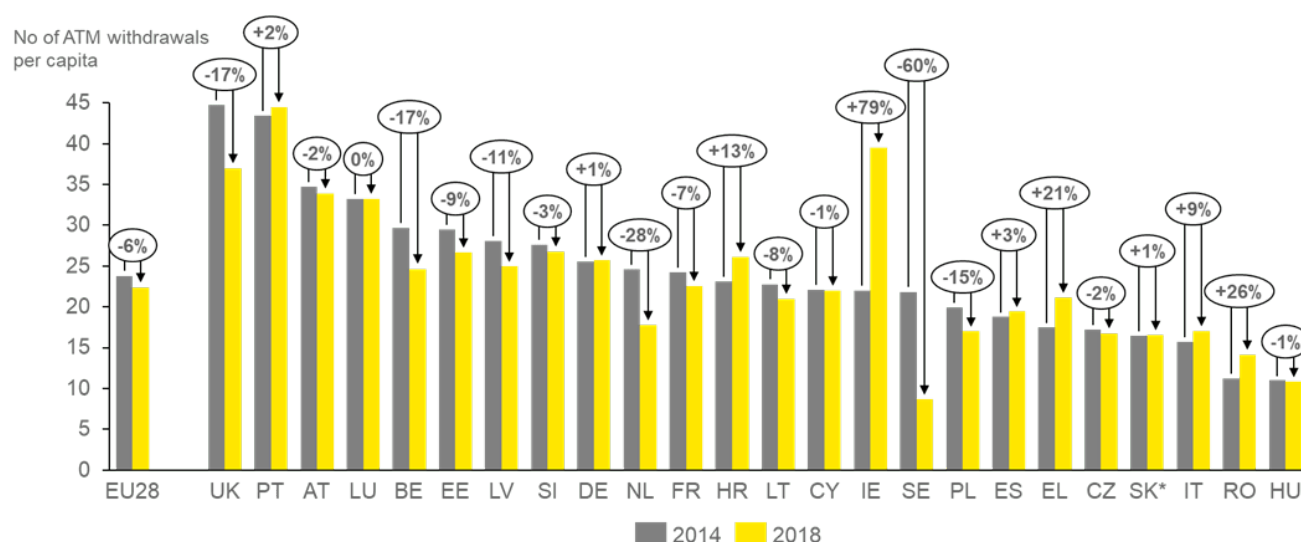
<sup>25</sup> Interchange fees on ATM transactions are not affected by the MIF Regulation caps.

<sup>26</sup> Absolute number and value of ATMs withdrawals are reported in Table 85, Table 86 and Table 87.

<sup>27</sup> Riksbank (2018), 'Payment patterns in Sweden 2018'.

<sup>28</sup> Jonker, Nicole, et al. (2017) "From cash to cards: how debit card payments overtook cash in the Netherlands." DNP Occasional Studies, Vol.16-1.

<sup>29</sup> Ideal website (2019). [retrieved from: <https://www.ideal.nl/en/>]



Note: Cash withdrawals at ATMs provided by resident and non-resident PSPs, with cards issued by resident PSPs.

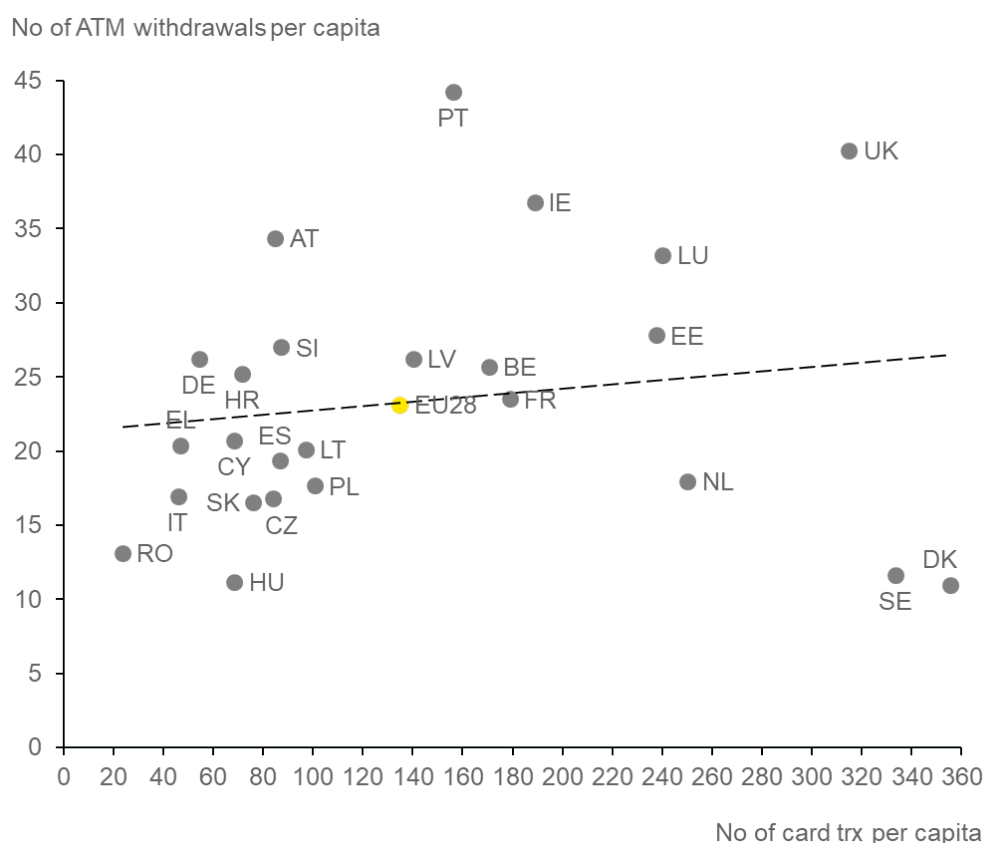
(\*) = data for 2018 were not available at the time of the report, 2017 values are reported instead. Consequently, percentage changes are not fully comparable. No data available for Bulgaria, Denmark, Finland and Malta.

Source: ECB.

Figure 12: Number of ATM withdrawals per capita, 2014 and 2018

At EU level, the correlation between card payments and cash withdrawals in 2017 is not clear, see Figure 13. The trend line shows a slightly positive relationship. This is mainly driven, however, by a large group of MS on the bottom left corner of the figure (e.g. Hungary, Romania and the Czech Republic) which had relatively low levels per capita of both type of operations. A negative correlation can be seen among the rest of the MS: cash reliant countries such as Austria, Germany and Portugal, and countries where card payments are used the most (e.g. Nordics and the Netherlands).





Note: Cash withdrawals at ATMs provided by resident and non-resident PSPs, with cards issued by resident PSPs. Card transactions with cards issued by resident PSPs. Year 2017 is used because of more complete coverage. No data available for Bulgaria, Finland and Malta.

Source: ECB.

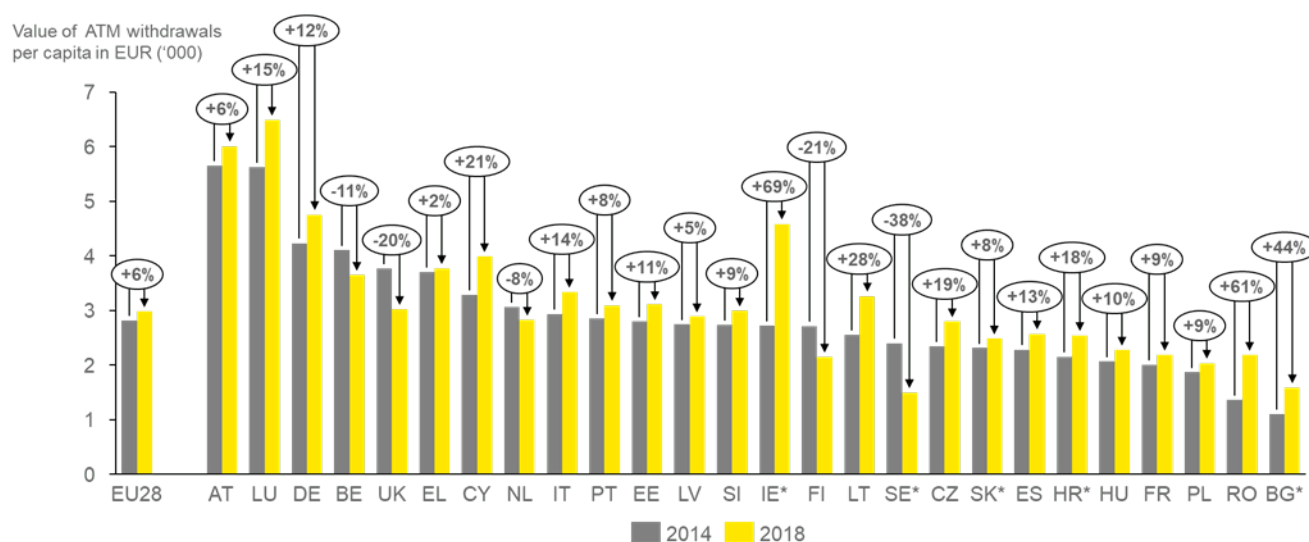
Figure 13: Correlation of ATM cash withdrawals and card payments per capita, 2017

ATM cash withdrawal usage might also be influenced by other factors such as withdrawal fee levels or the number of available ATMs per inhabitant. However, according to the ECB survey on the use of cash<sup>30</sup>, these two factors are not relevant to explain behaviours at ATMs, at least across MS. Only 6% of respondents declared that they pay ATM fees every time they withdraw cash. Ireland had the second highest frequency of ATM withdrawals per person in the survey despite having the highest share of respondents (27%) declaring they always pay withdrawal fees. Moreover, the vast majority of respondents (94%) answered that it is easy for them to find an ATM when they need it, even though the density of ATMs tellers per inhabitant can vary considerably across MS. In some cases, the change in consumer demand for cash can affect the number of ATMs in operation. In MS where consumers are becoming less reliant on cash and cash withdrawals decrease, banks may not find it economically viable to maintain the size of their ATM network. Banks in Finland and Sweden reduced the number of ATMs and the remaining

<sup>30</sup> Esselink, H., & Hernández, L. (2017). "The use of cash by households in the euro area." ECB Occasional Paper,, p.47-49.

teller machines are pooled together and managed under a joint agreement to ensure sufficient asset utilization. Banks in the Netherlands are also planning to cut the number of ATMs and pool them together.<sup>31</sup>

Across the EU, the value withdrawn at ATMs per capita has increased by 6%<sup>32</sup> between 2014 and 2018, see Figure 14. Generally, MS with high numbers of ATM withdrawals also registered a high total value of cash withdrawals, for instance Luxembourg and Ireland. Nordic countries, leaders in card payments, show very low value cash withdrawal. However, there are also examples of countries where cards are widely used for transactions, e.g. the United Kingdom, that still present above-average ATM withdrawal values.



Note: Cash withdrawals at ATMs provided by resident and non-resident PSPs, with cards issued by resident PSPs. No data available for Denmark and Malta.

(\*) = data for 2018 were not available at the time of the report, 2017 values are reported instead. Consequently, percentage changes are not fully comparable.

The decrease of 20% reported for the United Kingdom is partially related to currency conversion, the change in national currency was -13%. Annex 3 reports values in national currency for MS outside the Euro area.

Source: ECB.

Figure 14: Value of ATM cash withdrawals per capita, 2014 and 2018

The value of ATM withdrawals per capita is positively correlated with MS' levels of economic development, see Figure 15. The relationship is weaker for Nordic countries and for MS such as Austria and Germany, where the total value of cash withdrawn at ATMs are relatively high. These MS rely more on cash for cultural affinity and consumer preferences. Overall, the highest average value of ATM withdrawals (for instance, Hungary and Italy) are three times larger than the lowest group (for instance, Portugal and the United Kingdom). The propensity to withdraw large sums of cash at ATMs in Hungary (216) and Greece (180) stands out even more considering their levels of GDP compared to other MS with high average ATM withdrawals values such as Denmark

<sup>31</sup> RBR (2018b), 'Press Release', 7 February, London.

<sup>32</sup> Inflation adjusted growth rate in ATM withdrawals value was 2%.



and terminal density<sup>34</sup>, while MS that grew the most are the ones where card usage is still developing. The exceptional increase reported in Greece is mainly due to the recently introduced domestic law that requires the installation of POS terminals in certain businesses, including professionals and tourism related service providers. In 2018, Greece and Spain had the highest density of terminals (together with the UK), despite their low levels of card-based transactions. It must be noted that in those MS it is common for merchants to have multiple contracts with different acquirers, and thus they tend to deploy multiple terminals<sup>35</sup>. This partially inflates their number of POS terminals compared to the actual number of merchants' outlets accepting cards<sup>36</sup>. In Germany, a market with historically low adoption of card payments, card acceptance is still limited in certain sectors, such as food retail, food wholesalers, small supermarkets and pharmacies<sup>37</sup>. Romania, Poland and Hungary, are among those with the lowest levels of acceptance but growing at above average rates.

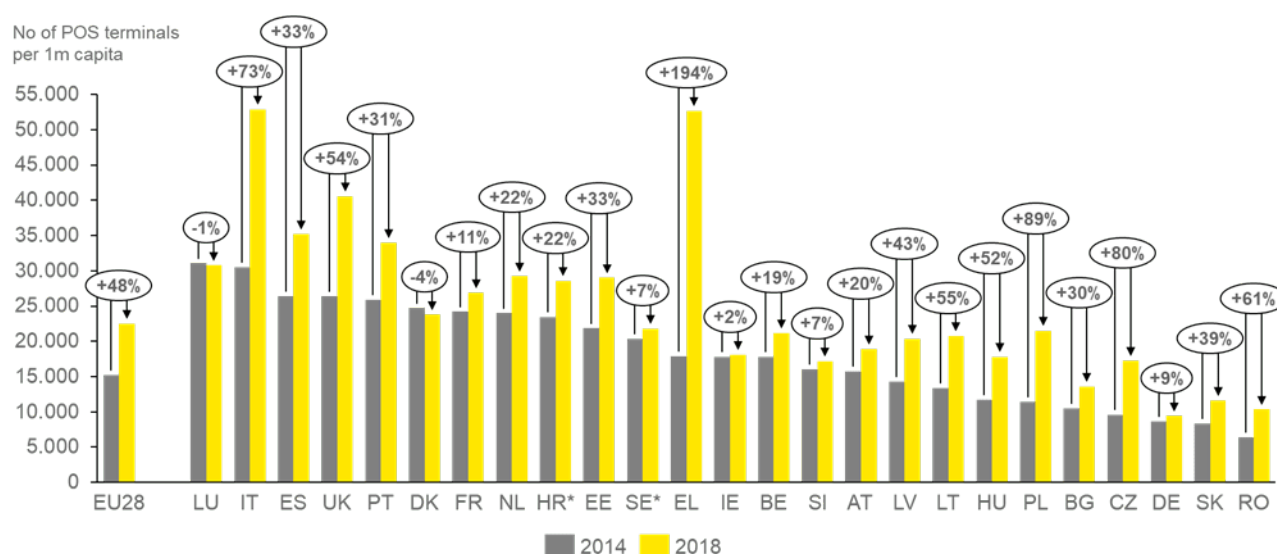
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<sup>34</sup> For Denmark, the decrease may be due to a change in primary sources of data in 2016 when the National Bank changed frequencies at which statistics were reported (from biannual to quarterly). In more recent figures from the Danish Central Bank the number in POS is steadily rising. Reference: Danmarks Nationalbank (2019), Nationalbankens Statistik.

<sup>35</sup> PCM. European Payment Card Yearbook (2018/2019), p.94.

<sup>36</sup> Figures on the number of merchants (outlets) accepting cards are only available from RBR for the period 2014 to 2016 and are reported in the confidential version of the study.

<sup>37</sup> RBR (2018). Payment Cards Issuing and Acquiring Europe 2018: Germany, p.59.



Note: POS terminals provided by domestic PSPs and located in the reporting MS at yearend. Data includes POS terminals provided by PSPs resident in Luxembourg, Germany and Spain for which a complete breakdown of their POS terminals located in other countries is available. Luxembourg also include POS terminals of Belgian PSPs, while Germany also includes POS terminals from Austrian PSPs. For the Czech Republic, France, Ireland, the United Kingdom and Sweden, all POS terminals provided by domestic PSPs are included (which may include terminals only accepting e-money cards and terminals located outside the reporting MS) because information on POS is either not available or not consistent. PSPs in Denmark and Portugal do not distinguish POS terminals located only in the reporting MS.

(\*) = data for 2018 were not available at the time of the report, 2017 values are reported instead. Consequently, percentage changes are not fully comparable.

No data available for Cyprus, Finland and Malta.

Source: ECB.

Figure 16: POS terminals per million inhabitants, 2014 and 2018

The growth in card acceptance is in part the result of cost reductions induced by, among others, lower costs for terminals, lower terminals' network charges, and enhanced fraud management. The reduction in interchange fees resulted from the IFR also contributes to lowering the costs of accepting card payments. In Germany, for instance, the fee caps introduced by the IFR have made credit cards acceptance more attractive for small merchants as they started to obtain less costly contracts from acquirers on credit card acceptance<sup>38</sup>. Positive effects of the reduction in interchange fees on the decision of merchants to accept card payments were also observed in Italy<sup>39</sup>. Those factors related with IFR will be further detailed in Chapter 5.

<sup>38</sup> RBR (2018). Payment Cards Issuing and Acquiring Europe 2018: Germany, pg.58-59

<sup>39</sup> Ardizzi, Guerino, and Michele Savini Zangrandi (2018). "The impact of the interchange fee regulation on merchants: evidence from Italy." Bank of Italy, *Occasional Papers*, 434.

The availability of new and cheaper acceptance devices such as mobile POS terminals<sup>40</sup> (mPOS) is also expected to further increase card acceptance. MPOS are predicted to account for one in four POS transactions worldwide in 2023<sup>41</sup>. MPOS terminals are especially important for the expansion of cards acceptance among small merchants which in the past years have been overlooked by most established payment service providers. As a minimum requirement small merchants only need their smartphone or tablet to connect the card reader and handle cards payments. Usually, mPOS providers charge transaction fees based on volumes, without additional fixed monthly or per-transaction fees<sup>42</sup>. MPOSs tend to have lower starting costs and shorter on-boarding process for the merchants.

The sustained growth of e-commerce also increased card payments acceptance. Although, no data on developments in the number of e-commerce merchants is available, high proportion of all online purchases is paid by card, with some variation across MS.

The growth in card acceptance matches on EU level the growth of card payment transactions. In most cases, MS with the fastest growth in card payment acceptance points also experienced the highest growth in card transactions, see Figure 17. As the cost to accept payment cards decline, merchants have more incentives to offer and promote these payment instruments with their customers.

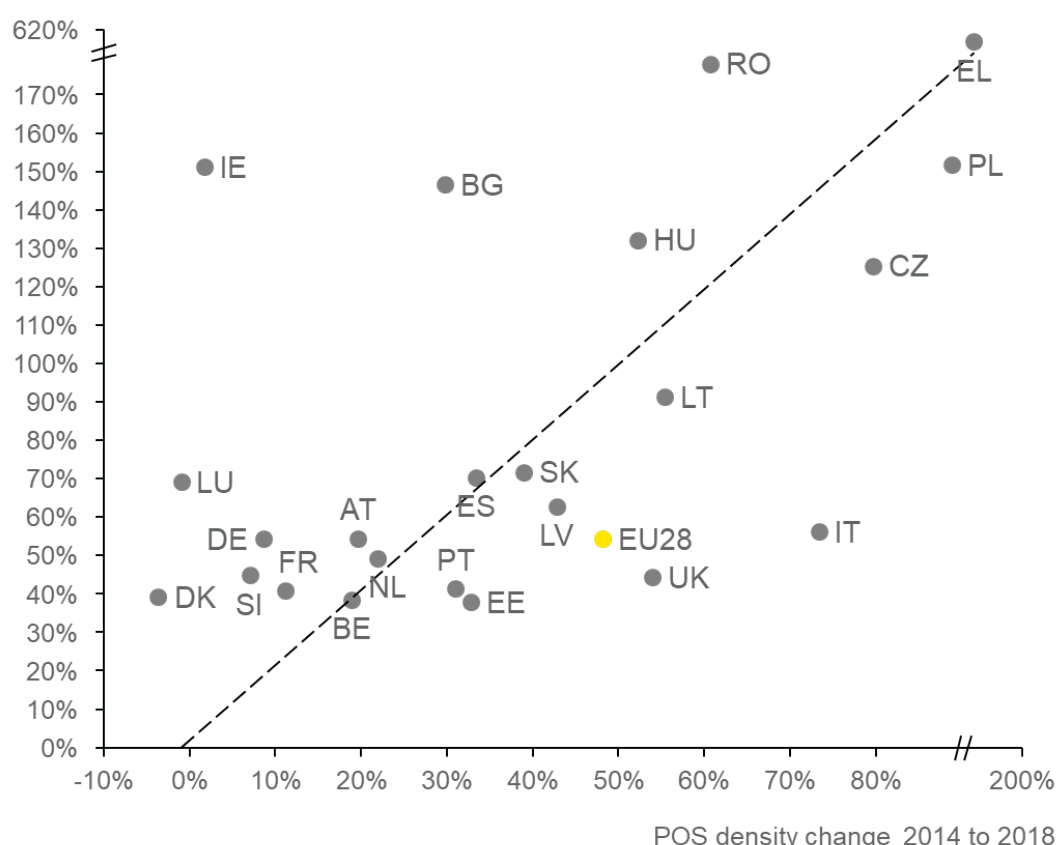
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<sup>40</sup> PCM. 4 March 2019. "Payment Card Yearbooks: European payments continue to rise rapidly". [retrieved from: <https://www.paymentscardsandmobile.com/payment-card-yearbooks-european-payments-continue-to-rise-rapidly/> ]

<sup>41</sup> Juniper Research. 20 June 2018. "MOBILE POINT-OF-SALE DEVICES TO ACCOUNT FOR ALMOST 1 IN 4 POS TRANSACTIONS BY 2023". [retrieved from: <https://www.juniperresearch.com/press/press-releases/mobile-point-of-sale-devices-1in-4-pos-2023> ]

<sup>42</sup> EY. 10 September 2019. "How the mPOS business model expands beyond payments acceptance". [retrieved from: [https://www.ey.com/en\\_us/banking-capital-markets/how-the-mpos-business-model-expands-beyond-payments-acceptance](https://www.ey.com/en_us/banking-capital-markets/how-the-mpos-business-model-expands-beyond-payments-acceptance) ]

No of card trx change 2014 to 2018

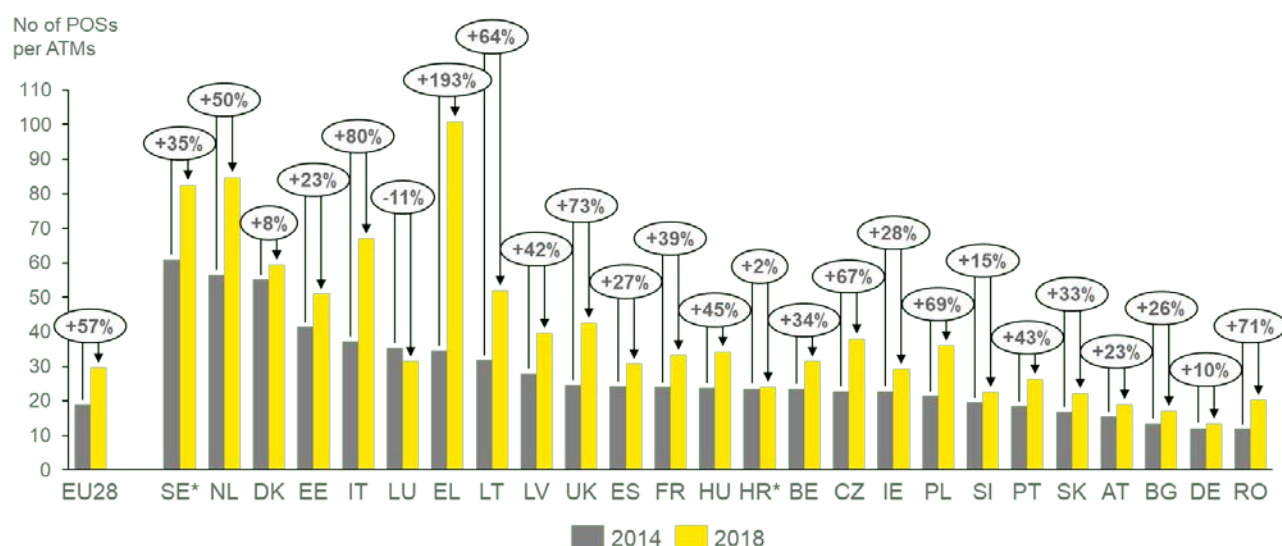


Note: No data available for Cyprus, Finland, Croatia, Malta, Sweden.

Source: ECB.

Figure 17: Correlation of POS terminal density and card payments development, 2014-2018

The number of POS terminals increased in proportion to ATMs terminals across all MS, except for Luxembourg. In 2018, there were at EU-level 30 POS terminals for each ATM, growing 57% from 2014, see Figure 18. This provides further evidence on the relative decline in demand for cash as compared to card payments. MS with the largest increase were Greece, Italy, the United Kingdom and Romania, with a change between 70% to 193%. Part of the observed decline in the number of ATMs in these MS could be explained by the economic downturn experienced by the banking sector in the period, i.e. Greece and Italy, which pushed banks to cut expenses by closing down some of their branches. Nordic MS and the Netherlands reported the lower share of ATMs on POS terminals, in line with the already low use for cash of their citizens.



Note: ATM terminals with cash withdrawal functions provided by resident and non-resident PSPs. Nearly all ATM terminals are reported by PSPs in their MS of residence. Information on EFTPOSs terminals are in note to Figure 16. (\*) = data for 2018 were not available at the time of the report, 2017 values are reported instead. Consequently, percentage changes are not fully comparable. No data available for Cyprus, Finland and Malta.

Source: ECB.

Figure 18: Ratio of POS terminals to ATM terminals, 2014-2018



## 3.2 Development of market structures

### 3.2.1 Card schemes

In most cases, payments cards function under card scheme networks. Financial institutions can enter brand licensing agreements with card schemes to obtain the ability to issue cards and acquire card transactions on the card scheme's network. Card schemes present in EU-28 consist of domestic schemes, e.g. Carte Bancaire in France and Girocard in Germany, and international card schemes, e.g. Visa and MasterCard.

All (Western) EU MS used to have their domestic card schemes, each of them with separate standards and technical frameworks. By the end of 2014 a number of domestic schemes had been phased out from market (e.g. in the UK, Finland and the Netherlands), as local banks started to issue cards under international schemes brands, MasterCard and Visa, which were offering higher interchange fees than the domestic schemes. In MS where domestic schemes are still present, nearly all domestic scheme cards are co-badged with an international scheme, in most cases either MasterCard or Visa. The international scheme brand allows cardholders to make face-to-face card payments outside the domestic market as well as remote payments. In most cases, international schemes are also better integrated in digital wallets and mobile payment apps. These advantages in international schemes card functionalities over domestic schemes cards are partially explained by international schemes creating and promoting standards and protocols based on technologies for which they already provided their own proprietary solutions. Examples are 3Dsecure protocol for authentication in remote payments and tokenization technology for mobile payments. As e-commerce and mobile payments are further growing in relevance, domestic schemes need to enhance the capabilities of their cards (a process partly underway) in order not to be affected.

#### *Domestic schemes*

Currently, there are 9 domestic card schemes in EU<sup>43</sup>, see Table 8. Except France, Slovenia and Bulgaria, which also issue credit cards under the domestic scheme, all other domestic schemes only issue debit cards<sup>44</sup>.

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<sup>43</sup> Excluding closed loop mono-banks cards and private label cards. Financial institutions can also issue payment cards with their own brands that only function on their terminals. Those are defined as closed-loop mono-bank card schemes, examples are debit cards Cashlink and Quickcash issued by Bank of Valletta and HSBC in Malta. In France, consumer finance institutions owned by banks e.g. BNP Paribas PF, Crédit Agricole CF, also issue their own mono-bank cards, generally co-branded with large retailers to offer consumer finance services. Private label cards are issued by merchants and can be used only to make purchases in their stores. The relevance of private label cards in EU is decreasing.

<sup>44</sup> In some MS such as France and Portugal, are also present universal cards which enable cardholders to initiated debit as well as credit transactions with the same card. It is not always possible for the card scheme and acquirer to distinguish the transaction as debit or credit at the POS, as the cardholder can make the choice and inform the issuer also after the transaction is completed. Transactions with such cards are treated as debit card transactions under the IFR. Until 9 December 2016 however, MS could define a share of no more than 30 % of these domestic universal card transactions as equivalent to credit card transactions and subject to the 0.3% interchange fee cap.

Member State	Domestic scheme
Belgium	Bancontact
Bulgaria	Borica/BCARD
Denmark	Dankort
France	Carte Bancaire (CB)
Germany	Girocard
Italy	PagoBancomat
Portugal	Multibanco (MB)
Slovenia	Activa/Karanta
Spain	STMP* (EURO 6000/ServiRed/ Sistema 4b)

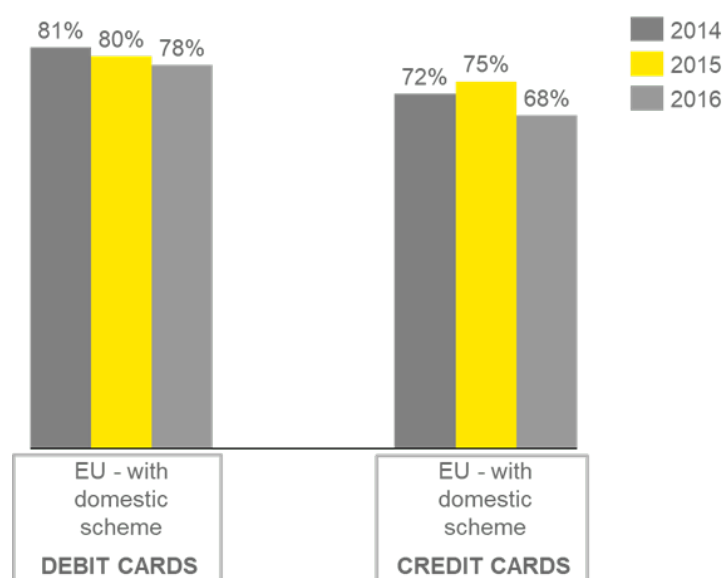
Note: \*In February 2018 the three Spanish card schemes merged to Sistema de Tarjetas y Medios de Pago (STMP).

Source: Copenhagen Economics research.

Table 8: Overview domestic card schemes in EU-28

Domestic card schemes remained highly relevant in the MS where they are present. The share of domestic cards in circulation was high and fairly stable across the EU between 2014-2016, see Figure 19. Considering only MS where domestic schemes are present, the share of cards with domestic brand in circulation in the same period was between 70% and 80% in the debit and credit segment<sup>45</sup>. Detailed per MS data is available in the confidential version of the study.

<sup>45</sup> Considering also Member States without a domestic scheme, the share of domestic debit cards in 2016 was 40% while for credit cards was 10%.



Note: Number of domestic cards includes cards co-badged with international schemes. Figures for EU- with domestic scheme in debit cards include Belgium, Bulgaria, Denmark, France, Germany, Italy, Portugal and Slovenia. Figures for EU- with domestic scheme in credit cards include Bulgaria, France and Slovenia. RBR does not provide data for Spain.

Source: RBR.

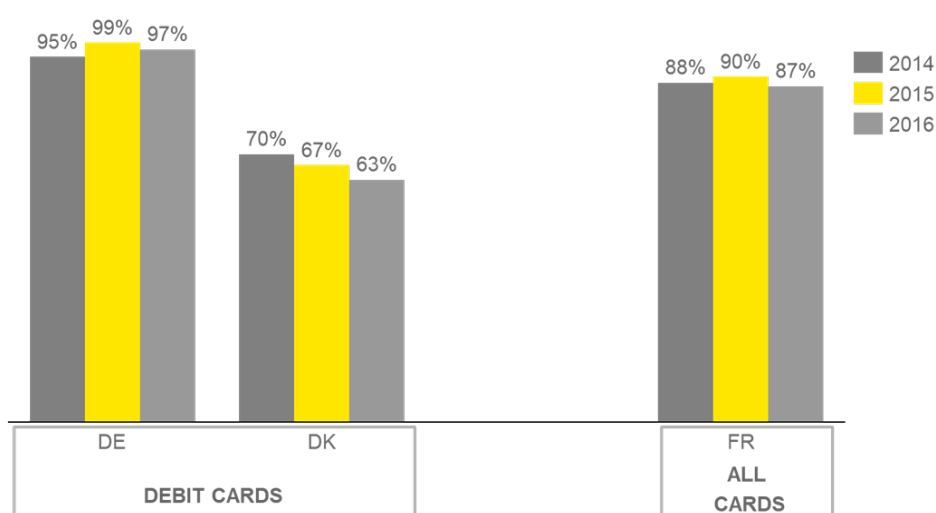
Figure 19: Market share of domestic schemes in number of issued cards, 2014-2016

Domestic card schemes were widely present in their respective MS also in terms of volume and value of transactions, see Figure 20 and Figure 21<sup>46</sup>. Their market share in Germany, France and Denmark was typically above 60% between 2015 and 2017<sup>47</sup>. Except for Denmark, domestic schemes reported higher market shares in the number of transactions compared to values, around 10% points difference in Germany. This indicates that domestic scheme cards were more frequently used for lower-value purchases with an implied ATV on domestic schemes networks being lower than the one on international schemes. This might also be explained by the higher average value of e-commerce purchases where international scheme brands are more used compared to POS face-to-face purchases<sup>48</sup>. However, international schemes were generally ahead on contactless and mobile POS payments which account for low-value transactions.

<sup>46</sup> The following figures show only MS for which information was publicly available. Additional information on domestic schemes' market shares in Belgium, Italy and Portugal based on data collected in the IFR Survey can be found in the confidential version of the study.

<sup>47</sup>Discrepancy with the period studied in figure for domestic schemes' card issuance (2014-2016) is due to the different source of data (RBR) for which data availability is limited to 2016.

<sup>48</sup>In 2018 at EU level, card payments initiated remotely had an ATV of 58 EUR, while ATV of payments at EFTPOS was 40 EUR (Source: ECB).



Note: Values for Girocard<sup>49</sup>, Carte Bancaire<sup>50</sup> and Dankort<sup>51</sup> are based on schemes' / national banks published data, while values for Bancontact, PagoBancomat and Multibanco are taken from the IFR Survey and are disclosed only in the confidential version of the report. Total market volume for each MS is constructed with ECB data on transactions with debit cards issued by domestic PSPs. Market share of Cartes Bancaires is calculated on all cards (debit and credit) since the scheme does not provide breakdown of debit and credit cards transactions over the studied period.

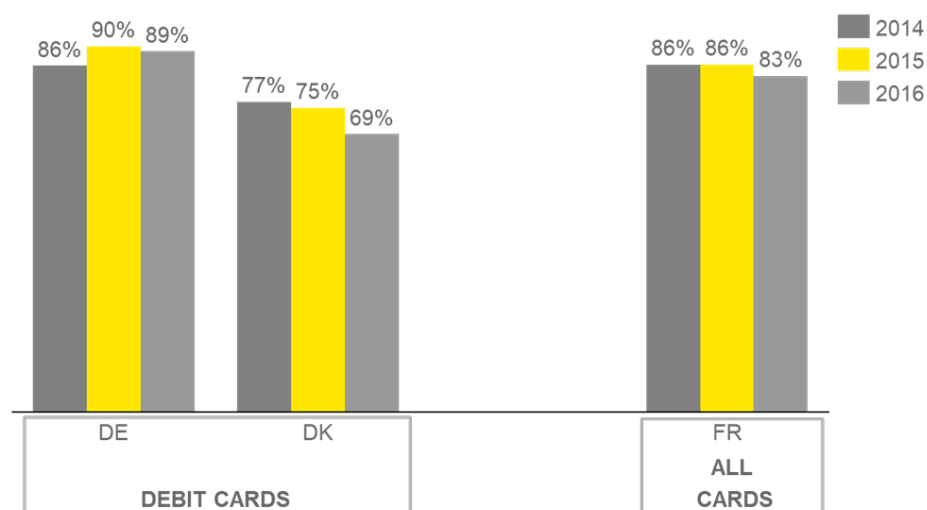
Source: ECB, domestic schemes published information.

Figure 20: Market shares of domestic schemes by transaction volume in selected Member States, 2015-2017

<sup>49</sup> Girocard (2019). [retrieved 16 October 2019 from: [https://www.girocard.eu/media/girocard\\_statistik\\_2008-2018.pdf](https://www.girocard.eu/media/girocard_statistik_2008-2018.pdf)]

<sup>50</sup> Carte Bancaire (2019). CB en chiffres. [retrieved 16 October 2019 from: <https://www.cartes-bancaires.com/a-propos/cb-en-chiffres/cb-en-chiffres/>]

<sup>51</sup> Dankort (2019). [retrieved 16 October 2019 from: <https://www.dankort.dk/Pages/Dankort-forbrug.aspx>]



Note: Values for Girocard,<sup>52</sup> Carte Bancaire<sup>53</sup> and Dankort<sup>54</sup> are based on schemes' published information, while values for Bancontact, PagoBancomat and Multibanco have been taken from the IFR Survey and are disclosed only in the confidential version of the report. Total market volume for each MS is constructed with ECB data on transactions with debit cards issued by domestic PSPs. Market share of Carte Bancaire is calculated on all cards (debit and credit) since the scheme does not provide breakdown of debit and credit cards transactions over the studied period.

Source: ECB, domestic schemes published information.

Figure 21: Market shares of domestic schemes by transaction values in selected Member States, 2015-2017

### International Schemes

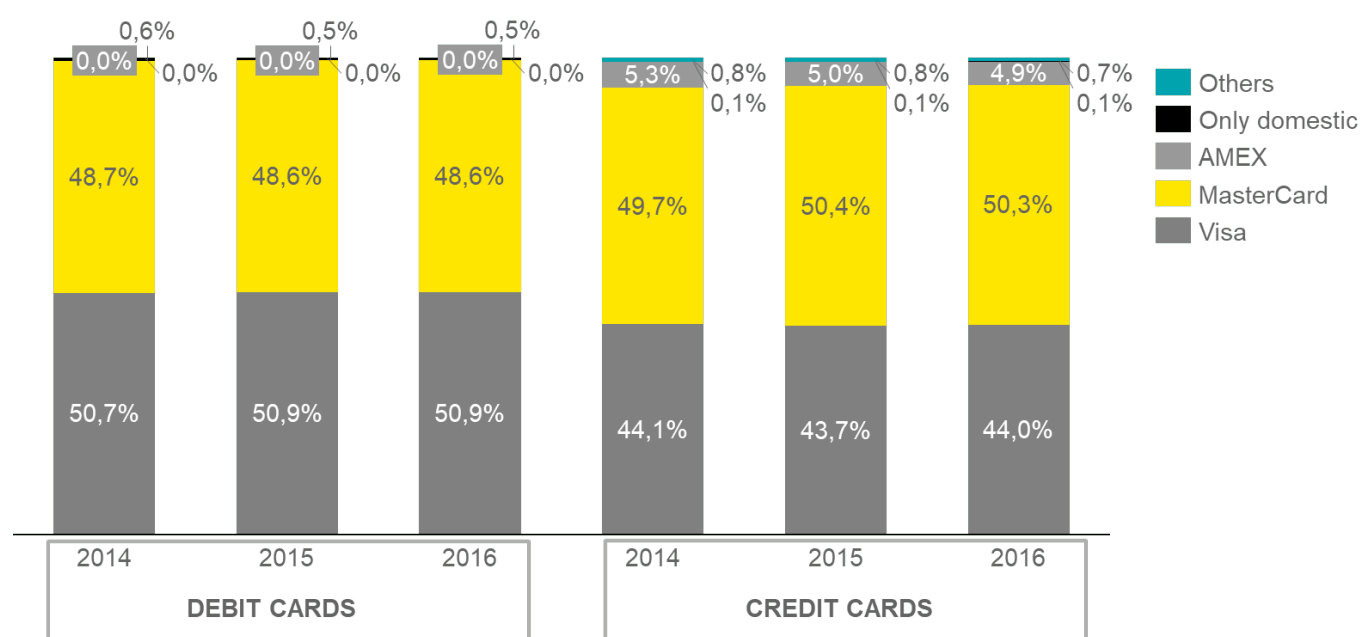
Within the total number of cards issued at the EU level by international schemes, MasterCard and Visa<sup>55</sup> scheme brands accounted for nearly all debit cards and for around 95% of credit cards in circulation, see Figure 22. However, this also includes co-badged cards with domestic schemes.

<sup>52</sup> Ibid 49.

<sup>53</sup> Ibid 50.

<sup>54</sup> Ibid 51.

<sup>55</sup> These figures include MasterCard's and Visa's owned card scheme brands: Maestro and MasterCard Electronic for MasterCard, Visa Electron and VPAY for Visa.



Note: Others include Diners Club, JCB and Union Pay. Totals do not include private labels cards. Total number of cards in circulation differ from ECB data. No data available for Cyprus, Luxemburg and Malta.

Source: RBR.

Figure 22: EU market shares of international schemes by cards in circulation, 2014-2016

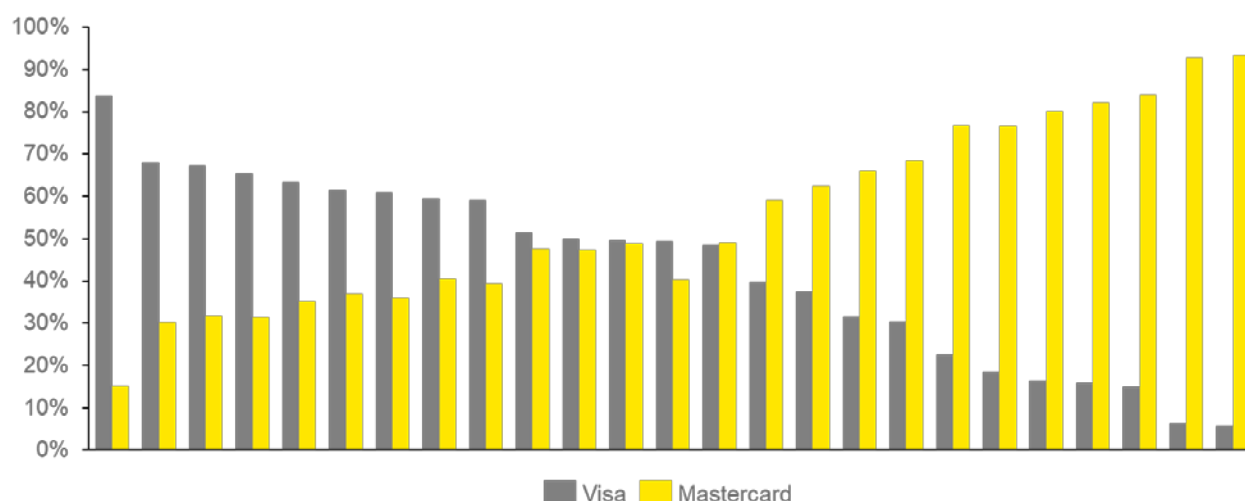
The share of Visa's and MasterCard's single-branded and co-badged cards remained stable at the EU level between 2014 and 2016.

The number of credit cards of three-party schemes as American Express and Diners Club has been decreasing in the 2014-2016 period by 2% (American Express) and 6% (Diners Club). This is not the case for JCB, whose number of credit cards grew from 13 to 14 thousand over the 2014-2016 period, and Union Pay which entered the EU market in 2015 (with less than 5 thousand cards). The impact of these changes related to their overall shares of cards in circulation was however marginal. American Express also decided to discontinue its licencing business in EU which accounted for a relevant share of American Express cards in circulation in EU in 2017<sup>56</sup>. The IFR considers three-party schemes that licence the issuing<sup>57</sup> of cards with their brand to other payment service providers as operating a *de facto* four-party schemes, thus subject to interchange fees caps.

Even though in 2016 MasterCard's and Visa's market presence was similarly high at the EU level, their respective presence significantly differed across MS, see Figure 23. Detailed per MS data for 2014 is available in the confidential version of the study.

<sup>56</sup> The exact figure based on IFR Survey to three-party schemes can be found in the confidential version of the study.

<sup>57</sup> This also includes the licence of acquiring their cards.



Note: Totals do not include private labels cards and single-badged domestic cards. No data available for Cyprus, Luxemburg and Malta.

Source: RBR (designation of MSs on horizontal axis is disclosed in the confidential version of this study).

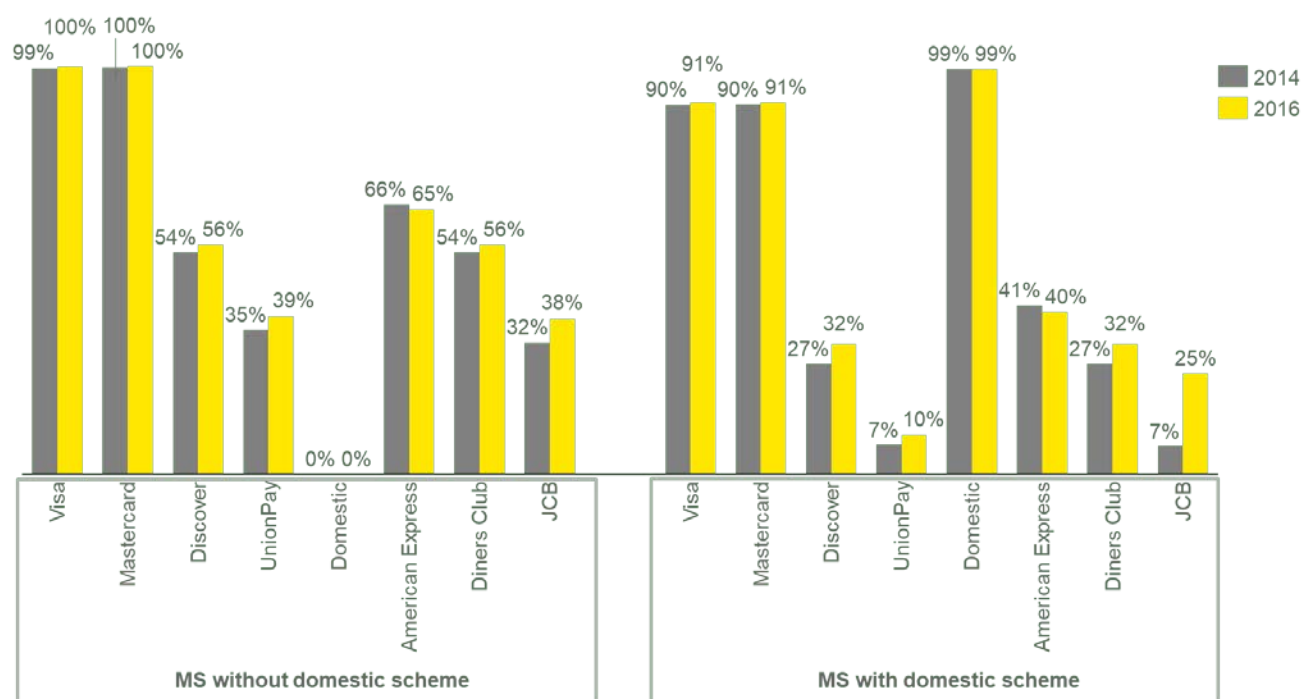
Figure 23: Market prevalence of MasterCard and Visa in number of cards, 2016

Among the other international schemes, American Express was more present in 2016 in Croatia, Latvia and in larger markets such as UK and France. In all these markets, however, American Express' share of cards in circulation did not exceed 10%. The ceased licencing business affected American Express operations in UK, Croatia and Latvia where American Express was, at least in part, licencing the issuing of its cards.<sup>58</sup> Croatia was also the MS with relatively more Diner Clubs cards in circulation, though the scheme's market share remained marginal. By 2016, JCB was only present in few MS<sup>59</sup>.

A similar picture can be seen for card acceptance at the POS. Among international schemes, MasterCard and Visa cards had the highest share of merchant outlets that accepted their cards calculated over all the outlets that accepted card payments, i.e. over 90%, see Figure 24. However, their acceptance was slightly lower for countries where domestic schemes are present. In those instances, domestic schemes cards had a nearly full coverage (99%). The picture remained relatively stable between 2014-2016, except for the increase in acceptance of JCB, UnionPay and Diners, although still lower than the one provided by major schemes.

<sup>58</sup> The exact figure based on IFR Survey to three-party schemes can be found in the confidential version of the study.

<sup>59</sup> Based on data from RBR.



Note: For MasterCard and Visa, the value of the sub-brands with the highest penetration is taken. Spain was excluded because RBR does not provide information on domestic scheme. No data available for Cyprus, Luxemburg and Malta.

Source: RBR.

Figure 24: Card acceptance share at merchant outlets by scheme, 2014 and 2016

### 3.2.2 Card issuing market

The card issuing market is composed of financial institutions that issue payment cards and provide related services to individuals and businesses. In the past, card issuing was managed at national level, but since 2009 issuers compete also cross-border<sup>60</sup>. Around 230 main issuers were active in 2016 in EU<sup>61</sup>. 32 issuers were operating in more than one MS, with issuing operations in three different MS on average<sup>62</sup>. In 2017, the ten leading European card issuers had more than 15 million cards in circulation in at least one MS. Four leading issuers are headquartered in the UK (Lloyds Banking Group, Barclays Bank, RBS/NatWest and HSBC), three in Italy (Banco Posta, Nexi Payments, UniCredit Group), two in France (Crédit Agricole Group and BPCE Group) and one in the Netherlands (ING Group). In 2017, they together accounted for 32% of the 808 million cards in circulation. This share has been slightly declining from 2014 when the share was 35%.

In 2016, the concentration in the card issuing market was quite heterogeneous across MS. Detailed per MS data on ten largest issuers' market shares in terms of issued cards is available in the confidential version of the study. While in some MS (such as Estonia, Lithuania and

<sup>60</sup> PCM: European Payment Card Yearbook (2018/2019), pg.60.

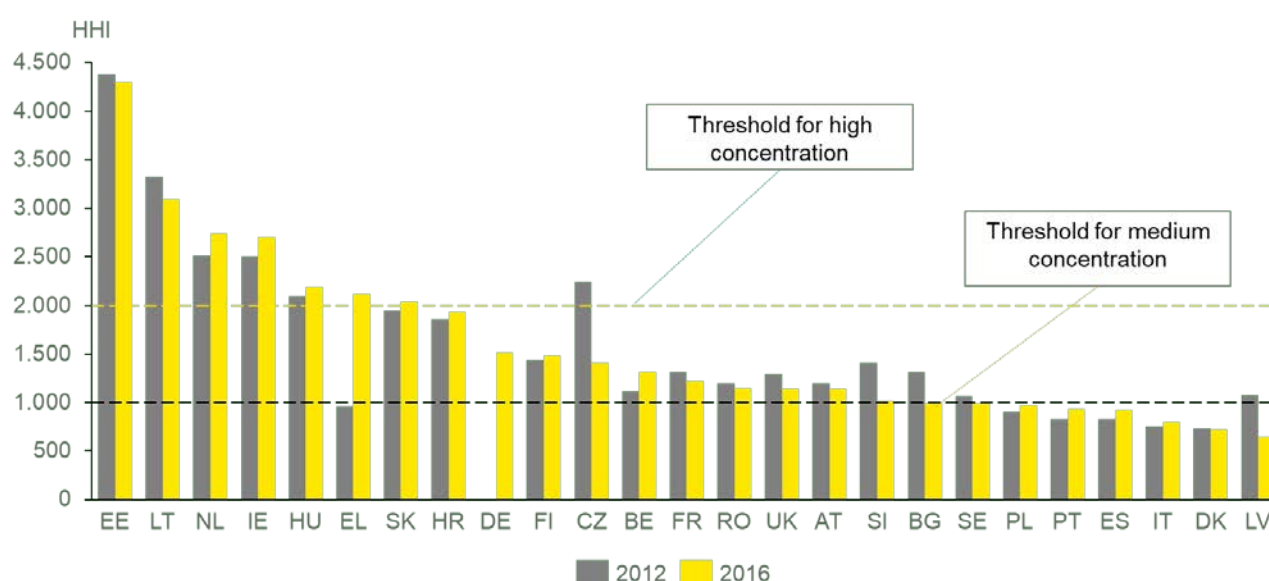
<sup>61</sup> Malta, Cyprus and Luxemburg are not included. Saving and co-operative banks are not included. (Source: RBR).

<sup>62</sup> Only issuers operating with the same name in different MS were identified.



Hungary), the largest issuer accounts for over 40% market share (up to 60%), the market in most MS was more fragmented (e.g. Spain, Romania and Portugal).

A further way to measure concentration levels in markets is to calculate the Herfindahl-Hirschman Index. In 2016, approximately one-third of the MS had a highly concentrated issuing market (Herfindahl-Hirschman Index above 2,000) while for another third the concentration was moderate (Herfindahl-Hirschman Index above 1,000). In the remaining MS, the issuing market was not concentrated. The situation compared to 2012 has remained overall stable for most MS. Only Greece has seen the concentration of its issuing market increasing substantially during the period due to bankruptcy of certain leading banks during the economic crisis. The MS with the largest decline in concentration, instead, were Czech Republic and Latvia.



Note: No data available for Cyprus, Luxembourg and Malta. No breakdown of saving and co-operative bank available for 2012.

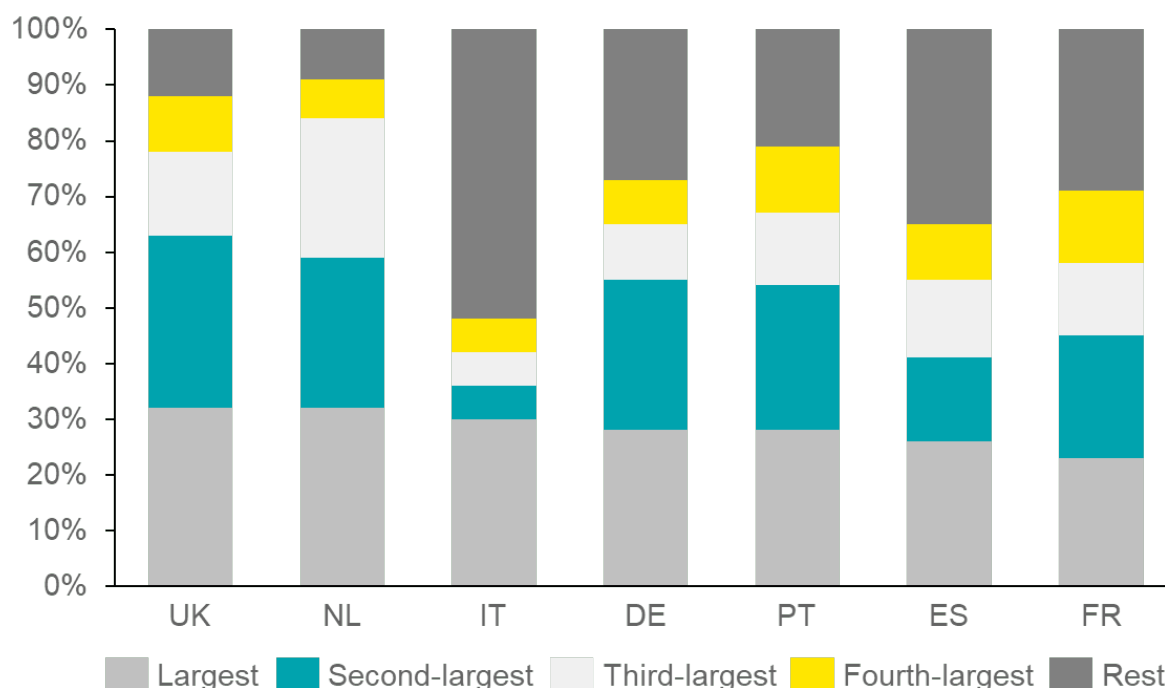
Source: RBR.

Figure 25: Herfindahl index of card issuing markets by number of issued cards, 2012-2016

### 3.2.3 Acquiring market

The acquiring market is composed of banks and financial institutions offering acquiring services that enable merchants to accept card-based payments. Acquirers provide technical and commercial services to accept, process, and settle card transactions on behalf of the merchant. For these service merchants are charged a service fee, called merchant service charge (MSC).

According to industry research, there were around 375 acquirers active in Europe in 2018<sup>63</sup>. Most of them are banks. A large portion of all card transactions is acquired by few large players. In 2017, there were 16 acquirers with more than one billion acquired transactions each, excluding transactions on domestic schemes<sup>64</sup>. More than 50 acquirers active in EU-28 have a multi-country presence with acquiring activities, on average, in five different MS<sup>65</sup>. Quantitative information available for some countries shows the relative market shares of main acquirers present in the country, see Figure 26. Despite the number of acquirers, the acquiring market appears to be more concentrated than the issuing market.



Note: Information of market share for the first four players is only available for Germany, Spain, France, the Netherlands and Portugal. For the largest acquirer in Italy, market share is derived from PCM (2019) European Yearbook 2018-2019 and ECB. The market share of the largest acquirer in Belgium constructed with IFR Survey data is shown in the confidential version of the study.

Source: EY research, ECB.

Figure 26: Concentration of acquiring markets in selected Member States by value of acquired transactions, 2017

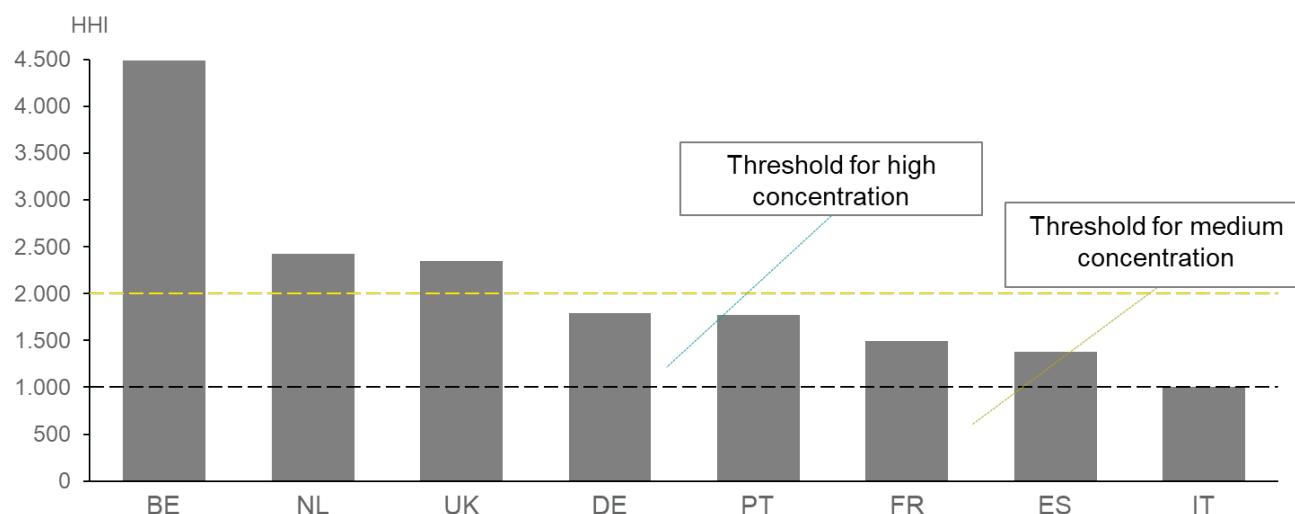
The Herfindahl-Hirschman Index shows that the acquiring market in selected MS is highly concentrated with the HHI index being above 2,000 in three out of eight MS for which data was available while the concentration in the remaining MS is medium, see Figure 27. Besides Italy,

<sup>63</sup> PCM (2018). 20 June 2018, 'Europe's biggest Merchant Acquirers by volume'. [retrieved from: <https://www.paymentscardsandmobile.com/europes-biggest-merchant-acquirers-by-volume/>]

<sup>64</sup> PCM: European Payment Card Yearbook (2018/2019), pg. 112.

<sup>65</sup> EY research.

France and Spain had the most fragmented market. In these two countries, the market is divided among local banks that have retained their acquiring and processing activities.



Note: Information of market share for the first four players is only available for Germany, Spain, France, the Netherlands and Portugal. For Belgium information on market share is derived from IFR Survey and ECB, while for the largest acquirer in Italy, market share is derived from PCM (2019) European Yearbook 2018-2019 and ECB.

Source: EY research, IFR Survey, ECB.

Figure 27: Herfindahl index of acquiring markets in selected Member States in value of acquired transactions, 2017

Based on information provided in the IFR survey, market shares of MS market leaders<sup>66</sup> have declined between 2015 and 2017 in Belgium, Austria, Ireland, Portugal, Malta and France. Large acquirers, in Sweden, the Netherlands, UK, Croatia and Slovakia have increased their presence in their domestic market, while the rest remained stable. Detailed information on market share development of the market leaders in selected Member States is available in the confidential version of the study.

At the EU-level, a consolidation process has been taking place in recent years. From 2010 to 2017, there were more than 40 large M&A deals in the European acquiring market, the number increased over the years, from one deal in 2011 to nine in 2017<sup>67</sup>. The wave of mergers and acquisitions was fuelled by the intention of international players to achieve large volumes of acquired transactions and maximise economies of scale<sup>68</sup>. Multi-country acquirers are able to

<sup>66</sup> Market leaders were identified among respondents that reported total value of acquired card transactions higher than 10% of overall card transactions value reported in the MS by ECB for that year.

<sup>67</sup> EY Innovalue.

<sup>68</sup> EY. May 29, 2019. "Consolidation is driving M&A momentum, and it's time for banks to pick a strategy – expand or sell?"

offer their customers, multinational merchants, increased geographic coverage of their service. This may reduce contracting costs for the merchants with additional benefits derived from centralizing the acquisition and handling of their payments<sup>69</sup>. Through acquisitions, acquirers are also able to obtain the technology and capabilities necessary to offer merchants cross-channel payment acceptance (i.e. POS, e-commerce purchases, mobile in-store payments) with different type of payment methods.

This development has started in the early 2000s with banks selling off their acquiring business, to international payment service providers due to their sub optimal scale and large investments required to manage the increased technical complexity of the acquiring services. This has led, for instance, to the formation of EquensWorldline in the Netherlands and Nets in Denmark, now among the top 10 largest acquirers in Europe in terms of volume of transactions. Both successfully expanded into their neighbouring markets. Nets now is active in 9 EU MS. Besides payments players, which expand to increase transactions volumes and acquire new technologies, private equity (PE) funds are also contributing to the wave of acquisitions in the segment. PE funds are driven by high growth and margin improvement potential in the sector. In Germany, Bain Capital and Advent have recently (2017) bought the large acquirer, Concardis from the German banking industry.

As a result of this process, non-bank acquirers such as Worldpay, Worldline, Nets, and Ingenico have gained significant market shares and settled themselves as top players next to established actors from the banking sector, e.g. Barclaycard and Credit Agricole. Further on, payment service providers, specialized in offering specialised payment technologies and services for e-commerce merchants and mobile payments like Adyen and Wirecard, have emerged. This has resulted in increased competition and pressure on margins in the sector at the European level<sup>70</sup>.

More recent mergers between Concardis and Nets and Worldline's acquisition of Swiss SIX Payment Services, both in 2018, as well as the joint venture between German BS Payone and French Ingenico Group in 2019, clearly indicate the objective to create regional leaders in the European acquiring market. Increasing concentration partially contribute to more cross-border acquiring activity and may to some degree enhance competition in the acquiring market.

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<sup>69</sup> Four merchants participating in the IFR survey, however, responded that they did not succeed in setting up a single EU-wide acquirer during the period 2015-2017, while only one that tried to do so succeeded.

<sup>70</sup>Oliver Wyman. December 2018. 'European consolidation in payments'. *Insights* [retrieved from: <https://www.oliverwyman.com/our-expertise/insights/2018/dec/european-consolidation-in-payments.html>]

### 3.3 Key driving forces of card payments

Growing internet penetration, increasing importance of e-commerce, and the increased use of smartphones for payments and retail banking foster card payments as well as new payment methods, often based on cards. Their advent is both driven from the supply side, with new payment products introduced by bank-lead initiatives as well as new entrants such as Apple, Google and Amazon (BigTechs) and Fintech firms, and the demand side, with consumers having new service expectations on frictionless and user-friendly payment methods.<sup>71</sup>

Card payments are positively correlated with e-commerce growth across MS. However, it also facilitates the adoption of other digital payment methods: digital wallets and online bank transfers among others. Most digital wallets, to the extent that they are linked to a payment card, are still relying on card networks. Online bank transfers, instead, are account-based and represent the most relevant alternative to card-based payments. Consumer preferences in e-commerce between the two payment systems vary considerably across MS.

Physical stores have also started to accept mobile based payments. Currently, mobile payments options available for face to face payments are mostly card-based. Their adoption is still low but rapidly increasing.

#### 3.3.1 E-commerce growth

In 2018, e-commerce, accounted for 17% of total turnover at EU-level<sup>72</sup>. This included sales via internet or other forms of electronic data exchange. Web sales, either through marketplaces, e.g. Amazon, or via merchants' website accounted for 7%. Ireland and Belgium were leading the group of countries with the highest reported share of web-sales, 15%, while Bulgaria and Slovenia, the MS with the lowest values, had only 2%.

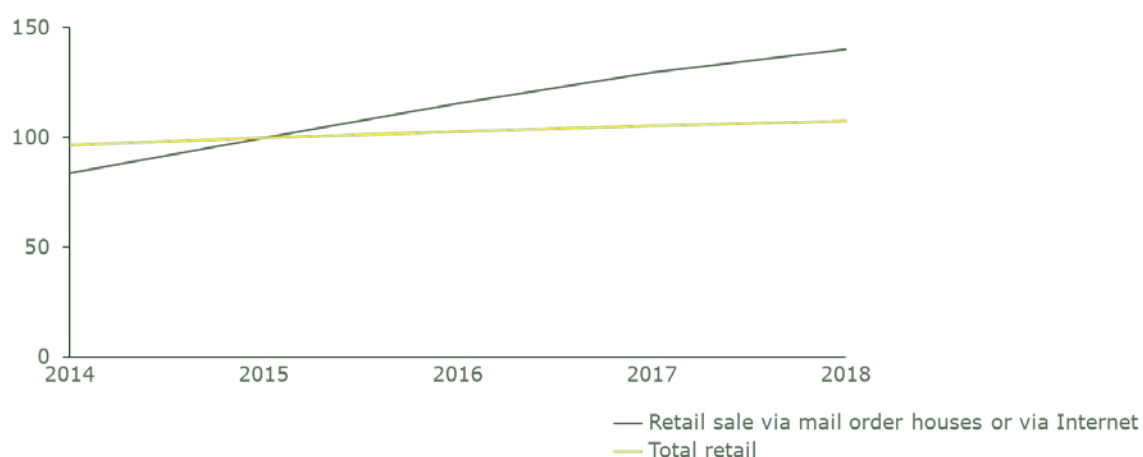
E-commerce is the fastest growing sales channel in Europe. From 2014 until 2018, the inflation adjusted retail sales value from e-commerce in Europe has grown by 40% - more than four times faster than total retail sales, see Figure 28. Accordingly, the importance of e-commerce payments in overall payments transactions is likely to increase over time.

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<sup>71</sup> Vives, X. (2019). "Digital disruption in financial markets – Note by Professor Xavier Vives". OECD DAF/COMP(2019)1

<sup>72</sup> Eurostat news. 27 February 2019, '7% of EU business turnover is through web sales'. [retrieved from: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190227-1>]

Index of turnover volume, 2015=100

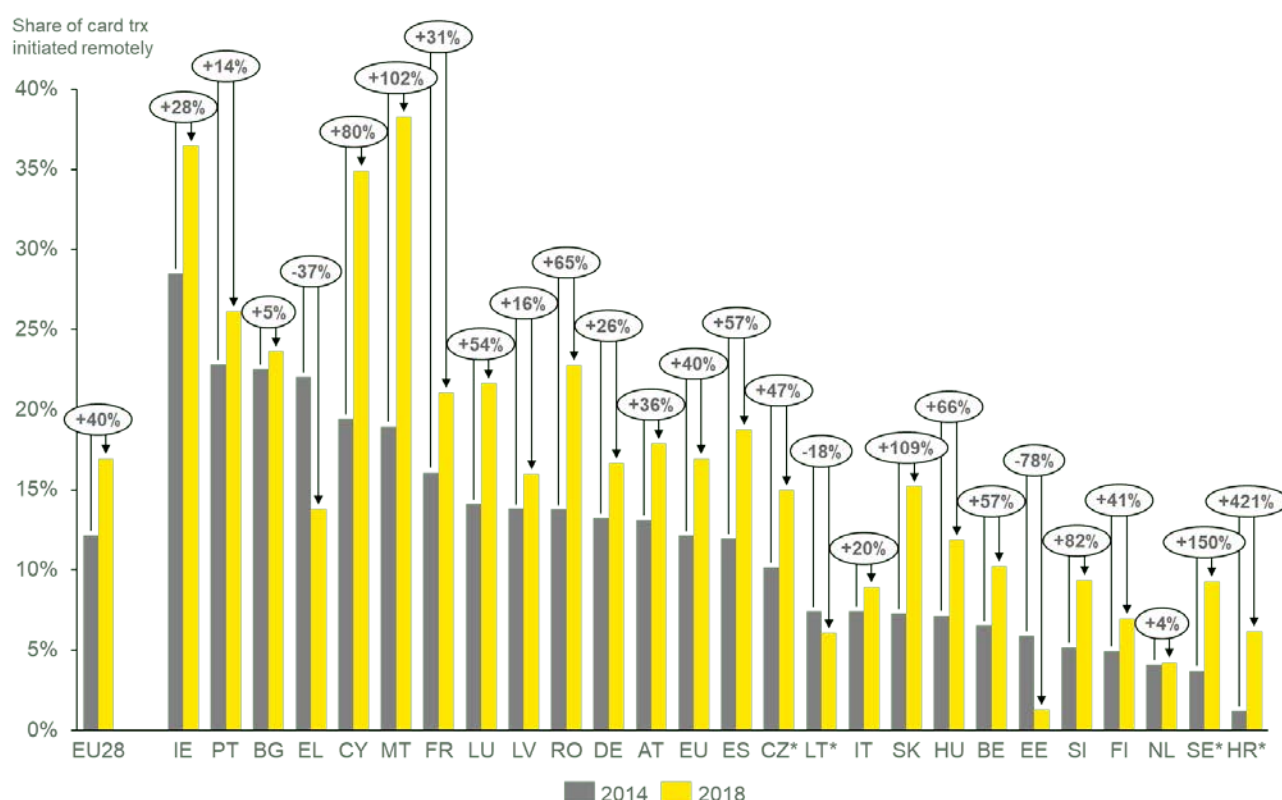


Note: Index (2015=100) of turnover volume is deflated and seasonally adjusted. Indices are calculated by Eurostat on the monthly activity of the retail sector in value and volumes. A change from 100 to 110 in the index indicate a 10% increase in turnover from the two periods. The index for total retail refers to the NACE category: 'Retail trade, except of motor vehicles and motorcycles'. Index for e-commerce refers to NACE category: 'Retail sale via mail order houses or via Internet'.

Source: Eurostat.

Figure 28: E-commerce vs retail turnover growth in EU-28, 2014-2018

As a result, so-called card-not-present transactions are taking a more important role in driving card payment developments. The value of e-commerce card payments over all card payments has increased in most EU MS. At EU level, the share of e-commerce card payments has moved from 12% to 17% between 2014 and 2018, see Figure 29. Ireland with a developed e-commerce sector and a preference for usage of payment cards has the highest share of card payments value coming from e-commerce transactions, already accounting for more than a third of the value of card payments.

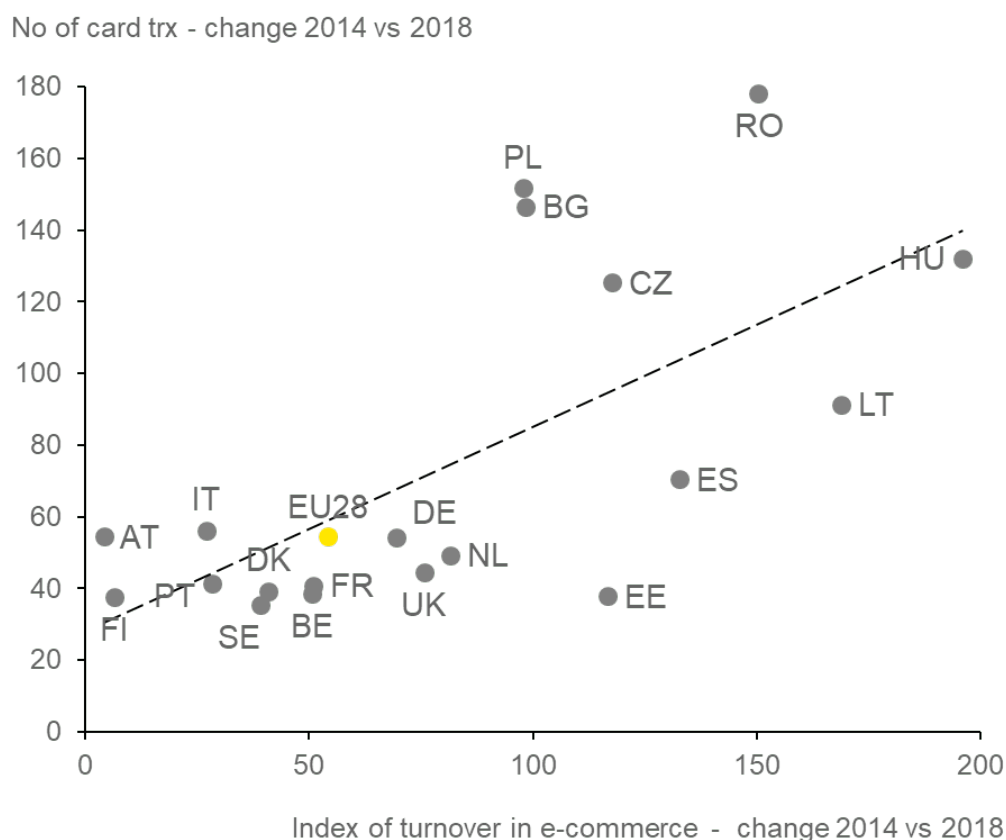


Note: Transactions initiated remotely with cards issued by resident PSPs. Share is calculated over the value of transactions initiated remotely plus transactions at physical EFTPOS. For marked MS (\*) data for 2014 were not available at the time of the report, 2015 values are reported instead. For Lithuania data for 2018 was not available, 2017 was used instead. Consequently, percentage changes are not fully comparable. No data available for Poland and United Kingdom.

Source: ECB.

Figure 29: Share of value of card transactions initiated remotely, 2014 and 2018.

In general, a positive correlation is observed between development in e-commerce and card usage in EU, see Figure 30. MS where both online shopping and card payments report low levels of maturity, such as Hungary, Bulgaria, and Romania, are leading the trend.



Note: Cards issued by resident PSPs. Share is calculated over the total transaction value.

(\*) = data for 2014 were not available at the time of the report, 2015 values are reported instead. For Lithuania data for 2018 was not available, 2017 was used instead. Consequently, displayed percentage changes are not fully comparable. No data available for Cyprus, Greece, Croatia, Ireland, Lithuania, Latvia, Malta, Slovenia and Slovakia. Index calculation is explained in Figure 28.

Source: ECB, Eurostat.

Figure 30: Correlation of e-commerce and card transactions growth, 2014 and 2018

### 3.3.2 New payment methods for e-commerce

E-commerce fosters card-not-present transactions but also other kinds of remote payments. It encourages the development and adoption of new digital payment methods that can either be used in the internet browser or on mobile devices (e.g. smart phones and tablets). Some of these payment means have already an established presence in EU. PayPal, for instance, represents the most frequent payment method offered by e-commerce merchants in several MS



such as Germany, France and United Kingdom<sup>73</sup>. Others, e.g. BigTechs, have recently entered the market and are, to different degrees, rapidly gaining tractions. Global players are also coming from China, i.e. Alipay and WeChat, where the market for mobile payments is well developed. However, they are mainly based on QR technology in contrast with EU where NFC-based solutions dominate. Alipay has recently entered into a partnership with 6 European digital wallets providers to create a unified QR system across MS for acceptance at POS<sup>74</sup>. Some of these payment methods are based on a card-based application and thus processed over a card network, while the payment process for others does not require the card networks. Hence, the advent of new payment methods creates only partly competition with card schemes. The two most frequent digital payment methods used in e-commerce are digital payment wallets (mostly based on cards) and online bank transfers.

Digital payment wallets are payment methods that allow individuals to make electronic transactions via their computer or smartphone. Consumers can link their preferred payment card (or bank account) to their digital wallets and make online transactions by accessing their funds directly via the wallets. Digital wallets may be issued by issuers, schemes, telecoms, retailers, or third parties (e.g. PayPal, Apple, Android Pay) and are predominantly card-based, i.e. they function using tokenised credentials of the payment card. While fostering innovation and improving service choice and quality for consumers, these payment services may result in higher merchant fees than normal card payments as they add their own margin on top of interchange and scheme fees and acquirers' margins. For instance, PayPal merchant fees can reach around 3% of the transaction value processed<sup>75</sup>. Depending on the provider, the costs may also be borne by other stakeholders, as for Apple Pay where issuing banks have to share part of the fees they collect with Apple<sup>76</sup>.

Digital wallets can be grouped in two categories: *staged wallets* and *pass-through wallets*. The first type, the staged wallet, has a funding stage where consumers need to 'top up' the wallet by transferring funds into it, and a separate payment stage where the wallet operator provides the money to the merchant as consumers make the purchase. PayPal is an example of this type. In some cases, staged wallets do not allow issuers and schemes to collect data about the transaction they process. This information may enable issuers to design better rewards systems and schemes to follow consumers' purchases patterns. International schemes Visa and MasterCard have already tried to impose specific additional fees, either on the merchant or the wallet operator, to deter transactions which do not pass information to schemes<sup>77</sup>. The second type, the pass-through wallet, acts instead as a proxy for a real payment card. In this case, the wallet does not have a balance, and card information is provided during the transaction. Most of the pass-through wallets function with a tokenization process that protects sensitive data by replacing the consumer's primary account number (PAN) with a token that is passed through

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<sup>73</sup> Ecommerce News Europe, 14 February 2018. 'Top 3 of payment methods per European country' [retrieved from: <https://ecommercenews.eu/top-3-payment-methods-per-european-country/>]

<sup>74</sup> Finextra. 10 June 2019. 'Alipay teams up with European mobile wallet operators'. [retrieved from: <https://www.finextra.com/pressarticle/78728/alipay-teams-up-with-european-mobile-wallet-operators>]

<sup>75</sup> PayPal Belgium. [retrieved from: [https://www.paypal.com/be/webapps/mpp/paypal-fees?locale.x=en\\_BE](https://www.paypal.com/be/webapps/mpp/paypal-fees?locale.x=en_BE)]

<sup>76</sup> The Payers. 5 November 2014. "Apple Pay requirements for card issuers are revealed". [retrieved from: <https://thepayers.com/news/apple-pay-requirements-for-card-issuers-are-revealed--757215>]

<sup>77</sup> Reuters, 20 March 2013. 'Visa CEO calls digital wallet fee on PayPal "appropriate"' [retrieved from: <https://www.reuters.com/article/us-visa-paypal/visa-ceo-calls-digital-wallet-fee-on-paypal-appropriate-idUSBRE92J1CU20130320>]

the networks. The payment is then processed without card details being exposed to the Merchant and on the internet. Apple Pay, Android Pay and Samsung Pay are examples of pass-through wallets.

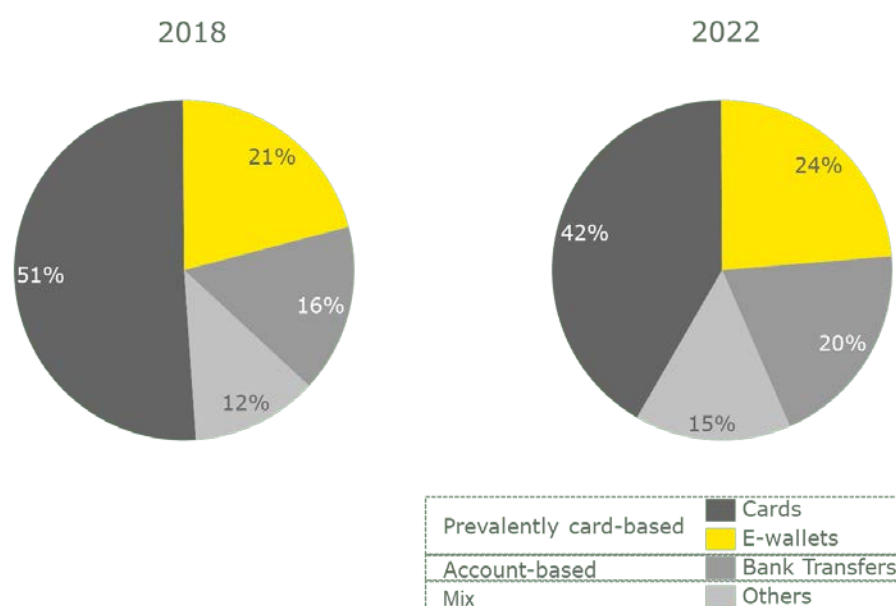
Online bank transfers are another alternative payment method to make online payments. Their importance differs across countries. In this case, consumers make the purchase by directly transferring funds to the merchant from their bank account. This method is account-based, and hence do not rely on the card schemes infrastructure. The service can be provided directly by banks or by third party payment initiation service providers that can initiate a payment order from the bank account on behalf of the user. Examples of the first group are iDEAL in the Netherlands, Giropay in Germany, Pay-by-links in Poland, and Swish in Sweden. They can be account-based credit transfers (e.g. Ideal, Giropay, SOFORT direct debit), direct debits (e.g. paydirekt) or instant payments (e.g. Swish). In most cases, bank-owned online payment solutions, while being widely used in their respective domestic markets, are not accepted outside of the national borders. Third party providers, i.e. SOFORT and Trustly, on the other hand, are able to operate in multiple countries, allowing users to make online purchases with cross-border merchants. SOFORT, owned by Swedish company Klarna, is present now in 7 European countries. The relevance of payment initiation service providers is expected to increase with the introduction of the EU PSD2 Directive which requires banks to grant licenced third-party service providers access via APIs to their customers' bank account information on the availability of funds.

Several other payment methods remain quite limited in terms of adoption in most EU countries. For instance, consumers are able to pay after the delivery without sharing their credit card or bank details with eInvoices services. This is where a third party pays out for products and services and then collects payment from the shopper after delivery. An important player that offer this service is the Swedish start-up Klarna. This solution may still be card-based to the extent that the subsequent payment of the eInvoice is linked to a payment card. Other examples of payment methods not based on card schemes are prepaid cards such as Paysafecard or Neosurf that do not require users to possess a credit card or a bank account, mobile carrier billings, cryptocurrencies and cash on delivery.

Despite the rising choice for consumers among different kinds of payment methods – although wallets are mostly card-based, according to the 2018 report published by WorldPay<sup>78</sup>, cards are the preferred payment instrument to buy online in the EMEA region. However, consumers are expected to slowly move away from cards with the share of cards in the e-commerce payment mix forecasted to decrease from 51% in 2018 to 42% in 2022, see Figure 31.

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<sup>78</sup> Worldpay (2018). "Global payment report".



Note: Numbers adjusted for rounding may impact totals. Others include: eInvoices, PrePay, PostPay, Cash on delivery, mobile carrier billing and cryptocurrencies.

Source: Worldpay (2018) Global Payments Report, page 15.

Figure 31: Payment mix in e-commerce in EMEA, 2014 and 2022 estimates

The effect of the rise of new payment methods as a competitive pressure on card schemes is likely to be mixed. For instance, the decrease of payments by means of cards might be offset by the increase from 21% to 24% in the usage of digital wallets, which are currently prevalently based on card instruments.

One of the potential competitive constraint to the card payment system is represented by recent developments in instant payment solutions for account-based transfers as well as new pan-European infrastructures initiatives to process SEPA Instant Credit Transfer (SCT Inst) such as the TARGET Instant Payment Settlement (TIPS). These solutions are expected to enable PSPs to offer their customers the possibility to send and receive payments real time across Europe directly from bank accounts. This may further increase the competition on card networks from account-based payments.

Another important source of competitive pressure is likely to come from BigTech platforms. While their current products make use of existing card schemes infrastructures, their large existing user base put them in a favourable position when negotiating conditions with card issuers and schemes. To the extent that the existing players become more dependable on transactions executed with the tech giants' products, the digital wallets providers will be able to increasingly eat up their stream of revenues. Apple and Amazon have also recently entered the issuing market with their own credit cards in co-operation with existing banks in the US (e.g. Goldman Sachs for Apple credit card).

Currently, however, payment patterns in e-commerce differ substantially across MS, see Figure 32. In MS such as UK, Italy and Denmark, shoppers increasingly use digital wallets. On the other hand, there are other countries, such as the Netherland and Poland, where online bank transfers are already the most popular option for e-commerce payments. Germany, Belgium and Sweden also have widespread account-based payments with at least one-fifth of e-commerce payments estimated to be executed via bank transfers.



Note: Numbers adjusted for rounding may impact totals. Others include: eInvoices, PrePay, PostPay, Cash on delivery, mobile carrier billing and cryptocurrencies.

Source: Worldpay (2018) Global Payments Report.

Figure 32: Payment mix in e-commerce for selected Member States, 2017 estimates

### 3.3.3 Digital face-to-face payment methods

As the usage of smart phones has become ubiquitous, payment service providers as well as device and software producers started to integrate payment services into mobile devices. Besides remote payments and peer to peer funds transfer, mobile devices are being increasingly used for digital face-to-face payments at physical points of sale<sup>79</sup>.

Most mobile payment methods used at physical stores integrate digital wallets linked to the mobile (mobile wallets) with technologies such as Near Field Communications (NFC), Quick Response (QR) codes, two-dimensional barcodes and Bluetooth Low Energy (BLE), which enable authentication and secure proximity payments via the device. For the moment, in-shop mobile payments are mainly card-based. Increasingly adopted mobile wallets such as Apple Pay utilizes NFC technologies - the same system that enables contactless card payments. Consumers can 'tap to pay' with their mobile on NFC terminals. Merchants that make the upgrade to NFC-capable terminals would be able to accept mobile payments and contactless card payments on the same terminal. As at this point all acquirers offer these type of terminals, mobile card-based payment applications based on NFC technology possess a market advantage compared to other QR-based solutions. The results of a market investigation conducted by the European Central Bank for a recent report on card payments in Europe<sup>80</sup>, have identified the adoption of mobile wallets as a

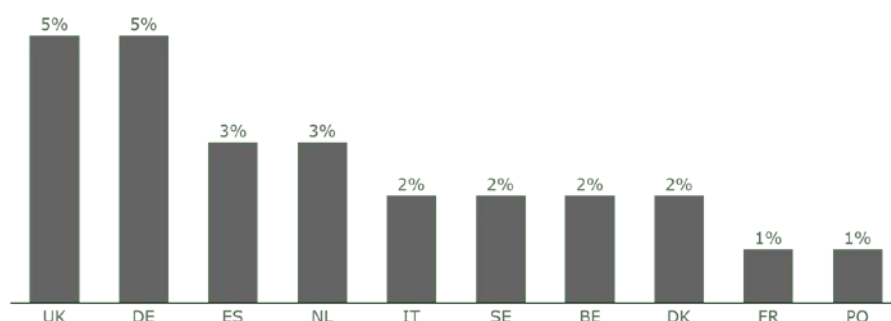
<sup>79</sup> Other methods are e-money electronic purses, e.g. GeldKarte in Germany, gift cards and vouchers.

<sup>80</sup> ECB report: 'Card payments in Europe - current landscape and future prospects: a Eurosystem perspective' (2019).

factor that will allow international schemes to maintain or even strengthen their role in the payment market. This would be caused by the more limited inclusion of domestic schemes in some of the mobile wallets compared to international schemes, which might be linked to the higher interchange fee revenues generated under the latter.

However, more European banks are starting to offer account-based mobile payment solutions linked to their mobile banking applications. Pilot projects and initiatives based on QR technology such as Jiffy in Italy, Blink in Poland, PayConiq in Benelux and Swish in Sweden<sup>81</sup> were launched to introduce these solutions at physical stores.<sup>82</sup> Also domestic schemes, Girocard and Dankort and banking group iDeal, started offer their own mobile applications for face to face payments.

While the usage of mobile wallets to make payments at physical POS in the EMEA region is expected to more than double between 2018 and 2022<sup>83</sup>, their overall share in the payment mix was quite low: only 3% estimated in 2018. The estimated shares of transactions carried out with mobile wallets at POS in 2017 for a selected number of MS range from 5% to 1%, with mobile payments being relatively more widespread in the United Kingdom and Germany, see Figure 33.



Note: Numbers adjusted for rounding may impact totals.

Source: Worldpay (2018) Global Payments Report.

Figure 33: Share of mobile wallet payments at POS for selected countries, 2017 estimates

### 3.3.4 New market entrants

The recent developments in the payment sectors are determined by factors on both the supply side and the demand side<sup>84</sup>. The supply side factors are mostly related to technological developments while the change in consumers' expectations is affecting the demand side. The recent developments in technology and increased digitalization represent the main drivers of the

<sup>81</sup> PYMNTS. 3 July 2019. "Swish Teams With Nets To Test In-Store Mobile Payments". [retrieved from: <https://www.pymnts.com/news/partnerships-acquisitions/2019/swish-teams-with-nets-to-test-in-store-mobile-payments/>]

<sup>82</sup> PCM. 4 March 2019. "Payment Card Yearbooks: European payments continue to rise rapidly". [retrieved from: <https://www.paymentscardsandmobile.com/payment-card-yearbooks-european-payments-continue-to-rise-rapidly/>]

<sup>83</sup> Worldpay (2018) Global Payments Report, p. 15.

<sup>84</sup> Ibid 71.

increased supply of new payment solutions. On the demand side, consumers are increasingly expecting payment services to meet the levels of high convenience, speed, user-friendliness and security and data protection of digital products offered in the market. Demographic factors are also affecting demand.

The increase reliance of consumers on digital devices has incentivised innovative suppliers of financial services, FinTechs, and technological players, BigTechs, to enter the market<sup>85</sup>.

Part of the technologies underlying new payment methods are developed by new innovative companies that are entering the payment sector at different stages of the payment value chain. FinTechs are defined as companies that provide financial services through the use and development of innovative technologies. Often, they specialize in one service, e.g. cross-border payments, mobile and online payment service processing, but digital “neobanks” such as Monzo, N26 and Revolut are also emerging. While possessing selective competitive advantages, these players have encountered difficulties in scaling up their operations and convince large portion of customers to switch away from their traditional banks and financial service providers. Except for a few cases, among others Ayden, Klarna and Wirecard, which succeed in establishing themselves as relevant players in the market, most FinTechs have not yet manage to achieve a significant position. As a result, FinTech are increasingly seeking partnership with incumbents to overcome these obstacles. These types of collaborations are considered strategic also by leading payment services providers as demonstrated by initiatives undertaken by Visa and MasterCard to cooperate and support FinTech companies in developing and launching their products to the market<sup>86</sup>. Large acquirers, banks and schemes, need to integrate new enabling technologies possessed by FinTech companies, this may stimulate competition among existing players to seize deals with the most promising new entrants<sup>87</sup>.

BigTechs such as Apple, Google and Alibaba have also entered the payments market with their wallet products. Besides wallets, these players are considering introducing other products such as digital currency, i.e. Facebook’s Libra. While being technologically strong and highly innovative as FinTechs, they can also leverage an already wide user base and brand recognition. They have access to low cost capital to finance their market entry and withstand higher initial business risks. Furthermore, they possess a rich number of users’ data and the AI-related competences to extract from it valuable insights to improve their offer to customers. BigTechs have the possibility to bundle or cross-subsidize their payment products with the rest of their services in their ecosystem. While at initial stages BigTechs bring new products, efficiency and competitive constraints on incumbents, there are risks that they ultimately monopolise new markets, for example by leveraging their existing positions as platform operators into retail finance. Direct revenues streams from payment transactions might not be the main driver for these players which are constantly striving to increase the amount time users spend in their ecosystems by adding new type of services on their platforms. Hence, consumers and also merchants may experience savings costs from engaging with payment products offered by

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<sup>85</sup> Ibid 71.

<sup>86</sup> PYMNTS. 4 June 2019. “Card Giants Step Up FinTech Support Efforts Across EU”. [retrieved from: <https://www.pymnts.com/news/b2b-payments/2019/mastercard-visa-fintech-bank-digital-innovation/>]

<sup>87</sup> Quartz. 22 October 2019. “MasterCard and Visa are fighting over Revolut”. [retrieved from: <https://qz.com/1732023/revolut-will-partner-with-mastercard-for-us-launch/>]

BigTechs at competitive price to attract consumers on their platforms. At the current stage, however, BigTechs have decided to cooperate and rely on with existing players in the payment sector as for now they mainly offer mobile payment wallets that still function with the international scheme infrastructure. BigTechs have also set up collaborations with incumbents to develop new products such as the recent credit card created by Apple and Goldman Sachs that function on MasterCard network<sup>88</sup>. The effects of BigTechs' entry into payment markets are still uncertain. On the one hand they represent a competitive constraint on the traditional card schemes, although relying still predominantly on their networks. On the other hand, they have the potential to become a disruptive force in payments and retail finance themselves given the large pool of consumers they already have in their main markets and their technological capabilities.

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<sup>88</sup> Reuters. 6 August 2019. "Apple, Goldman Sachs start issuing Apple Cards to consumers. [retrieved from: <https://www.reuters.com/article/us-apple-goldman-sachs-card/apple-goldman-sachs-start-issuing-apple-cards-to-consumers-idUSKCN1UW0ZS>]

## 4 FEE AND COST DEVELOPMENT

This chapter investigates to what extent key financial flows under the control of stakeholders within the card payment sector have changed in the period 2015-17 after the imposition of the interchange fee caps. Using statistical and econometric methods, the chapter documents empirically the actual change in these key financial flows and verifies the connection with the implementation of the IFR.

The interchange fee caps were designed to counter the undesired situation in which competition between card schemes leads to increasingly higher interchange fees. Schemes could compete by granting issuers higher and higher interchange fees to guarantee that issuers would issue their card brands instead of the card brands of a competing scheme. The higher interchange fees are paid by acquirers, passed on to merchants and ultimately passed further on to consumers through higher retail prices.

To prevent such an outcome, interchange fees on consumer debit and credit card transactions within the EU were capped under the IFR. As of 9 December 2015, interchange fees were capped at 0.2% of the transaction value for consumer debit cards, cf. article 3 of the IFR, and at 0.3% of the transaction value for consumer credit cards, cf. article 4 of the IFR.

The cap was expected to lead to significant changes in financial flows within the card payment sector, starting with a significant decline in the interchange fee payment from acquirers to issuers. The cap could also release changes of other fees controlled by stakeholders but not capped by the IFR, for example scheme fees, cardholder fees and merchant service charges. For this reason, card schemes and other market players are not allowed to provide issuers with other forms of compensation to circumvent interchange fee caps.<sup>89</sup>

Fees flow between the stakeholders connected through the payment card platform to pay for the costs of providing payment services and to incentivise desired behaviour, see Figure 34 for an illustration of flows in a typical four-party card scheme. The four parties are first the *card scheme* that provide network and technologies for facilitating card payments; second the *card issuer* (hereafter “issuer”, the cardholder’s bank) that issues payment cards to cardholders and releases card payments from the cardholders bank account; third the *acquirer* (the merchant’s bank) that provide payment infrastructure, processes payment requests, merchant account provisions and bears the risk of the payment, and fourth the *merchant* that receives card payments from cardholders.

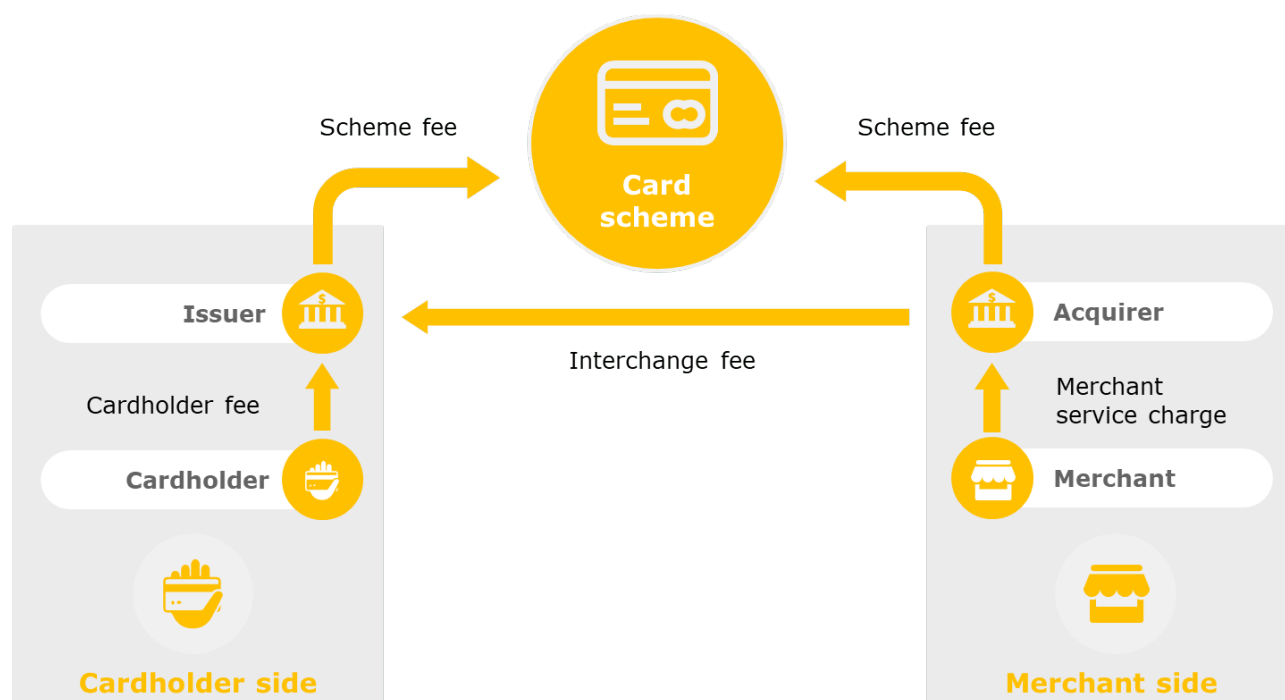
The costs of the card scheme are ultimately borne by the customers on the two sides of the platform: the cardholders (the consumers) and the merchants (that ultimately passes through costs to consumers). Cardholders typically pay *cardholder fees* directly to issuers for using payment cards that the issuer has issued. Merchants pay a *merchant service charge* to acquirers for the acceptance and processing of the merchants’ card-based payment transactions. The acquirer pays an *interchange fee* to cover the issuer’s costs of handling the card-based payment<sup>90</sup> and to incentivize issuers and an *acquirer scheme fee* to the card scheme for access to the card payment platform. Finally, the issuer also pays an *issuer scheme fee* to the card scheme for access to the card payment platform and for switching to the card scheme.

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<sup>89</sup> “Any agreed remuneration including net compensation with an equivalent object or effect as the interchange fee received by an issuer from the payment card scheme, acquirer or any other intermediary shall be treated as part of the interchange fee”, cf. article 5 of the IFR.

<sup>90</sup> Interchange fees are also set in bi-lateral agreements between acquirers and issuers.





Source: EY and Copenhagen Economics.

Figure 34: Illustration of fee flows within a four-party card scheme

In the remainder of this chapter, we analyse the changes in fee flows as described above that will be set in motion when implementing the interchange fee caps as defined in the IFR.

First, we document for each MS the actual change in the interchange fees paid by acquirers to issuers in the period from 2015 to 2017 following the imposition of the interchange fee cap and we check whether the caps are being met. We estimate the total relative and absolute annual reductions in interchange fees in EU-28 and per MS from 2015 to 2017, see section 4.1.

Second, we focus on card schemes and estimate the change in issuer scheme fees and acquirer scheme fees from 2015 to 2017. We explore whether there is a causal relationship between the change in interchange fee and the scheme fees paid by issuers and acquirers, see section 4.2.

Third, we focus on issuers who may try to compensate the decreased interchange fees from the acquiring side by increasing cardholder fees paid by consumers or by steering card issuing away from capped consumer card transactions to non-capped commercial card transactions where interchange fees can be several times larger than the cap. We estimate changes in cardholder fees and in card issuing from 2015 to 2017, see section 4.3.

Fourth, we turn to acquirers who are benefiting from significant cost savings from the capped interchange fees that are likely - fully or partially - to be passed-through into lower merchant service charges. We estimate the change in merchant service charge and the remaining change in acquiring margin that covers costs and profit of the acquirer, see section 4.4.

Fifth, we estimate to what extent merchant acceptance of cards has improved as a consequence of the expected reduction in merchant service charge in the period from 2015 to 2017, see section 4.5.

The analysis is based on data from the IFR Survey to all stakeholders, namely schemes, issuers, acquirers and merchants, covering the period 2015-2017<sup>91</sup> and data from public sources. Before proceeding, we describe the treatment of data on transactions with cards issued under domestic and international schemes, see Table 9.

The results in chapter 4 build on the IFR Survey to schemes, issuers, acquirers and merchants. The two largest international schemes provided comprehensive data. However, few domestic schemes provided data on transactions with cards issued under their brands. The German domestic scheme stated for example that by prohibition of the German Competition Authority, it is not allowed to access fee data, which is left to issuers and acquirers to handle themselves. Hence, data from schemes mostly cover transactions with cards issued under international schemes. Data provided by issuers and acquirers, on the other hand, contain transactions with cards issued under domestic schemes.

The econometric estimations generally use data from as many stakeholders as possible while controlling for the stakeholder identity. This means that the econometrically estimated results to a larger extent than the results shown in figures are based on data on transactions with cards issued under domestic scheme, in addition to international schemes.

The results and conclusions naturally apply to the type of stakeholders that provided the data underlying the results and conclusions. Hence, the results and conclusions based on figures generally apply to international schemes, with a few exceptions where domestic schemes provided data. The results and conclusions based on econometric estimations generally apply to both international and domestic schemes. This general description is relevant for all results and conclusions in chapter 4.

Table 9: Treatment of data on transactions with cards issued under domestic and international schemes

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<sup>91</sup> Qualitative information provided by survey respondents and national regulators indicate that effects of the IFR have materialised after 2017. However, at the time when the IFR Survey was conducted survey respondent could generally not provide more recent data than from 2017.

## 4.1 Interchange fees

The purpose of this section is to document the development of interchange fees applied by schemes in each MS and in EU-28 from the imposition of the interchange fee cap in 2015 until 2017. The analysis is based on data from the IFR Survey to schemes, issuers, acquirers and merchants. The interchange fee cap applies to card transactions on most payment cards, but not all.

The interchange fees are broken down by card type (consumer debit, consumer credit and commercial), per transaction type (domestic and cross-border intra EEA transactions), and per scheme type (domestic and international schemes). In all cases, we report interchange fees in the form of weighted average interchange fees in % of transaction value. The weights correspond to the transaction value per respondent.

The interchange fee cap applies to consumer card transactions, but not to commercial card transactions, cf. article 1 of the IFR. Commercial cards are payment cards issued to undertakings (or public entities and self-employed persons) that are limited in use for business expenses and where the payments are charged directly to the account of the enterprise, see more in section 6.3.

The interchange fee caps apply to four-party card schemes, but not to 'pure' three-party schemes, see Article 1 of the IFR. American Express and Diners Club are two examples of three-party schemes. However, the caps do apply to three-party schemes when they license third parties to issue cards and to acquire transactions, or when they issue cards with a co-branding partner or an agent.<sup>92</sup>

The interchange fee cap applies to domestic and cross-border transactions where both the issuer and acquirer are located within the EU, but they do not apply to cross-border transactions where either of the issuer or acquirer is located outside the EU. Neither do caps apply for cash withdrawals at an ATM or at the counter of a payment service provider since these transactions fall outside the scope of the IFR.

The main results are that interchange fees for consumer debit and credit card transactions within EU-28 from 2015 to 2017 declined in a statistically significant manner. The decline was particularly strong for credit card transactions with an average reduction of 0.25 percentage points, more modest for debit card transactions by 0.04 percentage points. Data from the IFR Survey indicates that interchange fees in all MS were in compliance with the interchange fee caps in 2017. There is no evidence of statistically significant changes in interchange fees for non-capped commercial card transactions in the same period.

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<sup>92</sup> MS could decide until 9 December 2018 to exempt three-party schemes that license to an issuer or acquirer or issue card-based payment instruments through a co-branding partner or agent, from the caps on domestic consumer card transactions provided the value of these transactions is no more than 3% of the market.

The overall decline in the interchange fee has led to a significant savings in overall interchange fee. Based on the estimated changes in interchange fees multiplied by ECB data on total value of transactions with consumer debit and credit cards, we find that the reductions in interchange fees for consumer card transactions covered by the IFR led to interchange fee savings for acquirers of around EUR 2,680 million in 2017.<sup>93</sup> This corresponds to about 35% of the total interchange fees paid for consumer card transactions in 2015. The estimate is conservative because the calculation is based on the total value of transaction in 2015 and therefore does not account for acquirers' interchange fee savings on transactions beyond the level in 2015. The decline is large in MS with high propensity to use card-based payments and with a high pre-IFR level of interchange fees, for example in the United Kingdom.

The overall reduction in interchange fees for debit and credit card transactions can be broken down into fee changes for domestic transactions and for cross-border transactions within the EEA. The driver of the reductions in interchange fees is the reduction in interchange fees for domestic transactions with consumer credit cards.

The overall reduction in interchange fees for domestic debit transactions can also be broken down into fee changes for domestic schemes and for international schemes. Domestic schemes, in MS with domestic schemes, either have interchange fees in line with the EU average and at the same level as the international schemes in the same MS, for example in Germany and France, or interchange fees that are lower than the EU average and the international schemes in the same MS, for example in Belgium and Denmark. For the former MS, the cap has reduced interchange fees equally for domestic and international schemes. For the latter MS, the cap has mostly reduced interchange fees for international schemes.

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<sup>93</sup> This number is calculated as the product of the estimated, statistically significant relative fee changes and multiplied by total value of debit and credit card transactions reported by ECB.

#### 4.1.1 Interchange fees for debit and credit card transactions

We first calculate<sup>94</sup> and show weighted average<sup>95</sup> interchange fees in 2015 and in 2017 for each MS for transactions on two card types, consumer debit cards and consumer credit cards, based on data from the IFR Survey to schemes, issuers and acquirers. Few domestic schemes provided data, but issuers and acquirers provided data for cards under domestic schemes. We interpret the 2015-observations as the pre-IFR base year observations<sup>96</sup> and the 2017-observations as the best possible representative of post-IFR year.<sup>97</sup> This holds for all analysis in chapter 4.

In 2015, the weighted average EU interchange fee for debit card transactions reported by four-party schemes was below the cap at 0.194%.<sup>98</sup> The interchange fees differed across MS with several MS having high interchange fees, while half of the MS had interchange fees below the cap and were therefore not affected by the cap, see Figure 35 top.

In 2017, the interchange fee had declined to or below the cap of 0.2% for all MS. Reporting discrepancies exist for international card schemes in Belgium, where interchange fees calculated from survey data for debit card transactions are above the cap, while the domestic scheme Bancontact is not covered. At the same time, based on inspections organised by the Belgian National Competent Authority, the authority has concluded that interchange fees in Belgium comply with the IFR.<sup>99</sup> The weighted average EU interchange fee had declined to 0.168%. The significant decline in interchange fees in MS with previously high levels implied that the level differences between MS were much smaller in 2017 than in 2015.

The Netherlands stands out with uniquely low interchange fees for debit card transactions, both in 2015 and 2017. The low fee is explained by the fact that in 2015 the Netherlands opted for a weighted average cap of EUR 0.02 for domestic debit card payments. In addition, bilateral interchange fees in the Netherlands were of EUR 0.01 before the IFR entered into force, and they currently remain at the same level.

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<sup>94</sup> The interchange fee is expressed as a percentage of transaction value. It is calculated by dividing the total EUR value of interchange fees divided by the total EUR value of transactions reported by respondents. For data reported by schemes, the interchange fee value is divided by the total EUR value of transactions processed by the scheme. For data reported by issuers, acquirers and merchants, the interchange fee value is divided by the total EUR value of transactions that are not "on-us". For an elaborate description, see annex 4.

<sup>95</sup> The average interchange fees, and other averages of fees, are weighted by respondents' transaction value to correspond to the average fee on the market.

<sup>96</sup> This is a simplification since the interchange fee caps became applicable by 9 December 2015. It means that a limited number of transactions in 2015 may represent post-Regulation transactions. Some stakeholders could also have adjusted their interchange fees already before the formal date of applicability. Both factors make interchange fee levels of 2015 likely to be lower than the true pre-regulation levels, meaning that any change between 2015 and 2017 will be understated.

We have investigated the possibility to link the Commissions Zero Study database covering 2014-2015 with the survey database via identical respondents in the two databases and use the year 2014 as a full pre-Regulation base year for the study. See annex 4.

<sup>97</sup> One cannot rule out that fees have changed due to the IFR after 2017, and possibly that the fees are still changing. However, 2017 was the last year that respondents could provide data for during the time of data collection.

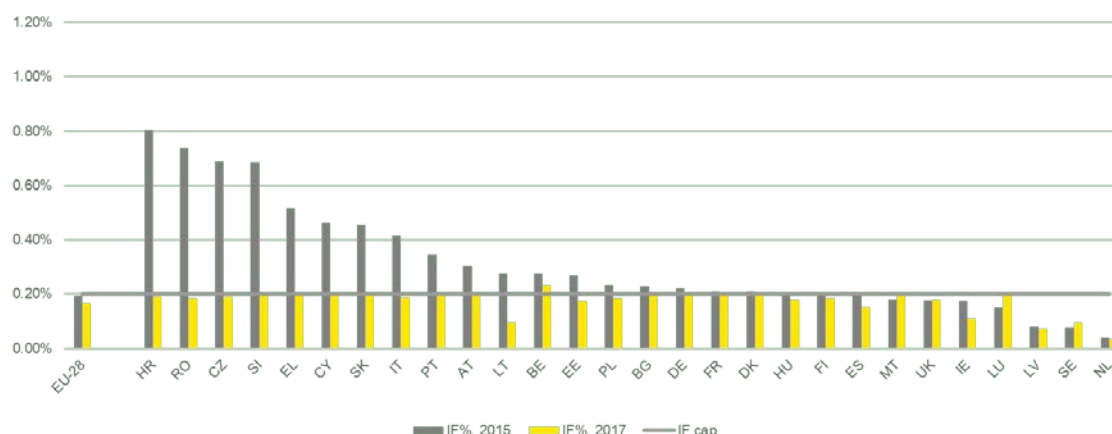
<sup>98</sup> The interchange fee data for Portugal contain data from the domestic scheme in Portugal.

<sup>99</sup> Interchange fees are calculated based on information on fee and transaction values by survey respondents (see annex 4). There are several reasons, why this information is not necessarily consistent with one another, including differences in reporting systems and time of data reporting etc. Thus, fee levels above the respective IFR cap do not necessarily indicate non-compliance with the regulation.

In 2015, the weighted average EU interchange fee for credit card transactions at 0.598% was firmly above the cap. In 2017, the interchange fee had declined significantly to 0.289%, see Figure 35 bottom. In all MS, the interchange fees declined to or below the cap of 0.3%. In some MS as Hungary, Romania and Slovenia the interchange fee declined by more than half. Both in 2015 and 2017, level differences in interchange fees between MS were larger for credit card than for debit card transactions.

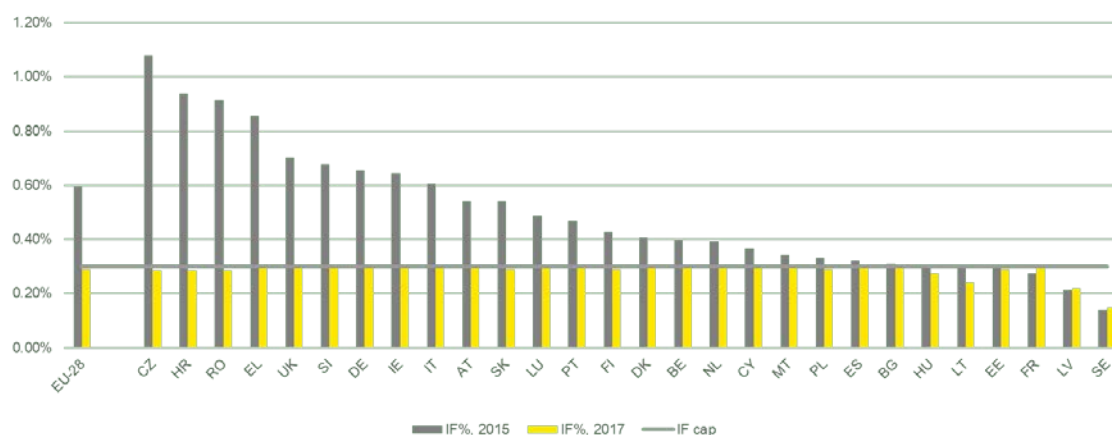
## Interchange fee for debit card transactions

IF as % of transaction value



## Interchange fee for credit card transactions

IF as % of transaction value



Note: The figures are based on data from Visa and MasterCard as well as data on interchange fees for debit card transactions from the domestic scheme in Portugal, which was the only domestic scheme providing these data. The horizontal grey line indicates the interchange fee cap for the type of card transaction. The bars in the figure represent weighted average interchange fees. Total transaction values corresponding to the interchange fees of each respondent are used as weights.

Source: IFR Survey.

Figure 35: Interchange fee, per card type and MS, 2015 and 2017

The reported interchange fees for 2015 are lower for most MS than the interchange fees reported in other public sources, for example in European Commission<sup>100</sup> and RBR<sup>101</sup> with data for all MS from 2013. The differences are expected because up to 2015 several card schemes adjusted downwards their interchange fees and several MS imposed lower interchange fees via national regulation.

We now test whether the changes in interchange fees from 2015 to 2017 are statistically significant. This does not only provide relevant insights into the development of interchange fees, but also tests whether our methodology can provide statistically significant results with data from the IFR Survey. A result is statistically significant when it is unlikely that the observed result has occurred by chance. We choose the standard level of significance at 95% which means that there is at most 5% probability that the results arose by chance.

We estimate a formal statistical model where the parameter  $\mu$  measures the change in interchange fee from 2015 to 2017.<sup>102, 103</sup> The model captures the general EU-wide development while statistically controlling for specific characteristics of the respondent and MS.

$$IF_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

If  $\mu$  is sufficiently large in relation to its standard error<sup>104</sup>, the change in interchange fees from 2015 to 2017 can be interpreted as an effect for the whole market. We conduct the estimation on a pooled<sup>105</sup> dataset with observations from schemes, issuers and acquirers to increase the number of observations and enhance the statistical power.<sup>106, 107</sup>

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<sup>100</sup> European Commission SWD(2013) 288 final "IMPACT ASSESSMENT Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions." SWD(2013) 288 final volume 2/2, page 203.

<sup>101</sup> RBR (2018) "Payment Cards Issuing and Acquiring Europe 2018".

<sup>102</sup> The interchange fee variable,  $IF_{itc}^{CT}$ , is defined as the interchange fee in EUR for a respondent  $i$  in MS  $c$  in a given year  $t$  for a given card type  $CT$  divided by the value in EUR of transactions for the same respondent, MS, year and card type.  $D_{itc}^{17}$  is a dummy that is one for the year 2017 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the respondent's type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions).

<sup>103</sup> The econometric results throughout chapter 4 are generally robust to changes in specification and other assumptions. The results and implications of several robustness checks are discussed in Annex 4.ö

<sup>104</sup> The standard error measures the precision of the estimate. The smaller the standard error is, the more precise is the estimate.

<sup>105</sup> Pooling observations requires sufficient consistency in reporting between stakeholders. This issue and the adjustments made to handle it are described in Annex 4.

<sup>106</sup> Statistical power indicates the likelihood that the statistical test result corresponds to the true result.

<sup>107</sup> Scatter plots of the observations used in the regressions are shown in Annex 4.

We conclude that there is a statistically significant reduction in average interchange fees<sup>108</sup> in EU from 2015 to 2017 for capped consumer debit and credit card transactions, see Table 10.<sup>109</sup> There is no evidence of change in the interchange fee for uncapped commercial card transactions.

	OLS	WLS	QReg
Consumer Debit	-0.093***	-0.039***	-0.063***
	(388; 0.35)	(388; 0.33)	(388; 0.17)
Consumer Credit	-0.173***	-0.252***	-0.178***
	(392; 0.31)	(392; 0.62)	(392; 0.23)
Commercial	0.025	-0.028	0.010
	(364; 0.42)	(362; 0.48)	(364; 0.28)

Note: Two-sided test for change in IF: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average IF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects

Source: IFR Survey.

Table 10: Change in interchange fee per card type, 2015-2017

In the preferred estimation model (WLS)<sup>110</sup>, the average EU interchange fee for consumer debit card transactions decreased on average by 0.039 percentage points between 2015 and 2017. The decrease is strongly statistically significant and corresponds to one fifth of the average interchange fee level for debit card transactions within EEA in 2015.

The interchange fee for consumer credit card transactions decreased on average by 0.252 percentage points. The decrease is strongly statistically significant and corresponds to about two fifths of the average interchange fee level for credit card transactions within EEA in 2015. The overall conclusion is the same for all of three different estimation models. The results confirm the validity of the IFR Survey data as a basis for the empirical analyses in this report.

<sup>108</sup> The average EU interchange fee should be interpreted as the average interchange fee paid in the EU per EUR of transaction value.

<sup>109</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data on the latter is provided by issuers, acquirers and merchants. The results for debit card transactions therefore apply to both domestic and international schemes, while the results for credit and commercial card transactions apply only to international schemes.

<sup>110</sup> We report three different estimation models: ordinary least squares (OLS), weighted least squares (WLS, weighted by respondent's value of transactions) and quantile regression (QReg). The OLS coefficient is interpreted as the average effect of respondents. The coefficient of the WLS, in which each response is weighted by the respondent's total transaction value, is interpreted as the average effect on transaction value, which is similar to an average market effect. The WLS minimises the risk that small respondents get a large influence on the conclusions. The QReg provides a robustness check that we have correctly identified and excluded outliers from the regressions. This is because the coefficient of the QReg is interpreted as the median effect of the respondents instead of the average effect. The OLS and WLS exclude the first and last percentile (outliers) of the observations as well as values of zero. We conclude that results are statistically significant if they are significant at the 5% level.



The WLS estimation model is preferred because it provides the most natural interpretation of the change in fees. The coefficient in the table should be interpreted as the percentage point change in the weighted average interchange fee in the EU. The coefficients from the OLS and QReg estimation model do not have a similar natural interpretation. The WLS model is less sensitive than OLS to outlier values for small respondents, because the WLS model weighs responses by transaction value. The OLS and the QReg estimation models are better to handle outlier values for large respondents because the OLS model does not weigh respondents and because the QReg model estimates the median value and not the average.

Using the econometric estimates of the changes in interchange fees for consumer card transactions and data on total transaction value in the EU from ECB, we estimate the annual reduction in interchange fees to be around EUR 2,680 million (rounded) for consumer credit card transactions, see Table 11.

	Estimated annual change (EUR million)	Estimated change (percentage points)	Transaction value 2015 (EUR million)
Consumer debit cards	-824	-0.039%	2,113,455
Consumer credit cards	-1,858	-0.252%	737,297
<b>Total consumer cards</b>	<b>-2,682</b>	<b>-</b>	<b>2,850,752</b>

Note: The estimated annual change in EUR million is calculated by multiplying the estimated changes in percentage points to the total transaction values in the EU in 2015 reported by ECB.

Source: IFR Survey, ECB.

Table 11: EUR change in interchange fees for consumer card transactions at EU level

### 4.1.2 Savings in interchange fees per Member State

In 2013, the European Commission impact assessment<sup>111</sup> reported interchange fees higher than the caps for most MS and therefore foresaw large annual savings (for acquirers) in interchange fees for the consumer debit and credit card transactions covered by the caps. We now document the annual savings for the period 2015-2017 based on data from the IFR Survey supplemented with data from public sources.

<sup>111</sup> European Commission SWD(2013) 288 final, "IMPACT ASSESSMENT Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions".

Based on interchange fee rates from the IFR Survey and data on values of transactions from the ECB, the total interchange fee paid by acquirers to issuers for consumer card transactions within the EU were about EUR 7,800 million in 2015. Using the econometrically estimated and statistically significant fee changes for debit and credit card transactions from Table 10 multiplied with data on transaction values from ECB<sup>112</sup>, we find that the interchange fees for consumer card transactions decreased between 2015 and 2017 amounting to an annual effect in 2017 of EUR 2,680 million, see Table 11.

By comparison, the Impact Assessment<sup>113</sup> prepared by the European Commission in 2013 estimated that the interchange fee caps would lead to a EUR 6 billion cost saving for acquirers through the reduction of interchange fees. The difference arises primarily because the savings in the Impact Assessment are calculated based on interchange fees in 2013 while the savings in this study are calculated on the basis of interchange fees in 2015.<sup>114</sup> The interchange fees were higher in 2013 than in 2015, because some MS introduced national regulation of interchange fees and because some card schemes started to reduce interchange fee levels already prior to 2015.

Now, we calculate savings in interchange fees per MS. The per MS calculation needs to be done in a slightly different way since the econometrically estimated changes refer to EU level, and not per MS changes. Thus, we calculate the difference in interchange fee levels between 2015 and 2017 for both debit and credit card transactions reported in the IFR Survey and multiply them with the total value of debit and credit card transactions reported by the ECB.

The relative savings in total interchange fee payment depend on the difference in interchange fees for debit and credit consumer card transactions between 2015 and 2017. The larger the difference, the larger will be the saving in relative interchange fee. On average, the interchange fee payment declined by 29% between 2015 and 2017, but in several MS it declined by more than half, see Figure 36.<sup>115</sup> Large relative savings were particularly common in small MS, such as Slovenia, Czech Republic, Croatia and Greece, with large pre-IFR interchange fees. Germany and Italy are two large MS that also experienced large relative savings. In other MS, the relative saving was more modest. In Sweden, interchange fees even increased. However, neither interchange fees for debit nor for credit card transactions in Sweden were above the caps in 2015, so the cap was not expected to push down further the interchange fees in Sweden.

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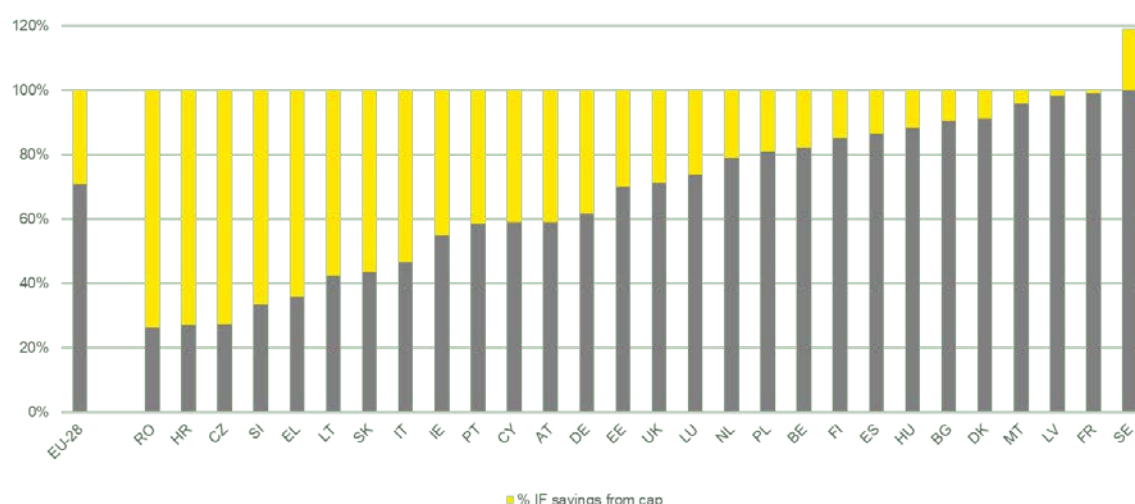
<sup>112</sup> We use the total values of transactions in 2015 in the calculation. This is to isolate the effect of the interchange fee reductions (price effect) from the change in value of transactions (volume effect).

<sup>113</sup> European Commission SWD(2013) 288 final, "IMPACT ASSESSMENT Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions".

<sup>114</sup> This study and the Impact Assessment use the same data series from ECB for the total value of debit and credit card transactions, but from different years. This study uses data from 2015 while the Impact Assessment uses data from 2011. This difference is likely to be less important.

<sup>115</sup> The interchange fee data for Portugal contain data from the domestic scheme in Portugal.

% of total value of IF in 2015



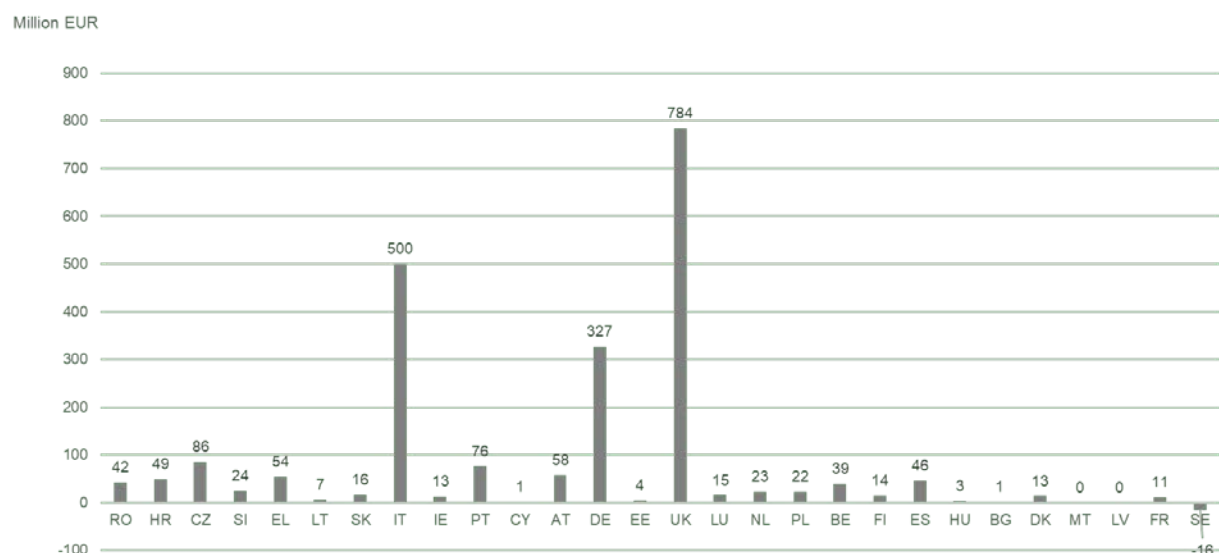
Note: The figures are based on data from Visa and MasterCard as well as data on interchange fees for debit card transactions from the domestic scheme in Portugal, which was the only domestic scheme providing these data. Grey bars represent interchange fees for consumer card transactions in 2017 as a share of interchange fees for consumer card transactions in 2015. Yellow bars represent the change in average interchange fees 2015 to 2017.

Source: IFR Survey, ECB.

Figure 36 Interchange fees in 2017 relative to 2015, per MS

The absolute savings in interchange fees vary substantially between MS, depending on both the change in interchange fees between 2015 and 2017 and the total value of debit and credit card transactions. United Kingdom has by far the largest savings in interchange fees, just below EUR 800 million, see Figure 37, because the transaction value of card payments in United Kingdom is much larger than in any other MS (the UK accounted for about 40% of the total transaction value in the EU in 2015). Other MS with large absolute interchange fee savings are Italy with EUR 500 million and Germany with more than EUR 300 million.<sup>116</sup>

<sup>116</sup> The total value of interchange fee savings calculated across all MS is at EUR 2,230 million lower than the value calculated for EU-28 in total at EUR 2,680 million. The difference at around 20% arises due to different calculation techniques.



Note: The figures are based on data from Visa and MasterCard as well as data on interchange fees for debit card transactions from the domestic scheme in Portugal, which was the only domestic scheme providing these data. Total savings are calculated as the average reduction in interchange fees in % of transaction value for debit and credit card transactions between 2015 and 2017 multiplied by the total value of debit and credit card POS transactions reported by ECB in each MS in 2015.

Source: IFR Survey, ECB.

Figure 37 Interchange fee savings (yearly) per MS, 2017

The reported interchange fee savings per MS based on the IFR Survey are generally in line with the conclusions in the Impact Assessment. The magnitude of the IFR Survey savings are still smaller, because different pre-IFR base years (2015 vs 2013) are applied. However, the differences between MS are recognizable in both the estimates from the IFR Survey and the Impact Assessment. The Impact Assessment also expected the largest savings (about EUR 1,200 million) to occur in the United Kingdom.<sup>117</sup>

<sup>117</sup> European Commission SWD(2013) 288 final, "IMPACT ASSESSMENT Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions".

### **4.1.3 Interchange fees for domestic and cross-border transactions**

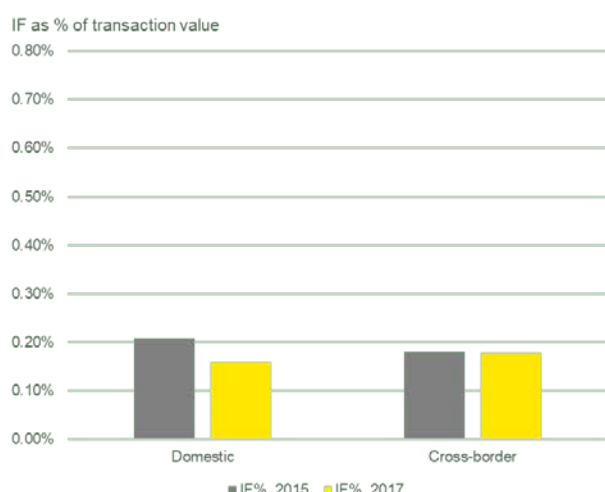
We now calculate and show average interchange fees in 2015 and in 2017 for all EU-28 for capped consumer debit and credit card transactions, but separately for domestic transactions and for cross-border transactions within EEA.<sup>118</sup> The interchange fee caps do not distinguish between domestic and cross-border transactions, which means that domestic and cross-border transactions of the same card type should have similar interchange fee levels from 9 December 2015 onwards. Note, however that the IFR allows MS to adopt special provisions for interchange fee caps for domestic transactions that do not apply to cross-border transactions, see section 6.4.

Data from international schemes show that interchange fees for domestic transactions were larger than for cross-border transactions in 2015, in particular for credit card transactions, see Figure 38. It follows that the reductions in interchange fees are mostly driven by fee changes for domestic transactions rather than by fee changes for cross-border transactions.

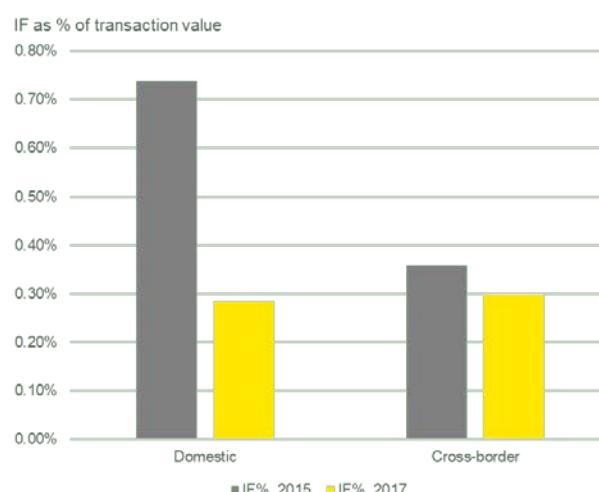
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<sup>118</sup> One important caveat is that the IFR provides two different definitions of cross-border transactions. In the instructions of the IFR Survey, a cross-border payment transaction was defined as a card-based payment transaction where the issuer and acquirer are located in different MS. However, due to the structure of reporting systems, several respondents could only provide data in line with a definition where the acquirer and merchant point-of-sale are located in different MS. This is in line with the definition in the IFR Survey of a cross-border acquired payment transaction. In practice, this means that there are small differences in how respondents have defined domestic and cross-border transactions. This caveat applies to all data from the IFR Survey on cross-border transactions.

## Debit card transactions



## Credit card transactions



Note: The figures are based on data from Visa and MasterCard. The bars in the figure represent weighted average interchange fees. Total transaction values corresponding to the interchange fees of each respondent are used as weights.

Source: IFR Survey.

Figure 38 Interchange fees for domestic and cross-border transactions, 2015-2017

We test formally whether the changes from 2015 to 2017 in the interchange fees for domestic and cross-border transactions within the EEA are statistically significant<sup>119</sup>. The test result confirms the observations in Figure 38, see Table 12. The decline in interchange fee is larger for domestic transactions than for cross-border transactions, most notably for credit cards.<sup>120</sup> The changes in interchange fees for domestic debit and credit are the only changes that are statistically significant at the required level.

<sup>119</sup> Results are statistically significant when it is unlikely that the observed effects have occurred by chance. The level of significance is the probability of this happening. I.e. when results are statistically significant at the 95% level, this means that there is a 5% probability that the results happened by chance.

<sup>120</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data on the latter is provided by issuers, acquirers and merchants. The results for debit card transactions therefore apply to both domestic and international schemes, while the results for credit and commercial card transactions apply only to international schemes.

	OLS	WLS	QReg
<b>Domestic</b>			
Consumer Debit	-0.154***	-0.044***	-0.095***
	(302; 0.39)	(302; 0.49)	(302; 0.16)
Consumer Credit	-0.357***	-0.300***	-0.361***
	(308; 0.43)	(308; 0.62)	(308; 0.33)
Commercial	0.103	0.018	-0.013
	(286; 0.21)	(284; 0.41)	(286; 0.30)
<b>Cross-border</b>			
Consumer Debit	-0.046*	0.005	-0.013**
	(250; 0.30)	(249; 0.55)	(250; 0.14)
Consumer Credit	0.062	-0.152	-0.001
	(260; 0.30)	(260; 0.68)	(260; 0.12)
Commercial	0.233*	-0.079	0.008
	(240; 0.28)	(238; 0.71)	(240; 0.29)

Note: Two-sided test for change in IF: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average IF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 12: Change in interchange fees for domestic and cross-border transactions, 2015-2017

#### 4.1.4 Interchange fees for domestic and international schemes

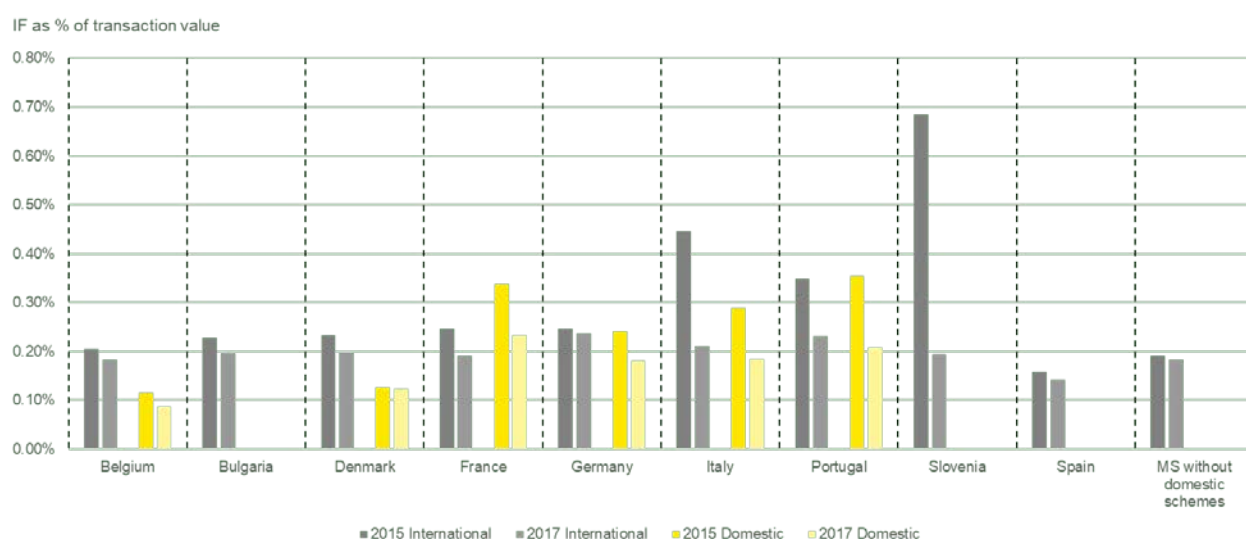
Finally, we calculate and show weighted average interchange fees in 2015 and in 2017, but separately for domestic and international schemes. Nine MS have domestic schemes with own card issuing. These are Belgium, Bulgaria, Denmark, France, Germany, Italy, Portugal, Slovenia, Spain.

However, the IFR Survey could not obtain data on interchange fees for the domestic schemes in Bulgaria, Slovenia and Spain. We report results only for domestic debit card transactions as domestic schemes primarily have debit cards and because domestic debit cards are used for domestic transactions.

Belgium and Denmark stand out as MS where the domestic scheme had interchange fees below the cap of 0.20% already in 2015 and had much lower interchange fees than the international scheme both in 2015 and 2017. Their interchange fees were already below the cap in 2015, but they did not change much in 2017, and they did not increase.

France, Germany, Italy and Portugal are MS where both the domestic and international scheme in 2015 had interchange fees above the cap and higher than the average interchange fee for international schemes in MS without domestic schemes. The latter may have been a consequence of schemes competing to attract issuers. As domestic schemes had interchange fees above the cap in 2015, they have been reduced below the cap in 2017.

In France and Portugal, the reported interchange fees for domestic schemes were still slightly above the cap in 2017. The reason is likely to be low quality data mostly provided indirectly by issuers and acquirers and not directly by the schemes.



Note: Nine MS have domestic schemes. There is available data on interchange fees for six domestic schemes provided either by the domestic schemes themselves or by issuers and acquirers for six of the MS. These MS are Belgium, Denmark, France, Germany, Italy, Portugal. There are also domestic schemes in Bulgaria, Slovenia, and Spain but data is missing for them. The right-most bars in the figure show interchange fees for international schemes in the remaining 19 MS. The bars in the figure represent weighted average interchange fees. Total transaction values corresponding to the interchange fees of each respondent are used as weights.

Source: IFR Survey.

Figure 39: Interchange fees for domestic debit card transactions with domestic and international schemes in MS with domestic schemes and in all remaining MS, 2015 and 2017



We now test formally whether the interchange fees for domestic debit card transactions from domestic and international card schemes in the six MS in which the IFR Survey provides data on interchange fees for domestic schemes have declined in a statistically significant manner. In line with the visual conclusions, we find that interchange fees for both types of schemes have experienced statistically significant reductions. For all estimation methods, the interchange fee declines by around 0.09-0.100 percentage points for domestic and international schemes, see Table 13.

	OLS	WLS	QReg
International	-0.096*** (172; 0.17)	-0.090** (172; 0.42)	-0.103*** (172; 0.12)
Domestic	-0.094*** (50; 0.81)	-0.093*** (50; 0.92)	-0.098*** (50; 0.55)

Note: The analysis includes only the six MS which have domestic schemes and for which schemes, issuers or acquirers reported data on interchange fees for domestic schemes. They are the MS with yellow bars in Figure 39, namely: Belgium, Denmark, France, Germany, Italy, and Portugal.

Two-sided test for change in average IF after 2015: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average IF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 13: Change in interchange fees for domestic debit transactions with domestic and international schemes in MS with data on domestic schemes, 2015-2017

## 4.2 Schemes: scheme fees

The purpose of this section is to document empirically the development of scheme fees from 2015 until 2017. We document the fee development based on data from the IFR survey covering 2015-2017 and supplement them with data from public sources. We also assess the extent to which changes in scheme fees can be linked to the interchange fee caps and the resulting changes in interchange fees.

The interchange fee cap reduces the flexibility of card schemes to define the level of the interchange fee paid by acquirers to issuers and thereby reduces the possibility for card schemes to incentivise issuers by means of high interchange fees to promote their card brand rather than the card brands of competing schemes. Card schemes could in theory respond by reducing scheme fees paid by issuers (issuer scheme fees or ISF) and increasing scheme fees paid by acquirers (acquirer scheme fees or ASF). This could shift part of the revenue loss of issuers to acquirers and thereby neutralise the effect of the interchange fee cap. However, the IFR explicitly prohibits any circumvention of the interchange fee caps.<sup>121</sup> Card schemes could also alter the interchange fees and the scheme fees for commercial card transactions.

We analyse the development in issuer and acquirer scheme fees, determined by card schemes, at EU or MS levels. The scheme fees are broken down by card type (debit, credit and commercial), by transaction type (domestic and cross-border intra EEA transactions), and scheme type (domestic and international schemes). In all cases, we report scheme fees per MS as the weighted average scheme fee per transaction value. The weight corresponds to the transaction value for each respondent. In addition, we assess whether there is a causal relationship from the changes in interchange fees to the observed changes in scheme fees.

We find that *issuer scheme fees* paid by issuers to schemes for consumer debit and credit card transactions have increased from 2015 to 2017 in a statistically significant manner. In total, the annual increase in issuer scheme fee payments in EU-28 is around EUR 270 million on an annual basis. Scheme fees have in particular increased for cross-border rather than for domestic transactions, but less than 20% of the total transaction value in the sample are cross-border transactions. Domestic schemes mostly continue to charge low and stable issuer scheme fees compared to international schemes. There is no evidence of a causal relationship between the change in interchange fee payment and the change in issuer scheme fee. There has been no statistically significant increase in issuer scheme fee for commercial card transactions.

We also find that *acquirer scheme fees* paid by acquirers to schemes for consumer credit card transactions and to a certain degree also for debit card transactions have increased from 2015 to 2017 in a statistically significant manner. The total annual increase in acquirer's scheme fee payments in EU-28 is in the range of EUR 280 million on an annual basis. Data cannot tell whether the increase is caused by increasing scheme fees for domestic or cross-border transactions, as data for acquirers has low quality. Domestic schemes mostly continue to charge low and stable issuer scheme fees compared to international schemes. There is no evidence of a causal relationship between the change in interchange fee payment and the change in issuer scheme fee. There has been no statistically significant increase in acquirer scheme fee paid for commercial card transactions.

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<sup>121</sup> Article 5 of the IFR reads: "For the purposes of the application of the caps referred to in Articles 3 and 4, any agreed remuneration, including net compensation, with an equivalent object or effect of the interchange fee, received by an issuer from the payment card scheme, acquirer or any other intermediary in relation to payment transactions or related activities shall be treated as part of the interchange fee."

In the remainder of this chapter, we first explain the concepts of *gross* and *net scheme fees*. Second, we focus on *issuer's gross scheme fees*, and finally on *acquirer's gross scheme fees*. For each scheme fee, we calculate the fee per MS and report its level pre-IFR in 2015 and post-IFR in 2017. We report scheme fees per card type, per transaction type and per scheme type. We test whether there over the period has been a statistically significant change in the scheme fees and whether the change has been causally related to changes in payments of interchange fees.

### 4.2.1 Gross and net scheme fees

The analysis of scheme fees is based on data from the IFR Survey reported by schemes, issuers and acquirers. The IFR Survey provides information about scheme fees with three components: i) variable scheme fees (or transaction-based), ii) fixed scheme fees (or non-transaction-based), and iii) rebates and benefits provided by schemes to issuers and acquirers.

We define the gross scheme fee as the sum of variable and fixed scheme fee divided by the total value of transactions. We define the *net scheme fee* as the sum of variable and fixed scheme fees *minus* the value of rebates and benefits, again divided by the total value of transactions.<sup>122</sup>

Data from the IFR Survey cannot always distinguish between rebates and benefits provided to issuers and acquirers which means that any analysis of net scheme fees needs to be done on an aggregated basis. In addition, information from schemes indicates that the use of rebates and discounts by schemes is highly discretionary and differs significantly between individual issuers and acquirers. It is possible that most of the discounts and rebates is provided to large international issuers and acquirers with bargaining power. It may also differ between international and domestic schemes. There is also limited information about the form of these rebates and discounts and the extent to which they have actually been paid out. All this means that the net scheme fee that can be calculated based on data from the IFR Survey on a disaggregated basis may not be representative and may be very different from the actual net scheme fee paid by most issuers and acquirers. Instead, the gross scheme fee, even if it does not account for rebates and benefits, can be a more credible approximation of the actual scheme fee paid by the median issuer or acquirer.

The total gross scheme fees paid by issuers and acquirers for transactions within EEA, reported by schemes in the IFR Survey, increased by 40% between 2015 and 2017, see Figure 40.<sup>123</sup> At the same time, the total value of transactions corresponding to the total gross scheme fees grew by less than 3%, which implies that gross scheme fees as a share of transaction value increased substantially. The variable scheme fee is the most significant component and its share has been relatively stable, only increasing slightly. The share of rebates and benefits declined from 48% of total gross scheme fees in 2015 to 38% in 2017 as the absolute value of scheme fees increased. Hence, the absolute value of rebates and benefits stayed relatively constant, while the gross scheme fees increased, leading to a similar increase in net scheme fees between 2015 and 2017. Data from the IFR Survey (although with limited data provided by domestic schemes) show that domestic schemes only in a single case<sup>124</sup> provide rebates or benefits to issuers and

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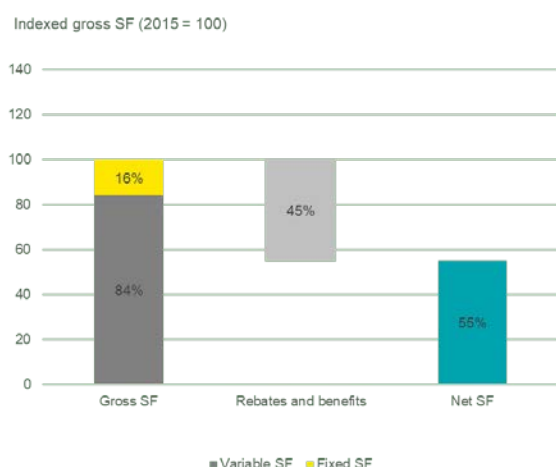
<sup>122</sup> See Annex 4 for an elaborate description of the calculation of scheme fees.

<sup>123</sup> Note that these values represent the scheme fees for a (large) portion of all transactions, but not all transactions on the market.

<sup>124</sup> The domestic scheme in Belgium reporting for the Netherlands.

acquirers. The rebates and benefits shown in Figure 40 are therefore almost exclusively provided by international schemes.

## 2015



## 2017



Note: The figures show gross and net total (issuer and acquirer) scheme fees. The issuer and acquirer sides have been combined because not all schemes could provide monetary values of rebates and benefits split on the two sides. The figures are based on data from Visa and MasterCard as well as data from three domestic schemes providing data for five MS. The MS are: Belgium, France, Luxembourg, Netherlands, Portugal. The domestic scheme in Belgium provided data for Belgium, Luxemburg and Netherlands.

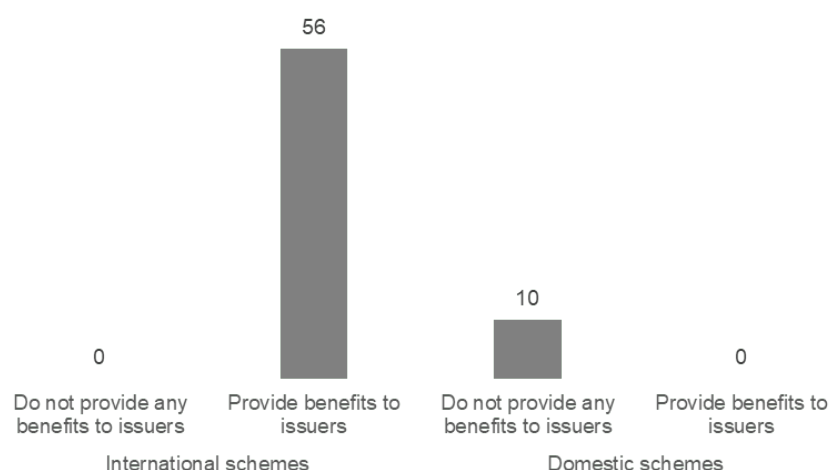
Source: IFR Survey.

Figure 40: Composition of total (issuer and acquirer) gross and net scheme fees, 2015 and 2017

Data from the IFR Survey can provide qualitative information about the structure of rebates and benefits, separately for the issuer and acquirer side. However, data does not allow for quantification of the monetary value of these benefits. The following figures show aggregate information about MS in which schemes provided rebates and benefits and about the type of rebates and benefits. Detailed per scheme and per MS data is available in the confidential version of the study.

For the issuing side, all MS responses of international schemes indicate that they provide issuers with rebates or benefits. An MS response is defined as a response by a scheme for one MS, which means that a single scheme can generate 28 MS responses, see Figure 41. The 10 MS responses from domestic schemes indicate that none of them provide rebates or benefits to issuers.

Number of MS responses from schemes



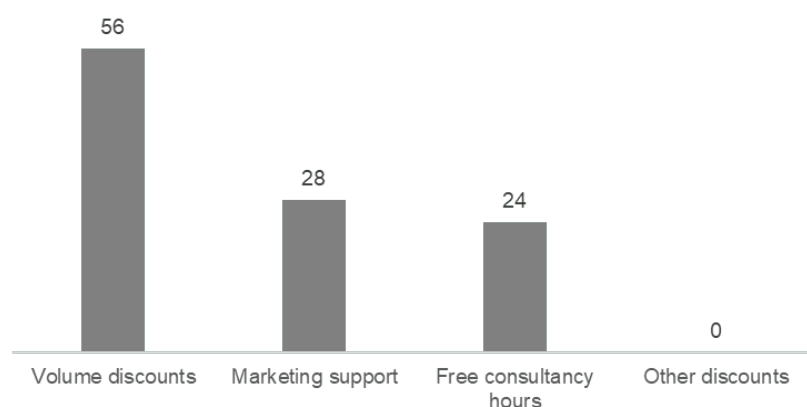
Note: The figures are based on data from Visa and MasterCard as well as data from six domestic schemes providing data for ten MS. The MS are: Belgium, Bulgaria, France, Germany, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom. The domestic scheme in Belgium provided data for Belgium, Bulgaria, Luxembourg, Netherlands and the United Kingdom. The total number of MS responses from international schemes were 56 and from domestic schemes 10.

Source: IFR Survey.

Figure 41 Number of schemes at the MS level that provide rebates and benefits to issuers, 2015-2017

The IFR Survey also provide information about the type of rebates or benefits to issuers provided by the international schemes. All international schemes provided volume discounts, half of them (28) provided marketing support, and fewer than half (24) provided free consultancy hours. For a single issuer, the total value of these rebates and benefits can be significant in relation to the gross scheme fees, see Figure 40.

Number of MS responses from schemes



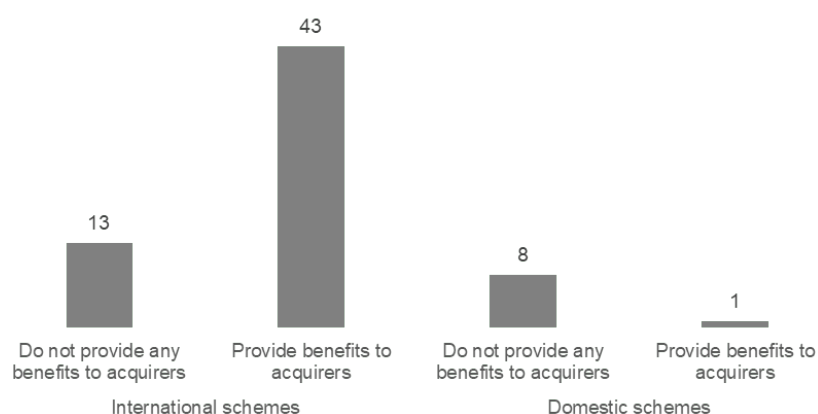
Note: The figures are based on data from Visa and MasterCard since no domestic scheme reported that they provide benefits to issuers. The total number of MS responses from international schemes were 56. Multiple answers were possible, which means that all 56 MS responses indicated that they provided volume discounts and half of them (28) indicated that they provided marketing support.

Source: IFR Survey.

Figure 42 Number of international schemes at the MS level that provide rebates and benefits of different types to issuers, 2015-2017

For the acquiring side, 43 of the 56 MS responses of international schemes indicated that they provide rebates and benefits to acquirers, see Figure 43. Only one (the Belgian domestic scheme reporting for the Netherlands) out of eight MS responses of domestic schemes indicate that it provides benefits to acquirers.

Number of MS responses from schemes



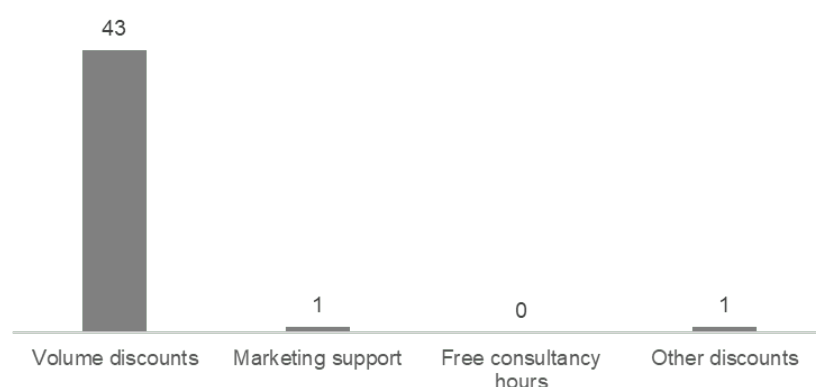
Note: The figures are based on data from Visa and MasterCard as well as data from five domestic schemes providing data for nine MS. The MS are: Belgium, Bulgaria, France, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom. The domestic scheme in Belgium provided data for Belgium, Bulgaria, Luxembourg, Netherlands and the United Kingdom. The total number of MS responses from international schemes were 56 and from domestic schemes 9.

Source: IFR Survey.

Figure 43 Number of schemes at the MS level that provide rebates and benefits to acquirers, 2015-2017

All the MS responses of international schemes providing benefits to acquirers state that they provided volume discounts. Only one MS response of international schemes indicates that it provides marketing support in addition. One domestic scheme indicates that it provides other discounts, without specifying in more detail. Several types of rebates and benefits seem not to be accessible for acquirers, likely because issuers have a role in promoting card issuing and usage. The larger amount of cases where benefits are provided to issuers than to acquirers, as well as the multitude types of rebates and benefits could be interpreted as evidence that the major share of rebates and discounts in practice goes to issuers.

Number of MS responses from schemes



Note: The figures are based on data from Visa and MasterCard and one domestic scheme that provide benefits to acquirers. The total number of MS responses from international schemes were 43. Multiple answers were possible, which means that all 43 MS responses indicated that they provided volume discounts and one of them indicated that in addition it provided marketing support. The domestic scheme indicated that it provides other discounts.

Source: IFR Survey.

Figure 44 Number of schemes at the MS level that provide rebates and benefits of different types to acquirers, 2015-2017

## 4.2.2 Issuer scheme fees

In this section, we analyse issuer gross scheme fees. The analysis is based on data from the IFR Survey.

### Issuer scheme fees for debit and credit card transactions

We calculate the weighted average issuer gross scheme fees in 2015 and in 2017 for consumer debit and credit cards per MS and for EU-28 based on information from the IFR Survey. There has been limited data provided directly by domestic schemes, but issuers and acquirers have provided data on transactions on cards issued with domestic schemes.

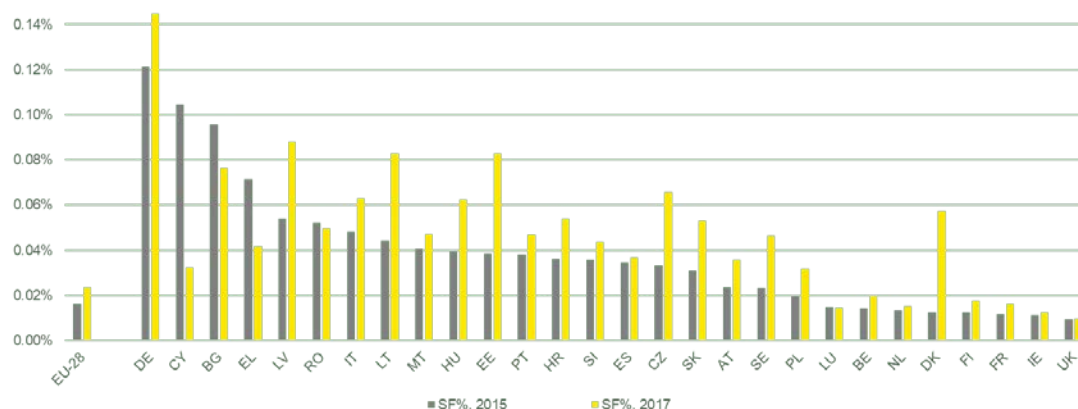
For debit transactions, data from schemes show that the average EU-28 issuer gross scheme fee for international schemes<sup>125</sup> for debit card transactions increased from around 0.016% in 2015 to around 0.023% in 2017, see Figure 35. The issuer scheme fees increased in most MS, although to different degrees. The gross scheme fee differs significantly between MS. The largest issuer scheme fee for international schemes in a MS can be several times larger than the lowest. For example, in 2017 the issuer scheme fee was around 0.145% in Germany, only around 0.010% in the United Kingdom.

<sup>125</sup> The data for Belgium contains data from the domestic scheme in Belgium.

For credit card transactions, similar data shows that the average EU-28 issuer scheme fee for international schemes increased from around 0.025% in 2015 to around 0.042% in 2017, more in both absolute and relative terms than for debit card transactions. All MS, but Latvia, saw increases in the scheme fee. The fee spread across MS is smaller for credit card transactions than for debit card transactions.

## Debit card transactions

SF as % of transaction value



## Credit card transactions

SF as % of transaction value



Note: Data contains scheme fees excluding processing fees. The figures are based on data from Visa and MasterCard as well as data on scheme fees for debit card transactions from the domestic scheme in Belgium, which was the only domestic scheme providing these data. The bars in the figure represent weighted average scheme fees. Total transaction values corresponding to the scheme fees of each respondent are used as weights.

Source: IFR Survey.

Figure 45 Issuer gross scheme fees for debit and credit card transactions per MS, 2015 and 2017

We have data on issuer scheme fees for transactions with cards issued under three-party schemes when they are subject to the interchange fee cap. However, the data reported by issuers is not of such quality that we can draw any conclusions on the development of these issuer scheme fees.



Next, we test whether the changes in issuer gross scheme fees from 2015 to 2017 are statistically significant. The statistical model has the same setup as the one used for assessing changes in interchange fees. The parameter  $\mu$  measures the change in gross issuer scheme fees between 2015 and 2017:<sup>126</sup>

$$ISF_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

We find that the increase in issuer gross scheme fees<sup>127</sup> from 2015 to 2017 is statistically significant for both consumer debit and credit card transactions. The gross scheme fees increased on average by 0.008 percentage points for debit card transactions and by 0.014 percentage points for credit card transactions, see the preferred WLS estimation method in Table 14. The result implies that issuers on average paid EUR cents 0.8 (EUR cents 1.4) more to card schemes in 2017 than in 2015 for a debit (credit) transaction with a value of EUR 100. We find some statistical evidence that there can also be an increase in issuer gross scheme fee for commercial card transactions, but the statistical evidence is weaker with no statistical significance for the preferred WLS method.

	OLS	WLS	QReg
Consumer Debit	-0.002 (154; 0.32)	0.008*** (154; 0.46)	0.007 (154; 0.16)
Consumer Credit	0.015*** (152; 0.58)	0.014*** (152; 0.52)	0.007 (152; 0.33)
Commercial	0.013** (142; 0.60)	0.004 (142; 0.62)	0.013*** (142; 0.38)

Note: Data from schemes contain scheme fees excluding processing fees while data from some issuers include processing fees and data from some issuers exclude processing fees. While this is an inconsistency in the data, the inconsistency has less impact on changes in values than on levels.

Two-sided test for change in SF: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 14: Change in issuer gross scheme fees per card type, 2015-2017

<sup>126</sup> The issuer scheme fee variable,  $ISF_{itc}^{CT}$ , is defined as the issuer scheme fee in EUR for a respondent i in MS c in a given year t for a given card type CT divided by the value in EUR of transactions for the same respondent, MS, year and card type.  $D_{itc}^{17}$  is a dummy that is one for the year 2017 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the respondent's type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions).

<sup>127</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data on the latter is provided by issuers. The results for debit card transactions therefore apply to both domestic and international schemes, while the results for credit and commercial card transactions apply only to international schemes.

Using the econometric estimates of the changes in issuer scheme fees for consumer card transactions and data on total transaction value in the EU from ECB, we estimate the annual increase in issuer scheme fees to be around EUR 270 million (rounded) for consumer debit and credit card transactions, see Table 15.

	Estimated annual change (EUR million)	Estimated change (percentage points)	Transaction value 2015 (EUR million)
Consumer debit cards	169	0.008%	2,113,455
Consumer credit cards	103	0.014%	737,297
<b>Total consumer cards</b>	<b>272</b>	<b>-</b>	<b>2,850,752</b>

Note: The estimated annual change in EUR million is calculated by multiplying the estimated changes in percentage points to the total transaction values in the EU in 2015 reported by ECB.

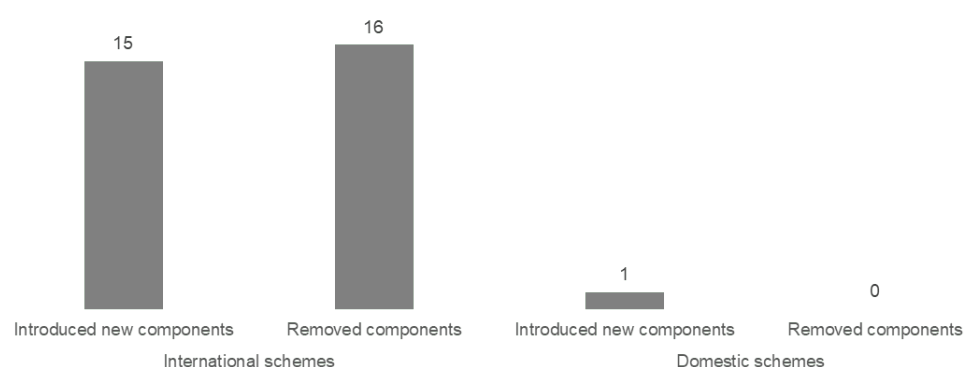
Source: IFR Survey, ECB.

Table 15: EUR change in issuer gross scheme fees for consumer card transactions at EU level

From the IFR Survey, we have information about the extent to which the increase in gross scheme fees has been associated with the introduction of new price components. Of the total 56 MS responses<sup>128</sup> of international schemes, 15 indicate that they introduced new components of the issuer scheme fees since December 2015, and 16 indicate that they removed components. Only one of the 10 MS responses of domestic schemes indicate that it introduced new issuer scheme fee components, and none indicated that they removed components, see Figure 46. Information on the responses of each scheme in each MS can be found in the confidential version of the study.

<sup>128</sup> Every MS response from a scheme is counted, which means that a scheme that has provided data for two MS provide two responses.

Number of MS responses from schemes



Note: The figures are based on data from Visa and MasterCard as well as data from six domestic schemes providing data for ten MS. The MS are: Belgium, Bulgaria, France, Germany, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom. The domestic scheme in Belgium provided data for Belgium, Bulgaria, Luxembourg, Netherlands and the United Kingdom. Each MS-response from a scheme counts as one single response.

Source: IFR Survey.

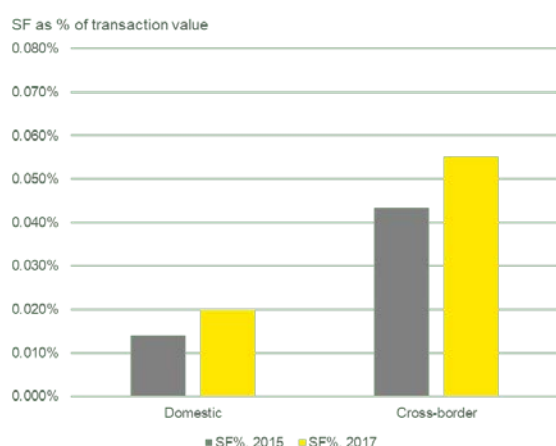
Figure 46: Number of schemes at the MS level that have introduced or removed components of issuer gross scheme fees since December 2015

### Issuer gross scheme fees for domestic and cross-border transactions

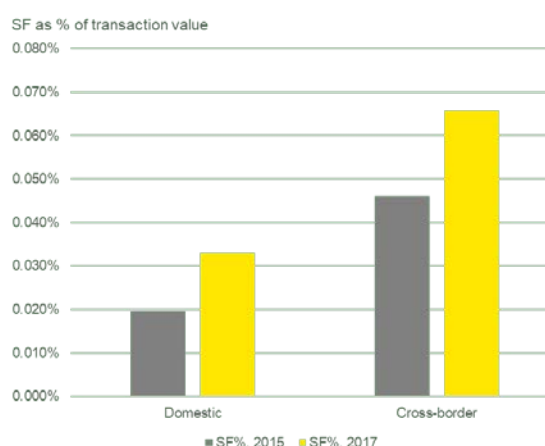
We now calculate and show average issuer gross scheme fees for international schemes per MS in 2015 and in 2017 for all EU-28 for capped consumer debit and credit card transactions, but separately for domestic transactions and for cross-border transactions within EEA. The analysis is done using data from international four-party schemes only.

We find that issuer gross scheme fees in both 2015 and 2017 are significantly larger for cross-border transactions, for which only international schemes are involved, than for domestic transactions, independent of being debit or credit transactions, see Figure 47. We also find that the absolute increase in issuer gross scheme fee is larger for cross-border transactions than for domestic transactions.

## Debit card transactions



## Credit card transactions



Note: The figures are based on data from Visa and MasterCard Data only. Data contain scheme fees excluding processing fees.

Source: IFR Survey.

Figure 47: Issuer gross scheme fees per card type and transaction type, 2015 and 2017

Econometric analysis confirms that the increase in issuer gross scheme fees<sup>129</sup> is driven primarily by increases for cross-border transactions, see Table 16. The estimated increases for both debit and credit cross-border transactions are larger in size and have stronger statistical support for all estimation methods, including the preferred WLS method, than the estimated changes in scheme fees for domestic transactions. For cross-border debit transactions the increase from 2015 to 2017 is 0.014 percentage point, for cross-border credit transactions the increase is 0.022 percentage point. The only change that is statistically significant for domestic transactions is the increase in scheme fees of 0.007 percentage points for domestic debit card transactions. We find some statistical evidence indicating that there might be a similar pattern of scheme fee increases for cross-border transactions on commercial cards.

<sup>129</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data on the latter is provided by issuers. The results for domestic debit card transactions therefore apply to both domestic and international schemes, while the results for cross-border debit and all credit and commercial card transactions apply only to international schemes.

	OLS	WLS	QReg
<b>Domestic</b>			
Consumer Debit	0.004	0.007**	0.008
	(138; 0.24)	(138; 0.31)	(138; 0.10)
Consumer Credit	0.002	0.007	0.002
	(140; 0.50)	(140; 0.26)	(140; 0.23)
Commercial	-0.008	0.001	0.004
	(138; 0.36)	(138; 0.39)	(138; 0.30)
<b>Cross-border</b>			
Consumer Debit	0.010	0.014**	0.010
	(140; 0.50)	(140; 0.48)	(140; 0.25)
Consumer Credit	0.022***	0.022***	0.018**
	(138; 0.51)	(138; 0.63)	(138; 0.26)
Commercial	0.023***	0.008	0.018***
	(138; 0.55)	(138; 0.64)	(138; 0.36)

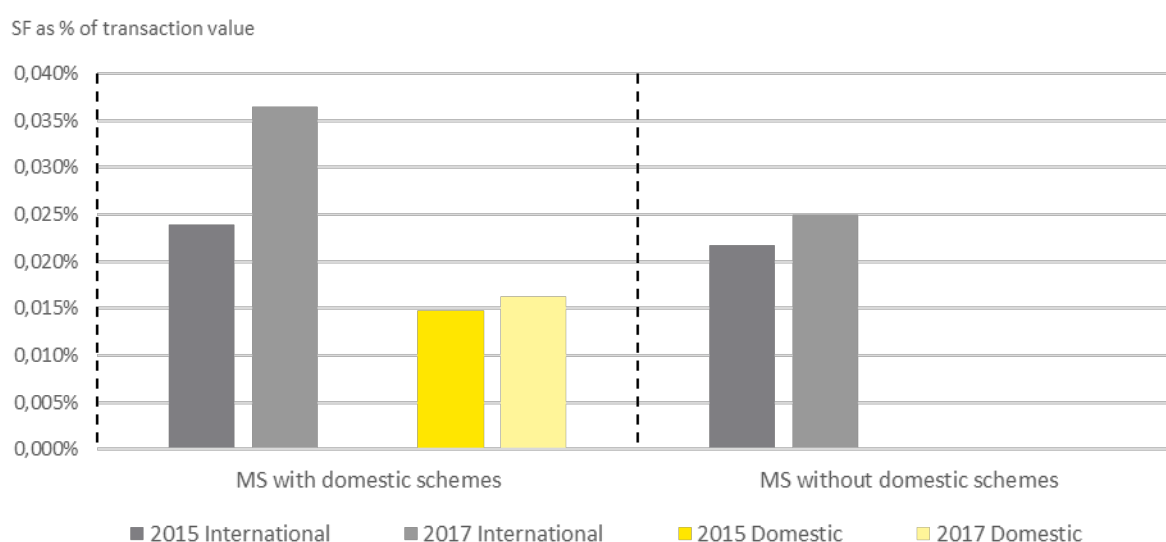
Note: OLS: Ordinary Least Squares, WLS: Weighted Least Squares, Q Reg: Quantile Regression. Two-sided test for change in scheme fees: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average scheme fee as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // MS fixed-effects  
Source: IFR Survey.

Table 16: Change in issuer gross scheme fees per card type and transaction type, 2015-2017

### Issuer gross scheme fees for domestic and international schemes

We calculate and show average issuer gross scheme fee in 2015 and in 2017 for capped consumer debit card transactions, but separately for domestic schemes and for international schemes. We cover five MS where domestic schemes are present and where schemes or issuers have provided data on scheme fees for domestic schemes. These MS are: Belgium, Denmark, France, Germany and Italy. There are also domestic schemes in Bulgaria, Slovenia, Portugal and Spain, but no data is available. We report results only for domestic debit card transactions as domestic schemes primarily issue debit cards and because domestic debit cards are used for domestic transactions.

We find that issuer gross scheme fees for domestic debit transactions paid to domestic schemes were generally lower than scheme fees for international schemes, see Figure 48. However, the level difference may be exaggerated because domestic schemes provide limited rebates and discounts relative to international schemes. Overall, the results indicate that scheme fees increased for international schemes and remained stable for domestic schemes.



Note: Nine MS have domestic schemes: Belgium, Bulgaria, Denmark, France, Germany, Italy, Portugal, Slovenia and Spain. Data on scheme fees for domestic schemes, provided by the domestic schemes themselves as well as by issuers, is available for five MS: Belgium, Denmark, France, Germany and Italy. Note that these MS are not the same as in Figure 39 due to data availability. The bars in the figure represent weighted average scheme fees. Total transaction values corresponding to the scheme fees of each respondent are used as weights. Scheme fees for international schemes in MS with domestic schemes show the weighted average over the nine MS that have domestic schemes. Scheme fees for domestic schemes show the weighted average over the five MS for which domestic schemes' data is available. MS without domestic schemes show the weighted average of scheme fees for international schemes in the remaining 19 MS. Individual figures at MS level are reported in the confidential version.

Source: IFR Survey.

Figure 48: Issuer gross scheme fees for debit card transactions with domestic and international schemes in MS with domestic schemes and in all remaining MS, 2015 and 2017

The conclusion of a stronger increase in issuer gross scheme fees paid to international schemes relative to domestic schemes is confirmed by statistical analysis. We find a statistically significant increase in scheme fees paid to international schemes of 0.014 percentage points for the preferred estimation method, while the similar increase for domestic schemes is small and only weakly statistically significant according to our standard criteria, see Table 17. We cannot rule out that the lack of significance for domestic schemes is due to the limited number (18) of observations.

	OLS	WLS	QReg
International scheme	-0.022 (42; 0.35)	0.014** (42; 0.68)	0.009 (42; 0.28)
Domestic scheme	0.001 (18; 0.17)	0.002* (18; 0.53)	0.001 (18; 0.26)

Note: The analysis includes the five MS which have domestic schemes and for which schemes or issuers reported data on scheme fees for domestic schemes. They are the MS with yellow bars in Figure 48: Belgium, Denmark, France, Germany and Italy.

Two-sided test for in average change in SF after 2015: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 17: Change in issuer gross scheme fees for debit card transactions with domestic and international schemes in MS with data on domestic schemes, 2015-2017

### Effect of the interchange fee caps on issuer scheme fees

Finally, we explore to what extent there is a causal relationship between the interchange fee cap and changes in issuer gross scheme fees<sup>130</sup>. In theory, schemes could fully or partially compensate issuers for their lost interchange revenue by reducing (or limiting increases in) the issuer scheme fees. This would lead to a lower issuer scheme fee revenue that the scheme could recoup by instead increasing acquirer scheme fees.

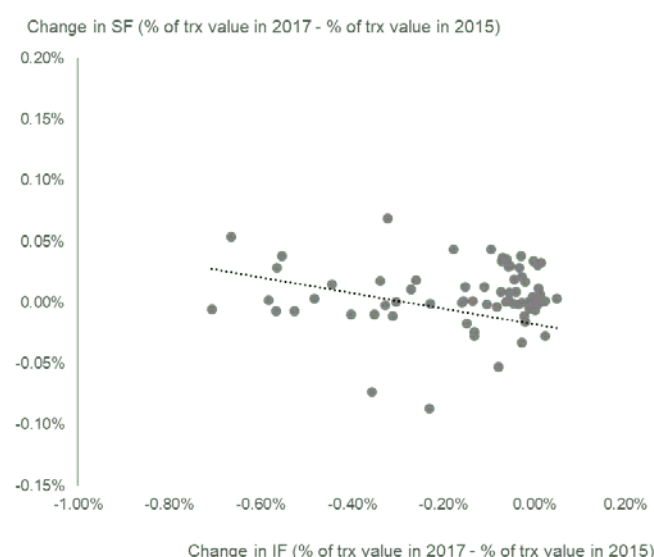
If this is the case, we would expect to find that a large reduction in interchange fees would lead to a smaller increase (or even a reduction) in issuer scheme fees. We capture this potential relationship by analysing how scheme fees differ for respondents with different levels of interchange fee revenue losses from the implementation of the interchange fee caps.

First, we explore visually the relationship between the change in interchange fee revenue on the horizontal axis and the change in issuer scheme fees for the same respondent on the vertical axis, see Figure 49. The scatter plots indicate a correlation, the larger the interchange fee reductions, the larger the increases in issuer scheme fees. It means that issuers with large losses

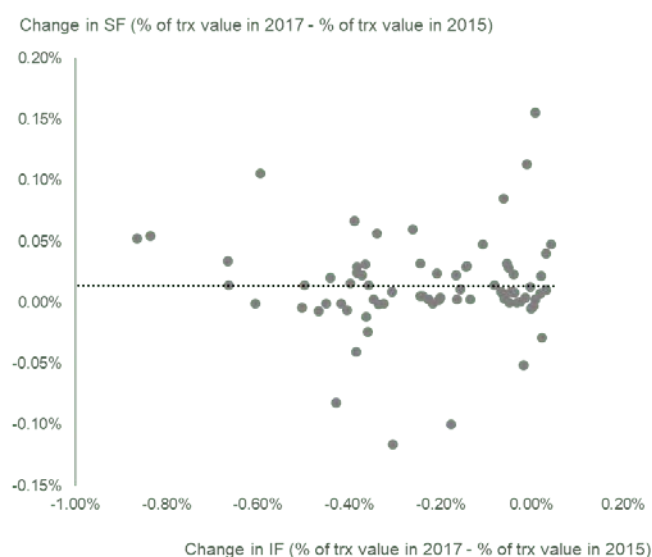
<sup>130</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data on the latter is provided by issuers. The results for debit card transactions therefore apply to both domestic and international schemes although increases in issuer scheme fees seems to have been for international schemes, while the results for credit card transactions apply only to international schemes.

of interchange fee revenue tend to have larger increases in issuer scheme fees than issuers with smaller losses. However, there seems to be no apparent correlation for credit card transactions.

### Consumer debit card transactions



### Consumer credit card transactions



Note: The vertical axis is cut such that one observation with a 1.02 percentage point decrease in the scheme fee for consumer debit card transactions is excluded.

Source: IFR Survey.

Figure 49: Correlation between changes in interchange fees and changes in issuer gross scheme fees per card type, 2015-2017

Second, we explore statistically the potential causal relationship between changes in interchange fee revenue and changes in issuer scheme fees for the same respondents. We used a standard difference-in-difference estimation model that estimates the difference in the development of a variable of interest (change in issuers scheme fee) between two groups of respondents with different levels of the causal variable that we are testing (change in interchange fee revenue). The two groups are called the treated and untreated group.<sup>131</sup> In this case, we aim to assess whether the change in issuer scheme fee is systematically larger in the treated group of respondents with large interchange fee losses than in the untreated group of respondents with small interchange fee losses (or gains).

We estimate a formal statistical model<sup>132</sup> based on data from IFR-survey from schemes and issuers, where the coefficient,  $\delta$ , tells us whether the issuer scheme fee for respondents with

<sup>131</sup> Respondents with interchange fee reductions larger than the EU average were assigned to the treated group and respondents with interchange fee reductions smaller than the EU average to the control group.

<sup>132</sup> The model is a standard differences-in-differences model with a treatment group of respondents that have experienced interchange fee reductions above the EU average.  $D^{17}$  is a dummy variable that takes on the value 1 if the year is 2017 and zero otherwise.  $D^{\text{treated}}$  is a dummy variable for whether the reduction in the interchange fees for the respondent is above the EU average. Fixed effects are represented by respondents and MS and controls by respondent type and size and whether the MS has a domestic scheme.



large interchange fee losses (treated) developed differently than for other respondents (untreated):

$$ISF_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \beta D_{itc}^{treated} + \delta D_{itc}^{treated} D_{itc}^{17} + Fixed\ effects + Controls + \varepsilon_t$$

We find no support for the hypothesized relationship where respondents that report large interchange fee reductions would report larger decreases (or smaller increases) in issuer scheme fees than respondents with small interchange fee losses. In contrast, and in line with the visual correlation analysis, there is a statistically significant relationship for consumer debit transactions, but in the opposite direction compared to what was expected. For the group of respondents that reported large interchange fee reductions (the treated group), the issuer scheme fees increased by 0.013 percentage points more than for the group with small interchange fee reductions (the control group), see Table 18. This means that issuers with the largest loss in interchange fee revenue faced the largest increase in issuer scheme fees. There is no similar statistically significant relationship for consumer credit card transactions.

	OLS	WLS	QReg
Consumer Debit	0.039 (150; 0.33)	0.013*** (150; 0.51)	0.005 (150; 0.17)
Consumer Credit	0.002 (150; 0.57)	0.001 (150; 0.45)	0.013 (150; 0.34)

Note: Two-sided test for a change in the difference between SF for respondents with a change in debit/credit/commercial IF above the EU average with respondents with a change in debit/credit/commercial IF below the EU average: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 18: Causal effect of interchange fee changes on issuer gross scheme fees (control group: respondents with small interchange fee losses) per card type, 2015-2017

We set up an alternative difference-in-difference estimation model where we again estimate the difference in the development of the variable of interest (change in issuers scheme fee) between two groups of respondents with different characteristics. This is to assess the robustness of the previous results. In this case, the groups are defined based on whether the transactions have interchange fees that are capped (consumer card transactions – the treated group) or not (commercial card transactions – the control group). It means that we aim to assess whether the change in issuer scheme fee is systematically larger in the treated group of capped transactions than in the untreated group of non-capped transactions.

We now find instead a statistically significant relationship for credit card transactions, but not for debit card transactions. For consumer credit card transactions, there is statistical support for a conclusion that issuers scheme fee increased by 0.009 percentage points more than for commercial cards transactions, see Table 17.

	OLS	WLS	QReg
Consumer Debit	-0.018 (290; 0.27)	0.002 (290; 0.48)	-0.007 (292; 0.24)
Consumer Credit	0.002 (290; 0.52)	0.009*** (290; 0.52)	-0.006 (292; 0.34)

Note: Two-sided test for a change in the difference between SF for debit/credit versus commercial cards: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects

Source: IFR Survey.

Table 19: Causal effect of interchange fee changes on issuer gross scheme fees (control group: commercial cards) per card type, 2015-2017

Overall, we conclude that we do not find that respondents who report large interchange fee reductions also report decreases in issuer scheme fees, which could have been interpreted as a compensatory adjustment of scheme fees. Instead, we find limited and mixed results for a causal relationship where respondents with large interchange fee reductions also report larger increases in issuer scheme fees. Hence, there is limited but not systematic evidence suggesting that issuers who lost more interchange fee revenue also faced larger increases in issuer scheme fees.

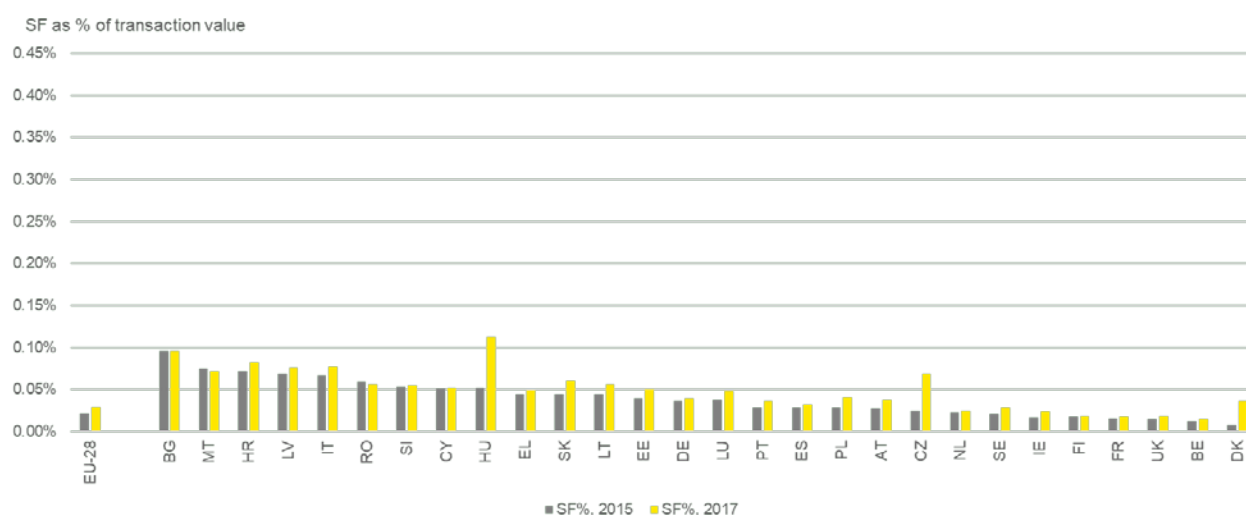
### 4.2.3 Acquirer scheme fees

In this section, we analyse acquirer gross scheme fees. The analysis is based on data from the IFR Survey. However, not all schemes could distinguish between commercial card, consumer debit card and consumer credit card transactions in their data of the acquiring side, for example due to limited card type identification at POS. This means that the analysis must rely mostly on data from acquirers, although these data are relatively scarce and heterogeneous. The structure and methodology of this section on acquirer scheme fees mirrors, to the extent possible, the structure and methodology of section 4.2.2 on issuer scheme fees.

### Acquirer scheme fees for debit and credit card transactions

We calculate weighted average acquirer gross scheme fees in 2015 and in 2017 for consumer debit and credit cards per MS and for EU-28 based on information from the IFR Survey. First, we report acquirer scheme fees aggregated for all consumer and commercial cards based on data reported by schemes, see Figure 50. These numbers are more aggregated than normal due to data limitations and do not include domestic schemes. Second, we report acquirer scheme fees separately for consumer debit and credit cards based on data reported by acquirers, see Figure 51. The data from acquirers cover fewer MS and are more heterogeneous than data from schemes. The data from acquirers may also include processing fees because of the way these acquirers reported their scheme fees.

Based on data from schemes, the weighted average acquirer scheme fee (excluding processing fees) for all cards for EU-28 increased from 0.022% in 2015 to 0.030% in 2017, see Figure 50. The increase in average acquirer scheme fee is comparable to the increase in issuer scheme fees. Data contains information about scheme fees for domestic schemes only in Belgium, Luxemburg and the Netherlands, due to limited data reporting by domestic schemes.



Note: Data contain scheme fees excluding processing fees. Data contain scheme fees for all card transactions, i.e. consumer debit, consumer credit and commercial due to data limitations of schemes. The figures are based on data from Visa and MasterCard as well as data on scheme fees for from the domestic scheme in Belgium reporting for Belgium, Luxemburg and the Netherlands. This was the only domestic scheme providing these data. Values on the vertical axis are in % of the transaction value. The bars in the figure represent weighted average scheme fees. Total transaction values corresponding to the scheme fees of each respondent are used as weights.

Source: IFR Survey.

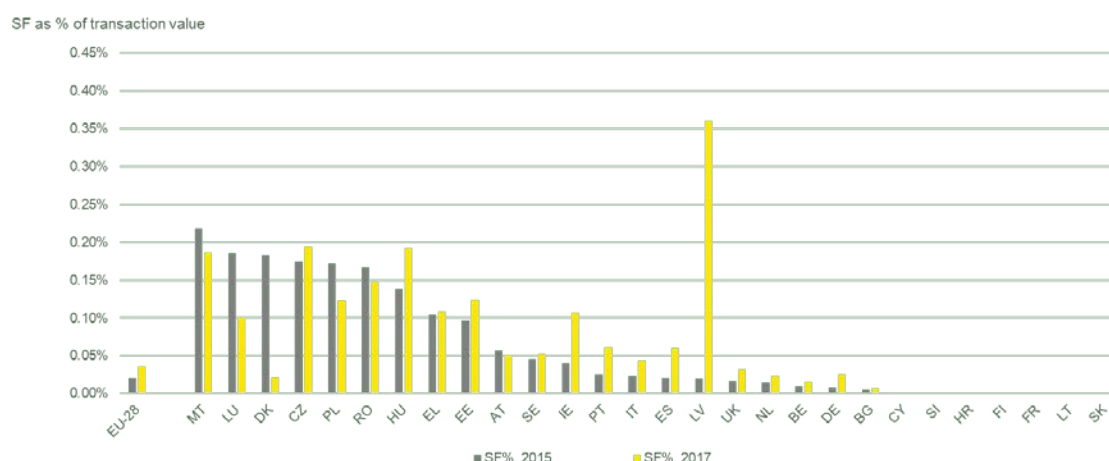
Figure 50: Acquirer gross scheme fees for all card transactions per MS, 2015 and 2017

Based on acquirer data, the weighted average acquirer scheme fees<sup>133</sup> for debit card transactions for EU-28 increased from 0.020% in 2015 to 0.036% in 2017, and for credit card transactions from 0.069% in 2015 to 0.083% in 2017, see Figure 51. Overall, the increases in EU average acquirer scheme fees reported by acquirers are relatively comparable to the increase in EU average acquirer scheme fees reported by scheme. Despite the immediate comparability, results for MS based on acquirer data should be interpreted with caution because several acquirers include processing fees in the reported scheme fees, because there is no information from several MS, and because there is only a single observation for many MS.

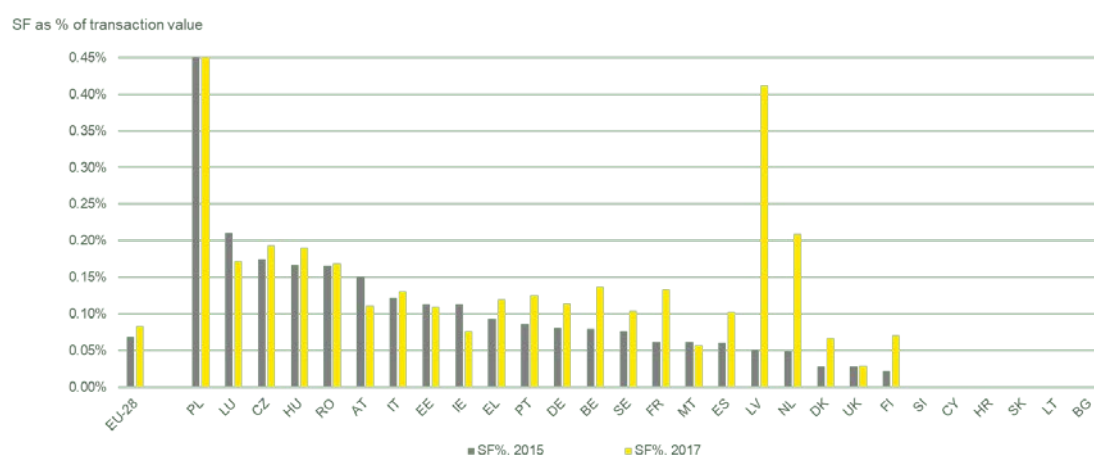
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<sup>133</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data are provided by acquirers. The results for debit card transactions therefore apply to both domestic and international schemes, while the results for credit card transactions apply only to international schemes.

## Debit card transactions



## Credit card transactions



Note: Data contain scheme fees including processing fees for several acquirers. For the following MS there are no data from acquirers. For debit card transactions: Cyprus, Slovenia, Croatia, Finland, France, Latvia and The Slovak Republic. For credit card transactions: Slovenia, Cyprus, Croatia, The Slovak Republic, Latvia, Bulgaria. For many MS, there is one respondent which could lead to large differences between MS or years. The bars in the figure represent weighted average scheme fees. Total transaction values corresponding to the scheme fees of each respondent are used as weights. The y-axis is cut at 0.45%, but the value for credit card transactions in Poland in 2015 was 0.69% and in 2017 0.52%.

Source: IFR Survey.

Figure 51: Acquirer gross scheme fees for debit and credit card transactions per MS, 2015 and 2017

We have data on acquirer scheme fees for transactions with cards issued under three-party schemes when they are subject to the interchange fee cap. However, the data reported by acquirers is not of such quality that we can draw any conclusions on the development of these acquirer scheme fees.

Next, we test whether the changes in the acquirer gross scheme fees from 2015 to 2017 are statistically significant. We make the test separately on scheme data and on acquirer data. The statistical model has the same setup as the one used for assessing changes in interchange fees and in issuer scheme fees. The parameter  $\mu$  measures the change in gross acquirer scheme fees between 2015 and 2017:

$$ASF_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

Based on scheme data, we find that the increase in acquirer gross scheme fee<sup>134</sup> for all types of card transactions from 2015 to 2017 is statistically significant and corresponds to an increase of around 0.009 percentage points, see Table 20. This means that acquirers on average paid EUR cent 0.9 more to card schemes in 2017 than in 2015 for each EUR 100 transaction value. The effect is comparable and statistically significant across all three estimation models.

	OLS	WLS	QReg
All cards	0.012**	0.009***	0.012***
	(244; 0.36)	(244; 0.38)	(244; 0.25)

Note: Two-sided test for change in SF: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects

Source: IFR Survey.

Table 20: Change in acquirer gross scheme fees for all card types (scheme data), 2015-2017

Based on acquirer data, we obtain similar results when we repeat the test per card type. We find that the average increase from 2015 to 2017 in acquirer gross scheme<sup>135</sup> fee for debit card transaction around 0.013 percentage points is statistically significant, see Table 21. In other words, acquirers on average paid EUR cent 1.3 more to card schemes in 2017 than in 2015 for each EUR 100 of debit card transaction value. We find no statistically significant increase in acquirer scheme fees for credit card transactions with the preferred WLS method, but the QReg model indicates the opposite. We tend to believe that better data may lead us to conclude that there would be statistical significance. There is no statistical evidence for a change in acquirer scheme fee for commercial card transactions.

<sup>134</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data are provided by schemes and acquirers. The results for "all cards" transactions apply to both domestic and international schemes.

<sup>135</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data are provided by acquirers. The results for debit card transactions therefore apply to both domestic and international schemes, while the results for credit and commercial card transactions apply only to international schemes.

	OLS	WLS	QReg
Consumer Debit	0.025* (82; 0.47)	0.013*** (82; 0.77)	0.013** (82; 0.42)
Consumer Credit	0.028* (84; 0.58)	0.007 (84; 0.94)	0.021*** (84; 0.39)
Commercial	-0.011 (78; 0.39)	0.015 (78; 0.92)	0.017 (78; 0.26)

Note: Two-sided test for change in SF: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 21: Change in acquirer gross scheme fees per card type (acquirer data), 2015-2017

Using the econometric estimates of the changes in acquirer gross scheme fees for consumer card transactions and data on total transaction value in the EU from ECB, we estimate the annual increase in acquirer gross scheme fees to be around EUR 280 million (rounded) for consumer credit card transactions, see Table 22.

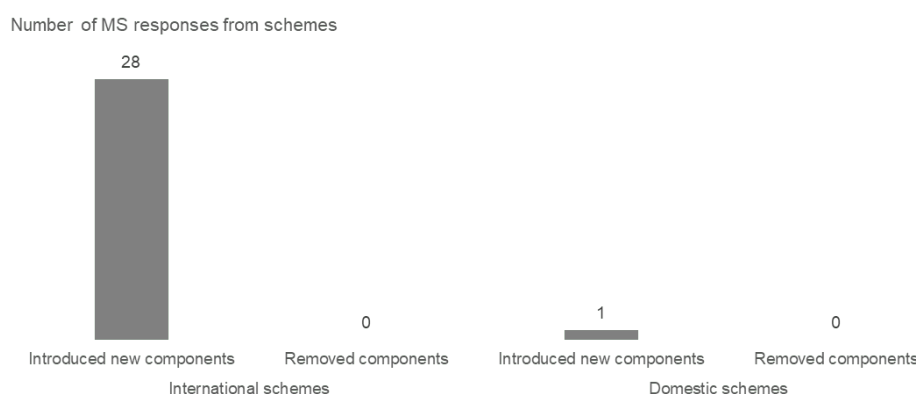
	Estimated annual change (EUR million)	Estimated change (percentage points)	Transaction value 2015 (EUR million)
Consumer debit cards	275	0.013%	2,113,455
Consumer credit cards	-	-	737,297
<b>Total consumer cards</b>	<b>275</b>	<b>-</b>	<b>2,850,752</b>

Note: The estimated annual change in EUR million is calculated by multiplying the estimated changes in percentage points to the total transaction values in the EU in 2015 reported by ECB. The estimated change in acquirer gross scheme fees for consumer credit card transactions is not statistically significant and cannot be tested to be different from zero.

Source: IFR Survey, ECB.

Table 22: EUR change in acquirer scheme fees for consumer card transactions at EU level

From the IFR Survey, we have information about the extent to which the increase in acquirer gross scheme fees has been associated with the introduction of new price components. Of the total 56 MS responses<sup>136</sup> of international schemes, 28 indicate that they introduced new components of the acquirer scheme fees since December 2015, and none indicate that they removed components. Only one of the 10 MS responses of domestic schemes indicate that it introduced new acquirer scheme fee components, and none indicated that they removed components, see Figure 52.<sup>137</sup> Information on the responses of each scheme in each MS can be found in the confidential version of the study. The observation is consistent with further evidence from survey respondents indicating the introduction of new scheme fees also after 2017.



Note: The figure is based on data from Visa and MasterCard as well as data from five domestic schemes providing data for nine MS. The MS are: Belgium, Bulgaria, France, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom. The domestic scheme in Belgium provided data for Belgium, Bulgaria, Luxembourg, Netherlands and the United Kingdom. Each MS-response from a scheme counts as one response.

Source: IFR Survey.

Figure 52: Number of schemes at the MS level that have introduced or removed components of the acquirer gross scheme fees since December 2015

### Acquirer scheme fees for domestic and cross-border transactions

Based solely on acquirer data, we now calculate and show average acquirer gross scheme fees per MS in 2015 and in 2017 for all EU-28 for capped consumer debit and credit card transactions, but separately for domestic transactions and for cross-border transactions within EEA. Cards issued under both domestic and international schemes can be used for domestic transactions, while cards issued under international schemes are used for cross-border transactions. Hence,

<sup>136</sup> Every MS response from a scheme is counted, which means that a scheme that has provided data for two MS provide two responses.

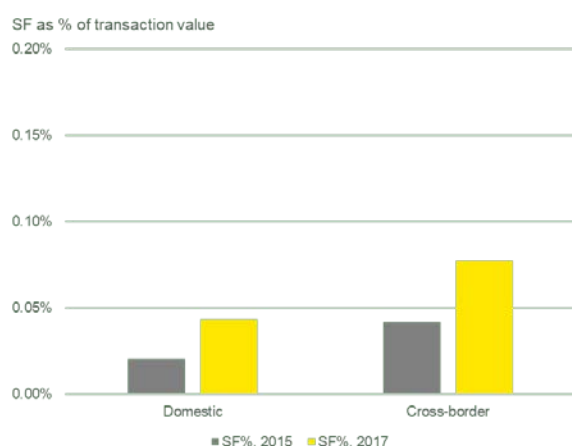
<sup>137</sup> The Dutch Competition Authority has received complaints about new scheme fees that have eliminated savings in the MSC in some merchant segment despite the interchange fee savings. The German Competition Authority has also received anecdotal evidence of new components of scheme fees leading to higher MSC.



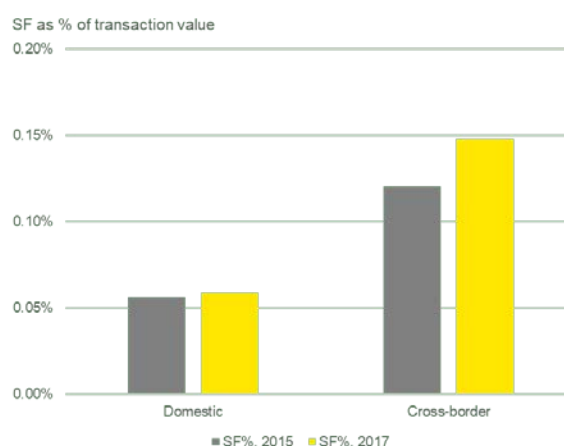
scheme fees for domestic schemes reported by acquirers are only included for domestic transactions.

We find that acquirer gross scheme fees in 2015 are significantly larger for cross-border transactions than for domestic transactions, both for debit and for credit transactions, see Figure 56. We also find that the absolute increase in acquirer gross scheme fee from 2015 to 2017 is significantly larger for cross-border transactions than for domestic transactions. This conclusion is similar to the corresponding conclusion for issuers scheme fee.

### Consumer debit card transactions



### Consumer credit card transactions



Note: Data contain scheme fees including processing fees for several acquirers. Values on the vertical axis are in % of the transaction value. The bars in the figure represent weighted average scheme fees. Total transaction values corresponding to the scheme fees of each respondent are used as weights.

Source: IFR Survey.

Figure 53: Acquirer gross scheme fees per card type and transaction type, 2015-2017

Regression analysis cannot as such confirm the conclusions obtained from visual observation. The results confirm, for most estimation models, increases in all acquirer scheme fees that are larger for cross-border transactions than for domestic transactions, see Table 23. However, results are generally not statistically significant at the required significance level. The lack of statistical significance is likely a result of the limited number of observations and the heterogeneity of data on acquirer scheme fees reported by acquirers. If we had had access to data from schemes on acquirer scheme fees at the required disaggregation level, we may have been able to find statistical support for the reported coefficients.

	OLS	WLS	QReg
<b>Domestic</b>			
Consumer Debit	-0.030	0.022*	0.006
	(76; 0.30)	(76; 0.52)	(76; 0.27)
Consumer Credit	0.017	0.006	0.005
	(66; 0.38)	(66; 0.87)	(66; 0.39)
Commercial	-0.026	0.008	0.005
	(66; 0.19)	(66; 0.86)	(66; 0.23)
<b>Cross-border</b>			
Consumer Debit	0.054	0.050	0.017*
	(42; 0.44)	(42; 0.63)	(42; 0.34)
Consumer Credit	0.004	0.032	0.021***
	(46; 0.78)	(46; 0.86)	(46; 0.53)
Commercial	0.002	0.031	0.014***
	(44; 0.75)	(44; 0.86)	(44; 0.55)

Note: Two-sided test for change in SF: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

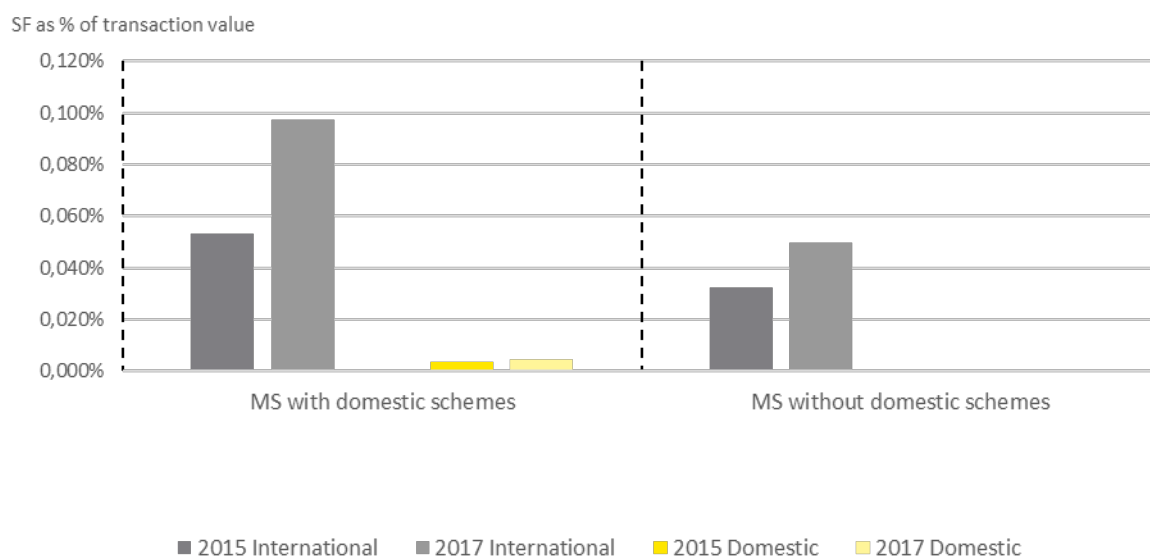
Source: IFR Survey.

Table 23: Change in acquirer gross scheme fees card type and transaction type, 2015-2017

### Acquirer scheme fees for domestic and international schemes

Only four acquirers provided data on acquirer scheme fees for transactions made with cards issued by domestic schemes covering four MS<sup>138</sup>. Based on available data, it is clear that acquirer scheme fees for international schemes were substantially larger and increased substantially more than for the domestic schemes, see Figure 54. This is in line with the findings for issuer scheme fees, see Figure 48. However, the level difference may be exaggerated because domestic schemes provide limited rebates and discounts relative to international schemes.

<sup>138</sup> Belgium, France, Italy and Portugal.



Note: Nine MS have domestic schemes: Belgium, Bulgaria, Denmark, France, Germany, Italy, Portugal, Slovenia and Spain. Data on acquirer scheme fees for domestic schemes, provided by acquirers, is available for four MS: Belgium, France, Italy and Portugal. Note that these MS are not the same as in other similar figures with domestic schemes for reasons of data availability. The bars in the figure represent weighted average scheme fees. Total transaction values corresponding to the scheme fees of each respondent are used as weights. Scheme fees for international schemes in MS with domestic schemes show the weighted average over the nine MS that have domestic schemes. Scheme fees for domestic schemes show the weighted average over the four MS for which domestic schemes' data is available. MS without domestic schemes show the weighted average of scheme fees for international schemes in the remaining 19 MS. Individual figures at MS level are reported in the confidential version.

Source: IFR Survey.

Figure 54: Acquirer gross scheme fees for debit card transactions with domestic and international schemes in MS with domestic schemes and in all remaining MS, 2015 and 2017

The statistical analysis confirms the conclusion from visual observation. Acquirer scheme fees increased more for international scheme (by 0.034 percentage points) than for domestic schemes in the four MS with data. However, the analysis is based on a very limited set of data and these conclusions should not necessarily be extrapolated to other MS with domestic schemes.

	OLS	WLS	QReg
International	0.017* (44; 0.37)	0.034*** (44; 0.29)	0.029* (44; 0.24)
Domestic	0.004 (10; 0.90)	0.002*** (10; 0.94)	0.002 (10; 0.75)

Note: The analysis includes only the four MS with domestic schemes and for which acquirers reported data on scheme fees for domestic schemes. They are the MS with yellow bars in Figure 54: Belgium, France, Italy and Portugal.

Two-sided test for in average change in SF after 2015: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 24: Change in acquirer gross scheme fees for debit card transactions with domestic and international schemes in MS with data on domestic schemes, EU, 2015 and 2017

### Effect of the interchange fee caps on acquirer scheme fees

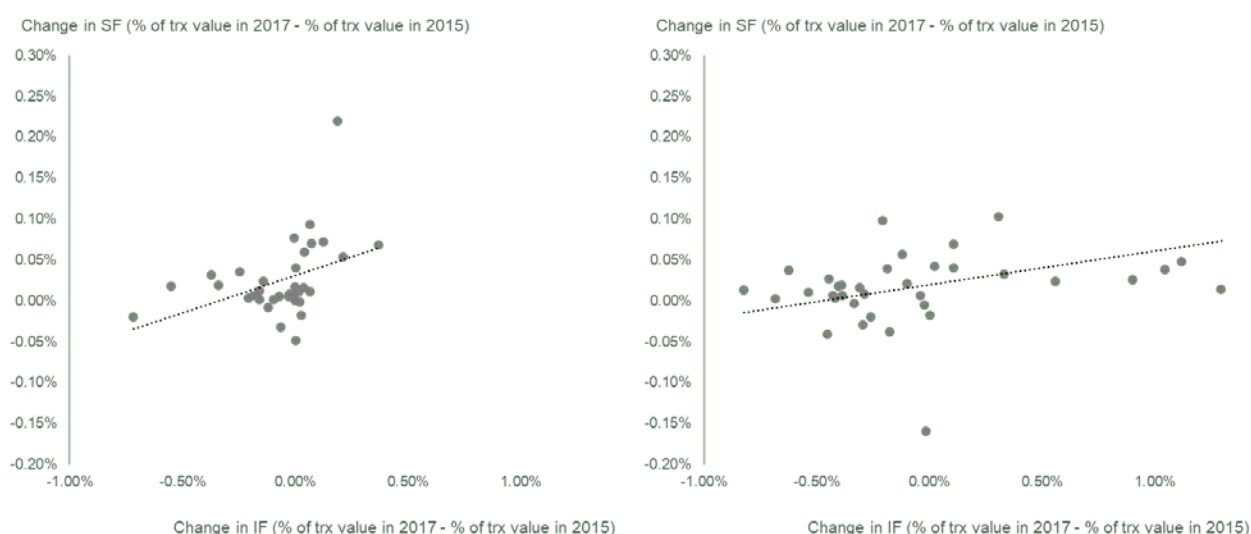
Finally, we explore to what extent there is a causal relationship between the interchange fee cap and changes in acquirer scheme fees<sup>139</sup>. As previously discussed, schemes could in theory compensate issuers for their lost revenue due to lower interchange fees by reducing (or limiting increases in) issuers scheme fees. This would lead to a lower issuer scheme fee revenue that the scheme could recoup by instead increasing acquirer scheme fees. If this is the case, we would expect to find that large acquirer savings in interchange fee payments would lead to a large increase in acquirer scheme fees.

The relationship between the interchange fee cap and issuer scheme fees has already been analysed in section 4.2.2. In this section, we focus on the relationship between the interchange fee cap and acquirer scheme fees. We capture the relationship by analysing how acquirer scheme fees differ for acquirers that are exposed to different level of savings of interchange fee payments from the implementation of the IFR.

First, we explore visually the relationship between the change in interchange fees on the horizontal axis (a large negative number means a large reduction in interchange fees for an issuer and a large saving for the acquirer) and the change in acquirer scheme fees for the same respondent on the vertical axis, see Figure 44.

The scatter plots indicate a correlation between the two variables. In this context, it means that acquirers for which interchange fees change a lot (large savings for the acquirer) have larger decreases or smaller increases in acquirer scheme fees than acquirers with smaller interchange fee reductions changes. This initial visual observation does not provide support for the hypothesis that schemes may be systematically charging acquirers for savings in interchange fees by increasing their scheme fees.

<sup>139</sup> The result is based on data on transactions with cards issued under international as well as domestic schemes. Data on the latter is provided by acquirers. The results for debit card transactions therefore apply to both domestic and international schemes although increases in acquirer scheme fees seems to have been for international schemes, while the results for credit card transactions apply only to international schemes.



Source: IFR Survey.

Figure 55: Correlation between changes in interchange fee payment and changes in acquirer gross scheme fees per card type, 2015-2017

Second, we set up a formal difference-in-difference estimation model<sup>140</sup> to explore statistically the causal relationship between changes in interchange fee revenue and changes in acquirer scheme fees for the same respondents:

$$ASF_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \beta D_{itc}^{treated} + \delta D_{itc}^{treated} D_{itc}^{17} + Fixed\ effects + Controls + \varepsilon_t$$

A statistically significant and positive coefficient,  $\delta$ , would tell us that the acquirer scheme fee tends to be larger for respondent acquirers with large changes in interchange fees than for respondents with small changes in interchange fees. The estimation method is the same as applied for issuer scheme fees, see section 4.2.2.

We find no statistically significant support for the hypothesized relationship, see Table 25. No coefficient is statistically significant for any card type or any estimation method. However, we cannot rule out that our inability to find statistically significant relationships in this case is caused by poor data quantity and quality.

<sup>140</sup> The model is a standard differences-in-differences model with a treatment group of respondents that have experienced the interchange fee reductions above the EU average.  $D_{itc}^{17}$  is a “dummy” variable that takes on the value 1 if the year is 2017 and zero otherwise.  $D_{itc}^{treated}$  is a dummy variable for whether the reduction in the interchange fees for the respondent is above the EU average. Fixed effects are represented by respondents and MS and controls by respondent type and size and whether the MS has a domestic scheme.

	OLS	WLS	QReg
Consumer Debit	-0.024 (72; 0.62)	-0.009 (72; 0.89)	-0.012 (72; 0.51)
Consumer Credit	-0.018 (76; 0.63)	0.005 (76; 0.95)	-0.012 (76; 0.44)

Note: Two-sided test for a change in the difference between SF for respondents with a change in debit/credit/commercial IF above the EU average with respondents with a change in debit/credit/commercial IF below the EU average: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 25: Causal effect of interchange fee changes on acquirer gross scheme fees (control group: small interchange fee changes) per card type, 2015-2017

The conclusion is the same if we apply the alternative difference-in-difference estimation model, assessing whether the change in acquirer scheme fee is systematically larger in the treated group of capped transactions than in the untreated group of non-capped transactions.

Again, we find we find no statistically significant support for the hypothesized relationship, see Table 26. We cannot though rule out that our inability to find statistically significant relationships in this case is caused by poor data quality.

	OLS	WLS	QReg
Consumer Debit	0.024 (153; 0.35)	-0.009 (153; 0.71)	0.005 (154; 0.33)
Consumer Credit	0.028* (159; 0.50)	-0.012 (159; 0.93)	0.003 (160; 0.33)

Note: Two-sided test for a change in the difference between SF for debit/credit versus commercial cards: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 26: Causal effect of interchange fee changes on acquirer gross scheme fees (control group: commercial cards) per card type, 2015-2017

Overall, we conclude that there is no evidence of a causal relationship where acquirers with large reductions in interchange fees face larger increases in acquirer scheme fees. However, the analysis is based on limited data provided only by acquirers since schemes were unable to provide any data on acquirer scheme fees broken down at a card-type level. It means that we cannot rule out that our inability to find statistically significant relationships is caused by poor data quality.

### 4.3 Issuers: cardholder fees, issuing and card usage

The purpose of this section is to document the development of instruments under full or partial control of issuers as banking fees and, card issuing and card usage in the period from 2015 until 2017. We document empirically this development based on data from the IFR-survey covering 2015-2017 and supplement them with data from public sources. We also assess the extent to which changes in these instruments can be causally linked to the implementation of interchange fee caps and the resulting changes in interchange fee payments.

The interchange fee cap would have a direct financial effect on issuers through reduced interchange fees, although the lower interchange fees could also result in increased card usage which could mitigate the revenue loss for issuers. Issuers could choose to compensate for the revenue loss by raising revenue from other services under their control, for example by raising real consumer prices for using banking services or by reducing services, benefits and loyalty programs to save costs.<sup>141</sup> This is possible only to the extent that consumers will not switch to other financial institutions that can offer the same or similar services at lower prices. Issuers could also compensate reductions in interchange fees by promoting the issuing and usage of commercial cards with significantly higher (non-capped) interchange fee. This option is limited by the strict requirements only to use commercial cards for business expenses charged directly to a company account, see Section 6.3. Finally, issuers may also decide to promote to a lesser extent the issuing of capped consumer cards.

We find no systematic evidence, based on the IFR Survey data, that issuers react by increasing cardholder or retail banking fees or by changing card issuing. However, the IFR Survey data is limited in this area. Amending the results of the IFR Survey, with results from national banking surveys indicate that some fees have been adjusted upwards, others adjusted downwards, and that there has been no significant change in the variety or quality of card-related banking services. There is mixed evidence on the development of the number of consumer debit cards. Based on the IFR Survey, the number of debit cards in EU increased, while the econometric estimates find no statistically significant change. There is no statistical evidence of a similar change in the number of consumer credit cards. The share of commercial cards in the total consumer and commercial card portfolio has also remained constant during 2015-2017.

In the remainder of this chapter, we focus on analysing the extent to which real cardholder fees and other retail banking costs have changed, see Section 4.3.1; to which extent the issuing and usage of consumer cards have declined, see Section 4.3.2; and to which extent issuing and usage of commercial cards have increased, see Section 4.3.3, in all cases as a consequence of the implementation of the IFR.

#### 4.3.1 Consumer cardholder and banking fees

In this section, we analyse the development of real banking fees related to consumers payment cards. The analysis is based on data from the IFR-Survey. Issuers have been asked to provide information about consumer banking prices related to card holding and the quality of the services covered by these prices. Only issuers from twelve MS provided information. Due to such data limitations, the results of the analysis should be interpreted with caution.

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<sup>141</sup> Any lost revenue could in principle also be recouped on other retail banking products, for example mortgages or consumer credits.

Consumer payment cards are typically offered to consumers in two different forms, either as a stand-alone payment card or as part of a banking account package. In the former, the issuer typically charges an annual card fee as well as specific transaction fees for using additional services as ATM cash withdrawals or currency exchange. In the latter, the issuer charges an annual fee that covers standard payment transactions, usage of a banking account and to varying extent also other banking services, as internet and mobile banking, mobile and e-payments, free ATM transactions, and bonus or loyalty programmes.

In the IFR Survey data sample, 13% of all payments debit cards and 52% of all credit cards within the EU are sold to consumers as stand-alone cards, the remaining cards are offered as part of a banking package.<sup>142</sup> Both stand-alone cards and cards part of a banking package can be debit or credit cards. Debit cards are mostly issued as part of a standard banking package, while credit cards are issued equally as stand-alone cards or as part of a banking package.<sup>143</sup> We explore the development in retail banking prices separately for stand-alone payment cards and - as far as we can - for cards that are part of a banking package.

*First*, we consider stand-alone payment cards. In the IFR survey, issuers have been asked to provide information about all fees such that we can calculate a total cardholder fee for an average user, including all types of fees.

For stand-alone debit consumer cards, we find that the weighted average total cardholder fee<sup>144</sup> for the 12 MS in the sample remained constant at 0.18% of the transaction value from 2015 until 2017.<sup>145</sup> Cardholder fees increased in half of the MS covered by the analysis and declined in the other half. For stand-alone credit consumer cards, we find a slight increase in the weighted average total cardholder fee from 0.74% in 2015 to 0.81% in 2017. The increase is driven almost entirely by an increase in the total cardholder fee in the United Kingdom that has a very large share of all credit card transactions within EU-28.

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<sup>142</sup> See Figure 112 in Annex 4.

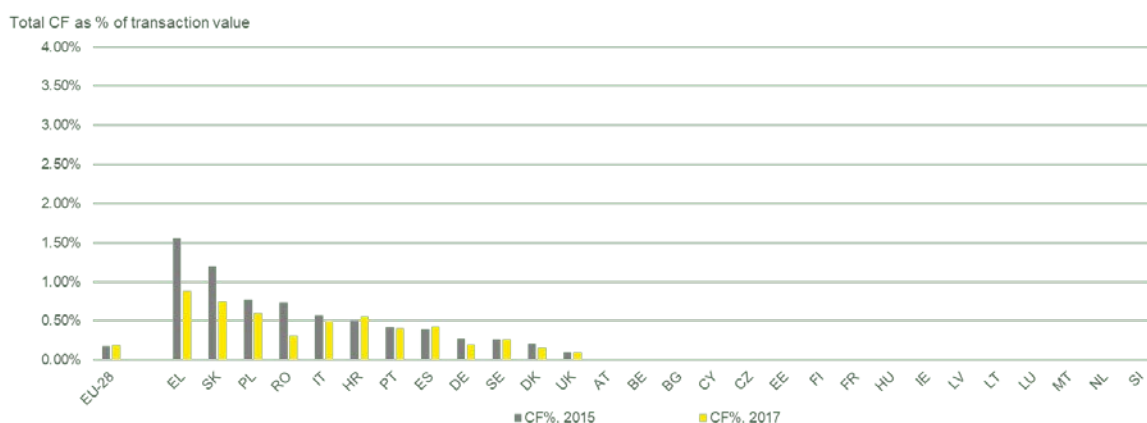
<sup>143</sup> See Annex 4.

<sup>144</sup> See the note of Figure 56 for a description of the calculation and the data used.

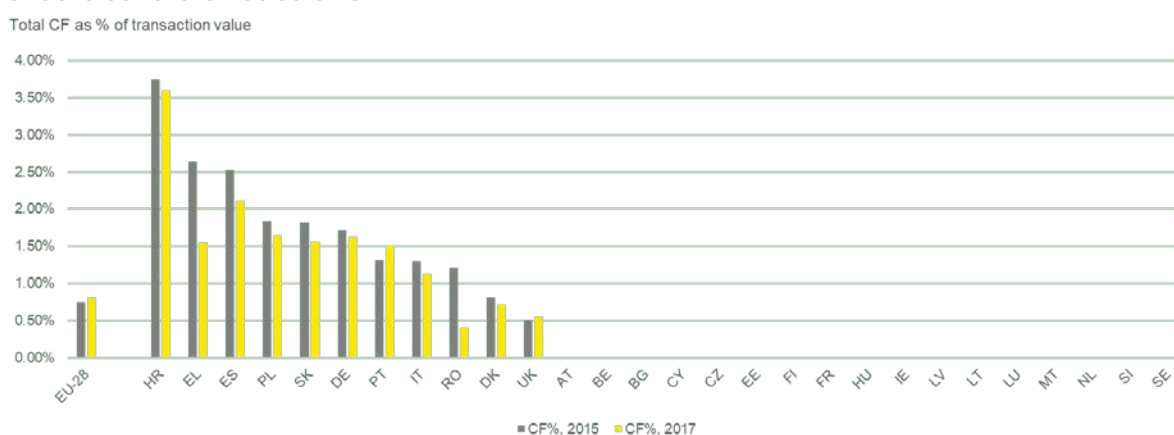
<sup>145</sup> Given that total transaction values increased, this means that the absolute EUR amount paid by the average cardholder increased.



## Debit card transactions



## Credit card transactions



Note: The IFR Survey collected data on cardholder fees in EUR per card, total number of cards and total value of transactions. Total cardholder fees include annual cardholder fees, transaction fees, ATM withdrawal fees, foreign currency fees, currency exchange fees and any remaining other cardholder fees. The numbers in the figure are calculated as cardholder fee as % of transaction value = annual total cardholder fees in EUR per card \* total number of issued cards / total value of transactions, for debit and credit card transactions respectively.

Source: IFR Survey.

Figure 56: Cardholder fees for debit and credit card transactions, 2015 and 2017

We also explore statistically whether average total cardholder fees have changed. We estimate a standard regression model<sup>146</sup> where the parameter  $\mu$  measures the change in average total cardholder fee between 2015 and 2017.<sup>147</sup>

$$X_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

<sup>146</sup> D is a unity dummy variable for year 2017, fixed effects are represented by respondents and MS and controls by respondent size. All respondents are issuers.

<sup>147</sup> The cardholder fee variable,  $X_{itc}^{CT}$ , is defined as the cardholder fee in EUR for a respondent i in MS c in a given year t for a given card type CT divided by the value in EUR of transactions for the same respondent, MS, year and card type.  $D_{itc}^{17}$  is a dummy that is one for the year 2017 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for size (in terms of the log of the respondent's total number of transactions).

We find conflicting signs for the relevant parameter for total cardholder fees but none of the results are statistically significant for any card type or regression model, see Table 27. Hence, we find no evidence of a change in total cardholder fees. However, we cannot rule out that the lack of significance is due to poor data quality and quantity.

	OLS	WLS	QReg
Consumer Debit	0.068	-0.017	-0.042
	(50; 0.20)	(50; 0.74)	(50; 0.22)
Consumer Credit	0.083	-0.053	-0.063
	(56; 0.69)	(56; 0.58)	(56; 0.45)

Note: Two-sided test for change in CF: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average CF as % of transaction value // number of observations and R-squared in brackets // CF of more than EUR 1,000 excluded // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 27: Change in total cardholder fees for debit and credit card transactions, 2015-2017

Some issuers have also reported data on the development of specific transaction and service fees in the period 2015-17, but the number of observations is even smaller than for cardholder fees. However, there are no strong signs of an increase in these fees over the period. For example, the APR on outstanding debt on credit cards<sup>148</sup> remains stable in the period 2015-2017. The limited number of observations do not allow for a formal statistical analysis.

Furthermore, some issuers have provided qualitative information about changes in cardholder benefits<sup>149</sup>. Of the issuers, 65% claim that the value of benefits has remained constant, while 26% report a decline in the value of benefits and 8% report an increase.<sup>150</sup> Issuers also report that the variety (the number) of consumer banking products included with a payment card has remained relatively constant<sup>151</sup> and the length of the interest-free period for credit cards has not changed<sup>152</sup>.

*Second*, we consider cards delivered as part of a bank account package. Such cards typically come with a current or a savings account and the payment card can be a debit card or a credit card. In addition, a number of other services can to varying degrees be part of a bank account package, as for example (in sequence of popularity) internet and mobile banking, free ATM withdrawals, e- and mobile payments, savings account and bonus programmes.<sup>153</sup>

<sup>148</sup> Responses of issuers to IFR Survey to issuers, questions 36 and 37.

<sup>149</sup> Cardholder benefits may include, but are not limited to, cash-back programs, loyalty programs, fee discounts, insurance coverage and warranties, inclusion of additional cards, access to airport lounges and concierge services, etc.

<sup>150</sup> See Figure 113 in Annex 4.

<sup>151</sup> See Figure 114 in Annex 4.

<sup>152</sup> See Figure 115 in Annex 4.

<sup>153</sup> See Figure 116 in Annex 4.

The IFR-survey provides some limited qualitative information about how the product variety and price of bank account packages have developed. For both debit and credit packages, there are no strong signs of either expansion or contraction of variety, some issuers have added more features while a similar number of issuers has taken out features.<sup>154</sup> Asked whether the price of banking packages have changed, 21% of respondents state that prices have gone up, while 5% report the opposite. There is no information about the size of the price changes. The remaining 74% reported no change in price. Changes in quality is even more balanced, 13% report quality going up, 13% report the opposite, while 74% report no changes.<sup>155</sup> A per-MS analysis on banking prices is not possible to do due to the limited data available from the IFR Survey.

*Third*, we consider independent studies of banking prices. A few public studies have investigated the development of retail banking prices in selected MS. These studies indicate some, but not systematic, price increases and the price increases do not seem to be related to the implementation of the IFR. These conclusions are in line with the general results from the IFR Survey.

A study<sup>156</sup> from the French Central Bank of a broad range of French banking fees in the period 2011-2018 found that most fees developed incrementally along the same trend and there was no general shift in this development after 2015.

Bank of Italy conducts yearly studies on the consumer costs of holding bank accounts. The study is based on data on more than 15,000 accounts collected by the Bank of Italy through a survey submitted to banks. Bank account fees, in particular the fixed fee component, have continued to increase since 2015, after having experienced a period of decline in previous years. The (weighted) fees specific to obtaining a debit and/or credit card linked to a bank account had been gradually increasing already before the entry into force of the IFR<sup>157</sup>.

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<sup>154</sup> See Figure 117 in Annex 4.

<sup>155</sup> See Figure 118 in Annex 4.

<sup>156</sup> Banque France (2018) "Rapport annuel: de l'Observatoire des tarifs bancaires" [https://publications.banque-france.fr/sites/default/files/medias/documents/rapport\\_annuel\\_otb2018\\_08102018.pdf](https://publications.banque-france.fr/sites/default/files/medias/documents/rapport_annuel_otb2018_08102018.pdf).

<sup>157</sup> Bank of Italy (2014). Indagine sul costo dei conti corrente nel 2014. [retrieved from: [https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2015/indagine\\_costo\\_conti\\_correnti\\_2014.pdf](https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2015/indagine_costo_conti_correnti_2014.pdf)]

Bank of Italy (2015). Indagine sul costo dei conti corrente nel 2015. [retrieved from: [https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2016/indagine\\_costo\\_conti\\_correnti\\_2015.pdf](https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2016/indagine_costo_conti_correnti_2015.pdf)]

Bank of Italy (2016). Indagine sul costo dei conti corrente nel 2016. [retrieved from: [https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2017/indagine\\_costo\\_conti\\_correnti\\_2016.pdf](https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2017/indagine_costo_conti_correnti_2016.pdf)]

Bank of Italy (2017). Indagine sul costo dei conti corrente nel 2017. [retrieved from: <https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2018/indagine-costo-cc-2018.pdf>]

Bank of Italy (2018). Indagine sul costo dei conti corrente nel 2018. [retrieved from: <https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/indagine-costo-cc-2019/indagine-costo-cc-2019.pdf>]

### 4.3.2 Capped consumer payment cards

In this section, we explore the development of issuing of capped consumer debit and credit cards per MS over time using data from ECB and the IFR Survey.

Lower interchange fee revenues from consumer card transactions may, everything else equal, reduce incentives for issuers to issue consumer cards and thereby reduce the number of cards in circulation. In section 4.1.1, we found that interchange fees reduced more for consumer credit cards than for consumer debit cards, which means that the incentives to issue consumer credit cards may have changed the most. The reduced incentives could be mitigated by scale economies, for example via improved card acceptance by merchants, or by substitution from ATM transactions to several POS transactions as cards are replacing cash. The reduced incentives could be strengthened to the degree that non-card-based payment instruments gain market shares.

#### Change in consumer card issuing

We calculate the weighted average annual change in issuing of consumer debit and credit cards per MS and for EU-28 based on information from the IFR Survey.<sup>158</sup>

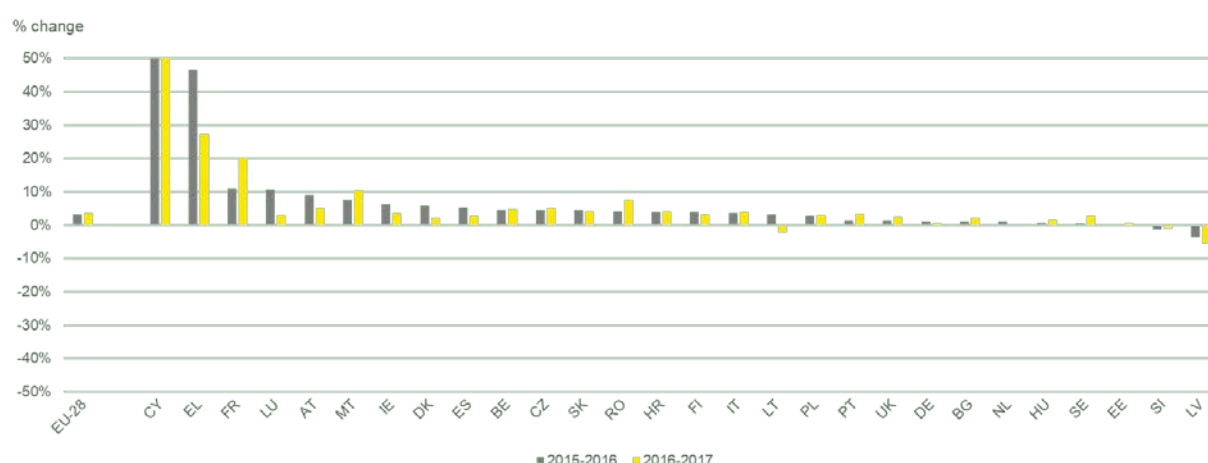
We find that the total number of issued consumer cards in the EU as reported by the schemes changed moderately between 2015 and 2017. The total number of consumer debit cards in the EU grew by 3% and 4% respectively in 2016 and in 2017, see Figure 57.<sup>159</sup> The number of credit cards declined by 1%. The larger decline in the number of credit cards could be related to the large reduction in interchange fees for credit card transactions to meet the interchange fee cap. However, other explanations unrelated to the IFR are also possibly. The development differs significantly between MS, especially for credit cards. The heterogeneity may indicate that issuing is primarily driven by MS-specific features rather than the common implementation of the IFR.

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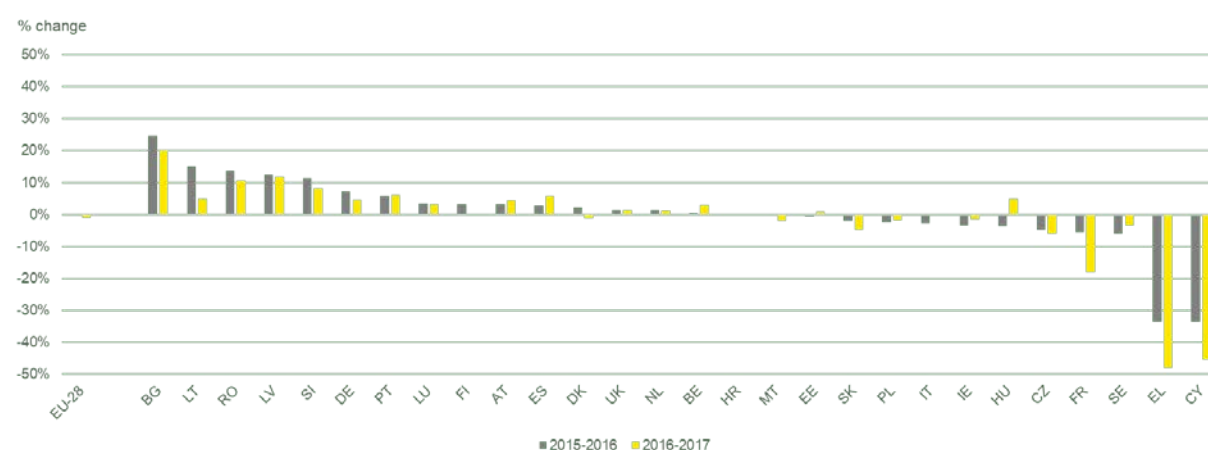
<sup>158</sup> We use data from the IFR Survey and not from the ECB here because it is not possible to separate commercial cards in the data from ECB.

<sup>159</sup> These growth rates differ slightly from the growth rates presented in the previous section for two reasons. First, this analysis uses data from the IFR Survey and not from the ECB and the two sources have slightly different coverage. Second, the ECB report year-end data while the IFR Survey collected data on average number of cards in circulation during each year.

## Consumer debit cards



## Consumer credit cards



Note: The figures are based on data from Visa and MasterCard. For debit cards there are data from the domestic schemes in Belgium, Germany, Italy and Portugal reporting for their respective MS. Other domestic schemes did not provide these data. The data contain cards reported by international and domestic schemes, which means that an international and a domestic scheme may both have reported the same co-badged card. However, this does not affect the result of these figures since the figures measure changes in the number of cards and not the absolute number of cards. The vertical axis for debit cards is cut off at a change of 50%. The change in Cyprus was 331% between 2015 and 2016 and 88% between 2016 and 2017.

Source: IFR Survey.

Figure 57: Annual change in the number of issued consumer debit and credit cards, 2015-2017

Next, we estimate a formal statistical model<sup>160</sup> for the period 2015-2017 based on data from the IFR-Survey. The model aims at determining whether there is a statistically significant change

<sup>160</sup> The variable,  $X_{itc}^{CT}$ , measures the change in the number of issued cards for a respondent  $i$  (when IFR Survey data is used) in MS  $c$  in a given year  $t$  for a given card type  $CT$ .  $D_{itc}^{17}$  is a dummy that is one for the years after 2015 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the respondent's type (scheme,

in issuing of consumer debit and credit cards after the implementation of the interchange fee caps in December 2015. In the model, the parameter  $\mu$  measures the weighted<sup>161</sup> average change in the number of cards per respondent:

$$X_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

Issuing of consumer debit cards declined by a weighted average of 2.15 million cards per respondent in the IFR Survey sample between 2015 and 2017, i.e. after the implementation of the interchange fee caps, see Table 28. The estimated coefficient corresponds to a weighted average decline of 6% compared to the number of debit cards in 2015 per respondent. This contrasts with the visually observed annual increase of 3-4% for debit cards, see Figure 57. However, the results are in any case only weakly statistically significant which means little emphasis should be put on them. There is no statistically significant change in issuing of consumer credit cards.

	OLS	WLS	QReg
Consumer Debit Cards (million cards)	-0.794** (260; 0.52)	-2.150* (253; 0.86)	-0.313 (260; 0.28)
Consumer Credit Cards (million cards)	-0.147 (288; 0.54)	-0.993 (261; 0.78)	-0.015 (288; 0.26)

Note: Two-sided test for change in change of number of cards issued by resident payment service providers: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change in 1,000 issued cards following the regulation on the change in cards issued // number of observations and R-squared in brackets // only Member States with data for all years are included // MS fixed-effects.

Source: IFR Survey.

Table 28: Change in total number of consumer cards per card type, 2015-2017

We estimate the same statistical model<sup>162</sup> instead based on ECB data. The estimation is limited to debit cards because commercial cards are included in the ECB data for credit cards. The time period can be expanded to the years 2014-2018 for which ECB has consistent data.

We find that the annual change in the number of consumer debit cards issued tends to increase but the result is not statistically significant, see Table 29. It means that there has been no

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issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions) when IFR Survey data is used.

<sup>161</sup> The weight is, as in the other WLS models, the total value of transactions. In this case, this means the total value of consumer debit card transactions in the estimation of consumer debit cards and the total value of consumer credit card transactions in the estimation of consumer credit cards.

<sup>162</sup> The variable,  $X_{itc}^{CT}$ , measures the change in the number of issued cards for a respondent  $i$  (when IFR Survey data is used) in MS  $c$  in a given year  $t$  for a given card type  $CT$ .  $D_{itc}^{17}$  is a dummy that is one for the years after 2015 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the respondent's type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions) when IFR Survey data is used.

statistically significant change in the number of issued debit cards within EU in the period 2014-2018.

Regression	OLS	WLS	QReg
Consumer debit cards	1.374	3.375	-0.276
(percent change)	(104; 0.25)	(104; 0.37)	(104; 0.19)

Note: Cards with a delayed debit function are not included in the data underlying the regression.

Two-sided test for change in change of number of cards issued by resident payment service providers: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change following the IFR on the change in cards issued // number of observations and R-squared in brackets // only MS with data for all years are included // MS fixed-effects.

Source: ECB.

Table 29: Change in the number of consumer debit cards, 2014-2018

Overall, we find no strong evidence in the sample for changes in issuing of capped consumer cards that is linked to the IFR.

### Effect of the interchange fee caps on consumer card issuing

Finally, we assess to what extent there is a causal relationship between the interchange fee caps and changes in debit card issuing based on ECB data for the period 2014-2018. We assess whether issuing of debit cards tend to decline more for respondents who report larger interchange fee reductions compared to respondents who report smaller interchange fee reductions (or increases).

We set up the usual difference-in-difference estimation model<sup>163</sup> where a statistically significant and negative coefficient,  $\delta$ , would tell us that card issuing tends to taper off when respondents experience large reductions in interchange fees:

$$ASF_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \beta D_{itc}^{treated} + \delta D_{itc}^{treated} D_{itc}^{17} + Fixed\ effects + Controls + \varepsilon_t$$

The estimation method is the same as applied for issuer and acquirer scheme fees, see section 4.2.2 and section 4.2.3.

We find that none of the results are statistically significant, see Table 30. Hence, we cannot find statistical support in the sample for a causal effect where large reductions in interchange fee revenue leads to stronger decline in issuing of consumer debit and credit than respondents with small reductions. Hence, there is no indication of the interchange fee cap causing a change in issuing of debit cards.

<sup>163</sup> The model is a standard differences-in-differences model with a treatment group of respondents that have experienced the interchange fee reductions above the EU average.  $D_{itc}^{17}$  is a "dummy" variable that takes on the value 1 if the year is 2017 and zero otherwise. " $D_{itc}^{treated}$ " is a dummy variable for whether the reduction in the interchange fees for the respondent is above the EU average. Fixed effects are represented by respondents and MS and controls by respondent type and size and whether the MS has a domestic scheme.

	OLS	WLS	QReg
Consumer Debit Cards (thousand cards)	-0.717 (104; 0.25)	-2.311 (104; 0.37)	-0.908 (104; 0.19)

Note: Two-sided test for a change in the difference between Issuing for Member States with a change in debit IF above the EU average with Member States with a change in debit IF below the EU average: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the change in average number of cards issued // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only Member States with data for all years are included // MS fixed-effects.

Source: ECB.

Table 30: Causal effect of interchange fee cap on the number of consumer debit cards (control group: small interchange fee changes) per card type, 2015-2017

### 4.3.3 Non-capped commercial payment cards

In this section, we explore to what extent commercial cards are developing differently after 2015 following the implementation of the interchange fee caps, in terms of the share of commercial cards in the total card portfolio, and the development in number of and in total value of commercial card transactions. For a more in-depth analysis of the effects of the exemption of commercial cards from the interchange fee caps, we refer to section 6.3.

Commercial cards are exempted from the interchange fee cap and carry interchange fees that are several times larger than the capped fees for debit and credit cards. For issuers, issuing of non-capped commercial cards could in principle be a more attractive business proposition than issuing of capped consumer debit and credit cards. However, the attractiveness is limited by the limitation on usage of commercial cards and by the practice of merchants to surcharge and steer cardholders to other payment instruments. As regards usages, commercial cards can be used solely for business expenses charged directly to the account of undertakings, public-sector entities or self-employed natural persons and not to the account of an individual person.<sup>164</sup> Merchants are in some MS allowed to apply surcharging on commercial card transactions to cover the additional costs from the larger interchange fees. In all Member States, merchants can provide rebates for the use of other means of payment or only accept commercial cards for transactions above a given amount.

Since there is no evidence of statistically significant changes in interchange fees for commercial card transactions (in contrast to consumer cards transactions), see Table 10 in section 4.1.1, interchange fees are likely not the drivers of potential changes in issuing and usage of commercial cards.

#### Change in commercial card issuing

The relative share of commercial cards in the total number of cards in circulation (commercial cards, consumer debit and consumer credit cards) remained stable during 2015-2017 at around 3% at the EU level, see Figure 58. The development in the share of commercial cards varied across MS. In Denmark and Croatia, the share of commercial cards decreased, while it increased

<sup>164</sup> The IFR, Article 2 (6).



considerably in Ireland, Greece, Bulgaria and Cyprus. Overall, the share of commercial cards remains below 5% in most MS.



Note: Share of commercial cards over the sum of commercial and consumer (debit and credit) cards. No data available for Malta.

Source: IFR Survey.

Figure 58: Share of commercial cards of all cards, 2015-2017

Next, we estimate a formal statistical model<sup>165</sup> for the period 2015-2017 based on data from the IFR-Survey. The model aims at determining whether there has been a statistically significant change in the number of commercial cards, in the number and in the total value of commercial card transactions in the period from 2015 until 2017. In the model, the parameter  $\mu$  measures the weighted<sup>166</sup> average change in the number of cards, number of transactions or the total value of transactions:

$$X_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

We find that there is no statistically significant change in the number of issued commercial cards between 2015 and 2017. However, the number of commercial card transactions per respondent increased by a weighted average of 12.4 million transactions in a statistically significant manner between 2015 and 2017, see Table 31. For the value of transactions there is no statistically significant change in the preferred WLS model.

<sup>165</sup> The variable,  $X_{itc}^{CT}$ , measures the change in the number of issued cards for a respondent  $i$  (when IFR Survey data is used) in MS  $c$  in a given year  $t$  for a given card type  $CT$ .  $D_{itc}^{17}$  is a dummy that is one for the years after 2015 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the respondent's type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions) when IFR Survey data is used.

<sup>166</sup> The weight is, as in the other WLS models, the total value of transactions. In this case, this means the total value of commercial card transactions.

	OLS	WLS	QReg
Number of cards issued (thousand cards)	54.7 (260; 0.50)	48.1 (230; 0.75)	15.6 (260; 0.28)
Number of transactions (million transactions)	2.5*** (536; 0.35)	12.4*** (522; 0.75)	0.3 (536; 0.14)
Value of transactions (EUR million)	101.8 (540; 0.33)	9.5 (530; 0.75)	47.0** (540; 0.11)

Note: Two-sided test for total change in Commercial Cards issuing, and volume and value of Commercial Card transactions: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated effect of the IFR on the total number/value in EUR // number of observations and R-squared in brackets // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 31: Change in the number of commercial cards and volume and value of commercial card transactions, 2015-2017

## 4.4 Acquirers: merchant service charge

The Merchant Service Charge (MSC) is the fee paid by merchants for using the services of the acquirer and enabling the merchant to receive payments from payment cards. The MSC is the sum of the interchange fee (see chapter 4.1), the acquirer's scheme fee (see chapter 4.2.3), and the acquiring margin (sometimes called the "acquiring service fee"). The acquiring margin covers the costs and profit of the acquirer. The MSC can be a variable or fixed fee and is determined by the acquirer or by the acquirer and the merchant in bi-lateral negotiations.

The purpose of this chapter is to document the development of MSC from the imposition of the interchange fee cap in 2015 until 2017. We document empirically the charges based on data from the IFR Survey covering 2015-2017 and supplement them with data from public sources.

These data were reported by acquirers and merchants. This means that these results and conclusions apply to transactions with cards issued by both domestic and international schemes.

We focus in particular on to which extent the merchants have had cost savings from lower MSCs made possible by lower interchange fees and how these cost savings differ between merchants of different size, different sector belonging, or usage of different pricing models.

We also assess the extent to which changes in MSC can be causally linked to the interchange fee caps and changes in interchange fees. In other words, whether the interchange fee caps have caused savings for merchants on the MSC.

We find that the MSC on average has declined strongly in a statistically significant manner for credit card transactions but has remained stable for debit card transactions. This pattern is consistent with changes of the interchange fee that has mostly declined for credit card transactions. For credit card transactions, the MSC has declined on average by 0.163 percentage point from 2015 to 2017, meaning that the merchant in the period has saved EUR cent 16.3 for each EUR 100 of transaction value. Overall, the lower MSC for credit cards has led to annual savings for merchants around EUR 1,200 million. At the same time, the acquirers' acquiring margin has increased on an annual basis by the same amount around EUR 1,200 million. In other words, acquirers seem to have passed on parts of the interchange fee savings to merchants while keeping another part of the savings for themselves.

There seems to be a statistically significant causal relationship between the size of the interchange fee savings and reductions in MSC. The larger are the interchange fee savings, the larger is the reduction in MSC. Data from the IFR Survey show that the acquiring margin for credit card transactions increased between 2015 and 2017, even though the merchant service charge declined. This indicates that both acquirers and merchants have benefited from the interchange fee reduction.

The decline in MSC for credit card transactions is primarily driven by MSC reductions for domestic transactions. The limited data available indicates that MSC is smaller for transactions with cards issued by domestic schemes than for international schemes. MSC for both domestic and international schemes have declined, but the decline has been larger for international schemes. The average MSC varies between sectors, both before and after the IFR. Average MSC has declined for merchants in all sectors for credit card transactions and has remained stable for debit card transactions. This pattern is consistent with the overall pattern of change.

The average MSC for credit card transactions has declined for all respondents, irrespective of their chosen pricing model, but the decline seems to have been much stronger for respondents

with an unblended and transparent pricing model, as Interchange Fee++.<sup>167</sup> On average, there has been no visible change in the MSC for debit card transactions for any pricing model. This pattern is also consistent with the overall pattern.

#### **4.4.1 Merchant service charge**

In this section, we analyse total merchant service charge. The analysis is based on data from the IFR Survey.

The MSC, as the scheme fees, can have different variable and fixed cost components as well as being subject to rebates and benefits provided by acquirers to merchants. However, data from the IFR Survey indicates that the variable component accounts for almost all of the MSC and that the size of rebates and benefits is extremely limited.<sup>168</sup> Therefore, we focus on gross MSC (excluding rebates and discounts) for the remainder of the analysis on MSC.

##### **Merchant service charge for debit and credit card transactions**

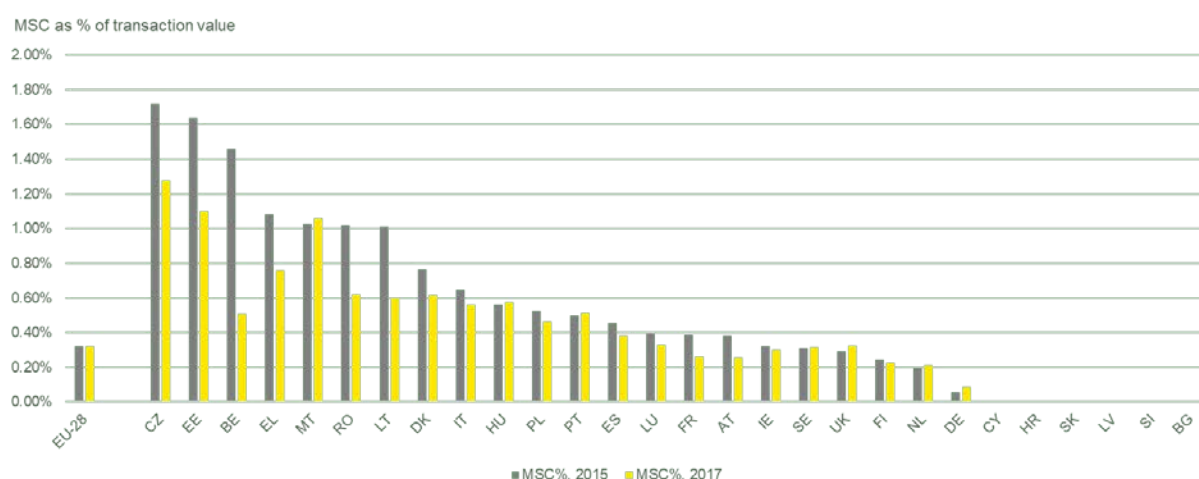
The average EU MSC for debit card transactions remained constant around 0.32% both in 2015 and in 2017, see Figure 59. It reflects the fact that some of the MS with intense card use had already lowered the interchange fee below the cap in 2015. For credit card transactions, the average EU MSC declined from around 0.92% to 0.73%. It reflects the fact that interchange fees for credit cards for most MS were substantially above the cap still in 2015 and had to decline until 2017. Generally, there is a large heterogeneity of MSC between MS both for debit and for credit card transactions. MSC for credit card transactions are substantially larger than for debit card transactions as interchange fees are higher for credit cards and as domestic schemes mostly are present on the debit card segment of the market. A large increase in the MSC for credit card transactions in Finland stands out, but it is based on only a single responding acquirer. The average MSC for credit card transactions of the four respondents in France increased between 2015 and 2017. This reflects increases in interchange fees and acquirer scheme fees, see Figure 35 and Figure 51.

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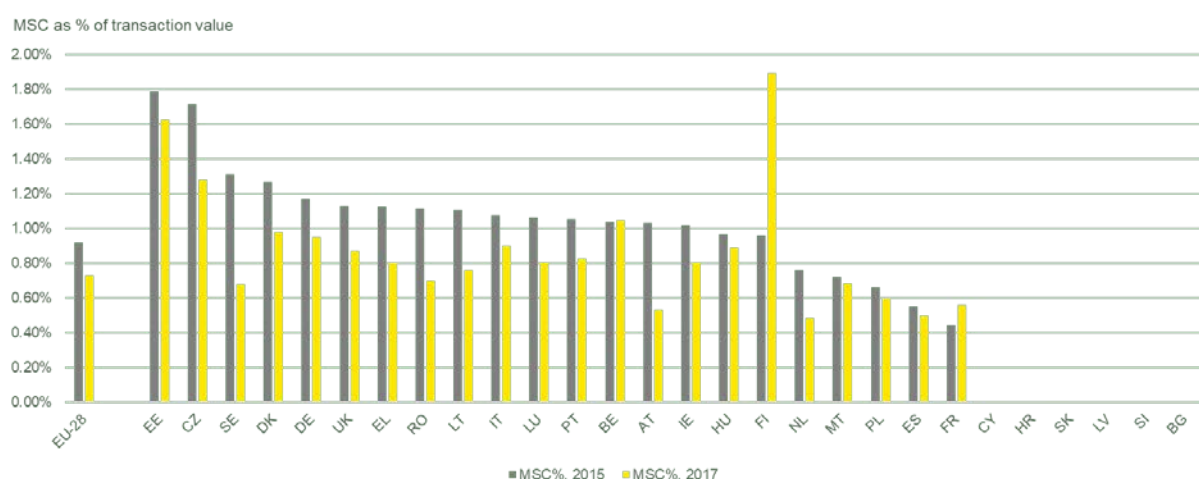
<sup>167</sup> Unblended merchant service charge means that all components of the merchant service charge, including the interchange fee, are specified and billed separately.

<sup>168</sup> The variable part makes up above 95% of the merchant service charge in all years, except for Portugal where the variable part makes up to 75%. Rebates and benefits are primarily used by a small number of MS and are there limited to at most 2-3% of the merchant service charge.

## Debit card transactions



## Credit card transactions



Note: For some MS there are no data reported by acquirers. They are: Cyprus, Croatia, The Slovak Republic, Latvia, Slovenia and Bulgaria.

Source: IFR Survey.

Figure 59: Merchant service charge for debit and credit card transactions, 2015 and 2017

We now test whether the changes in MSC from 2015 until 2017 are statistically significant. We estimate a formal statistical model where the parameter  $\mu$  measures the change in MSC between 2015 and 2017<sup>169</sup>:

<sup>169</sup> The merchant service charge variable,  $MSC_{itc}^{CT}$ , is defined as the merchant service charge in EUR for a respondent  $i$  in MS  $c$  in a given year  $t$  for a given card type  $CT$  divided by the value in EUR of transactions for the same respondent, MS, year and card type.  $D_{itc}^{17}$  is a dummy that is one for the year 2017 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the respondent's type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions).

$$MSC_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

We find that the statistical analysis confirms and enriches the visual observations. For credit card transactions, the average MSC decline from 2015 to 2017 in a statistically strongly significant manner, see Table 32. The MSC declines on average by 0.163 percent points which means that the MSC paid by the average merchant declines by EUR cents 16.3 for each EUR 100 transaction value. The decline is comparable to the EU-wide decline observed in Figure 59.

For debit card transactions, the result is less clear. The MSC declines for all estimation methods, but the decline is only statistically significant for the less preferred estimation methods, not the WLS method. We interpret the results such that for the average EUR of debit card transaction value there is no decline in MSC. The lack of decline is caused by one or several MS with large debit card transaction value and with limited changes in interchange fee for debit card transactions, for example the United Kingdom. But the significant result for the OLS estimation method implies that there can be many MS with lesser debit card transaction values where the MSC actually declined quite significantly. This is in line with the observations in which the MSC reductions occurred in small MS, see Figure 59.

For commercial card transactions, there has been no statistically significant changes in MSC.

	OLS	WLS	QReg
Consumer Debit	-0.125*** (224; 0.55)	-0.007 (224; 0.65)	-0.066*** (224; 0.38)
Consumer Credit	-0.137*** (230; 0.54)	-0.163** (230; 0.61)	-0.143*** (230; 0.39)
Commercial	0.019 (256; 0.46)	0.034 (256; 0.42)	-0.038 (256; 0.36)

Note: Two-sided test for change in MSC: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change of the average MSC as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 32: Change in merchant service charge per card type, 2015-2017

Using the econometric estimates of the changes in the MSC for consumer card transactions and data on total transaction value in the EU from ECB, we estimate the annual reduction in the MSC to be around EUR 1,200 million (rounded) for consumer credit card transactions, see Table 22.

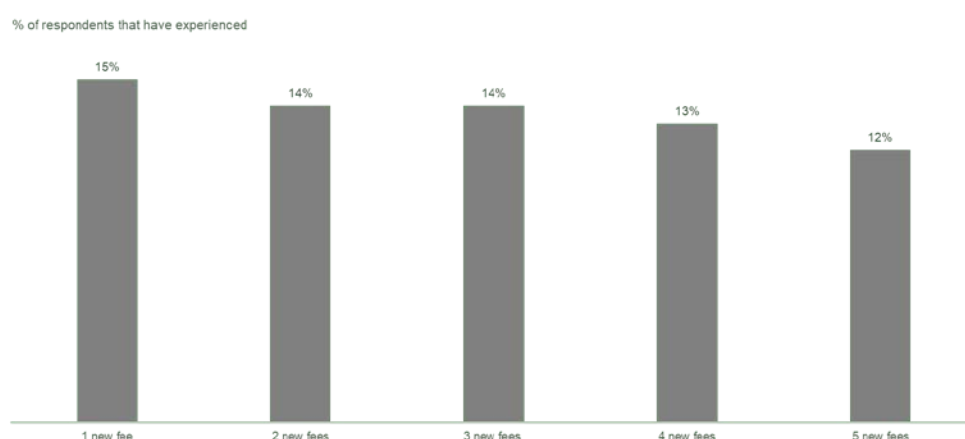
	Estimated annual change (EUR million)	Estimated change (percentage points)	Transaction value 2015 (EUR million)
Consumer debit cards	-	-	2,113,455
Consumer credit cards	-1,202	-0.163%	737,297
<b>Total consumer cards</b>	<b>-1,202</b>	<b>-</b>	<b>2,850,752</b>

Note: The estimated annual change in EUR million is calculated by multiplying the estimated changes in percentage points to the total transaction values in the EU in 2015 reported by ECB. The estimated change in the MSC for consumer debit card transactions cannot be said to be different from zero in a statistically significant manner.

Source: IFR Survey, ECB.

Table 33: EUR change in merchant service charge for consumer card transactions at EU level

From the IFR Survey, we have information about the extent to which acquirers have increased existing MSC fees or have introduced new fee components. Since December 2015, at most 15% of the merchants have experienced that their acquirers introduced one or several new fees or fee increases, see Figure 60. The results should be interpreted with caution as the responses are limited and primarily coming from large merchants.



Source: IFR Survey.

Figure 60: Merchants that experienced new fees or increased fees outside the merchant service charge since December 2015

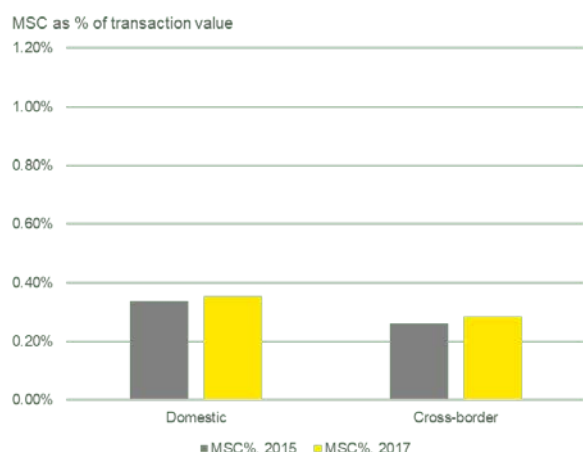
### Merchant service charge for domestic and cross-border transactions

We now calculate and display MSC for debit and credit card transactions for each MS, but separately for domestic and cross-border transactions. The calculation is based on the IFR Survey. Cards issued under both domestic and international schemes can be used for domestic transactions, while only cards issued under international schemes are used for cross-border transactions. Hence, MSC for domestic schemes reported by acquirers are only included for domestic transactions.

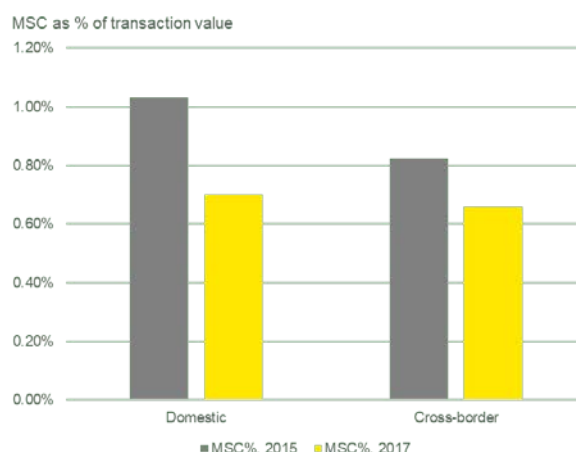
For debit card transactions, we find that there are only minor changes in MSC from 2015 to 2017, both for domestic and cross-border transactions, see Figure 61. If anything, the MSC increases marginally. For credit card transactions, we observe significant declines in MSC for

both domestic and cross-border transactions. This pattern is consistent with the overall pattern of change for credit card transactions.

### Debit card transactions



### Credit card transactions



Note: Values on the vertical axis are in % of the transaction value. The bars in the figure represent weighted average MSC. Total transaction values corresponding to the MSC of each respondent are used as weights.

Source: IFR Survey.

Figure 61: Merchant service charge for domestic and cross-border transactions, 2015 and 2017

We also test formally whether the changes in MSC from 2015 to 2017 are statistically significant for domestic and cross-border transactions within the EU-28, see Table 34.<sup>170</sup>

We confirm that there is no statistically significant decline in the MSC for debit card transactions, neither for domestic, nor for cross-border transactions. However, we observe the same pattern of results for domestic debit card transactions as for overall debit card transactions. There is no statistically significant change in average weighted MSC using the preferred WLS estimation method, but there can still be significant declines in MSC in many smaller MS as witnessed by the significant OLS estimations.

We also confirm that there is a large and statistically strong decline in MSC for domestic credit card transactions at the level of 0.256 percentage point. The result is consistent across all three econometric methods. This means that the average MSC for domestic credit card transactions declined by EUR cents 25.6 for each EUR 100 transaction value. In contrast, we cannot confirm any statistically significant decline in MSC for cross-border credit card transactions. Hence, the reduction in MSC for credit cards is driven by reductions in the charge for domestic transactions. Finally, we find no statistically significant change in MSC for domestic, nor for cross-border commercial card transactions.

<sup>170</sup> Results are statistically significant when it is unlikely that the observed effects have occurred by chance. The level of significance is the probability of this happening. I.e. when results are statistically significant at the 95% level, this means that there is a 5% probability that the results happened by chance.



	OLS	WLS	QReg
<b>Domestic</b>			
Consumer Debit	-0.102***	0.020	-0.086***
	(76; 0.79)	(76; 0.75)	(76; 0.48)
Consumer Credit	-0.267***	-0.256***	-0.312***
	(72; 0.71)	(72; 0.68)	(72; 0.49)
Commercial	-0.034	0.005	-0.049
	(70; 0.65)	(70; 0.53)	(70; 0.54)
<b>Cross-border</b>			
Consumer Debit	-0.058	0.006	-0.039
	(30; 0.80)	(30; 0.83)	(30; 0.57)
Consumer Credit	-0.133*	-0.188	-0.174**
	(30; 0.70)	(30; 0.45)	(30; 0.54)
Commercial	0.021	0.113	-0.008
	(32; 0.76)	(32; 0.65)	(32; 0.61)

Note: Two-sided test for change in MSC: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average MSC as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

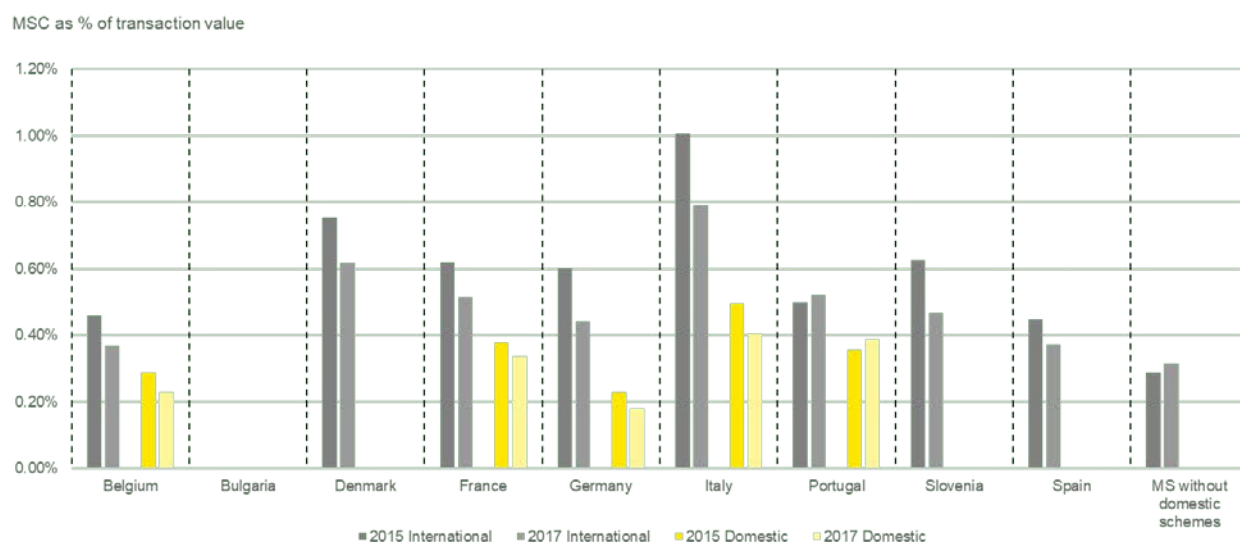
Source: IFR Survey.

Table 34: Change in merchant service charge per card type and per transaction type, 2015-2017

### Merchant service charge for domestic and international schemes

Based on the IFR Survey, we now calculate and display average MSC for domestic debit card transactions for selected MS, but separately for cards issued under domestic schemes and under international schemes. Domestic schemes are present in Belgium, Bulgaria, Denmark, Germany, Slovenia, Spain, France, Italy and Portugal. However, data from the IFR Survey only cover Belgium, France, Germany, Italy and Portugal. We compare the MSC for domestic debit card transactions on cards issued under domestic schemes with the MSC on debit cards issued under international schemes in these MS.

The MSC for transactions with cards issued under domestic schemes is lower than for international schemes in all five MS for which we have data, both 2015 and 2017, see Figure 62. The MSC declined for both domestic and international schemes in all MS with data on domestic schemes, except in Portugal where there were small increases.



Note: Nine MS have domestic schemes. There are available data on MSC for domestic schemes provided by acquirers or merchants for five of the MS: Belgium, France, Germany, Italy and Portugal. Note that these MS are not the same as in other similar figures with domestic schemes for reasons of data availability. There are also four domestic schemes in Bulgaria, Denmark, Slovenia, and Spain but data is missing for them. The right-most bars in the figure show MSC for international schemes in the remaining 19 MS. The bars in the figure represent weighted average MSC. Total transaction values corresponding to the MSC of each respondent are used as weights.

Source: IFR Survey.

Figure 62: Merchant service charge for transactions with debit cards issued under international and domestic schemes in MS with and without domestic schemes, 2015 and 2017

The econometric estimates confirm that the MSC for domestic debit card transactions declined for both domestic and international schemes. The estimated decline is smaller for domestic schemes (-0.045%) than for international (-0.109%), but the estimate for domestic schemes has stronger statistical significance.

	OLS	WLS	QReg
International	-0.102*** (104; 0.34)	-0.109* (104; 0.51)	-0.086*** (104; 0.25)
Domestic	-0.055*** (38; 0.77)	-0.045*** (38; 0.82)	-0.055*** (38; 0.60)

Note: The analysis includes only the five MS which have domestic schemes and for which acquirers or merchants reported data on MSC for domestic schemes. They are the MS with yellow bars in Figure 62: Belgium, France, Germany, Italy and Portugal.

Two-sided test for in average change in SF after 2015: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average SF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 35: Change in merchant service charge for debit card transactions with domestic and international schemes in MS with data on domestic schemes, 2015-2017

## Merchant service charge per sector

We explore to which extent MSC depend on the sector in which the merchant is active. This study has a particular focus on the travel, accommodation, food retail and other retail sectors.<sup>171</sup> Based on the IFR Survey, we calculate the average MSC for merchants in each of the four sectors and other sectors.

First, we find that merchants in different sectors can have different levels of MSC, both before and after IPR, see Figure 63. For both debit and credit card transactions, the MSC paid by merchants in the travel and accommodation sectors is several times larger than the MSC paid by merchants in the food retail industry and retail in general. The difference may arise for structural reasons, for example if merchants in the retail sector on average are larger (and more international) than merchants in the travel and accommodation sectors. Larger and more international merchants may have a better bargaining position vis-à-vis acquirers than small merchants and may find it easier to exploit international competition through cross-border acquiring. We have some evidence that very large merchants obtain lower MSCs than large merchants, but limited responses from small merchants make it difficult analyse properly the relationship between MSC and merchant size.<sup>172</sup> Some evidence can be found in Figure 119 in Annex 4, but should be interpreted with caution. The difference in levels of MSC may also arise if competition in the retail sectors is more intense than competition in travel and accommodation sectors, squeezing down margins for both merchants and their input suppliers or if travel and accommodation have riskier transactions which require higher risk premium and higher fees.

Second, we find that merchants obtain the same benefits from the interchange fee cap, independent of sector. Merchants have seen almost no decline in MSC for debit card transactions, irrespective of sector, see Figure 63.<sup>173</sup> Merchants have all seen a decline in MSC for credit card transactions, again irrespective of sector. Both conclusions are consistent with the overall result that MSC mostly declines for credit card transactions, see Figure 61 and Table 34.

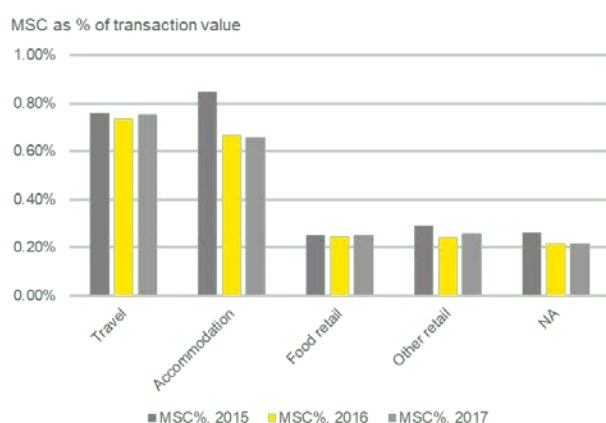
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<sup>171</sup> These sectors were chosen because the intensity of card-based transactions is higher than in other sectors.

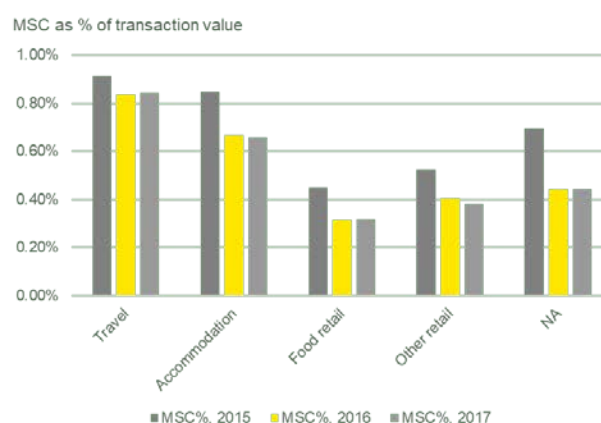
<sup>172</sup> The IFR Survey contains many responses from merchants that are small at the MS level, but these merchants are usually part of a large group active in several MS. For analysing the relationship between MSC and merchant size, the total group size is relevant.

<sup>173</sup> The figure indicates that merchants in the accommodation sector have seen declines in MSC for debit card transactions, but these results are based on only one response and should be treated with caution.

## Debit card transactions



## Credit card transactions



Note: Merchants who did not provide information about their sector are categorised as “NA”. 15 merchants out of 58 did not provide information on their sector. There is only one respondent from the accommodation sector.

Source: IFR Survey.

Figure 63: Merchant service charge per merchant sector and card type, 2015 and 2017.

### Merchant service charge per pricing model

We now explore to what extent the reductions in MSC for merchants depend on the pricing model chosen by the merchant and thereby on the level of fee transparency.

The MSC has three fee components: interchange fee, scheme fee and acquiring margin that can be specified on the invoice to the merchant with different degrees of transparency, either as a single fee, also called blended rate; as two separate fees (the interchange fee and a residual mark-up), also called Interchange Fee+ (or IF+); or as three separate fees (the interchange fee, the scheme fee and the acquiring margin), also called Interchange Fee++ (IF++). The latter model is the most transparent (but not necessarily the simplest) pricing model as it implies that any change in any fee is directly observable on the invoice by the merchants.

The IFR made it mandatory for acquirers to provide merchants with the default option to receive unblended transparent MSC, see Article 9 of the IFR. Our expectation is that merchants who choose more transparent fee models are the merchants that are in a better position to verify whether all interchange fee savings are being passed-on to the merchant and thereby will be in a better bargaining position vis-à-vis the acquirer. However, fee transparency may not necessarily mean better understandability if the number of reported fees is large and the fee structure complex. The extra administrative capacity that is needed to handle and exploit the additional information may only be available to large merchants and not to small merchants. It means that simplicity may be a pre-condition for transparency to be able to discipline pricing.

Based on the IFR-Survey, we find that about 80% of responding merchants reported that they had been given the default option to receive unblended and transparent information from their acquirer.<sup>174</sup> Of these merchants, about 40% opted out of the default option and chose deliberately the blended pricing model with limited fee transparency, while 60% chose unblended information.<sup>175</sup> When merchants chose unblended rates, they almost always chose the Interchange++ model that specifies separately all components of the MSC on separate invoicing lines. Very few opted for the intermediate model, Interchange Fee+.

Given that the IFR Survey provided few responses from small merchants, it is not possible to analyse whether the choice of pricing model differed depending on merchant size.

Merchants have different perceptions about the quality of information that they have received from their acquirer about the option to receive unblended rates. About 45% of merchant respondents found the quality good or very good, about 25% found the quality OK, while 30% found the quality poor or very poor.<sup>176</sup>

For debit card transactions, merchants with unblended pricing models (IF+ or IF++) had in 2015 slightly lower MSC level than merchants with blended pricing model, see Figure 64. We believe that structural differences between respondents can explain some of the difference. Irrespective of fee model, the change in MSC for debit card transactions between 2015 to 2017 was small. The reasons can be long-term contract duration or simply that MSC as known did not change much for debit card transactions.

For credit card transactions, merchants with unblended and transparent pricing models in 2015 had slightly higher MSC level than merchants with blended and non-transparent pricing models. The reason can again simply be that the initial level of MSC is determined by historical and structural factors and not by the new pricing options introduced in 2015. However, merchants with unblended and transparent pricing models clearly seem to have obtained the largest reductions in MSC from 2015 to 2017. They have on average cut their MSC by more than 0.20 percentage points, while merchants with blended, non-transparent pricing models, have cut their MSC only by one third, around 0.08 percentage point.

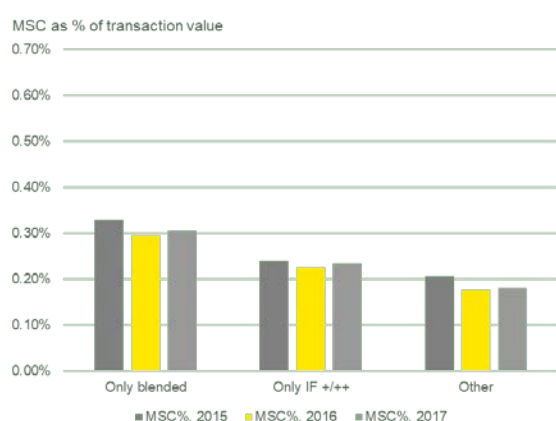
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<sup>174</sup> This is confirmed by national regulators who report that acquirers do not necessarily always provide the default option to merchants.

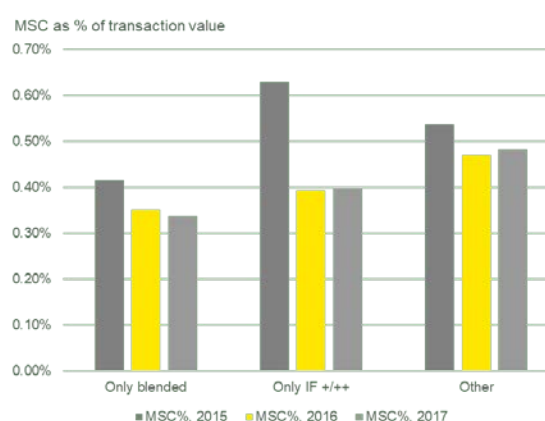
<sup>175</sup> Merchant responses to the IFR Survey to merchants, question 14.

<sup>176</sup> See Figure 120 in Annex 4.

## Debit card transactions



## Credit card transactions



Note: Merchants responding to the IFR Survey could choose the category "Other" to describe their pricing model if it could not be described properly by "blended", "interchange fee +" or "interchange fee ++". Eight respondents chose the category "Other". The total number of respondents were 58 merchants for debit card transactions and 59 for credit card transactions.

Source: IFR Survey.

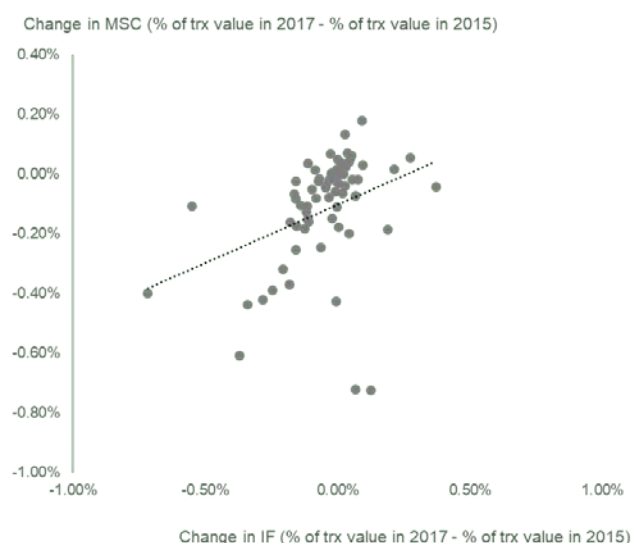
Figure 64: Merchant service charge per fee model and card type, 2015 and 2017

### Effect of the interchange fee caps on the merchant service charge

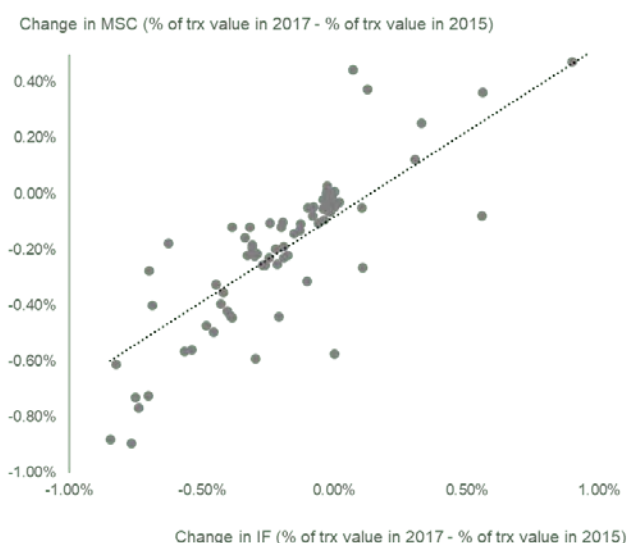
Finally, we explore to what extent there is a causal relationship between the interchange fee caps and changes in MSC. Previous results indicate that acquirers on average have had significant savings in interchange fee payments that are several times larger than the increase in acquirer scheme fees, see sections 4.1 and 4.2.3. Hence, the results indicate that acquirers on average have experienced (significant) cost savings after the implementation of the interchange fee cap. The question is to what extent these cost savings have been passed on to merchants via reductions in MSC in the relatively short time period since the implementation of the caps.

First, a visual correlation analysis shows a relationship between changes in interchange fees and changes in MSC. The larger are the interchange fee cost savings, the larger are the reductions in MSC, see the trend line in Figure 65. The relationship seems to exist for both debit and credit card transactions, but to be particularly strong for credit card transactions.

### Debit card transactions



### Credit card transactions



Note: The scatter plot shows for each respondent changes in percentage points of two fees. On the y-axis is the change in MSC and on the x-axis the change in interchange fees. The x-axis is cut off at interchange fee increases of more than 1%.

Source: IFR Survey.

Figure 65: Correlation between reductions in interchange fee payments and merchant service charge per card type, 2015-2017

Second, we explore statistically the causal relationship between changes in interchange fee savings and in MSC. We set up a standard difference-in-difference model similar to the models used in sections 4.2.2 and 4.2.3 that estimates the difference in development between two groups of respondents: treated and non-treated. The model assesses the difference in development in MSC for a treated group of respondents with large<sup>177</sup> interchange fee reductions with a non-treated group of respondents with small interchange fee reductions to give an indication of whether interchange fee reductions caused changes in MSC. In other words, whether interchange fee reductions caused acquirers to pass-through some of their cost savings to merchants.

We estimate a formal statistical model<sup>178</sup>, where the coefficient,  $\delta$ , tells us whether the MSC for respondents in the treated group developed differently compared to the non-treated group:

$$MSC_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \beta D_{itc}^{treated} + \delta D_{itc}^{treated} D_{itc}^{17} + Fixed\ effects + Controls + \varepsilon_t$$

<sup>177</sup> A large reduction is defined as being more negative than the EU weighted average change in interchange fees. Similarly, a small reduction is defined as being less negative than the EU weighted average change.

<sup>178</sup> The model is a standard differences-in-differences model with a treatment group of respondents that have experienced the interchange fee reductions above the EU average.  $D^{17}$  is a dummy variable that takes on the value 1 if the year is 2017 and zero otherwise.  $D^{treated}$  is a dummy variable for whether the reduction in the interchange fees for the respondent is above the EU average. Fixed effects are represented by respondents and MS and controls by respondent type and size and whether the MS has a domestic scheme.

We find evidence for a statistically significant relationship between changes in interchange fees and changes in MSC, such that larger reductions in interchange fee payments lead to larger reductions in MSC, see Table 36. The statistical relationship holds for both consumer debit and credit card transactions but is stronger for debit card transactions for the preferred WLS method. It holds for almost all estimation methods. According to this analysis, the group of respondents that experienced larger reductions in interchange fees for debit card transactions had a 0.131 percentage points larger reduction in MSC than the group that experienced smaller reductions (or larger increases) in interchange fees. For credit card transactions, the decline in MSC was 0.211 percentage points larger for the group with large interchange fee reductions, although the statistical significance is somewhat weaker.

	OLS	WLS	QReg
Consumer Debit	-0.092 (152; 0.61)	-0.131*** (152; 0.65)	-0.138*** (152; 0.43)
Consumer Credit	-0.435*** (158; 0.67)	-0.211* (158; 0.63)	-0.345*** (158; 0.48)

Note: Two-sided test for a change in the difference between MSC for respondents with a change in debit/credit/commercial IF above the EU average with respondents with a change in debit/credit/commercial IF below the EU average: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average MSC as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 36: Causal effect of interchange fee changes on merchant service charge (control group: small interchange fee changes) per card type, 2015-2017

Slightly different results are obtained if we make the same estimation using non-capped commercial cards as the treatment benchmark. Now, the relationship between interchange fee reductions and MSC reductions for debit card transactions is not statistically significant. However, the relationship for credit card transactions is strongly statistically significant. Jointly, the two methods of causal analysis show that larger reductions in interchange fees lead to larger reductions in MSC.



	OLS	WLS	QReg
Consumer Debit	-0.138*** (428; 0.61)	0.018 (428; 0.70)	-0.143 (430; 0.38)
Consumer Credit	-0.150*** (436; 0.54)	-0.190** (436; 0.57)	-0.134** (438; 0.35)

Note: Two-sided test for a change in the difference between MSC for debit/credit versus commercial cards: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average MSC as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 37: Causal effect of interchange fee changes on merchant service charge (control group: commercial cards) per card type, 2015-2017

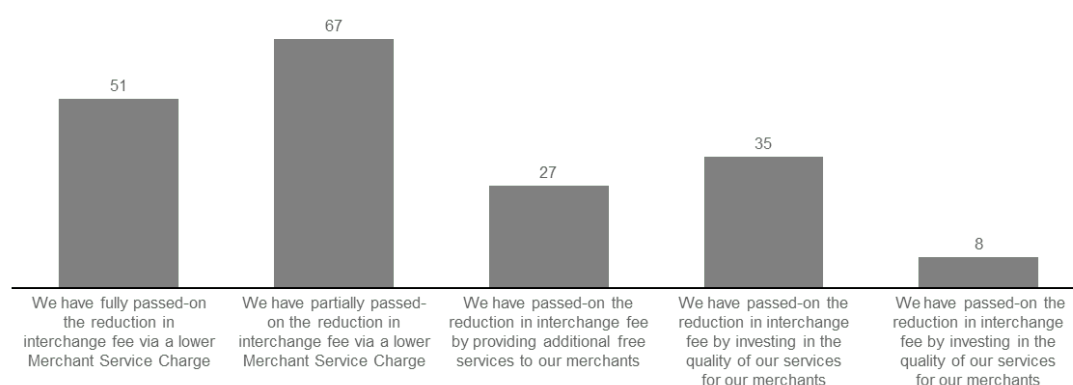
The conclusion is further supported by studies from EU MS reporting the existence of pass-on from acquirers to merchants. Banca d'Italia has conducted a study<sup>179</sup> on the effect of the IFR on MSC and merchant card acceptance with a methodology similar to the one applied in this chapter. The Bank concluded that, in line with the regulatory intent, the cap on interchange fees has led to a sizeable drop in MSC as well as to an increase in the acceptance of card payments among merchants, see more on the latter in chapter 4.5.

Finally, there is qualitative information from the IFR Survey about the extent to which acquirers have passed on savings in interchange fees into lower MSC. Acquirers were asked<sup>180</sup> whether and how they had passed-on savings in the interchange fees to merchants.

Half of the respondents indicated that they had passed-on all interchange fee savings, see Figure 66. Two thirds indicated that they had at least partially passed-on the reduction. One third indicated that they mostly compensated by improving the quality of their services. Note that the same respondents were allowed to answer more than one question. Large acquirers (above EUR 1bn) often indicated full pass-on, while small acquirers (below EUR 10m) mostly indicated partial pass-on.

<sup>179</sup> Ardizzi, G. and M.S. Zangrandi, 2018, The impact of the interchange fee regulation on merchants, evidence from Italy, Questioni di Economia e Finanza No. 434, Banca D'Italia available on [https://www.bancaditalia.it/pubblicazioni/qef/2018-0434/QEF\\_434\\_18.pdf?language\\_id=1](https://www.bancaditalia.it/pubblicazioni/qef/2018-0434/QEF_434_18.pdf?language_id=1)

<sup>180</sup> When interpreting these results, one should be aware that acquirers may have a bias towards overreporting the extent to which they pass on their savings to merchants. However, we have no specific evidence indicating that acquirers overreported.



Note: The numbers indicate the percentage of respondents who indicated 'correct' on the statement in question. The same respondent can answer on several statements. Respondents who have indicated that they passed-on interchange fee reductions in full can also have indicated that they have partially passed-on-reductions.

Source: IFR Survey.

Figure 66: Qualitative information about acquirers' reported pass-on of interchange fee savings to merchants

## 4.4.2 Acquiring margin

In this section, we analyse the acquiring margin, which is one of the components of the MSC. The analysis is based on data from the IFR Survey.

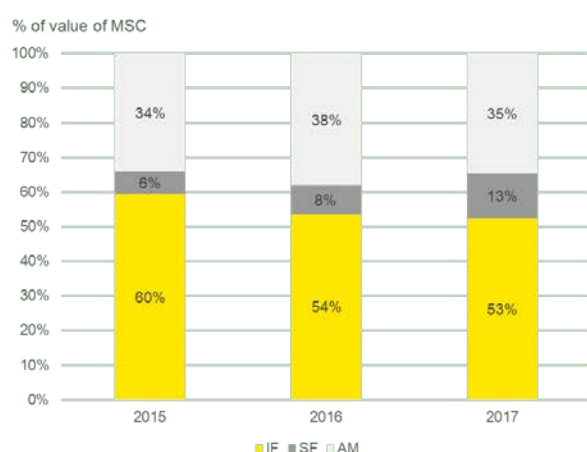
The MSC is composed of interchange fees, acquirer scheme fees<sup>181</sup> and the acquiring margin. The acquiring margin covers the cost and the profit of the acquirer. We define the acquiring margin as the residual of the MSC when subtracting the interchange fee paid by acquirers to issuers and the acquirer scheme fee paid by acquirers to schemes.

The data from the IFR Survey show that the interchange fee is the largest component of the MSC, the acquiring margin the second largest and the acquirer scheme fee the smallest component. This was the case in all years 2015, 2016 and 2017, see Figure 67.

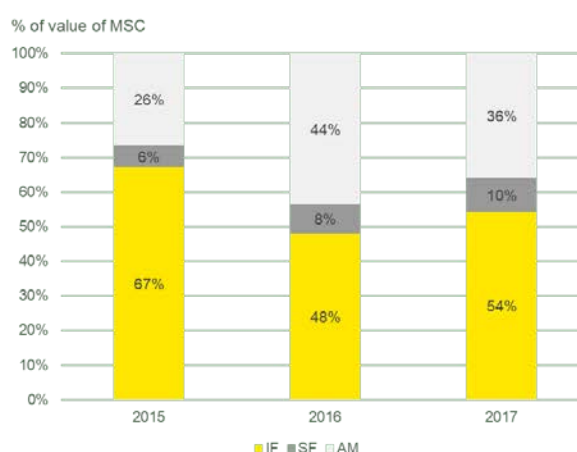
The acquiring margin increased more for credit than for debit card transactions, which is where the interchange fees decreased the most. For debit card transactions, the increase in the acquirer scheme fees (cost increase) paid by acquirers to schemes seems to have offset the small reduction in interchange fees (cost saving) that acquirers pay to issuers. The acquiring margin was largest in 2016. This indicates that acquirers immediately experienced interchange fee savings in 2016, but that the pass-on into lower MSC took time. One reason could be that some contracts with merchants are fixed for a certain time period.

<sup>181</sup> Acquirers have typically included scheme fees and processing fees in their reported scheme fees.

## Debit card transactions



## Credit card transactions



Note: There is no IFR Survey data available for the calculations underlying the figures for the following MS. Debit card transactions: Austria, Bulgaria, Croatia, Cyprus, Finland, Greece, Latvia, Lithuania, Luxembourg, Malta, Slovak Republic, Slovenia. Credit card transactions: Bulgaria, Croatia, Cyprus, Greece, Latvia, Lithuania, Luxembourg, Slovak Republic, Slovenia. IF = interchange fee, SF = (acquirer) scheme fee, and AM = acquiring margin.

Source: IFR Survey.

Figure 67: Merchant service charge components for debit and credit card transactions, 2015 and 2017

Using the findings of 4.1, 4.2.3 and 4.4.1, we estimate that in acquiring margin in EU on annual basis has increased by EUR 1,200 million from 2015 to 2017, see Table 38. This is based on calculating the acquiring margin as the residual of the EUR changes in MSC, interchange fee and acquirer scheme fees.

Fees	Change (EUR million)	Effect on acquirers
Change MSC	-1,200	Revenue loss
- Change interchange fee	-2,680	Cost saving
- Change acquirer scheme fee	280	Cost increase
<b>= Change acquiring margin</b>	<b>1,200</b>	<b>Margin increase</b>

Note: The change in acquiring margin is calculated as the residual of the change of change in MSC – change in interchange fee – change in acquirer scheme fee.

Source: IFR Survey, ECB.

Table 38: Overall EUR change in acquiring margin, 2015-2017

Finally, it has not been possible to conduct a full analysis of the individual components of the MSC on an MS-level due to a low number of observations from acquirers.

## 4.5 Merchants: merchant acceptance

The purpose of this chapter is to analyse the extent to which merchants have increased their acceptance of card-based payments in response to the lower costs of accepting card-based payments. We use data from the IFR survey and supplement with data from public sources.

We have documented that merchants in the period from 2015 to 2017 have saved costs on the MSC, and that these costs savings are causally related to the interchange fee cap, see section 4.4. For merchants, it means lower costs of accepting card-based payments and that it has become more attractive to accept these payments. These changes could spur merchants to adapt their behaviour, for example leading to more merchants accepting cards, merchants installing more POS-terminals, merchants accepting new card payment instruments, or merchants abandoning restrictions on minimum transaction amounts. All effects are in turn likely to encourage consumers to use payments cards more often, leading to increased consumer usage of card-based payments.

We find evidence of increased acceptance since 2015, both in terms of the number of merchant outlets accepting cards and in terms of the number of POS terminals. However, the results provide no evidence showing that acceptance has increased more after 2015 than it did before 2015. Hence, it is not possible to judge whether the observed increase in acceptance is due to the IFR or to other factors.

Furthermore, merchants seem to be inclined to accept new payment instrument (based on cards) as contactless cards and mobile payments and refer directly to lower costs of acceptance as one of several reasons for adopting new payment instruments.

### Change in merchant acceptance

First, we examine the development of card acceptance at merchant outlets in EU-28 MS. We explore whether there is an increase in merchant outlets accepting card payments. We estimate a formal statistical model<sup>182</sup> for the period 2014-2016 based on data from RBR. The model aims at determining whether there is a statistically significant change in merchant acceptance after the implementation of the interchange fee caps in December 2015. In the model, the parameter  $\mu$  measures the average change in the number merchant outlets per MS:

We conclude that there has indeed been a statistically significant increase in the number of

$$A_{tc} = \alpha + \mu D_{tc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

merchant outlets per MS, on average around 29,000 outlets, after 2015, see Table 39. This corresponds to an increase of about 11% relative to the average number of merchant outlets per MS in 2015. However, we cannot, based on available data, tell whether the rate of change is larger or smaller than in the years prior to 2015.

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<sup>182</sup> The variable,  $A_{tc}$ , measures the change in the number of merchant outlets accepting cards in MS  $c$  in a given year  $t$ .  $D_{tc}^{17}$  is a dummy that is one for the years after 2015 (post-IFR) and zero otherwise. *Fixed effects* are fixed effects for the MS. *Controls* control for the MS size (in terms of the log of the MS's total number of transactions).

	Variable	OLS	QReg
Merchants outlets accepting cards (thousand outlets)	After 2015	29.1***	8.0***
	(N, R-squared)	(75; 1.00)	(75; 0.95)

Note: The data cover the period 2014-2016. The R-squared is high (almost 100%) in both models. This is because the MS fixed effects capture almost all variation in addition to the coefficient capturing the change in merchant outlets. The reason is that the RBR data contain only one time-series observation over a short time-period (2014-2016) per MS while the IFR Survey data usually contain more than one time-series observation, e.g. from Visa, MasterCard, as well as from issuers and acquirers.

Two-sided test for total change in total number of merchant outlets (in thousands): \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the total number of merchant outlets in thousands // number of observations and R-squared in brackets // only Member States with data for all years are included // MS fixed-effects.

Source: RBR.

Table 39: Change in number of merchant outlets accepting card payments, 2014-2016

Second, we estimate the change in the number of POS-terminals installed at merchant outlets using a similar model. The number of POS-terminals captures merchant acceptance in a broader sense as it also counts additional terminals installed at merchants that already have at least one single terminal. The analysis is based on public data from the ECB during the period 2014-2018. In line with the finding of increased number of merchant outlets accepting cards, we find a statistically significant change in the average number of POS-terminals per MS after 2015. This is also in line with the finding of increased number of terminals in section 3.1.4. The increase was on average around 4,500 POS-terminals per million capita.

	OLS	QReg
Number of POS terminals	4,508***	3,092***
(Change in number per million capita)	(110; 0.87)	(110; 0.75)

Note: Data on the number of POS terminals per million capita are from ECB and data spans 2014-2018. The regressions are conducted only for MS with observations for all years. Hence, the following MS are not included in the regressions: Croatia, Cyprus, Finland, Ireland, Malta, Sweden.

Two-sided test for total change in number of POS terminals: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change after the regulation on the total number // number of observations and R-squared in brackets // only Member States with data for all years are included // MS fixed-effects.

Source: ECB.

Table 40: Change in number of POS-terminals (excluding time trend), 2014-2018

Next, we conduct the same estimation but control for a time trend, which means that we assess whether the change in POS-terminals was different after 2015 than before 2015. This yields no statistically significant results, which means that although the number of POS-terminals increased after 2015, the number of POS-terminals did not increase more or less after 2015 than before 2015.

	OLS	QReg
Number of POS terminals	-54	426
(Change in number per million capita)	(110; 0.88)	(110; 0.78)

Note: Data on number of POS terminals per million capita are from ECB and data spans 2014-2018. The regressions are conducted only for MS with observations for all years. Hence, the following MS are not included in the regressions: Croatia, Cyprus, Finland, Ireland, Malta, Sweden.

Two-sided test for total change in number of POS terminals: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change after the regulation on the total number // number of observations and R-squared in brackets // only Member States with data for all years are included // MS fixed-effects.

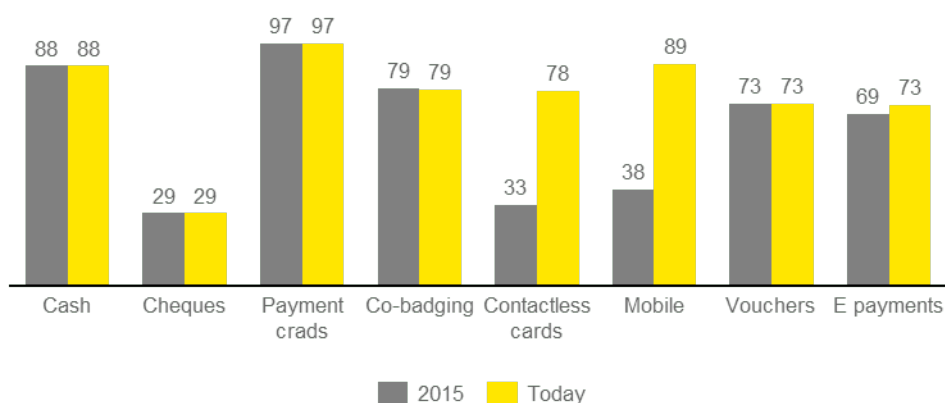
Source: ECB.

Table 41: Change in number of POS-terminals (including time trend), 2014-2018

Third, we have some but limited qualitative information about card acceptance from the IFR-survey. This information provides insights from a different angle than the number of acceptance points. It can tell us what types of payments were accepted at the acceptance points. We find that merchants today to a larger degree accept new card-based payment instruments, as contactless cards and mobile payments, than in 2015, see Figure 68. The acceptance of other payment instruments remained by and large constant in the same period.

According to merchants, the main driving forces behind changes in acceptance of payment instruments are consumer demand, lower costs of acceptance, and technological improvements.<sup>183</sup>

<sup>183</sup> Responses of merchants to the IFR Survey to merchants, question 28.



Note: The bars and numbers in the figure correspond to the share of respondents that accepted the payment instrument in the given year. "Today" should be interpreted as the time the respondent completed the IFR Survey, i.e. in winter and spring of 2019.

Source: IFR Survey.

Figure 68: Merchant acceptance of payment instruments in the EU, 2015 and 2019

In addition, qualitative information from the IFR Survey show that the number of schemes that were accepted by merchants has remained stable during 2015-2019.<sup>184</sup>

Merchants may use minimum transaction amounts for accepting card payments to avoid low value card payments with high relative costs, for instance if the MSC is a fixed minimum fee per transaction. We would expect that the purely percentage-based interchange fee (for most MS) would make costs (more) proportional to the transaction value and could lead to a lesser need for imposing minimum transaction amounts, especially for small merchants. This is not what we observe. The share of merchants using minimum transaction values as a way to steer cardholders away from low-value transactions was minimal both in 2015 and in 2017 according to information from the IFR Survey.<sup>185</sup> The reason is likely that most of the merchants answering the IFR Survey are large and the results may not be representative of small merchants who use minimum transaction amounts the most. It could also be because merchants have started to use mobile POS terminals without fixed per-transactions fees included in the rental of the payment terminals, see section 4.5.

<sup>184</sup> Responses of merchants to the IFR Survey to merchants, question 29.

<sup>185</sup> Responses of merchants to the IFR Survey to merchants, question 30.

## 5 MERCHANTS' PASS-THROUGH OF INTERCHANGE FEE REDUCTIONS

In line with Article 17 (d) of the IFR, which provides for an assessment of the pass-through from merchants to consumers, the aim of this chapter is to investigate how much of merchants' cost savings from the IFR are passed through to consumers<sup>186</sup> and to quantify consumer savings for the EU as a whole, as well as for five Member States (MS): Denmark, Germany, Greece, Italy and Poland. The five Member States are selected as representative MS from geographically distinct parts of the EU and with different levels of living standards.

Since the pass-through of interchange fee (IF) savings is very difficult to measure directly, the consumer savings are calculated based on estimated pass-through rates in the food retail sector supplemented with qualitative evidence from merchant interviews. We choose the food retail sector as a representative sector for which to measure pass-through as the literature provides a large number of pass-through estimates for retail sectors in Europe, which makes for reliable pass-through estimates.

For our assessment, we use insights from the pass-through literature to conduct a meta-study and estimate the pass-through rate of cost changes in the countries of interest. The analysis does not allow to assess whether there was in fact a pass-through of cost savings stemming from the IFR. Rather, it allows to estimate consumer savings assuming that cost pass-through rates are consistent with historical average pass-through rates in the empirical literature.

We find that merchants in the food retail sectors of the five MS in the long run pass-through up to 66% of cost savings to consumers. This is close to the average pass-through rate in the food retail sectors of all EU, where up to 72% of cost savings are passed through from merchants to consumers.

Assuming full pass-through of acquirers' cost savings to merchants and based on the estimated pass-through rates, the total consumer savings per year from the IFR across the five MS amount to EUR 587 million. The average annual consumer savings per household across the five MS are EUR 6.76. Across the entire EU, the total potential for interchange fee savings for consumers is estimated to EUR 1,930 million and the average potential consumer savings per household to EUR 8.81.

Taking into consideration the actual pass-through of acquirers' cost savings to merchants via reductions in the Merchant Service Charge (MSC) as lower bound and based on the estimated pass-through rates, the total consumer savings in all five MS amount to EUR 333 million. The average consumer savings per household across the five MS are EUR 3.83. Across the entire EU, the lower bound potential for interchange fee savings for consumers is estimated to EUR 864 million and the average potential consumer savings per household to EUR 3.94.

The chapter proceeds in four steps:

*First*, we collect cost pass-through rates from the existing empirical literature and studies in European MS. We review a total of 32 studies, covering 166 individual estimates of pass-through rates in different settings. For each estimate, we collect information about the determinants of

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<sup>186</sup> The degree to which merchant's pass-through cost savings can be quantified as merchants' pass-through rate, i.e., the share of cost savings experienced by merchants that ultimately are passed on to consumers through lower product prices. A pass-through rate of, for instance, 75% implies that a merchant with cost savings of EUR 1,000 ultimately passes on EUR 750 to consumers through lower prices on the goods sold.



the pass-through. Then, we collect supplementary information about sectoral and MS-specific factors identified in the literature study which have an impact on the size of pass-through. This includes for instance measures of economic output such as labour productivity and the prevalence of using card payments in a given MS. See section 5.1.

*Second*, we build a regression model that estimates an empirical relationship between the merchant pass-through rates in EU MS and a range of relevant explanatory variables. The regression model is then used to predict merchant pass-through rates in the five MS of interest. See section 5.2.

*Third*, we calculate the consumer savings from the IFR for two different scenarios: the first scenario where IF savings are assumed to be fully passed through from acquirers to merchants, which, in turn, pass through part of their savings to consumers. The second scenario where IF savings are partly passed through from acquirers to merchants, which, in turn, pass through part of their MSC savings including IF savings to consumers. See section 5.3.

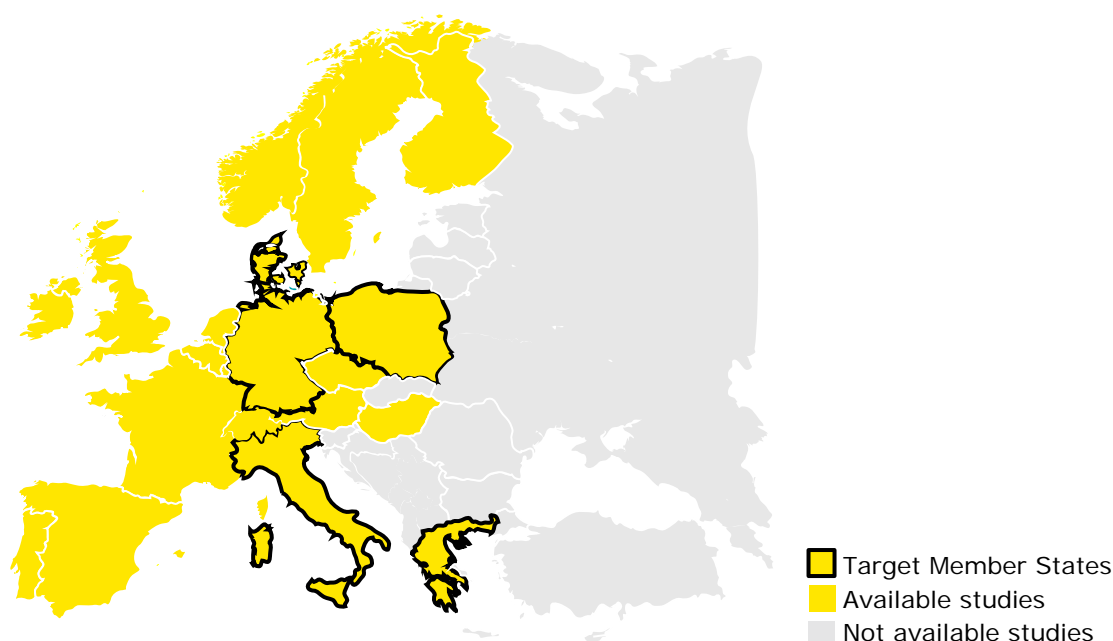
*Fourth*, we present qualitative evidence from a merchant survey and from interviews with selected merchants on cost pass-through to supplement the findings from our quantitative analysis on merchant pass-through. See section 5.4.

## 5.1 Collection of pass-through data

Interchange fees constitute very small costs of payment which are difficult to measure directly without extensive and granular cost and price data, if at all. Following the capping of IF in the past, such as in Australia (2003) or Spain (2005), the direct assessment of the pass-through of cost savings resulting from the IF cap to consumers was difficult because the cost changes from the IF capping were very small. Therefore, this chapter seeks to measure the pass-through of cost savings resulting from the IFR indirectly by conducting a meta-study, first, pass-through rates and their determinants are collected from the literature and then used to predict the missing pass-through rates of interest.

Pass-through rates and the factors influencing pass-through have been extensively studied in the academic literature. In total, we identified 32 studies that investigate how merchants pass through cost changes to consumers in different sectors across European MS. The goal of this literature study is to, firstly, collect cost pass-through rates, and, secondly, to obtain an overview about the determinants of those pass-through rates that can inform our regression model. We compile this information into a data set of pass-through rates and determinants based on which we can perform our meta-study.

Cost pass-through estimates are available in 25 of the 32 collected studies. They cover 20 European countries, of which five (Denmark, Germany, Greece, Italy and Poland) are the MS of interest for this study, see Figure 69.



Source: Copenhagen Economics based on meta-study.

Figure 69: Member States covered by European studies on cost pass-through

The studies comprise 166 individual cost pass-through estimates. Often, the studies identify multiple pass-through rates depending on differences in cost change characteristics, products and MS. Most of the collected pass-through estimates belong to the retail, wholesale trade or electricity sector, see Table 42.

Sector	Number of studies	Number of cost pass-through rates	Number of MS
Retail	13	74	16
(of which food retail)	(11)	(57)	(7)
Electricity	5	20	4
Wholesale trade	2	42	18
Materials (cement, glass, etc.)	2	13	7
Refining	1	12	6
Financial leasing	1	4	1
Automotive	1	1	1
<b>Total</b>	<b>25</b>	<b>166</b>	<b>-</b>

Note: The studies often include multiple pass-through estimates for different products, sectors and/or countries.

Source: Copenhagen Economics based on meta-study.

Table 42: Collected pass-through rates in meta-study

In addition to the pass-through rates, the literature provides insights into the determinants of pass-through, hence, factors that affect the pass-through rate, see Table 43. Understanding these factors helps to identify the variables that explain pass-through (so-called explanatory variables) and that should be included in our regression model estimating merchant pass-through. For example, the literature shows that the model must include information on the direction of the cost change, because whether the costs increase or decrease appears to impact how much of the cost change is passed-through to consumers. Moreover, the intensity of competition in the output market plays a role in the extent of pass-through from merchants to consumers. According to the empirical and economic literature, pass-through rates of industry-wide cost changes tend to be higher, the more intense is competition on a market. Therefore, a regression model should include information on the characteristics of markets.

Factor	Pass-through evidence
Small cost changes	The studies provide evidence of pass-through of large and small cost changes in different sectors and different countries. Bergman and Hansen (2012) <sup>187</sup> , for instance, show that a DKK 0.04 increase in taxes per beer bottle is passed through to consumers. This is important evidence for the analysis since the decrease in IF due to the IFR also constitutes a small cost change across sectors and countries. This shows that pass-through of small cost changes is possible in the first place.
Firm-specific vs industry-wide cost changes	Cost changes may only affect individual firms, or they may affect all firms in an industry or market. Theoretical literature shows that the extent of pass-through to consumer prices may vary significantly between these scenarios. <sup>188</sup>
Cost decrease	The studies show that pass-through of cost decreases is lower/less likely than pass-through of cost increases <sup>189</sup> , that retail prices respond more slowly to cost decreases than to cost increases at wholesale level <sup>189</sup> , and that, nevertheless, there is evidence of pass-through of cost decreases to consumers in different industries and different countries <sup>190</sup> .
Intensity of competition in output markets	The studies indicate that pass-through to consumers is lower in markets with less competition and higher in markets with intense competition given that the cost change is industry-wide. <sup>108</sup>
Level of value chain	The studies show that pass-through to the wholesale level differs from pass-through to the retail level. <sup>191</sup>

Source: Copenhagen Economics based on meta-study.

Table 43: Factors that influence pass-through

### 5.1.1 Sector and country study for supplementary information

In a sector study, we map characteristics of relevant sectors in European MS, specifically, of sectors that are characterised by a relatively high share of card payments and are therefore especially relevant for the merchant pass-through of cost decreases from the IF cap, e.g., the retail sector. These characteristics are already identified in the literature study and then collected in the sector study. They serve as explanatory variables in the regression model to predict the pass-through rates of interest.

Specifically, the sector study considers factors that impact the rate of pass-through of cost changes from merchants to consumers. These are measures regarding the economic output and

<sup>187</sup> Bergman, U. M., & Hansen, N. L. (2012). "Are excise taxes on beverages fully passed through to prices? The Danish evidence.", Working Paper.

<sup>188</sup> RBB Economics (2014). "Cost pass-through: theory, measurement, and potential policy implications"

<sup>189</sup> Mirza, F. M., & Bergland, O. (2012). "Pass-through of wholesale price to the end user retail price in the Norwegian electricity market", Energy Economics, Volume 34, Number 6 2012, p. 2003-2012.

<sup>190</sup> Bonnet, C., & Réquillart, V. (2012). "Sugar policy reform, tax policy and price transmission in the soft drink industry", Toulouse School of Economics.

<sup>191</sup> Jimborean, R. (2013). "The exchange rate pass-through in the new EU member states", in: Economic Systems, Volume 37, Number 2, p. 302-329.

competitiveness on the market, for example the productivity of labour. There is empirical evidence showing a positive correlation between competition and productivity.<sup>192</sup>

Moreover, the study maps country-specific characteristics that could impact the degree of pass-through of cost decreases from the IF cap. These include measures such as the GDP and the number and value of card-based transactions between 2011 and 2017.<sup>193</sup>

The underlying data of the country and sector study is partly firm-level data from the Amadeus database, which contains ownership and accounting data for a large sample of firms across Europe. Based on Amadeus data for the period from 2006 until 2015, we calculate the labour productivity in sectors of interest, the food retail sector. The labour productivity measures economic output and is calculated as operating revenue per employee.

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<sup>192</sup> CMA (2015): "Productivity and competition - A summary of the evidence"

<sup>193</sup> The numbers come from the OECD and ECB.

## 5.2 Merchant pass-through meta-study

Based on the data set on pass-through rates and their determinants, we conduct a meta-study by building a generic pass-through model that allows us to determine which factors (i.e., variables) influence pass-through, to which extent and in which direction. With this model, we can then predict pass-through rates for specific sectors or countries for which we do not have direct pass-through rates from the literature provided we know their factor characteristics.

### 5.2.1 Prediction of merchant pass-through rates

The model determines how the pass-through rate is influenced by three different types of characteristics, cost change characteristics, sector-specific characteristics and country-specific characteristics, which we identified in the literature research of the previous section.

Cost change characteristics include the direction of the cost change, i.e., whether the cost item increases or decreases that is captured. All pass-through rates in the sample come from industry-wide cost changes, hence, cost changes that affect the entire industry rather than only specific firms. Also, all pass-through rates in the sample result from direct cost changes. Direct costs, cost of production, can be traced to the specific object that is bought by consumers. Indirect costs, or costs of trading, on the other hand, occur in the course of purchasing the object but cannot be traced to the specific object.

Sector-specific characteristics include two variables: the intensity of competition on output markets and the level of the value chain in the sector. We control for the intensity of competition on output markets by including a measure for economic output, that is the labour productivity in the different sectors. Moreover, we obtain pass-through rates from different value chain levels from the literature study, both for the wholesale-to-merchant (acquirer-to-merchant) as well as the merchant-to-consumer level. We control for the level of the value chain by including a dummy for merchant-to-consumer pass-through rates, since the level of the value chain influences the pass-through rate. In addition, we include sector dummies to control for the pass-through of cost changes in each sector. This is necessary because additional unobserved sector-specific factors, that we cannot control for in the model, are likely to affect the pass-through of cost changes as well. The sector dummies control for these unobserved factors so that they do not bias our results.

Country-specific characteristics include three variables. The first variable is the average Gross Domestic Product (GDP) between 2006 and 2017 for each MS, reflecting the standard of living. We take the average GDP between 2006 and 2017 to ensure the representativeness of the measure over time. The second and third variable are the average annual volumes and values of card-based transactions in each MS. Including these variables allows us to control for the propensity of different MS to use card payments. Since the pass-through rates from the literature cover different years, we take an average annual volume and value between 2011 and 2017, to ensure that the volumes and values of card-based transactions are representative for multiple years instead of just one.

We first estimate a model that explains the available pass-through rates collected in our literature study given their specific sector and country characteristics. Then, we use the same model as well as the same sector and country characteristics to predict the missing pass-through rates of interest. In this way, we predict merchant-to-consumer pass-through rates for cost increases as well as cost decreases in the food retail sectors of Denmark, Germany, Greece, Italy and Poland.

### 5.2.2 Estimation results

The estimation results confirm that cost changes are, to a large extent, passed-through to consumers, see Table 44. Moreover, the results for the food retail sector show that cost increases are consistently passed through on a larger scale than cost decreases. On average, cost increases in the MS of interest are nearly fully passed-through to consumers, at 90%, whereas only 66% of cost decreases are passed-through. This is in line with the literature on cost pass-through. Bergman and Hansen (2012), for instance, show that in the Danish beverage retail sector, tax increases are consistently passed-through on a larger scale to consumers than tax decreases.<sup>194</sup>

Sector	DE	DK	EL	IT	PL	Average w/o PL
Food retail: Direct <b>cost increase</b>	0.84 (0.73 – 0.95)	0.88 (0.76 – 1.01)	1.00 (0.83 – 1.17)	0.88 (0.76 – 1.01)	1.21 (1.00 – 1.42)	<b>0.90</b>
Food retail: Direct <b>cost decrease</b>	0.60 (0.47 – 0.72)	0.64 (0.51 – 0.77)	0.76 (0.57 – 0.94)	0.64 (0.50 – 0.78)	0.97 (0.76 – 1.17)	<b>0.66</b>

Note: The food retail sector corresponds to the NACE code 4711 describing retail sale in non-specialised stores with food, beverages or tobacco predominating. The number above show the predicted pass-through rates from merchants to consumers in the food retail sectors of the five MS – both for cost increases and cost decreases. The numbers in brackets show the 95% confidence intervals of the stated estimated pass-through rates.

Source: Copenhagen Economics based on meta-study.

Table 44: Merchant pass-through estimates of cost changes in the food retail sectors of MS of interest

The above-mentioned average pass-through rates do not include the Polish pass-through rate since Poland seems to be an outlier. Poland is the only MS of the five MS for which the literature does not provide any pass-through rates for any type of retail sector, whereas the literature provides at least one pass-through rate for retail sectors of the other four MS. If, for instance, there is no pass-through rate available for the food retail sector in Italy, there is one available for its fuel retail sector. This is not the case for Poland. Since pass-through rates for non-retail sectors in Poland are available, it is still possible to estimate the pass-through rate in the retail sector of Poland, however, this measure might be less reliable than in the other MS due to possible sector-specific pass-through differences. This can be the reason for the outlier character of Poland and its much higher cost pass-through rate in the food retail sector compared to the other four MS.

The reported pass-through rates for the five MS cover direct cost changes in the food retail sector that we use to approximate the pass-through of cost changes resulting from the IFR. The change in interchange fee, however, is an indirect cost change, that is a change in costs of

<sup>194</sup> Bergman, U. M., & Hansen, N. L. (2012). "Are excise taxes on beverages fully passed through to prices? The Danish evidence.", Working Paper.

payment, rather than of production. Since the pass-through of indirect cost changes could differ from the pass-through of direct cost changes, the estimated pass-through rates should be applied with caution.

On average, the estimated merchant pass-through of direct cost decreases in the food retail sectors across the EU<sup>195</sup> is similar to the average pass-through of the same cost change in the five MS<sup>196</sup>, see Table 45. This supports the reliability of the pass-through rates estimated in our quantitative analysis since pass-through rates appear to be stable across the EU.

Sector	Average for four MS, excluding PL	EU average
Food retail: Direct <b>cost increase</b>	0.90	0.96
Food retail: Direct <b>cost decrease</b>	0.66	0.72

Note: The food retail sector corresponds to the NACE code 4711 describing retail sale in non-specialised stores with food, beverages or tobacco predominating. The numbers above show the average of the predicted pass-through rates of cost decreases from merchants to consumers in the food retail sectors of 26 MS of the EU (Austria and Poland are outliers and therefore excluded).

Source: Copenhagen Economics based on meta-study.

Table 45: Average merchant pass-through estimate of cost changes in the food retail sector in the EU

<sup>195</sup> Excluding Austria and Poland, which are outliers.

<sup>196</sup> Excluding Poland, which is an outlier.



### 5.3 Consumer savings from the IFR

Based on our insights from the regression analysis combined with the results from the IFR survey, see Chapter 4, we can calculate the total value of expected consumer savings as well as the consumer savings per household resulting from merchant pass-through to consumers. We conduct our calculations for two different scenarios.

We now assume that acquirers fully pass through the IF savings to merchants. This constitutes the upper bound scenario. Then, we assume that acquirers only partly pass through the IF savings to merchants in line with changes in the MSC. At the same time, our pass-through estimates show that merchants, in turn, pass through part of their IF savings to consumers. We calculate consumer savings for all consumer card payments.

First, we calculate an upper bound of consumer savings from the IF cap by assuming full pass-through of IF savings from acquirers to merchants. Here, we can directly calculate the consumer savings from the gross IF savings that occur in each MS after the IFR.

We calculate consumer savings in five steps:

1. We obtain the percentage savings in IF for merchants by calculating the difference between the IF in 2017 and the IF in 2015 for both debit and credit card payments in each MS, see Table 46.

Debit card payments	DE	DK	EL	IT	PL
IF in 2015 (% of total trx value)	0.22%	0.21%	0.52%	0.42%	0.23%
IF in 2017 (% of total trx value)	0.19%	0.20%	0.19%	0.19%	0.18%
IF savings (% of total trx value)	0.03%	0.01%	0.33%	0.23%	0.05%
Credit card payments	DE	DK	EL	IT	PL
IF in 2015 (% of total trx value)	0.65%	0.41%	0.86%	0.60%	0.33%
IF in 2017 (% of total trx value)	0.30%	0.30%	0.30%	0.29%	0.29%
IF savings (% of total trx value)	0.35%	0.11%	0.56%	0.31%	0.04%

Note: Trx stands for transactions. The IF in 2015 and 2017 is a weighted average per country based on scheme data from a survey. We have made robustness checks for the above applied IFR survey data using Federal Reserve Bank data.

Source: IFR survey.

Table 46: IF savings (% of total transaction value) for debit and credit cards

2. To approximate the percentage savings in IF passed through to consumers, we multiply the estimated pass-through rates of cost decreases in the food retail sectors of each MS, see Table 44, with the percentage IF savings for merchants from step 1 (assuming full pass-on from acquirers), see Table 49. Hence, we base the calculation of IF savings for consumers on the merchant-to-consumer pass-through in the food retail sector and therefore assume that the pass-through of IF savings is consistent with average pass-through in food retail.

Debit card payments	DE	DK	EL	IT	PL
Estimated pass-through of cost decreases in food retail	0.60	0.64	0.76	0.64	0.97
IF savings for merchants	0.03%	0.01%	0.33%	0.23%	0.05%
IF savings for consumers	0.0174%	0.0080%	0.2451%	0.1464%	0.0481%
Credit card payments	DE	DK	EL	IT	PL
Estimated pass-through of cost decreases in food retail	0.60	0.64	0.76	0.64	0.97
IF savings for merchants	0.35%	0.11%	0.56%	0.31%	0.04%
IF savings for consumers	0.2131%	0.0694%	0.4244%	0.1984%	0.0401%

Source: IFR survey.

Table 47: Percentage savings in IF passed through to consumers

3. We obtain the total values of debit and credit card transactions in 2015 by multiplying the total value of debit and credit card transactions at POS terminals in 2015 with the value shares of debit and credit card transactions in the total value of card transactions in 2015, see Table 48.

Debit card payments	DE	DK	EL	IT	PL
Value share of total value of debit card trx	65%	92%	51%	66%	81%
Total value of trx at terminals in 2015 in million EUR	229,756	68,231	12,250	194,927	46,405
Value of debit trx in million EUR in 2015	150,055.75	63,015.60	6,186.67	127,845.41	37,629.44
Credit card payments	DE	DK	EL	IT	PL
Share of total value of credit card trx	35%	8%	49%	34%	19%
Total value of trx at terminals in 2015 in million EUR	229,756	68,231	12,250	194,927	46,405
Value of credit trx in million EUR in 2015	79,699.90	5,215.08	6,062.98	67,081.92	8,775.22

Note: Trx stands for transactions. The shares of total value of debit and credit cards do not add up to 100% since there is another type of payment card, commercial cards, which were not affected by the IFR.

Source: Copenhagen Economics based on ECB data.

Table 48: Value of debit and credit card transactions in 2015

4. We obtain the total values of IF savings for consumers in both debit and credit card transactions by multiplying the percentage savings in IF for consumers from step 2 with the total values of debit and credit card transactions in 2015 from step 3, see Table 49. We calculate savings based on aggregate values of card-based transactions for 2015 instead of 2017. Since aggregate values of card-based transactions could increase over time due to increasing card acceptance levels, our calculations are conservative.

Debit card payments	DE	DK	EL	IT	PL
IF savings for consumers	0.0174%	0.0080%	0.2451%	0.1464%	0.0481%
Value of debit trx in million EUR in 2015	150,055.75	63,015.60	6,186.67	127,845.41	37,629.44
Value of IF savings for consumers in million EUR	26.13	5.02	15.16	187.17	18.09
Credit card payments	DE	DK	EL	IT	PL
IF savings for consumers	0.2131%	0.0694%	0.4244%	0.1984%	0.0401%
Value of credit trx in million EUR in 2015	79,699.90	5,215.08	6,062.98	67,081.92	8,775.22
Value of IF savings for consumers in million EUR	169.82	3.62	25.73	133.10	3.52

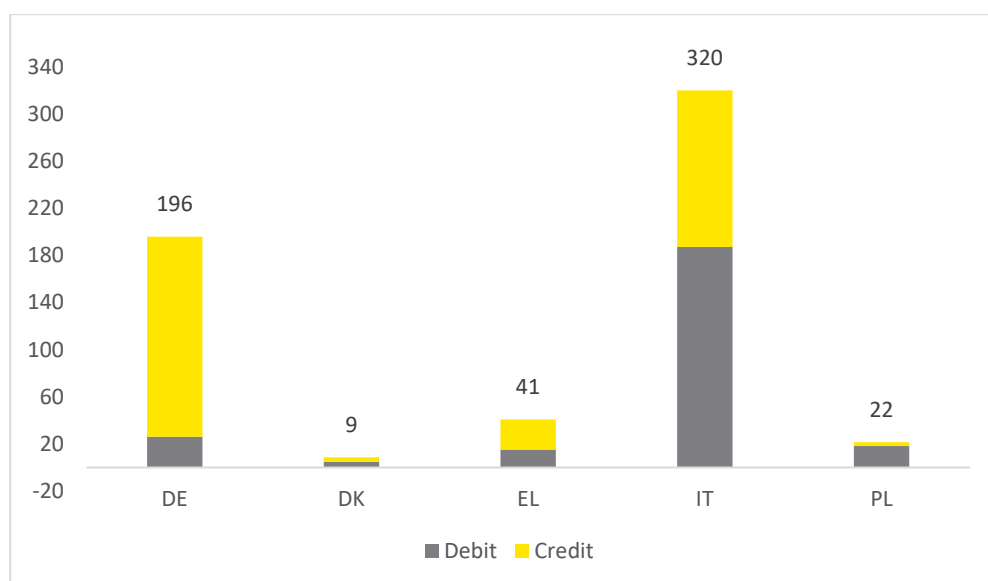
Note: Trx stands for transactions.

Source: Copenhagen Economics based on ECB data.

Table 49: Total values of IF savings for consumers in debit and credit card transactions

The calculations yield total consumer savings per year across all five MS up to EUR 587 million. The consumer savings are highest in Italy for debit card payments at approximately EUR 187 million and highest in Germany for credit card payments at approximately EUR 170 million. Denmark has the lowest consumer savings for debit card payments at approximately EUR 5 million and Poland has the lowest consumer savings for credit card payments at approximately EUR 3.5 million.

The total value of consumer savings from the IFR for both types of cards are highest in Italy at around EUR 320 million, see Table 76. The total value of consumer savings from the IFR depends on two factors: the level of IF before the IFR and the value of debit and credit card payment transactions in the MS. Total consumer savings are lower when IF were already low in 2015 before the caps were implemented. Moreover, high values of debit and credit card transactions, hence large shares of card payments in total payments, imply higher total consumer savings from the IFR.



Source: EY and Copenhagen Economics based on Table 49.

Figure 70: Total consumer savings per year from the IFR for both types of cards in million EUR

- To obtain IF savings for consumers per household, we divide the total value of consumer savings from the IFR for both card types from step 4 by the number of households per MS, see Table 50.

Debit card payments	DE	DK	EL	IT	PL
Value of IF savings for consumers in million EUR	26.13	5.02	15.16	187.17	18.09
Number of households in 2015 in thousands	40,257.80	2,373.10	4,376.10	25,788.60	14,110.00
Consumer savings per household in EUR	0.65	2.12	3.46	7.26	1.28
Credit card payments	DE	DK	EL	IT	PL
Value of IF savings for consumers in million EUR	169.82	3.62	25.73	133.10	3.52
Number of households in 2015 in thousands	40,257.80	2,373.10	4,376.10	25,788.60	14,110.00
Consumer savings per household in EUR	4.22	1.52	5.88	5.16	0.25

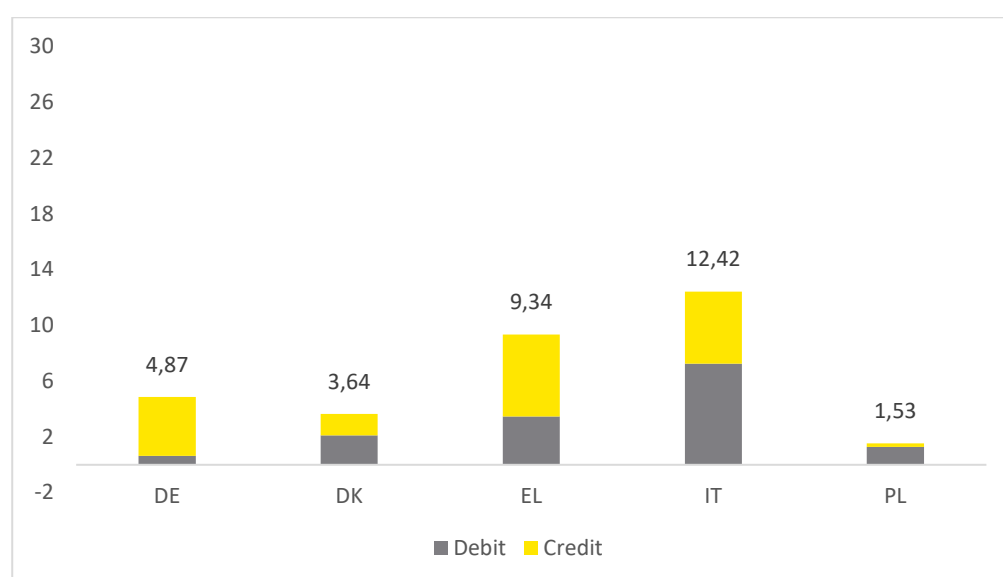
Note: Trx stands for transactions. The numbers of households are stated in thousands.

Source: Copenhagen Economics based on Eurostat Number of private households by household composition, number of children and working status within households.

Table 50: Consumer savings per household per year from the IFR in debit and credit card transactions

The calculations yield average consumer savings per household per year across the five MS of EUR 6.76.<sup>197</sup> The consumer savings are highest in Italy for debit card payments at EUR 7.26 per household and highest in Greece for credit card payments at EUR 5.88. The consumer savings are lowest in Germany for debit card payments at EUR 0.65 per household and lowest in Poland for credit card payments at EUR 0.25 per household.

The total consumer savings per household from the IFR are highest in Italy at EUR 12.42, see Figure 71. The results show in which MS households on average use card payments more than households in other MS. Denmark, for instance, has the lowest total IF savings for consumers, since IF were already low in 2015. Nevertheless, consumer savings per household are comparatively high due to high levels of card-payment activity per Danish household.



Source: Copenhagen Economics based on Table 50.

Figure 71: Consumer savings per household per year from the IFR for both types of cards in EUR

*Second*, for the scenario where acquirers only partly pass-through the IF savings to merchants, we can calculate the consumer savings indirectly via the Merchant Service Charge (MSC), which comprises the IF as one of three types of payment fees. Hence, we assess how the MSC changed for merchants from 2015 to 2017, and subsequently, how much of the saved MSC merchants passed through to consumers.

We calculate consumer savings in four steps:

1. We obtain the percentage savings in MSC for merchants by calculating the difference between the MSC in 2015 and 2017 for both debit and credit card payments in each MS, see Table 51.

<sup>197</sup> These are weighted averages across the five MS according to number of households in each MS.

Debit card payments	DE	DK	EL	IT	PL
MSC in 2015 (% of total trx value)	0.06%	0.76%	1.08%	0.65%	0.53%
MSC in 2017 (% of total trx value)	0.09%	0.62%	0.76%	0.56%	0.47%
MSC savings	-0.03%	0.14%	0.32%	0.09%	0.06%
Credit card payments	DE	DK	EL	IT	PL
MSC in 2015 (% of total trx value)	1.20%	1.27%	1.13%	1.07%	0.71%
MSC in 2017 (% of total trx value)	0.99%	0.98%	0.80%	0.90%	0.69%
MSC savings	0.21%	0.29%	0.33%	0.17%	0.02%

Note: Trx stands for transactions. The MSC in 2015 and 2017 is a weighted average per country based on acquirer responses from a survey.

Source: IFR survey.

Table 51: MSC savings (% of total transaction value) for debit and credit cards

- To obtain the percentage savings in MSC passed through to consumers, we multiply the estimated pass-through rates of cost decreases in the food retail sectors of each MS, see Table 44, with the percentage MSC savings that merchants experienced from step 1, see Table 52.

Debit card payments	DE	DK	EL	IT	PL
Estimated PTR of cost decreases in food retail	0.60	0.64	0.76	0.64	0.97
MSC savings for merchants	-0.03%	0.14%	0.32%	0.09%	0.06%
MSC savings for consumers	-0.0187%	0.0936%	0.2441%	0.0523%	0.0551%
Credit card payments	DE	DK	EL	IT	PL
Estimated PTR of cost decreases in food retail	0.60	0.64	0.76	0.64	0.97
MSC savings for merchants	0.21%	0.29%	0.33%	0.17%	0.02%
MSC savings for consumers	0.1236%	0.1847%	0.2472%	0.1110%	0.0165%

Note: We have made robustness checks for the above applied IFR survey data using Federal Reserve Bank data.

Source: IFR survey and own calculations.

Table 52: Percentage savings in MSC passed through to consumers

- We obtain the total values of MSC savings for consumers in both debit and credit card transactions by multiplying the percentage savings in MSC for consumers from step 2 with the total values of debit and credit card transactions in 2015, see Table 53.

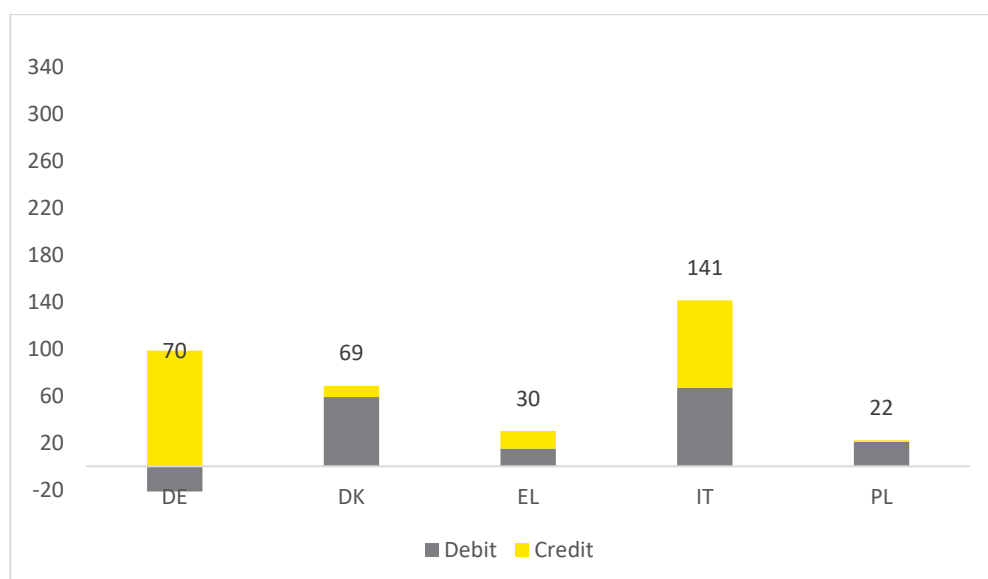
Debit card payments	DE	DK	EL	IT	PL
MSC savings for consumers	-0.0187%	0.0936%	0.2441%	0.0523%	0.0551%
Value of debit trx in million EUR in 2015	150,055.75	63,015.60	6,186.67	127,845.41	37,629.44
Value of MSC savings for consumers in million EUR	-28.12	58.99	15.10	66.83	20.74
Credit card payments	DE	DK	EL	IT	PL
MSC savings for consumers	0.1236%	0.1847%	0.2472%	0.1110%	0.0165%
Value of credit trx in million EUR in 2015	79,699.90	5,215.08	6,062.98	67,081.92	8,775.22
Value of MSC savings for consumers in million EUR	98.53	9.63	14.99	74.47	1.45

Note: Trx stands for transactions.

Source: Copenhagen Economics based on ECB data.

Table 53: Total values of MSC savings for consumers in debit and credit card transactions

The calculations yield total consumer savings per year across all five MS from the IFR of up to EUR 333 million. The consumer savings are highest in Italy for debit card payments at approximately EUR 67 million and highest in Germany for credit card payments at approximately EUR 98.5 million. Poland has the lowest total value of consumer savings of MSC for credit card payments at approximately EUR 1.50 million and in Germany total MSC for consumers even increased by approximately EUR 28 million for debit card payments. Total MSC savings for consumers are highest in Italy at around EUR 141 million, see Figure 72.



Source: Copenhagen Economics based on Table 53.

Figure 72: Total consumer savings per year from the IFR for both types of cards in million EUR

- To obtain MSC savings for consumers per household, we divide the total value of MSC consumer savings for both card types from step 3 by the number of households per MS, see Table 54.

Debit card payments	DE	DK	EL	IT	PL
Value of MSC savings for consumers in million EUR	-28.12	58.99	15.10	66.83	20.74
Number of households in thousands, 2015	40,257.80	2,373.10	4,376.10	25,788.60	14,110.00
MSC consumer savings per household in EUR	-0.70	24.86	3.45	2.59	1.47
Credit card payments	DE	DK	EL	IT	PL
Value of MSC savings for consumers in million EUR	98.53	9.63	14.99	74.47	1.45
Number of households in thousands, 2015	40,257.80	2,373.10	4,376.10	25,788.60	14,110.00
MSC consumer savings per household in EUR	2.45	4.06	3.43	2.89	0.10

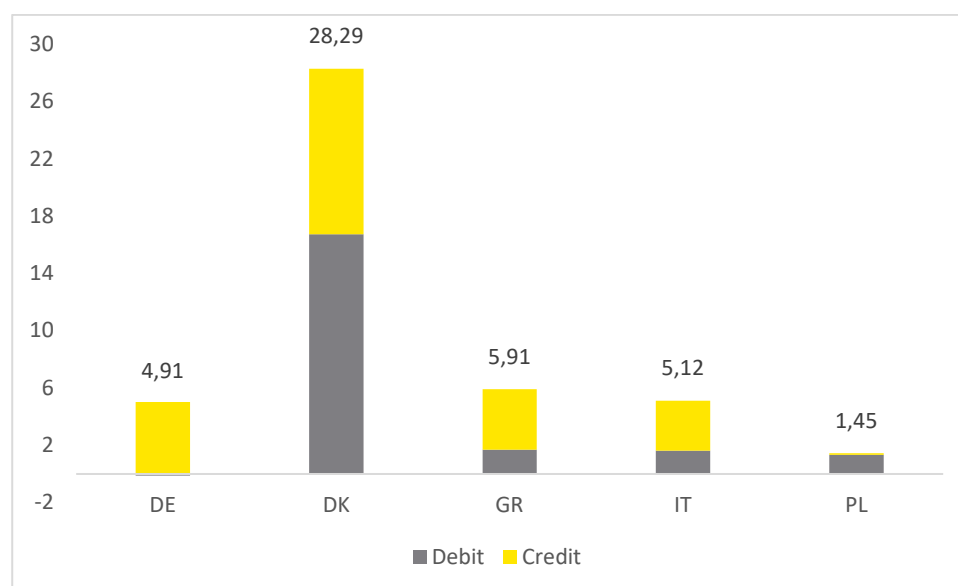
Note: Trx stands for transactions. The numbers of households are stated in thousands.

Source: Copenhagen Economics based on Eurostat Number of private households by household composition, number of children and working status within households.

Table 54: MSC consumer savings per household per year in debit and credit card transactions



The calculations yield average consumer savings per household per year across the five MS of EUR 3.83.<sup>198</sup> The annual household savings are highest in Denmark for both debit and credit card payments at EUR 24.86 for debit cards and EUR 4.06 for credit cards. The consumer savings are lowest in Poland for credit card payments at EUR 0.10 and in Germany, where we measure an increase in MSC per household of EUR 0.70 following the IFR, see Figure 73.



Source: Copenhagen Economics based on Table 54.

Figure 73: Consumer savings per household per year from the IFR for both types of cards in EUR

For Denmark, the MSC savings exceed the IF savings following the IFR for consumers. These results are driven by the percentage reduction in MSC for merchants for debit card payments, 0.14%, that is significantly higher than the percentage reduction in IF for merchants for debit card payments, 0.01%. The same is the case for credit card payments.

In general, the results show that apart from an increase in costs for consumers in Germany due to higher MSC in debit card payments, consumers profited from the IFR across all MS and types of card payment in form of consumer savings.

*Third*, we calculate the upper bound of total consumer savings from the cap in EU-28 based on the assumption of full pass-through of IF savings from acquirers to merchants. We obtain potential annual savings for EU-28 around EUR 1,930 million that corresponds to EUR 8.81 per household per year.

We calculate the potential consumer savings based of full pass-through from acquirer to merchant in two steps:

1. We apply the estimated average pass-through rate of cost decreases in the food retail sectors in the EU, see Table 45, to the total value of IF savings from the IF cap in the EU, see Chapter 4, to obtain the total value of IF savings for consumers in the EU, see Table 55, left column.

<sup>198</sup> These are weighted averages across the five MS according to number of households in each MS.

2. We divide the total value of IF savings for consumers by the total number of households in the EU in 2015 to obtain average IF savings for consumers per household in the EU, see Table 55, left column.

*Fourth*, we calculate the lower bound of total consumer savings from the cap in EU-28 based on the assumption of the observed short-term pass-through of IF savings from acquirers to merchants. We obtain potential annual savings for EU-28 around EUR 864 million that corresponds to EUR 3.94 per household per year.

We calculate the potential consumer savings based on observed pass-through from acquirer to merchant in three steps:

1. We calculate the observed pass-through rate from acquirers to merchants as the ratio between estimated pass-through from acquirer to merchant and the total value of IF savings, see Table 55, right column.
2. We apply the observed pass-through rate from acquirers to merchants to the total value of IF savings from the IF cap in the EU, see Chapter 4, to obtain the total value of IF savings for consumers in the EU, see Table 55, right column.
3. We divide the total value of IF savings for consumers by the total number of households in the EU in 2015 to obtain average IF savings for consumers per household in the EU, see Table 55, right column.

Debit and credit card payments	Full pass-through acquirer-merchant	Limited pass-through acquirer-merchant
Total savings for acquirer from IF cap in million EUR	2,680	2,680
Pass-through Acquirer-merchant	100%	45%
Total savings for merchants from IF cap in million EUR	2,680	1,200
Estimated pass-through EU-28 Merchant-consumer	72%	72%
Total savings for consumers from IF cap in million EUR	<b>1,930</b>	<b>864</b>
Number of households in 2015 in thousands	219,010	219,010
Total savings for consumers from IF cap in million EUR	<b>8.81</b>	<b>3.94</b>

Note: The total value of consumer savings from the IFR includes both debit and credit card payments from all 28 EU MS.

Source: Copenhagen Economics based on the IFR survey (Scheme data), ECB data and Eurostat Number of private households by household composition, number of children and working status within households.

Table 55: IF savings for consumers in the EU

## 5.4 Qualitative findings on merchant pass-through

We supplement the empirical analysis above with insights from qualitative information provided from different types of merchants in two market surveys. This chapter presents the results from these surveys, where merchants were asked about their behaviour regarding cost pass-through to consumers. The results from the survey support the conclusions of the quantitative analysis above and confirms that pass-through of cost savings takes place from merchants to consumers. Moreover, the chapter includes qualitative information from interviews with selected merchants regarding the determinants of pricing and the factors that influence the extent and timing of cost pass-through to consumers. The interviewed merchants conclude that all cost categories, including payment costs such as IF, contribute proportionally to pricing decisions and therefore will ultimately have an impact on prices charged to consumers.

### Merchant survey

The responses are from merchants located in the United Kingdom, Poland, Luxembourg, Ireland and Romania. Representative types of merchants are identified based on size (annual turnover), economic sector and share of online sales. We find that the survey results corroborate the analysis presented in this chapter, with most merchants perceiving high pass-through from acquirers and intending high pass-through of IF savings to consumers via product prices.

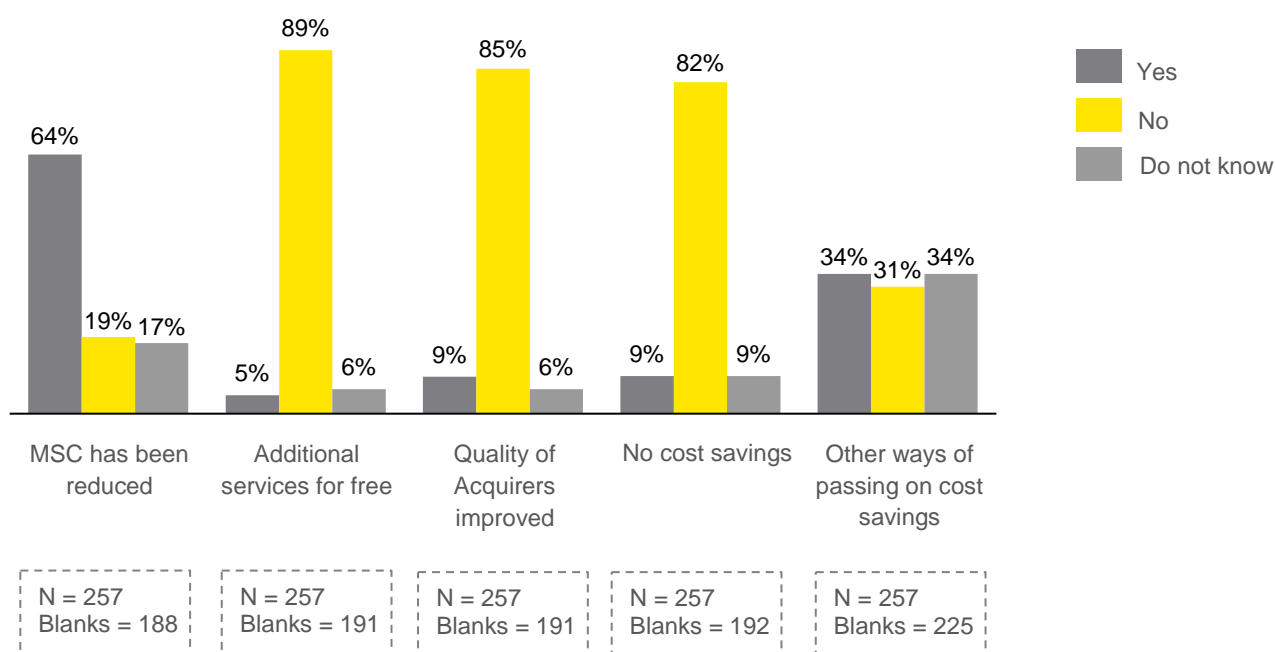
However, the survey insights have to be treated with caution as to the interpretation of the numbers and their representativeness for the entire market. This is because they are based on low merchant response rates throughout the survey, below 30%, and because of potential response bias from the merchants.

The market survey shows that the majority of merchants that responded to the survey, 64%<sup>199</sup>, experienced cost savings in the form of reduced MSC from acquirers. Moreover, 34% of the merchants<sup>200</sup> experienced cost savings that were passed on to them from acquirers in other forms, see Figure 74.

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<sup>199</sup> The response rate to this survey question was 26.8%.

<sup>200</sup> The response rate to this survey question was 12.5%.



Note: Numbers do not always add up to 100% due to rounding. Percentages exclude blank answers.

Source: IFR Survey.

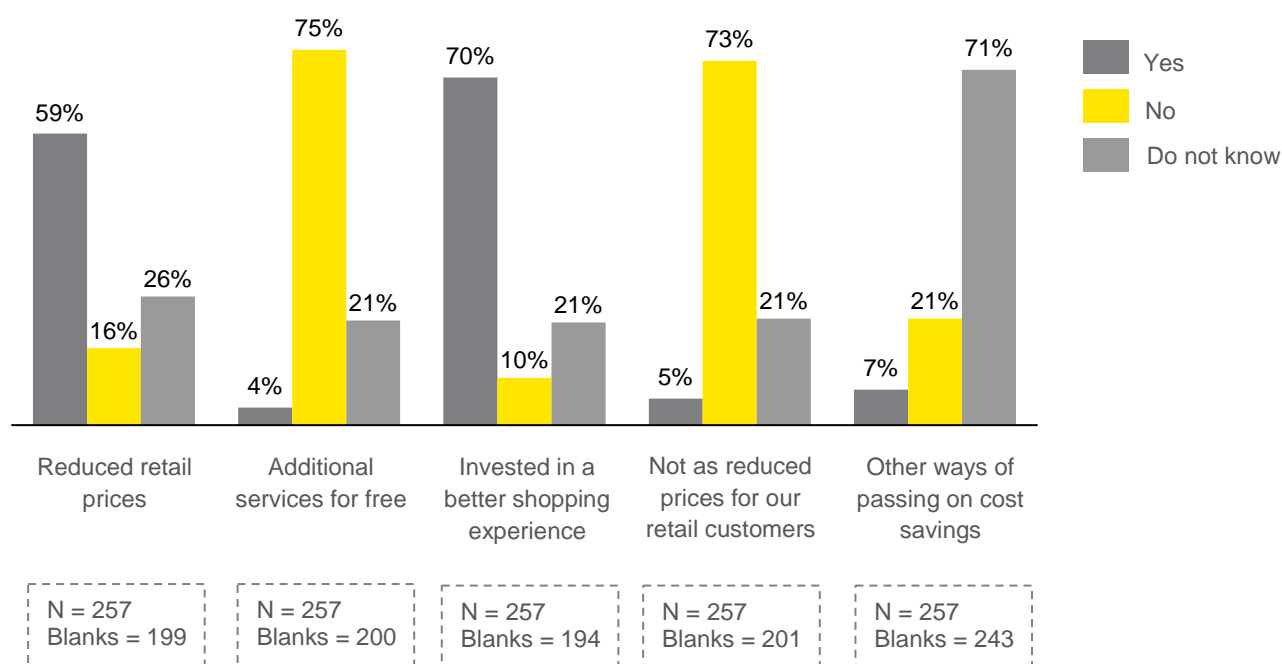
Figure 74: Share of merchants that experienced a pass-on of IF cost savings from acquirers

Chang et al. (2005) in a study for VISA assessed the impact of the IF capping in Australia. Similar to our results, they find that merchants have benefitted from the lower fees. They state that the effect of the IF capping on consumers is more difficult to assess since there is nearly no evidence on merchant pass-through of cost savings. The very little evidence that they present is also coming from a merchant survey showing that among merchants who experienced a change in the merchant discount, less than 5% stated that they reduced prices to consumers.

Contrary to their findings, our merchant survey supports the hypothesis that most merchants pass-through IF cost savings to consumers. Approximately 60% of the responding merchants<sup>201</sup> report that they pass through cost savings in form of lower retail prices and 70%<sup>202</sup> report that they invest the cost savings to create a better shopping experience for consumers, see Figure 73.

<sup>201</sup> The response rate to this survey question was 22.6%.

<sup>202</sup> The response rate to this survey question was 24.5%.



Note: Numbers do not always add up to 100% due to rounding. Percentages exclude blank answers. Question is formulated so that merchants could cross multiple answers (e.g., there is a big overlap in respondents answering Yes for 'Reduced prices' and 'Invested and a better shopping experience').

Source: IFR Survey.

Figure 75: Share of merchants that passed through IF cost savings to consumers

### Interviews with selected merchants

We have also interviewed pricing managers from ten large merchants in the retail, travel and accommodation sectors with activities in several EU member states. The interviews were conducted over the phone in the period from primo? September to mid-November 2019. The merchants typically participated with 2-3 pricing managers in each interview who were interviewed by two consultants based on an interview guide<sup>203</sup>.

All merchants emphasized that pricing was determined as part of an interaction between competition and market factors (the demand side) and cost factors (the supply side). The actual distribution of weights given to the two sides differed significantly between markets and sectors and varied over time, both in the short run and the longer run.

A majority of merchants operated a price calculation model to help them determine optimal pricing from the cost side. In most calculation models, payment costs were an explicit variable cost category in line with many other variable costs within a main category, as for example store costs, station service costs, or store expenses, and under control of the local store. In a single case, it appeared as though payment costs were treated as a fixed cost that was not controlled at local store level. The calculation models were updated regularly with new cost information. In these cases, they were updated every hour, 2-3 times per day, every day, regularly, or yearly. In the former cases, pass-through was described as immediate and fast, irrespective of the cost

<sup>203</sup> See Table 106 in Annex 5.

change being small or large, negative or positive. In the latter case, cost pricing mostly took place when a new product was launched or when management were focused on operational profit rather than on winning market shares, making cost pass-through slow and less predictable.

All merchants stressed that pricing was often influenced by competition and market factors rather than cost factors, in particular in the short run. Their industry was very competitive, and all market participants were to a large extent a price taker. As such changes in payment costs are not directly influencing the prices, it could create situations where cost increases, as for example the removal of the right to surcharge certain card payments, are taken by the merchant instead of being converted into general price increases. It was often stated that pricing is mostly driven by local competition but there is an interaction as variable costs (not including fixed costs) form a floor for pricing that cannot be under-priced by the local merchant, or that pricing can temporarily run below costs for local competitive reasons. However, merchants would not do it for longer periods to avoid losing money.

No merchant could mention an example of a specific price change that was driven explicitly by a change in payment costs. The merchants agreed that this is no surprise as changes in payment costs typically are small and would not be sufficiently large to release price adjustment by themselves. This was a feature that was shared with many other cost categories. They all stressed that the key principle was that all cost categories contributed proportionally to a decision to initiate price changes. The price is a sum of many cost components, so payment costs will have an impact – like all other costs do.

Most merchants notice that they experienced a drop in payment costs with the introduction of the IFR in the form of a lower merchant service charge. Many also stated that the initial drop in prices is being eroded by increases in other fees, as for example scheme fees and interchange fees for commercial cards and alleging that the total price will soon be back to pre-IFR levels. For the period 2015-2017, this study has documented some increases in scheme fees that has reduced but not removed MSC savings, see section 4.2.3. In the same period there has not been statistically significant increases in interchange fee for commercial cards, see section 4.1.

A merchant reported that some travel agencies receive payment from consumers with a capped consumer card and then pay airlines with a non-capped commercial card (virtual card) with the consumer paying the costs of both transactions.

## **6 ASSESSMENT ACCORDING TO IFR ARTICLE 17(E)-(K)**

The following sections provide a focused assessment of specific aspects covered by the IFR as required by the Article 17 (e)-(k).

Section 6.1 assesses the level of implementation of technical upgrades to POS terminals for merchants to be able to set their default selection of payment brand or application, while still allowing consumers to override such priority selection (Article 8) (6).

Section 6.2 studies the development of co-badging cards and consumers' use of the overriding option of the merchant's default selection of payment brand or application (Article 8) (1-6).

Section 6.3 provides an analysis of the effects of the exclusion of commercial cards from the cap on interchange fees set by the IFR (Article 1) (3a).

Section 6.4 assesses MS that applied special provisions on domestic debit and credit cards transactions and the effects of such provisions on their card payments market. The IFR allows MS to set a lower interchange fee cap or an interchange fee cap with a different structure for domestic debit and credit card transactions, so called special provisions (Article 3) (2-4).

Section 6.5 assesses the development of intra-EU cross-border acquiring following entry into force of the IFR which prohibits any limitation on cross-border acquiring (Article 6).

Section 6.6 analyses the level of implementation and the effects on the processing market of the IFR provision that requires functionally independent card schemes and processing entities (Article 7.1)(a).

Finally, section 6.7 focuses on MS that applied a maximum amount on the interchange fee for domestic debit card transactions to inform on the possible effect of revising Article 3 (1) to include a maximum fee amount.

## **6.1 Identification and choice of card type and payment application at POS terminals**

The IFR prohibits mechanisms at the point of sale that limit merchants and consumers' choice of a payment brand, category or application. Moreover, merchants are allowed to install a priority selection that can be overruled by the consumer (Article 8) (6). The aim of these provisions is to increase the level of competition between and within payment brands at the point of sale at the time of purchase.

However, for putting these measures into practice and for competition to increase, merchants need to technically upgrade their POS terminals to enable the identification of card type, brand or payment application. Merchants could make a default choice which consumers must be able to override.

Based on the survey results comprising 19 EU MS<sup>204</sup> to merchants, acquirers, and regulators, this section investigates whether there are technical barriers that prevent merchants and consumers to make full use of the IFR provisions. First, this section investigates the level of completion of the upgrades of the POS terminals to the necessary technical features to allow for identification and selection of payment category, brand and application by the merchant and consumer at the point of sales. Second, this section studies the costs for installing and adapting terminals to distinguish between card categories and other barriers and difficulties for consumers and merchants to make use of these provisions of the IFR.

Overall, the majority of installed POS terminals have been upgraded with the necessary features to make use of the IFR provisions, with possible variations between MS. The key barriers to achieving a full upgrade of terminals are not the costs of upgrading but rather the technical difficulties involved in making the upgrade. Finally, consumers do not seem to make wide use of the options to override default choices by merchants mostly because of lack of information and incentives.

### **6.1.1 Completion of technical upgrades of POS terminals**

The survey responses from merchants show that by the end of 2017 the majority of POS terminals installed were capable to identify card category and brand and allow the cardholder to override the merchants' default payment brand in order to choose his or her preferred payment brand or application. This was confirmed by 89% of the acquirers and 75% of the merchants across MS in 2019.

The large upgrading percentages may reflect that most respondents in the survey are large merchants on EU-level. Other evidence points out that implementation after 3 years of entry into force of IFR is still not full. For instance, the Danish Competition and Consumer Authority (DCCA)<sup>205</sup> found that 60% of physical stores surveyed at the end of 2017 had not made the technical adaptations to allow merchants and consumers to make their choice (or override the

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<sup>204</sup> These Member States are: BE, DK, FI, DE, EL, HU, IE, IT, BG, LV, LT, MT, NL, PL, PT, RO, SI, ES and UK. These were chosen in consultation with DG Competition.

<sup>205</sup> Danish Competition and Consumer Authority DCCA (2018), "Betalingsrapport 2018, Regler og udvikling på betalingsmarkedet"



default choice) of payment brand or application. Similarly, a survey conducted in 2017 to merchants in France<sup>206</sup> found that the level of implementation of these provisions of the IFR varied considerably and the main obstacle to the implementation of brand selection was the absence of certified electronic payment solutions.

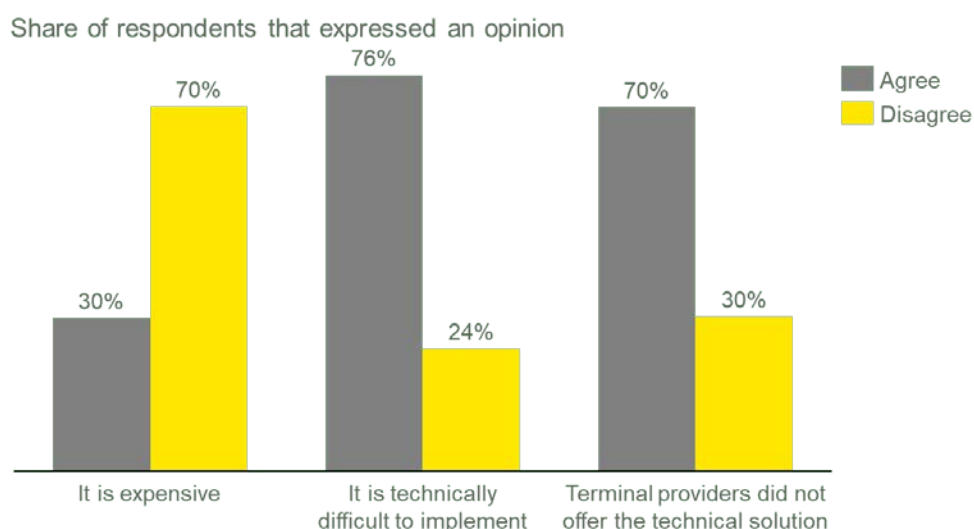
### **6.1.2 Barriers to upgrading of POS terminals**

The survey, although based mostly on responses from large merchants, suggests that merchants encountered various type of barriers for upgrading of POS terminals to allow identification of card category. Technical difficulties are the most common barrier, with 76% of respondents finding it technically difficult to upgrade their payment terminals, see Figure 76. Moreover, 70% of merchants state that terminal providers do not offer support by providing the necessary technical solutions. One factor that could generate technical obstacles is the different technical functionalities and characteristics of payment cards from different brands. Terminals may not be able to identify card category and brand of certain cards in order for the merchant to make the priority selection. The issue may encompass the overall payment value chain including card schemes and processors.

In contrast, the cost for upgrading payment terminals does not appear to be a barrier to upgrading, with 70% of merchants not considering the upgrade expensive. This is in line with the relatively low fees that acquirers charge to contracted merchants for implementing the upgrade: most acquirers indicated that they charge a one-time fee lower than 100 EUR to their contracted merchants to upgrade a POS terminal so that merchants can identify card category and brand, pre-select payment option and allow merchants to override the default payment brand.

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<sup>206</sup> AFTE, FCD and Mercatel (2017), "European regulation on Interchange fees, results of the joints questionnaire AFTE-FCD-Mercatel".



Source: IFR Survey.

Figure 76: Barriers to merchants upgrading POS terminals

### 6.1.3 Choice of preferred payment brand or application in practice

Consumers do not appear to make use of the possibility to choose or override merchants' default selection even though it does not appear to require many steps. Consumers' incentives to override merchants' priority choice remain limited as there is often no price difference for them between payment brands used to make the payment. Over 80% of merchants that responded to the survey stated that consumers do not have to refuse the priority selection first before they can make their own choice of preferred payment brand. Instead, consumers only need to make their choice between payment brands or application at POS terminals to either confirm or override the default selection. There might be possible variations in terms of practical implementation of this between MS though. In France, for instance, a national inquiry indicates that co-badging is not yet transparent enough for merchants and consumers to make use of the choice of payment brand or application. The limited transparency of such possibility and the limited incentives for consumers to make a choice of brand or application are likely to explain consumers' lack of use of this possibility.

## 6.2 Co-badging and choice of payment brand or application

The IFR defines co-badging as “the inclusion of two or more payment brands or payment applications of the same brand on the same card-based payment instrument” (IFR Article 2(31)). In MS where a domestic scheme is present, co-badged cards typically carry a domestic card brand and an international card brand allowing the cardholder to use the same card for both domestic (through either the domestic or the international scheme) and cross-border card payment transactions (only through international scheme). For instance, a co-badged debit card in Belgium is a debit card that has a Maestro badge (or another brand of an international card scheme) and a Bancontact badge (the domestic card scheme in Belgium). Co-badged can also be applied to universal cards that allow cardholders to initiate debit as well as credit transactions with the same payment instruments. In these cases, the card can have the domestic scheme brand for debit transactions and an international scheme brand for credit transactions<sup>207</sup>.

In addition to the increase in consumer convenience, co-badging is aimed at increasing competition between card schemes at the moment of performing a payment transaction. This is particularly relevant in MS where a domestic card scheme is present. In these MS, the presence of co-badged cards increases competition on domestic transactions at the point of sale between the domestic and international card schemes. For competition to materialise in practice, merchants and consumers need to be able to exercise a choice between payment brands and applications of co-badged cards. Together these two measures (co-badging and choice of payment brand or application) imply that competition between card schemes shifts from the moment in which consumers choose their cards (among those offered by their issuer) to the moment in which they make a domestic transaction at the point of sale. The expected increase in competition between card schemes ultimately results in lower fees for card payments and increased overall welfare for both merchants and consumers as merchants can pre-select less costly payment brands and consumers can benefit for more choice and quality of payment products.

To increase competition, the IFR introduces several provisions to stimulate the use of co-badging (Article 8) (1-4) and choice of application and brand (Article 8) (5,6). On co-badging, the IFR prohibits any card scheme rules or other measures that hinder or prevent co-badging and stipulates that any scheme rule or licensing agreement concerning co-badging should be non-discriminatory. Moreover, it establishes that consumers have the possibility to request issuers co-badging of two or more payment brands<sup>208</sup>. On choice of payment brand or application, the IFR stipulates that card schemes, issuers, acquirer and processing entities are prohibited from taking any measure that limits the choice of payment brand or application. Merchants are allowed to make a priority selection of the payment brand or application at the point of sales. However, consumers should always be allowed to override such priority selection. These provisions also apply to mobile wallets.

The effectiveness of these measures to increase competition depends on merchants' and consumers' ability and incentives to make use of their choice. Merchants and consumers can only make a choice of payment application and brand at the point of sale if, for instance, the POS terminal is technically suited to allow such choice as seen in section 6.1 Consumers can

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<sup>207</sup> Not all universal cards are necessarily co-badged by two separate schemes. For instance, MasterCard may offer universal cards branded with MasterCard (for credit transactions) and Maestro (for debit transactions).

<sup>208</sup> Provided that such a service is offered by the issuer.

only benefit from their choice of payment brands and applications, if they are informed in a transparent and neutral manner about the existence of these provisions and about the terms of use of their cards or applications. Transparency towards merchants concerning MSCs also affects merchant's ability and incentives to make use of these provisions of the IFR. Consumers exercise their choice effectively only if the use of POS terminals for the purpose of choosing the preferred payment brand or application is relatively simple and user-friendly even for vulnerable consumer groups. Finally, consumers will only have an incentive to make a specific choice at the point of sale if they can expect a benefit from making this choice, i.e. by choosing the payment application or brand that offers the lower fee or from which they get other benefits (e.g. benefits linked to the use of a credit card).

Against this background, the IFR requires the assessment of the effects on the provisions for co-badging and choice of application or brand (Articles 17) (f). This section assesses whether the prevalence of co-badging has increased following the IFR and whether issuers offer separate co-badged cards that can be used for both domestic and cross-border transactions and single-branded cards for domestic use only. Moreover, the assessment investigates whether and how merchants and consumers make use of co-badged cards and choose brand or application. In particular, this section asks whether consumers choose their preferred payment application when paying with a co-badged card, including the user-friendliness of choice of application for elderly and vulnerable groups. Finally, this section asks whether consumers actively request co-badging of two payment brands or applications to their issuers.

The results presented in this section are based on the IFR Surveys to issuers, regulators and merchants in 19 EU MS<sup>209</sup>. Survey results are complemented with information from publicly available sources such as studies conducted by national regulators on the effects of the IFR.

Overall, the prevalence of co-badged cards in issuers' portfolios has remained stable in 2015-2017. A majority of issuers do offer consumers a choice between a single-branded card and a co-badged card that can both be used for both domestic and cross-border transactions. Moreover, consumers still do not appear to make sufficient use of the possibility to choose their preferred payment brand or application when paying with co-badged cards. While the majority of POS terminals seem to allow the choice of the preferred payment brand, the limited number of merchants that provided a response declare that only a small share of consumers (between 0 and 10%) make use of this option. This result is confirmed by national regulators and holds across all consumer groups including elderly and vulnerable groups.

### **6.2.1 The share of co-badged cards in issuers' portfolios**

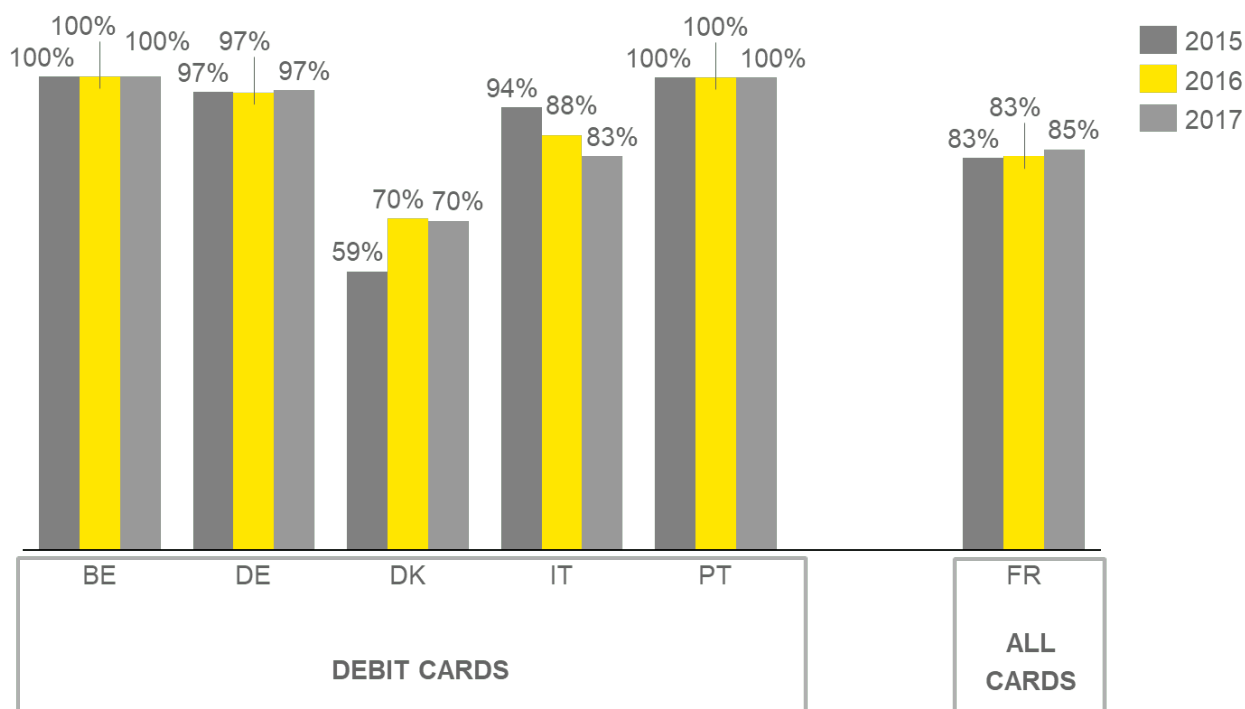
Following entry into force of the IFR, there is no increase in the prevalence of co-badged cards in the period 2015-2017. The share of co-badged cards in issuer's portfolio stayed overall constant at around 95% of debit cards across MS where a domestic card scheme is present, see Figure 77. In Denmark, a relevant part of domestic scheme Dankort's cards continued to be issued as single badged, which explains the low share of co-badged cards in the MS compared to the rest<sup>210</sup>. In France, where also co-badged credit cards are present, the overall share

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<sup>209</sup> These Member States are: BE, DK, FI, DE, EL, HU, IE, IT, BG, LV, LT, MT, NL, PL, PT, RO, SI, ES and UK. These were chosen in consultation with DG Competition. Only responses from MS with domestic schemes are considered for this section.

<sup>210</sup> In the last quarter of 2017 11% of Dankort cards in circulation were still not co-badged with an international scheme. (Source: Danish Central Bank's Databank. [retrieved from: <https://nationalbanken.statbank.dk/913>])

remained around 84% during the period, all debit-cards were co-badged while the share was lower for credit cards: around 75%. Part of these cards are universal (multi-function) cards which allow cardholders to initiate both a debit and credit transaction with the same payment instrument. In some cases, the debit brand is different from the credit one<sup>211</sup>. MasterCard



Note: MS with a domestic card scheme. Data not available for Bulgaria, Slovenia and Spain. France includes debit and credit cards.

Source: IFR Survey.

Figure 77: Share of co-badged cards in Member States with domestic card schemes, 2015-2017

The majority of national regulators also state that the prevalence of co-badged cards has either not increased or stayed constant, see Table 56.

<sup>211</sup>Share of co-badged credit cards were also reported in Portugal and marginally in Germany and Italy. It was not possible with the data available to identify the pair of card brands that were co-badged. However, none of these MS have domestic schemes that offer credit cards. One explanation, however unlikely, could be the co-badged of two international schemes. Another explanation could be the issuing of universal cards, where the domestic scheme brand offered only the debit function, while international scheme brands, i.e. MasterCard and Visa, provided the credit/delayed debit function. This can be the case in Portugal, for instance.

Answer chosen	Did the number of co-badged cards increase since entry into force of IFR?
Strongly disagree	0
Somewhat disagree	3 (Denmark, Portugal, Slovenia)
Neither agree nor disagree	1 (Spain)
Agree	2 (France, Italy)
Strongly agree	0
Do not know	1 (Belgium)

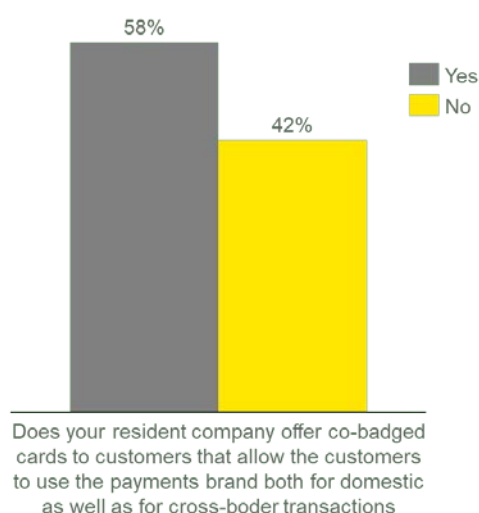
Note: Only MS with domestic card schemes are included.

Source: IFR Survey.

Table 56: Regulators' opinion on prevalence of co-badging since entry into force of IFR, number of regulators

### 6.2.2 Issuing of single branded and co-badged cards for domestic and cross border

The share of issuers that issue co-badged cards that can be used in both domestic and cross-border transactions reaches 58% across MS where a domestic card scheme is present, see Figure 78.



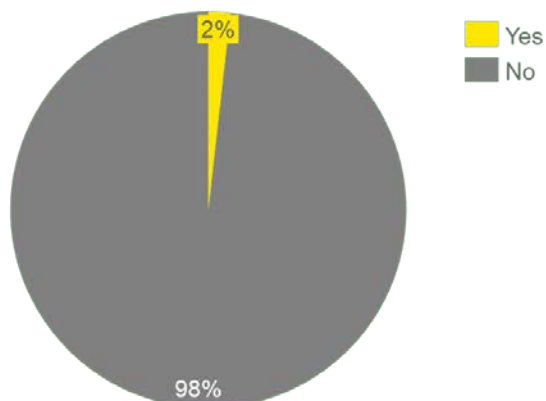
Note: Only MS with domestic card schemes are included.

Source: IFR Survey.

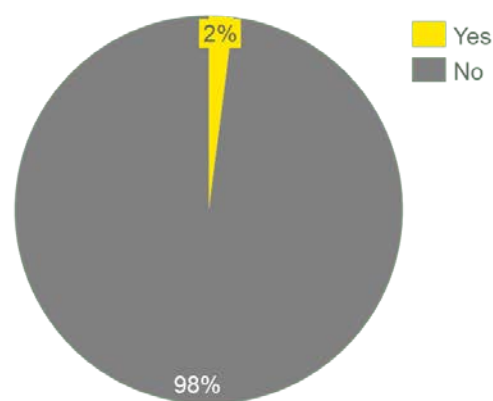
Figure 78: Issuing of co-badged for domestic and cross-border use

A large majority of issuers in MS where domestic schemes are present do not offer consumers the choice between a single-branded card that can only be used for domestic transactions and a co-badged card that can be used for both domestic and cross-border transactions, see Figure 79.

Choice between single-branded (domestic) and co-badged cards (domestic and cross-border)  
% respondents



Started offering this choice after IFR  
% respondents



Note: Only MS with domestic card schemes are included.

Source: IFR Survey.

Figure 79: Share of issuers that offer the choice between single branded cards for domestic use and co-badged cards for domestic and international use

According to regulators in Portugal and Slovenia, issuers are not offering packages with single branded cards for domestic use and co-badged cards that allow consumers to make domestic and cross-border transactions more often than after entry into force of the IFR, see Table 57.

Answer chosen	Do issuers increasingly offer packages with single-branded cards for domestic use and co-badged cards for international use since entry into force of IFR?
Strongly disagree	1 (Portugal)
Somewhat disagree	1 (Slovenia)
Neither agree nor disagree	0
Agree	0
Strongly agree	0
Do not know	4 (Belgium, Denmark, France, Spain)

Note: Only MS with domestic card schemes are included.

Source: IFR Survey.

Table 57: Regulators' view on issuers' offer of co-badged cards for domestic and cross-border use

### 6.2.3 Consumers' use of the possibility to choose preferred payment brand or application

While most POS terminals appear to be technically equipped to allow the choice of payment brand or application<sup>212</sup>, see section 6.1, only a small percentage of consumers make use of this choice. Most merchants stated that only in less than 10% of transactions in 2017 their customers actively overrode the default payment brand and choose their own preferred brand. Hence, a low number of consumers make use of this option in practice, although replies from merchants to the survey are limited.

Regulators in Denmark and France strongly disagree with the view that consumers increasingly make use of the option to choose payment brand and application when paying with a co-badged card, see Table 58, in line with what is reported by merchants. However, in Italy and Portugal regulators confirmed this statement to a certain degree. The remaining regulators did not have a strong view on the subject.

<sup>212</sup> Responses to the IFR survey revealed that the majority of POS-terminals installed can identify card category and brand and allow the cardholder to override the merchants' default payment brand in order to choose his or her preferred payment brand or application. On average this was confirmed by 89% of the acquirers and 75% of the merchants who responded to this question.



Answer chosen	Co-badged cardholders increasingly choose their preferred payment brand at POS-terminals since entry into force of IFR
Strongly disagree	2 (Denmark, France)
Somewhat disagree	0
Neither agree nor disagree	1 (Spain)
Agree	2 (Italy, Portugal)
Strongly agree	0
Do not know	2 (Belgium, Slovenia)

Note: Only MS with domestic card schemes are included.

Source: IFR Survey.

Table 58: Regulators' opinions on consumers' use of the possibility to choose payment brand on co-badged card

Merchants' and regulators' views suggest a general situation where consumers do not use the possibility to choose their preferred payment brand and application by overriding the default selection when paying with a co-badged card. This holds for consumers in general, i.e. is not specific for elderly or other vulnerable groups. Rather, non-exercise of consumers choice seems due to more general factors, as responses from merchants in the IFR survey suggest. Over 90% of the limited number of merchants that provided an answer stated that consumers are unaware of the possibility of such choice. This finding is supported by a study from the Danish Competition and Consumer Authority (DCCA) that found that 85% of interviewed consumers in 2017 did not know about the possibility to make a choice of payment brand or application when paying with a co-badged card. The DCCA also found out that consumers have limited incentives to use such options since, in practice, they experience no price difference between them.<sup>213</sup> Merchants surveyed also expressed that view that consumers experience no price difference by making the choice of payment brand or application, which renders them indifferent between payment brands and applications.

Consumers do not appear to have made specific requests to issuers on issuing of co-badged cards in the period 2015-2017. Nearly two thirds of issuers<sup>214</sup> reported that they did not receive requests from their customers asking for co-badging of cards beyond their current offer. This might be due to the fact that consumers were satisfied by their issuer's offering or that they were not sufficiently informed to make such requests.

These results also apply to the use of co-badged cards within mobile wallets although the rationale for consumers requesting more payment applications to be usable with their mobile wallet at first sight seems obvious. It might still be early to draw general conclusions on this

<sup>213</sup> Danish Competition and Consumer Authority DCCA (2018), "Betalingsrapport 2018, Regler og udvikling på betalingsmarkedet".

<sup>214</sup> 74% of issuers responding to this question in our survey answered that they did not receive any request from their consumers to issue co-badged cards beyond their offering.

though, due to the recent market entry of a number of providers and the time period under which the data collection was run. Besides, further practical issues might be present for the choice of payment brand of application in co-badged cards payments through mobile wallets. For instance, the Danish Consumer Council reported that Apple Pay does not allow consumers the choice between the domestic or international card scheme, it automatically chooses the international card scheme instead.<sup>215</sup> This is partially explained by the fact that most of this kind of payments function on new technologies and processes, e.g. tokenization, that are offered mainly by international schemes.

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<sup>215</sup> Taenk. 14 November 2017. "Forbrugerrådet Tænk melder Apple Pay til konkurrence-myndighederne". [retrieved from: <https://taenk.dk/om-os/presserum/forbrugerradet-taenk-melder-apple-pay-til-konkurrencemyndighederne>]

### 6.3 Effects of the exclusion of commercial cards

The IFR defines commercial cards as payment instruments issued to undertakings, public-sector entities or self-employed natural persons that are limited to the use for business expenses where the payments made with such cards are charged directly to the current account of the undertakings, public-sector entity or self-employed natural persons.<sup>216</sup> They are different from consumer cards that are issued to private cardholders and are not limited to any specific type of purchase. Prior to coming into force of the IFR, commercial cards could instead be charged to private accounts.

While the IFR sets caps on the interchange fee applicable to consumer cards (Articles 3 and 4), commercial cards are exempted from any cap on the interchange fee (Article 1) (3a). This means that interchange fees on transactions performed with commercial cards can be set freely by schemes as opposed to interchange fees on consumer cards which are instead capped at 0.2% for debit cards and 0.3% for credit cards.

The exclusion of commercial cards from the cap on interchange fees may incentivise schemes and issuers to promote issuing and use of commercial cards and consequently maintain high overall interchange fee revenues (and MSC). Schemes have incentives to set high interchange fees to promote issuing of cards belonging to their scheme by issuers. As commercial cards are excluded from the cap, schemes are allowed to set higher interchange fees for commercial card transactions. Issuers, who receive the interchange fee from acquirers for each card payment performed with a card they issued, have incentives to issue and promote the use of cards with higher interchange fees. As a result, they might promote issuing and use of commercial cards.

If commercial cards (with higher interchange fees and MSC) are increasingly used at the expense of other capped cards, this might erode merchants and consumer savings from the provisions of IFR. This is because the IFR introduced caps on the interchange fee on consumer cards, which (together with all other provisions of the IFR) are expected to decrease costs for merchants through lower MSC for processing consumer cards transactions. These savings might be (at least partially) passed-on to consumers in the form of lower consumer. If commercial cards are increasingly used at the expense of consumer cards, savings from the IFR are overall reduced.

However, the IFR provides for a specific and narrow definition of commercial cards. Such definition should mitigate the possible effect of the IFR on issuing and use of commercial cards.

Differently from issuers and schemes, merchants have incentives to steer cardholders away from commercial cards and towards consumer cards that carry lower costs for them<sup>217</sup>. In fact, due to comparatively higher interchange fees for commercial card payments, merchants pay higher MSCs to acquirers on transactions performed with commercial cards compared to consumer cards. Therefore, merchants can decide to refuse acceptance of these cards. This is a possibility for merchants following the IFR provision on 'Honour all cards' rule, which establishes that payment card schemes and payment service providers cannot apply rules that oblige merchants accepting one card type or brand to accept all card types and brands issued under the same card scheme (Article 10). Merchants can also choose to use other methods to steer cardholders

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<sup>216</sup> See the definitions in Annex 4. In the commercial taxonomy of issuers, commercial cards can be of different types such as corporate cards, purchase cards, business cards, travel and entertainment cards.

<sup>217</sup> Business related transactions with commercial cards, however, cannot always be replaced with consumer cards transactions.

towards other cheaper categories of cards at POS. They can, for instance, apply surcharges on commercial card transactions (provided surcharging is allowed by the MS).

This section evaluates the effects of the exclusion of commercial cards from the caps on interchange fees imposed by the IFR. It examines the developments in the issuing and usage of commercial cards compared to debit and credit consumer cards on which interchange fees caps have been applied. This section also analyses the level of acceptance of commercial cards and the extent to which surcharges on commercial cards and other steering methods are used by merchants to steer consumers towards other payment instruments. Furthermore, this section assesses the development of interchange fees applied to commercial cards as well as the overall costs incurred by merchants, in the form of MSC, to process payments carried out with commercial cards.

The results provided in this section are based on the IFR Survey.

Overall, there has been an increase in both the issuing and use of commercial cards since entry into force of the IFR. The number of commercial cards has increased on average by 12% in 2016 and 7% in 2017, however the share of commercial cards remained overall constant across EU at around 3% in 2015-2017. The number and total value of transactions performed with commercial cards also increased across EU MS. While commercial cards are accepted by nearly all merchants, acceptance rates vary by card scheme. Over half of the merchants surveyed declared that they apply surcharges to commercial card transactions and/or use other incentives to steer consumers towards other payment instruments. Overall, there is no evidence of a significant change in the level of interchange fee and MSCs applied to commercial card transactions in the period 2015-2017.

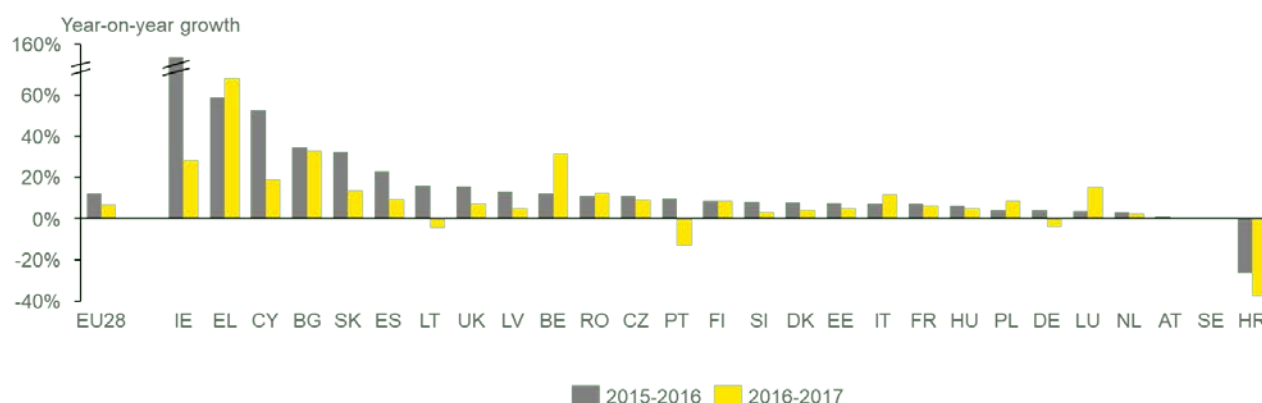
### **6.3.1 Issuing of commercial cards**

The number of commercial cards increased on average by 12% across Europe in the period 2015-2016 and on average by 7% in the period 2016-2017, see Figure 80.<sup>218</sup> Ireland reported an exceptional growth rate of 153%<sup>219</sup> from 2015 to 2016, while Croatia was the only MS where the number of commercial cards decreased.

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<sup>218</sup> Retail cards and fuel cards are not included in these figures.

<sup>219</sup> The growth registered in Ireland may be partially due to increased used of virtual cards products, disposable digital cards generated only for one transaction to enhance security in remote transactions. The increase in share of commercial card in terms of transactions value was lower (60% from 2015 to 2017) compared to the increase in issuing.

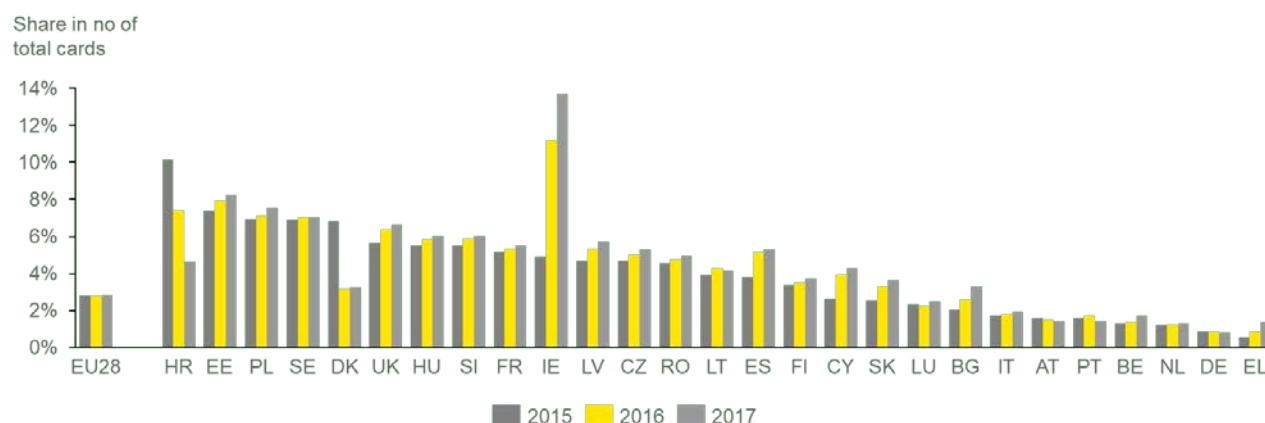


Note: No data available for Malta.

Source: IFR Survey.

Figure 80: Growth rates of commercial cards, 2015-2017

The relative share of commercial cards in the total number of cards in circulation (commercial cards plus consumer debit and credit cards) remained stable across EU in 2015-2017 at around 3%, see Figure 81. The development in the share of commercial cards varied across MS. In Denmark and Croatia, the share of commercial cards decreased, while it increased considerably in Ireland. Greece, Bulgaria and Cyprus. Overall, the share of commercial cards remains below 5% in most MS.



Note: Share of commercial cards over the sum of commercial and consumer (debit and credit) cards. No data available for Malta.

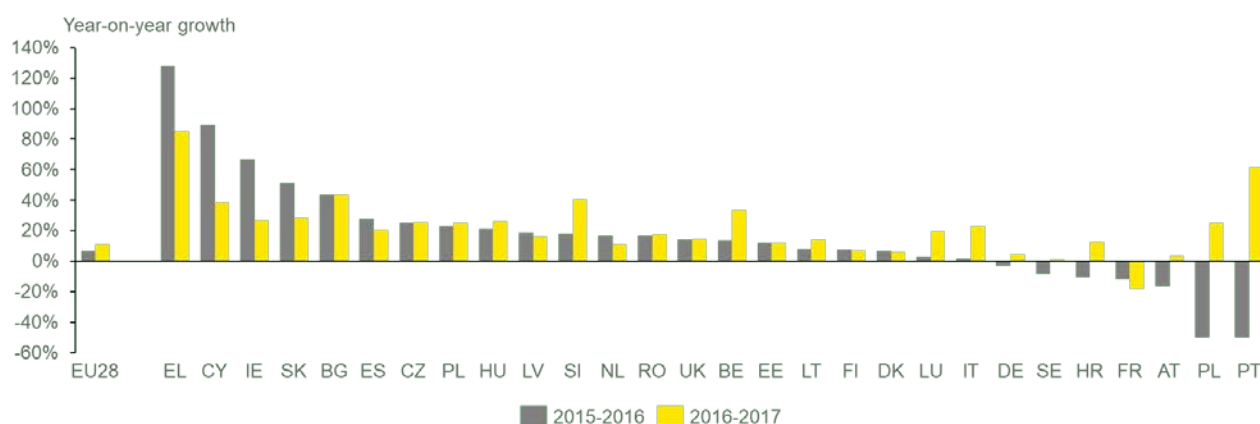
Source: IFR Survey.

Figure 81: Share of commercial cards in circulation ,2015-2017

### 6.3.2 Commercial card transactions

The use of commercial cards also increased across EU in the period 2015-2017. The number of commercial card transactions grew on average by 6% in the period 2015-2016 and on average 11% in the period 2016-2017, see Figure 82. At EU level there were around 1.8 billion commercial card transactions in 2017 from 1.5 billion in 2015. The MS where the number of

commercial cards transactions decreased were France, Portugal, Austria and Sweden. Overall the share of commercial card transactions over all card transactions (consumer debit and credit) remained stable at 3%.

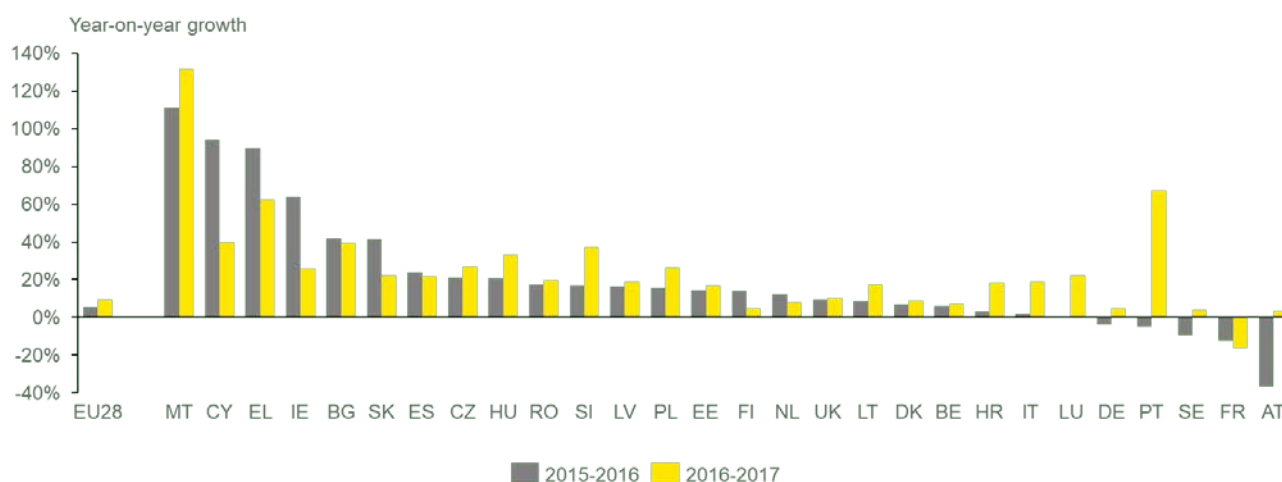


Source: IFR Survey.

Figure 82: Growth of commercial card transactions, 2015-2017

The transaction values of commercial cards increased across Europe in 2015-2017. On EU level, it increased by 5% in the period 2015-2016 and 9% in the period 2016-2017. The only MS with a decline are Austria, France and Sweden. At EU level the value grew from EUR 168 billion to 194, with the share on all transactions stable at around 7%. As the share was more than double the one in number of transactions, commercial cards were used for higher value transactions compared to consumer cards. The average transaction value for commercial cards declined only by two EUR from 110 to 108<sup>220</sup>.

<sup>220</sup> IFR Survey.



Source: IFR Survey.

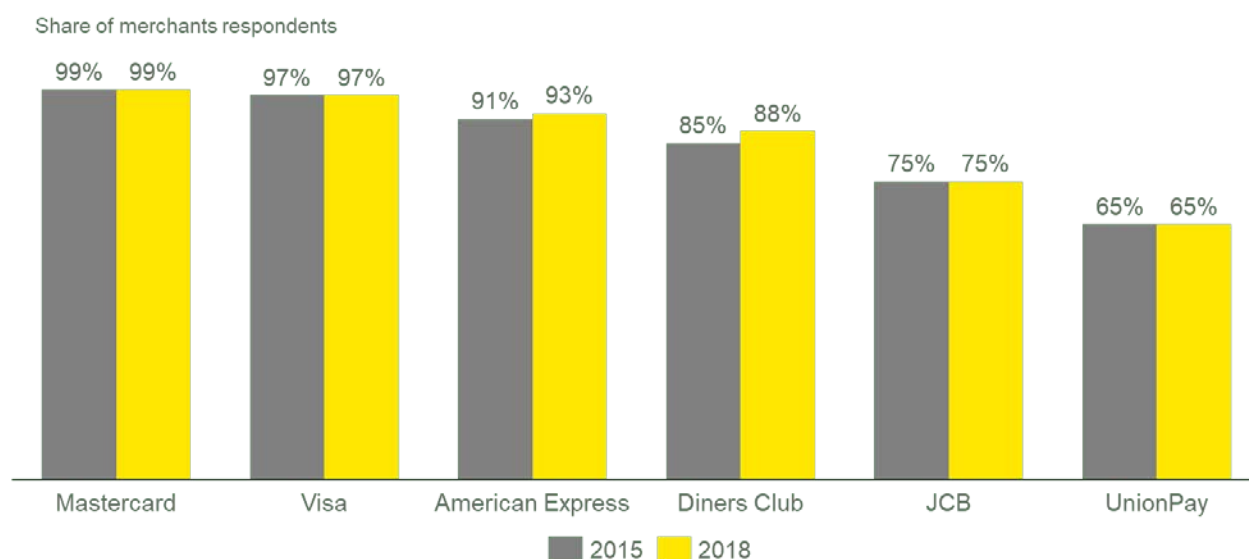
Figure 83: Growth of value of commercial card transactions, 2015-2017

The increase in the usage of commercial cards has also been confirmed by merchants, although the number of replies was limited. A majority of merchants (86%) that responded to the survey declared that the relative share of transactions performed with commercial cards has increased since entry into force of the IFR. More precisely, 54% of merchants reported an increase in commercial card transactions between 0 and 10%, 18% declared an increase above 10%. Only 2% of merchants found that the share of transactions performed with commercial cards has decreased since entry into force of IFR.<sup>221</sup>

### 6.3.3 Acceptance and surcharging of commercial cards

The majority of POS terminals are technically upgraded to allow identification of card category, this means that most merchants are able to distinguish between capped and non-capped cards. This may vary between MS as explained above. This was confirmed by 89% of the acquirers and 75% of the merchants across MS, see section 6.1. Among the merchants that responded to the survey (mostly large merchants), nearly all (99%) declared that they accept payments with commercial cards and did so already in 2015. However, acceptance rates vary by card scheme with MasterCard and Visa registering close to full acceptance rates among merchants, see Figure 84.

<sup>221</sup> These merchants declared a decrease of more than 10%.



Source: IFR Survey.

Figure 84: Share of merchants accepting commercial cards by card scheme, 2015 and 2018

Merchants often use surcharges on commercial cards and/or other steering methods. Sixty per cent of merchants that responded to the IFR Survey declared that they apply surcharges on commercial card transactions. In addition, over half (53%) of them confirmed that they tried to steer consumers towards other payment instruments.

Surcharging of commercial cards is not allowed in some MS: Belgium, Bulgaria, Croatia, France, Hungary, Latvia, Lithuania, Malta, Portugal, Spain and Romania. This reduces merchants' possibility to apply surcharging, but other steering methods are still applicable. For instance, merchants could offer rebates for the use of other categories of cards or only accept commercial cards above a certain transaction-value.

#### 6.3.4 Interchange fees and merchant service charges on commercial card transactions

The hypothesis that the exclusion of commercial cards from the cap set by the IFR could lead to higher interchange fees applied to commercial card transactions is not confirmed. The average interchange fee applied on commercial cards transactions decreased across the EU, from 0.95% to 0.86% of the transaction value in the period 2015-2017. The level and development of the interchange fees applied to commercial cards varied strongly across MS, see Figure 85.<sup>222</sup> However, the decrease in interchange fees applied on commercial cards was not statistically significant, see Table 10 in section 4.1.

<sup>222</sup> Data on the level of interchange fees per card scheme are shown in Annex 4.



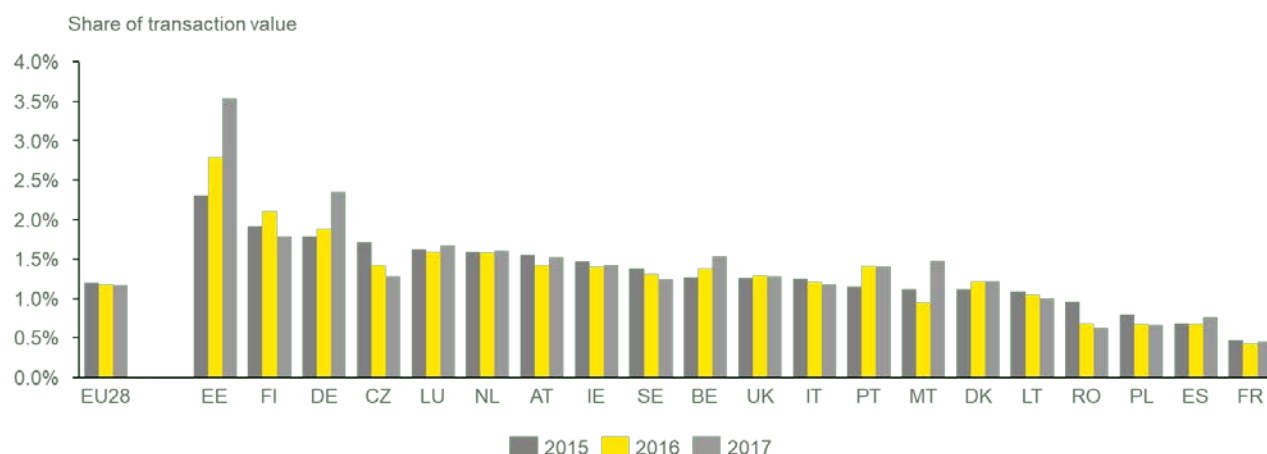


Note: No data available for Malta.

Source: IFR Survey.

Figure 85: Average interchange fee for commercial card transactions, 2015-2017

Similarly, the hypothesis that the exclusion of commercial cards from the cap set by the IFR could lead to higher MSCs applied to commercial card transactions is not confirmed. Average MSCs applied to merchants for commercial card transactions has also decreased somewhat across the EU from 1.22% to 1.20% between 2015 and 2017. Levels growth rates of the average MSC varied considerably across MS. The reduction in MSCs for commercial card transactions was also not statistically significant, see Table 32 in section 4.4.1.



Note: No data available for Bulgaria, Cyprus, Greece, Croatia, Hungary, Latvia, Slovenia, Slovakia.

Source: IFR Survey.

Figure 86: Average merchant service charges for commercial card transactions, 2015-2017

## 6.4 Effects of special provisions for domestic debit card transactions

Domestic debit or credit card transactions are transactions where the issuer of the card and the acquirer of the transaction are located in the same MS or where the issuer and the point of sale where the transaction is performed are located in the same MS. These transactions can be performed with debit or credit cards that belong to both a domestic scheme or to an international scheme.<sup>223</sup>

The IFR (Article 3) (2-4) established that, within the general interchange fee cap on consumer<sup>224</sup> debit card transactions of 0.2% (Article 3)(1), MS may define special interchange fee caps for domestic transactions performed with debit cards. IFR also allows MS to impose a lower cap than 0.3% on interchange fee for domestic credit card transactions (Article 4).

These special provisions allow national MS a level of flexibility to accommodate specific conditions of each national market, because interchange fees may have developed differently in each MS before the introduction of the IFR. In some MS, interchange fees for example were already lower than the cap set by the IFR.<sup>225</sup> National regulators are allowed under the IFR to define lower percentage interchange fee caps, possibly combined with a *maximum interchange fee amount*. The IFR also allows regulators to set *fixed per-transaction interchange fees*. Finally, the IFR allows further flexibility in the transition period until December 2020 to ease implementation.

The level and structure of interchange fee affect the behaviour of market players. This behaviour could lead to different effects on issuing, usage and acceptance of debit or credit cards as well as different incentives to use payment cards for lower or higher-value transactions. In particular, the presence of these special provisions could lead to fewer incentives to issue debit or credit cards because the interchange fees would decline and reduce the income of the issuer unless the lower costs would lead to more merchant acceptance and consumer usage.

This section<sup>226</sup> assesses MS that adopted special provisions on domestic debit and credit card transactions and the combination of interchange fee caps that they have implemented. For MS with special provisions, the developments in issuing and acceptance of debit and credit cards are assessed as well as the value and volume of domestic debit and credit card transactions. These trends are compared with the general developments in domestic debit and credit card transactions observed overall at the EU level. Further, trends in MSCs for debit and credit card transactions in MS with special provisions are assessed, including a comparison with European averages<sup>227</sup>.

The analysis is based on the IFR Survey. This data is complemented with publicly available information on national implementations of the IFR for domestic debit card transactions and with information from proprietary sources such as RBR reports.

Overall, the hypothesis that the presence of these special provisions could lead to fewer incentives to issue debit or credit cards is not confirmed. There was no clear correlation between

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<sup>223</sup> For instance, a transaction performed in Member State A with a debit card issued by an issuer resident in Member State A and part of an international card scheme brand is a domestic debit card transaction.

<sup>224</sup> Throughout the chapter, the term debit cards indicates consumer debit cards.

<sup>225</sup> See IFR paragraph 21.

<sup>226</sup> This follows the Terms of Reference, section 2.3.7 para. 44.

<sup>227</sup> The assessment in this section is based on data collected in the IFR Survey rather than ECB data since the latter does not provide figures for only domestic transactions divided between card type.

issuing of debit and credit cards and the presence of special provisions on domestic debit and credit card transactions compared to the average in Europe. The hypothesis that these special provisions could increase use of cards was also not confirmed by the statistical model, although it has to be considered that at least in some of the MS concerned cards use was already high and card issuing had not been affected by these lower interchange fee levels. While some differences were observed in the use of debit and credit cards in MS with special provisions, those were not statistically significant. The use of debit cards for domestic transactions has grown at a faster pace in MS with special provisions. It must be noted, however, that the data available to conduct the statistical exercise and to control for external factors that might drive the changes were limited. In light of this, the results should be interpreted with caution.

#### **6.4.1 Effects of the level and structure of interchange fee caps on market players' behaviour**

The IFR established that MS can choose one of the following options on interchange fees caps for domestic debit card transactions:

- I. define a per transaction percentage interchange fee cap lower than 0.2%, eventually combined with a fixed maximum per transaction interchange fee amount (a cap) (Article 3)(2a)<sup>228</sup> – option 1
- II. define a fixed per-transaction interchange fee of EUR 0.05, which may also be combined with a per transaction percentage interchange fee of 0.2% (Article 3)(2b)<sup>229</sup> – option 2

In addition, limited until December 2020, MS can choose to allow payment service providers to apply a weighted average interchange fee of no more than 0.2% of the annual average transaction value of all domestic debit card transactions (Article 3)(3) (transitory option).

MS are also allowed to set a lower percentage interchange fee for domestic debit card transactions than 0.2%. The effects of this option are not assessed in this section.<sup>230</sup>

Different types and levels of interchange fee affect the behaviour of market players. This behaviour could lead to different effects on issuing, acceptance and usage of debit or credit cards as well as different incentives to use payment cards for lower or higher-value transactions. These effects are expected to affect both debit and credit cards given that the provisions relate to domestic transactions performed with all debit and credit cards belonging to a domestic or an international card scheme. The paragraphs below discuss the possible effects on the behaviour of market players of setting a percentage fee combined with a maximum interchange fee amount, a fixed per transaction fee, lower percentage fee cap for debit cards and for credit cards.

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<sup>228</sup> In effect, this option allows Member States to choose a lower percentage interchange fee than 0.2%, a percentage interchange fee of 0.2% combined with a maximum cap, a percentage interchange fee lower than 0.2% combined with a maximum cap.

<sup>229</sup> In effect, this option allows Member States to choose a fixed per transaction interchange fee of EURO.05 or lower; a fixed per transaction interchange fee of EURO.05 or lower combined with a percentage rate of 0.2% (provided that the sum of interchange fees of the payment card scheme does not exceed 0,2 % of the total annual transaction value of the domestic debit card transactions within each payment card scheme).

<sup>230</sup> This option would result in overall lower level of interchange fees collected. Therefore, it could lead to fewer incentives to issue debit cards (if there is no increase in the use of debit cards) and a higher acceptance and usage of debit cards, obviously for all three aspects mostly in the context of an initial relatively low card usage.

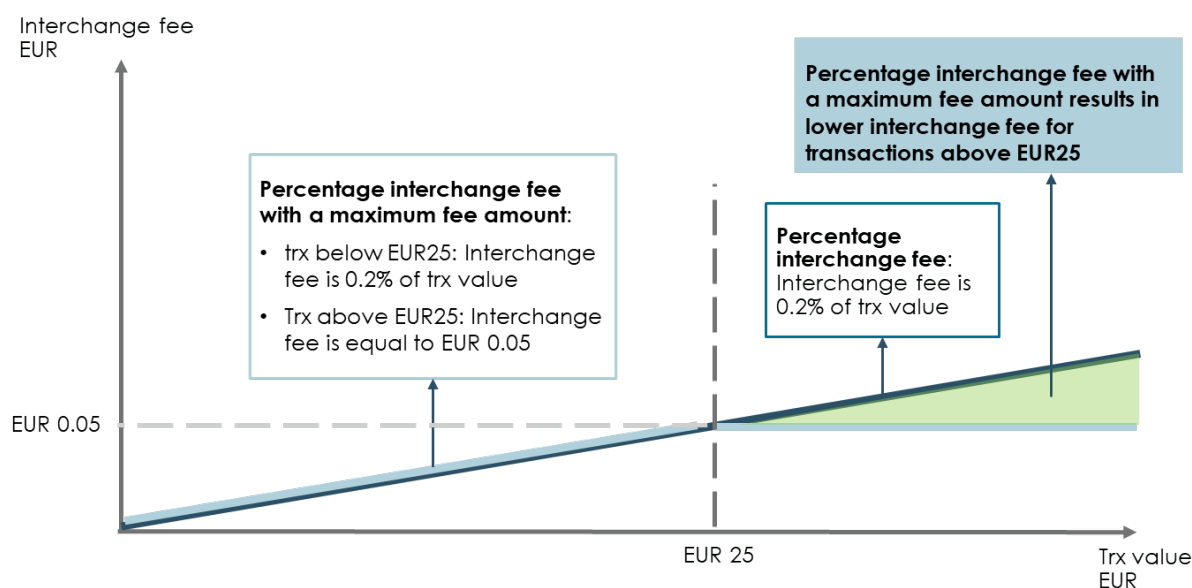
A *percentage fee combined with a maximum interchange fee amount* on domestic debit transactions could in theory lead to a lower number of debit cards issued, if the reduction in overall interchange fee resulting from this provision is not complemented through an increase in the use of debit cards or other compensations, such as cardholder fees. This is because this provision implies a lower overall interchange fee compared to the simple percentage interchange fee, see Figure 87. Once the percentage interchange fee reaches the maximum fee amount, interchange fees applied to transactions above that value will be equal to the maximum amount instead. In the illustrative example of a per transaction interchange fee of 0.2% with a maximum fee amount of EUR 0.05, the interchange fee for transactions above EUR25<sup>231</sup> is always EUR 0.05. A maximum interchange fee amount benefits higher value transactions, see section 6.7.

Overall, this provision implies lower interchange fees than a simple percentage interchange fee. The magnitude of the reduction in overall interchange fees collected depends on the distribution of transaction values. Because of the reduction in interchange fees collected, issuers might have less incentives to issue debit cards or to incentivise consumers to use their debit cards. This effect, however, is most likely to materialize in MS with low initial levels of card penetration. On the contrary, in MS where card adoption was already high, the interchange fee reduction will have limited impact on the incentives of issuers to issue new debit cards and incentivize their use by consumers.

On the merchant side, a maximum interchange fee amount could lead to a higher acceptance of debit cards. This is because acquirers pay a lower interchange fee and can apply a lower Merchant Service Charge (MSC) to merchants. A higher acceptance of debit cards is likely to incentivise consumers to increase their use of debit cards. The increase in the use of debit cards could compensate issuers' lost revenue stream from lower interchange fees and mitigate the lesser incentives to issue debit cards.

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<sup>231</sup> The transaction value above which the cap applies is equal to the ratio between the maximum cap (in our example, 0.05) and the per transaction percentage interchange fee (in our example, 0.2%).



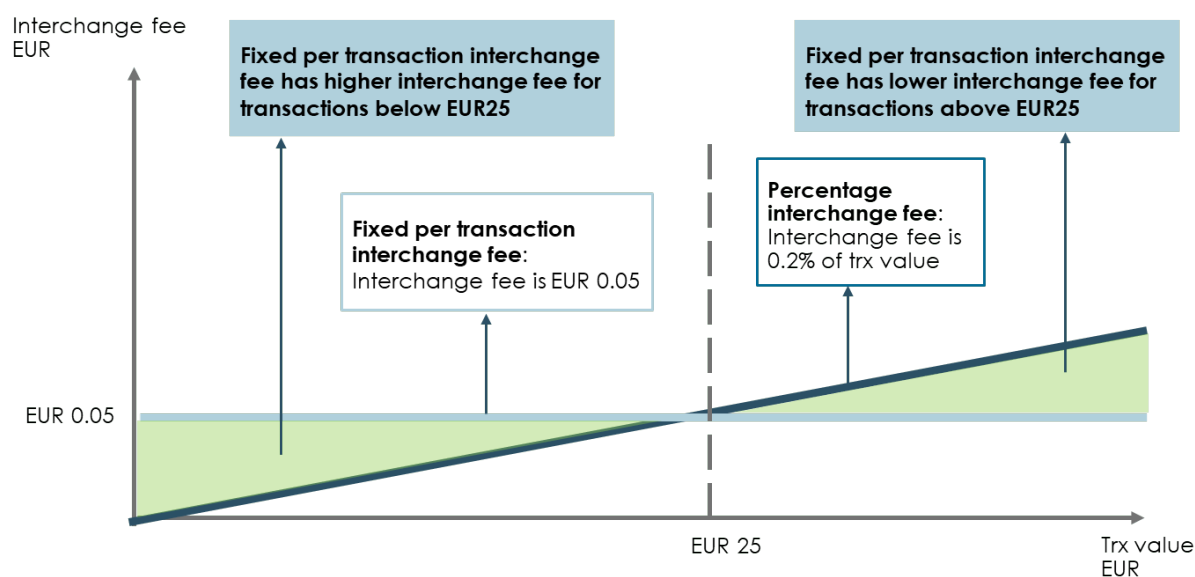
Note: the threshold EUR 25 is equal to the ratio between the maximum fee amount (EUR 0.05) and the percentage interchange fee (0.2%).

Source: Illustrative example.

Figure 87: Percentage interchange fee with a maximum fee amount results in lower interchange fee for higher-value transaction

The overall effect of a *fixed interchange fee* depends on the value of the fee amount as well as on the distribution of the value of transactions, see Figure 88. A fixed interchange fee results in a higher fee for transactions below a certain value compared to the percentage interchange fee. In the illustrative example of a fixed interchange fee of EUR 0.05 compared to the percentage interchange fee of 0.2%, the interchange fee of the latter is higher for transactions lower than EUR 25<sup>232</sup>. The other way around, a fixed fee results in lower interchange fee compared to the percentage option for transactions above that value. A fixed fee could benefit card payments for higher value transactions compared to the percentage interchange fee, see section 6.7. The overall effect on the amount of interchange fees collected will instead depend on the level of the fixed interchange fee as well as on the distribution of transactions in terms of their value.

<sup>232</sup> The threshold EUR 25 corresponds to the ratio between the fixed fee (in our example, 0.05) and the per transaction percentage interchange fee (in our example, 0.2%).



Note: the threshold EUR 25 is equal to the ratio between the maximum fee amount (EUR 0.05) and the percentage interchange fee (0.2%).

Source: Illustrative example.

Figure 88: Fixed interchange fee results in higher fees for lower value transactions and lower fees for higher-value transactions

Overall, the same the level of interchange fees is collected when the transitory option (weighted average interchange fee of no more than 0.2% of the annual average transaction value of all domestic debit card transactions) applies compared to the standard interchange fee cap. There is no clear predictable effect of the application of this option other than providing payment service providers with an additional level of flexibility. The effects of this option are not assessed in this section.<sup>233</sup>

The IFR also allows MS to impose *a lower percentage interchange fee for domestic credit card transactions* than 0.3% (Art. 4). The effects of this provision would be the same as those described for a lower percentage interchange fee for domestic debit card transactions. Only two MSs apply this option (Spain and Italy).

<sup>233</sup> In addition to the lack of predictable effects of this provision, Denmark is the only Member State that applied this provision without combining it with other special provisions (as chosen by the UK and Italy), see Table 59. Hence, it would be difficult to identify any correlation between the presence of such provision and the development of card-based transactions.

### 6.4.2 Member States with special provisions on domestic debit and credit card transactions

Eight MS<sup>234</sup> applied a special provision on domestic debit card transactions, see Table 59. National regulators mainly decided to apply a percentage fee (either corresponding to the one set by the IFR, 0.2%, or a lower one) combined with a maximum fee amount (option envisaged by the IFR under Article 3(2a)). Some regulators also chose to apply a lower percentage interchange fee on transactions below a set value. Only one regulator applied a fixed interchange fee<sup>235</sup>. The fact that most regulators chose a percentage interchange fee combined with a maximum fee amount instead of the fixed fee suggests that national regulators aimed at incentivising card payments for both lower and higher-value transactions.

Member state	Option I		Option II	Transitory period
	Per transaction percentage fee	Maximum fee cap per trx	Fixed per transaction fee	Weighted average fee
Belgium	0.2%	EUR 0.056		
Spain	Trx value <EUR 20: 0.18% Trx value >EUR 20: 0.2%	EUR 0.07		
UK	0.2%	EUR 0.056		0.2%
Italy	Trx value <EUR 5: below 0.2% (set by the scheme) Trx value >EUR 5: 0.2%			0.2%
Malta	0.15%			
Netherlands				EUR 0.02
Ireland				0.1%
Denmark				0.2%

Source: IFR Survey and national competent authorities' publications.

Table 59: Overview of Member States with special provisions on domestic card transactions

Two MSs, Spain and Italy, applied a lower percentage interchange fee to domestic credit card transactions below a certain value, see Table 60.

<sup>234</sup> Luxembourg also chose a special provision on domestic debit card transactions. The interchange fee on domestic debit card transactions is set at 0.12% in Luxembourg. However, this provision entered into force in June 2018. Being outside the timespan of our assessment (2015-2017), we do not include Luxembourg in the analysis of this chapter.

<sup>235</sup> In Netherlands, bilateral interchange fees were below the cap set i.e. at 1 eurocent before and after the IFR.

Member state	Per transaction percentage fee
Spain	Trx value <EUR 20: 0.2% Trx value >EUR 20: 0.3%
Italy	Trx value <EUR 5: below 0.3% (set by the scheme) Trx value >EUR 5: 0.3%

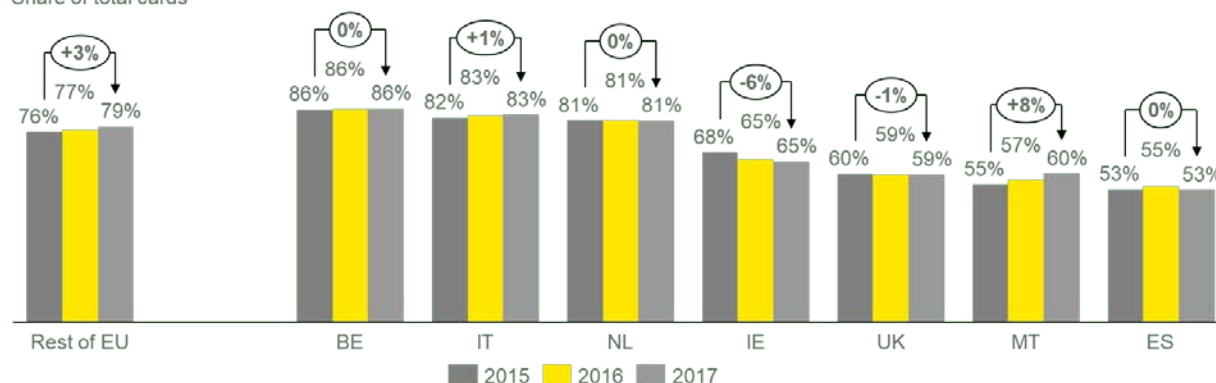
Source: IFR Survey and national competent authorities' publications.

Table 60: Member State with lower interchange fee cap on domestic credit card transaction

### 6.4.3 Share of consumer debit and credit cards in Member States with special provisions

A percentage fee combined with a maximum fee amount or a lower percentage fee on domestic debit transactions results in overall lower interchange fees collected. This could lead to lower issuing of debit cards if the decrease in overall interchange fees collected is not compensated by the increase in use of debit cards. This hypothesis is not confirmed on the data collected from the IFR Survey. The share of debit cards over all cards remained overall stable in most MS with a special provision and in the rest of EU, see Figure 89. The only two exceptions are Ireland, where the share of debit cards decreased by 6%, and Malta, where the share of debit cards increased by 8%. Overall, this suggests that the reduction in overall interchange fees did not reduce issuers' incentives to issue debit cards and/or was compensated by other factors, for instance the increase in the use of cards. Also, at least in some of these MS, card use was high already and card issuing had not been affected by these lower interchange fee levels.

Share of total cards



Source: IFR Survey.

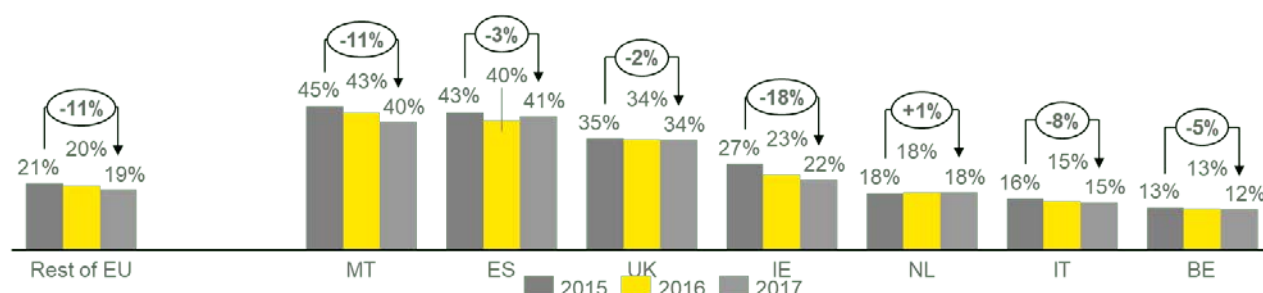
Figure 89: Share of issued debit cards in Member States with special provisions, 2015-2017

Survey results also do not confirm the hypothesis that lower interchange fees on domestic credit card transactions would lower issuers' incentives to issue credit cards. Spain and Italy, where a lower cap on the interchange fee for domestic credit card transactions applies, do not show a



clearly separate trend when compared to either MS with other special provisions or the rest of EU, see Figure 90.

Share of total cards



Source: IFR survey

Figure 90: Share of credit cards in Member States with special provisions, 2015-2017

A statistical test on whether issuing of debit and credit cards developed differently in MS with special provisions compared to those without after IFR came into force confirms these results. The parameter  $\mu$  in the following model (represented by the coefficient 'after 2015, with provisions' in Table 61) measures the difference in the change of issued debit or credit cards for survey respondents located in MS with special provisions compared to the average change in the group of respondents located in MS without special provisions after 2015 (introduction of the IFR).<sup>236</sup>

$$Cards_{itc}^{CT} = \alpha + D_{itc}^{17,16} + Prov_{tc} + \mu Prov_{tc} * D_{itc}^{17,16} + Fixed\ effects + Controls + \varepsilon_t$$

Looking at the WLS method, the estimated weighted average change in debit (credit) cards issued after 2015 by respondents in MS with special provisions was 1.5 million less (2.4 million more) than the weighted average change estimated for the group of respondents in MS without special provisions after 2015. However, the coefficient was not statistically significantly different from zero.

Overall, there is no statistically significant difference in the change of issuing of debit or credit cards in MS with special provisions compared to MS without special provisions between 2015 and 2017 across the three different methods, see Table 64. The data available, however, only covered three years (2015-2017) which limit the ability to estimate existing underlying differences in time trends across MS more accurately.

<sup>236</sup> The variable number of cards,  $Cards_{itc}^{CT}$ , is defined as the number of cards issued by respondent in MS  $c$  in a given year  $t$  for a given card type  $CT$ .  $D_{itc}^{17,16}$  is a dummy variable with value one for the year 2016-2017 (after the IFR was implemented) and zero otherwise.  $Prov_{tc}$  is a dummy variable with value one for the MS with special provisions.  $Controls$  control for the respondent's type (scheme, issuer) and size (in terms of the log of the respondent's total number of transactions).

Regression	Variable	OLS	WLS	QReg
Consumer Debit (million)	after 2015 ( $D_{itc}^{17,16}$ )	-0.8**	-1.7	-0.5
	MS with provisions ( $Prov_{tc}$ )	14.3*	11	4.4
	after 2015, with provisions ( $\mu$ )	0.05	-1.5	0.2
	(N, R-squared)	(260; 0.52)	(253; 0.86)	(260; 0.28)
Consumer Credit (million)	after 2015 ( $D_{itc}^{17,16}$ )	-0.2	-2,4	-0.01
	MS with provisions ( $Prov_{tc}$ )	10,1**	29***	5,7
	after 2015, with provisions ( $\mu$ )	0.2	2.4	-0.01
	(N, R-squared)	(288; 0.54)	(261; 0.78)	(288; 0.26)

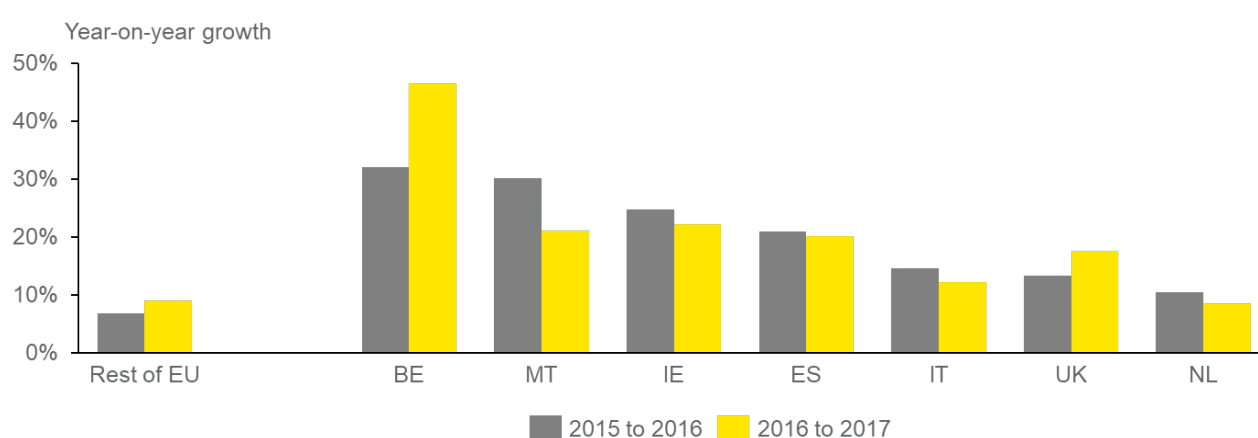
Note: Two-sided test for change in number of cards issued: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change in the number of cards issued // number of observations and R-squared in brackets // only MS with data for all years are included // country fixed-effects.

Source: IFR Survey.

Table 61: Change in issuing of debit and credit cards in Member States with special provisions, 2015 and 2017

#### 6.4.4 Number and value of domestic debit card transactions in Member States with special provisions

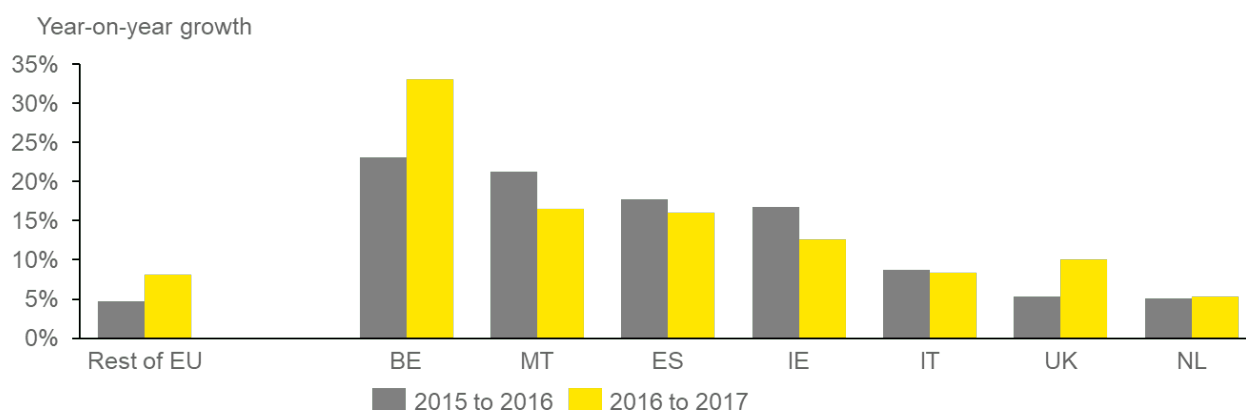
Survey data seems to confirm the hypothesis that provisions setting a lower cap and/or a fixed per transaction interchange fee amount can increase use of debit cards. The number of domestic card-based transactions performed with debit cards grew faster in most MS with special provisions on domestic debit card transactions than in the rest of EU, see Figure 91. The exception is the Netherlands, where the growth in the number of debit card transactions was overall in line with the EU average. It has to be considered that MS adopting lower IF levels might have done so to keep their lower IF levels prior to the IFR, while they already enjoyed high levels of card usage and acceptance, as in the case of Netherlands where the card payment market was already well developed prior the IFR and therefore less prone to significant increases in the number of debit card transactions.



Source: IFR Survey

Figure 91: Growth in number of domestic debit card transactions in Member States with special provisions, 2015-2017

Similarly, the value of domestic debit card transactions grew at faster pace in almost all MS that adopted a special provision on domestic debit card transactions, see Figure 92. Also, in this case, the Netherlands reported a lower growth rate lower than the EU average in the value of debit card transactions. It must be noted that in the Netherlands card usage was already relatively high before the IFR. The observed MS specific developments might be affected by other concomitant factors, such as development of card payment markets, increase in e-commerce or introduction of new payment methods, e.g. mobile payments.



Source: IFR Survey.

Figure 92: Transaction value growth of domestic debit card transactions in Member States with special provisions, 2015-2017

However, a statistical test on whether the number and value of domestic debit card transactions developed differently in MS with a special provision compared to those without after the introduction of the IFR does not confirm these results. The parameter  $\mu$  in the following model (represented by the coefficient 'after 2015, with provisions' in Table 62) measures the difference in the average change of number and value of domestic debit card transactions in MS with special provisions compared to the average change in the group of MS without special provisions after 2015 (introduction of the IFR).<sup>237</sup>

$$Trx_{itc}^{CT} = \alpha + D_{itc}^{17,16} + Prov_{tc} + \mu Prov_{tc} * D_{itc}^{17,16} + Fixed\ effects + Controls + \varepsilon_t$$

The difference in estimated changes in the number or value of domestic debit card transactions in MS with and without special provisions after 2015 is not statistically different from zero, the coefficient 'after 2015, with provision', see Table 62. Results, however, must be interpreted with caution as data are limited to three years and might not control for other external factors influencing the trend such as for instance the already high level of domestic debit card transactions prior to the IFR.

<sup>237</sup> The number or value of transactions variable,  $Trx_{itc}^{CT}$ , is defined as the number or value of domestic debit card transactions for respondent in MS  $c$  in a given year  $t$  for a given card type  $CT$ .  $D_{itc}^{17,16}$  is a dummy that is one for the year 2016-2017 (after the IFR was implemented) and zero otherwise.  $Prov_{tc}$  is a dummy that is one for the MS with special provisions. *Controls* control for the respondent's type (scheme, issuer) and size (in terms of the log of the respondent's total number of transactions).

Regression	Variable	OLS	WLS	QReg
Number of transactions (million)	after 2015 ( $D_{itc}^{17,16}$ )	20.9	-26.5	3.9
	MS with provisions ( $Prov_{itc}$ )	931*	786	85.6
	after 2015, with provisions ( $\mu$ )	82*	714	7.1
	(N, R-squared)	(538; 0.33)	(537; 0.73)	(538; 0.18)
Value of transactions (EUR billion)	after 2015 ( $D_{itc}^{17,16}$ )	-0.001	-5.7	
	MS with provisions ( $Prov_{itc}$ )	47**	57	
	after 2015, with provisions ( $\mu$ )	0.6	7.8	
	(N, R-squared)	(542; 0.32)	(541; 0.75)	

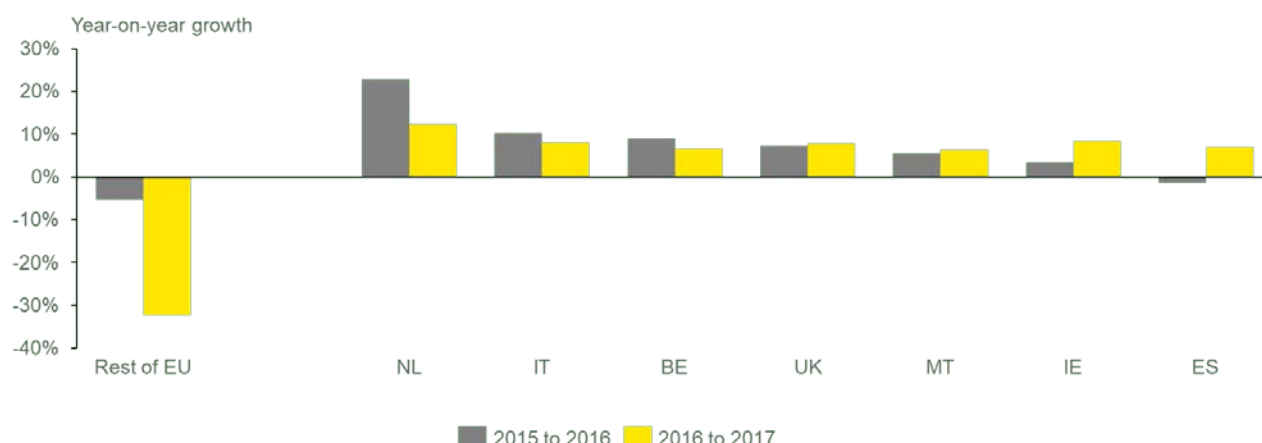
Note: Two-sided test for change in number of cards issued: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change in the number of cards issued // number of observations and R-squared in brackets // only MS with data for all years are included // country fixed-effects.

Source: IFR Survey.

Table 62: Change in number and value of domestic debit card transactions Member States with special provisions, 2015 and 2017

#### 6.4.5 Number and value of domestic credit card transactions in Member States with special provisions

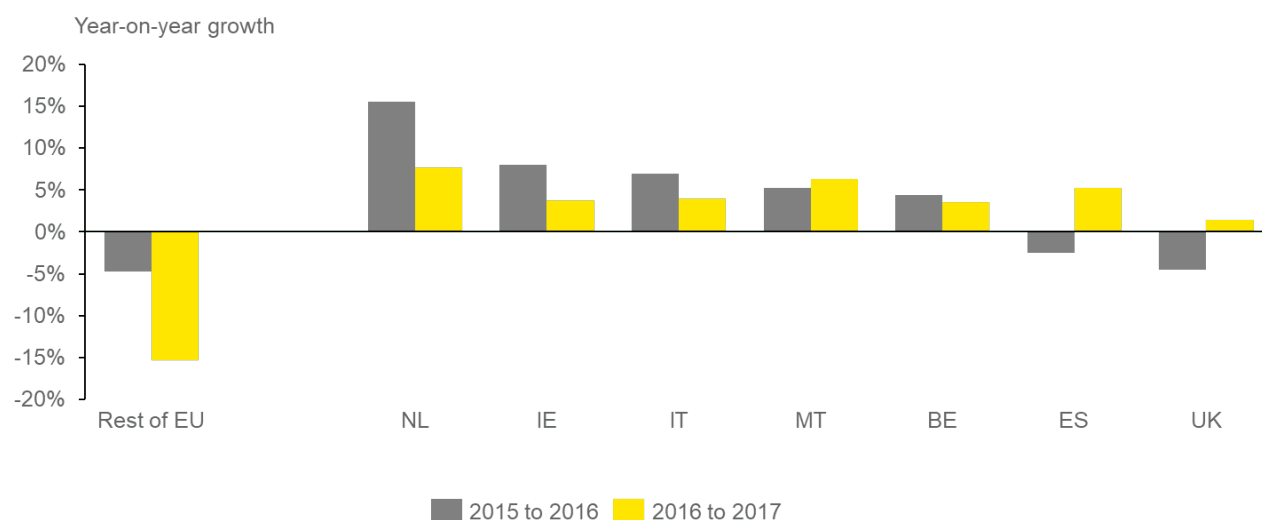
The number of domestic transactions performed with credit cards also grew in MS with special provisions in the period 2015-2017, while it decreased in the rest of Europe. However, the EU average is particularly influenced by a significant decrease in the number of domestic credit card transactions in two MS which don't have special provisions, Cyprus and France, while in other MS the number of domestic credit card transactions either increased or remained overall constant. Therefore, the increase in the number of domestic credit card transactions was not clearly correlated with the presence of special provisions. There was no particular trend in Spain or Italy, where a lower cap on domestic credit card transactions applies.



Source: IFR Survey.

Figure 93: Growth in the number of domestic credit card transactions in Member States with special provisions, 2015-2017

Similarly, value of domestic credit card transactions increases in most MS with special provisions, while it decreased overall in Europe in the period 2015-2017, see Figure 94. However, the EU average is influenced by a significant reduction in the value of domestic credit card transactions in Cyprus and France and to a lower extent in Greece. Therefore, the increase in the value of domestic credit card transactions is not necessarily correlated with the presence of special provisions.



Source: IFR Survey

Figure 94: Growth in the value of domestic credit card transactions in Member States with special provisions, 2015-2017

The statistical model supports these results. The analysis tests whether the number and value of domestic credit card transactions developed differently in MS with a special provision

compared to MS without in 2015-2017. This is captured by the parameter  $\mu$  (represented by the coefficient 'after 2015, with provisions', in Table 63) in the following model:<sup>238</sup>

$$Trx_{itc}^{CT} = \alpha + D_{itc}^{17,16} + Prov_{tc} + \mu Prov_{tc} * D_{itc}^{17,16} + Fixed\ effects + Controls + \varepsilon_t$$

The difference in estimated changes in the number or value of domestic credit card transactions in MS with and without special provisions after 2015 is not statistically different from zero, the coefficient 'after 2015, with provision', see Table 63. Results, however, must be interpreted with caution as data are limited to three years and might not control for other external factors influencing the trend.

Regression	Variable	OLS	WLS	QReg
Number of transactions (million)	after 2015 ( $D_{itc}^{17,16}$ )	-14.8	-946.7*	-0.01
	MS with provisions ( $Prov_{tc}$ )	215.4**	154.6	93.6*
	after 2015, with provisions ( $\mu$ )	21.6	940*	0.8
	(N, R-squared)	(548; 0.27)	(541; 0.68)	(548; 0.14)
Value of transactions (billion)	after 2015 ( $D_{itc}^{17,16}$ )	-0.7	-41.9*	
	MS with provisions ( $Prov_{tc}$ )	14.5***	33.7	
	after 2015, with provisions ( $\mu$ )	0.1	35.4	
	(N, R-squared)	(550; 0.32)	(545; 0.67)	

Note: Two-sided test for change in number of cards issued: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change in the number of cards issued // number of observations and R-squared in brackets // only MS with data for all years are included // country fixed-effects.

Source: IFR Survey.

Table 63: Change of domestic credit card usage in Member States with special provisions, 2015 and 2017

#### 6.4.6 Acceptance of debit and credit cards in Member States with special provisions

A percentage fee combined with a maximum fee amount and a lower percentage fee on domestic debit transactions could result in higher acceptance of cards by merchants because they lead to overall lower interchange fees and lower costs for merchants. The number of merchant outlets accepting debit and credit card payments grew in MS with special provisions as well as in the rest of Europe. The growth rate in acceptance of debit card payments in MS with special provisions was especially higher in Italy and UK. For Italy, this might be linked to the type of

<sup>238</sup> The number or value of transactions variable,  $Trx_{itc}^{CT}$ , is defined as the number or value of domestic debit card transactions for respondent in Member State c in a given year t for a given card type CT.  $D_{itc}^{17,16}$  is a dummy that is one for the year 2016-2017 (after the interchange fee regulation was implemented) and zero otherwise.  $Prov_{tc}$  is a dummy that is one for the Member States with special provisions. *Controls* control for the respondent's type (scheme, issuer) and size (in terms of the log of the respondent's total number of transactions).

special provision that allows for a lower interchange fee cap for small-value domestic debit and credit card transactions, see Table 59 and Table 60

In Italy, acceptance of credit card payments also grew at a significantly faster pace than on average in EU. Moreover, acceptance of credit cards grew at a similar pace as acceptance of debit cards. This suggests that more merchants are accepting card payments and they are not discriminating between debit and credit cards due to the special provisions applying to low amounts in both cases. Figures on number of merchant outlets accepting debit and credit card in MS with special provision are available in the confidential version of the study.



## 6.5 Development of cross-border acquiring

An acquirer performs cross-border acquiring when it acquires transactions for a merchant whose point of sale is located in a different MS. Cross-border acquiring increases competition in the acquiring market as it broadens its boundaries outside the national territories.

The IFR (Article 6) stipulates that card schemes cannot limit the activities of acquirers to a specific geographic area. In addition, it prohibits any requirement or obligation to obtain a country-specific license or authorization to operate as a cross-border acquirer. Merchants should then be able to choose freely any acquirer inside or outside their MS.

This Article is expected to increase competition in the acquiring market and therefore result in lower MSCs for merchants. Lower MSCs increase incentives for merchants to accept card payments. In turn, higher acceptance should encourage use of card payments. These effects can only be expected if merchants are aware of these provisions and actively procure acquiring services outside their own MS. Large acquirers are more able to take advantage of the opportunity to provide cross-border acquiring services. This can make competition in the market for cross-border acquiring services fiercer and result in lower fees for merchants procuring such services. Larger merchants usually have a more sophisticated procurement process and more bargaining power vis-à-vis acquirers, they might therefore experience larger benefits from cross-border acquiring compared to smaller merchants.

Cross-border acquiring has further advantages for merchants besides lower MSCs. Merchants can benefit from having a single point of contact with unified reporting standards, avoiding the need to reconcile payment settlements received from different acquirers. Being able to contract with a single acquirer also allows merchants to standardise the technology for card payments available in their outlets in all MS, thus improving consistency and efficiency of their operations.

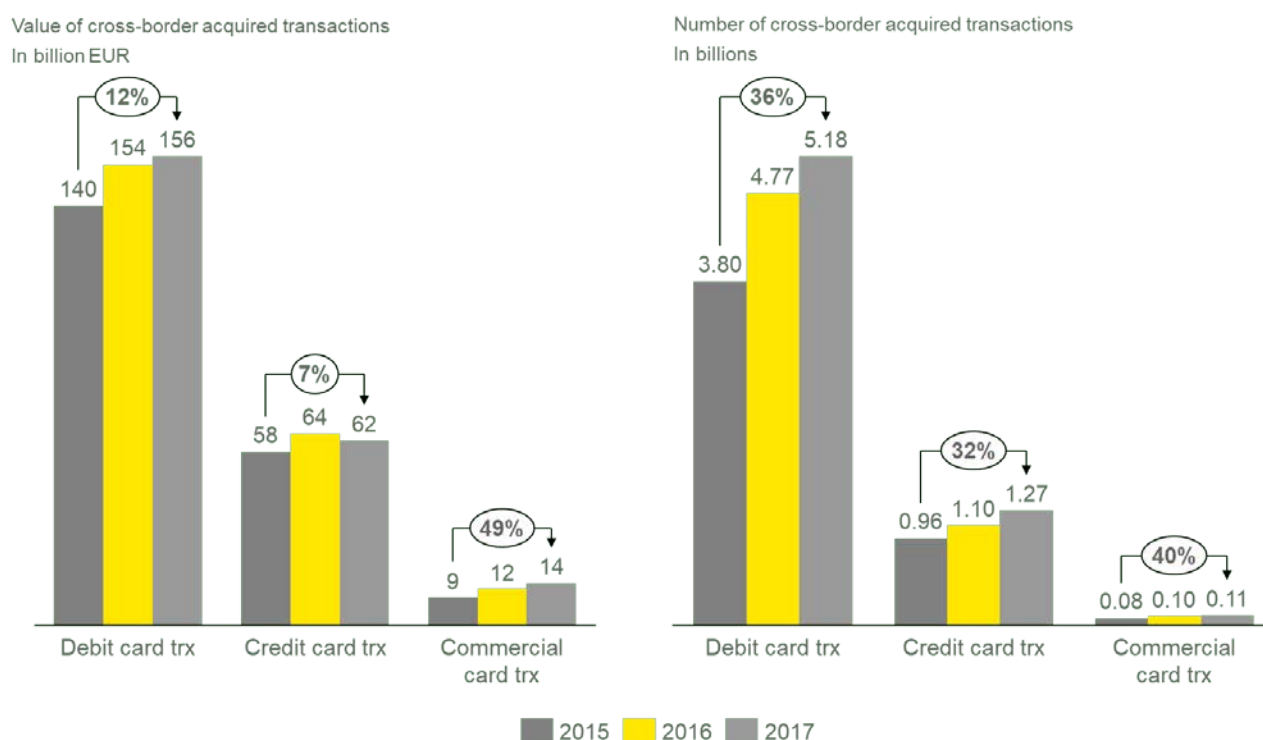
This section examines the effects of the IFR provision on cross-border acquiring. It assesses the development of the value and volume of card-based debit and credit transactions acquired by acquirers located in MS other than those of the merchants' point of sales for different card categories. Further, it analyses the use of cross-border acquiring by merchants of different size and active in different sectors. The analysis also includes the identification of the most important drivers for merchants to procure services from acquirers located in a different MS. Finally, the evolution of the costs, in terms of MSCs, that are applied to cross-border acquiring services is assessed. The results provided in this section are based on the IFR Survey conducted to acquirers and merchants in EU MS.

Overall, the prevalence of cross-border acquiring appears to have increased in the period 2015-2017, especially for consumer debit and commercial card transactions. Cross-border acquiring services are procured mainly by large international merchants. Merchants state that the main reasons for choosing a cross-border acquirer are the quality of the service provided or company policy to choose a specific provider. A more limited share of merchants (one third) listed lower fees as a reason to choose a cross-border acquirer. At the same time, MSCs for cross-border acquired transactions decreased less (or increased more) than MSCs for domestic-acquired transactions in the period 2015-2017. However, the level of MSCs for cross-border acquired transactions in 2015 were already slightly lower than the ones applied to domestically acquired transactions, with the exception of commercial card transactions.

### 6.5.1 Prevalence of cross-border acquiring

Based on the data collected in the IFR survey, the number of cross-border acquired transactions increased for all card types in the period 2015-2017, with reported growth rates between 32%

and 40%, see Figure 95. The value of cross-border acquired transactions grew at higher pace for commercial cards (49%) compared to debit (12%) and credit (7%) cards. However, the total value of commercial card transactions acquired by a cross-border acquirer remained marginal.

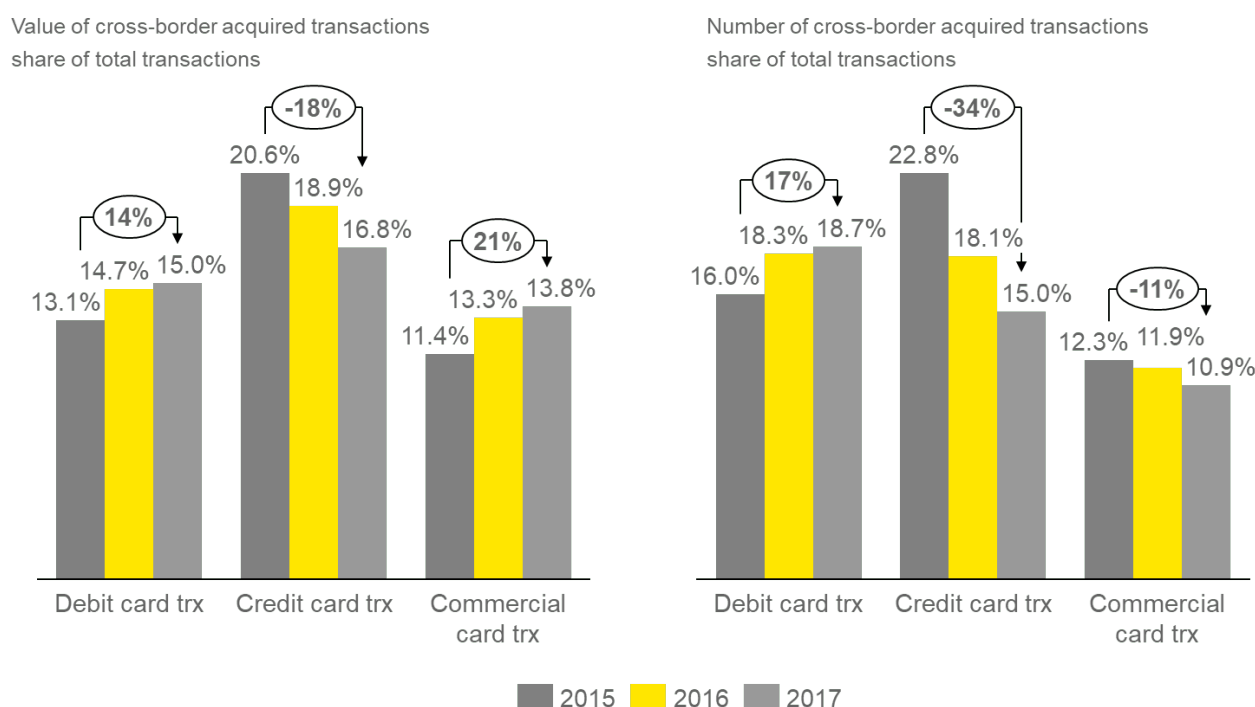


Note: Figures shown relate to intra-EEA cross-border acquiring activities.

Source: IFR Survey

Figure 95: Development of cross-border acquiring transactions by card category, 2015-2017

There is a shift in focus of cross-border acquired transactions from credit cards, whose share is decreasing, to debit cards, whose share is increasing, in terms of both volume and value of transactions, see Figure 96.



Source: IFR Survey.

Figure 96: Share of cross-border acquired transactions, 2015-2017

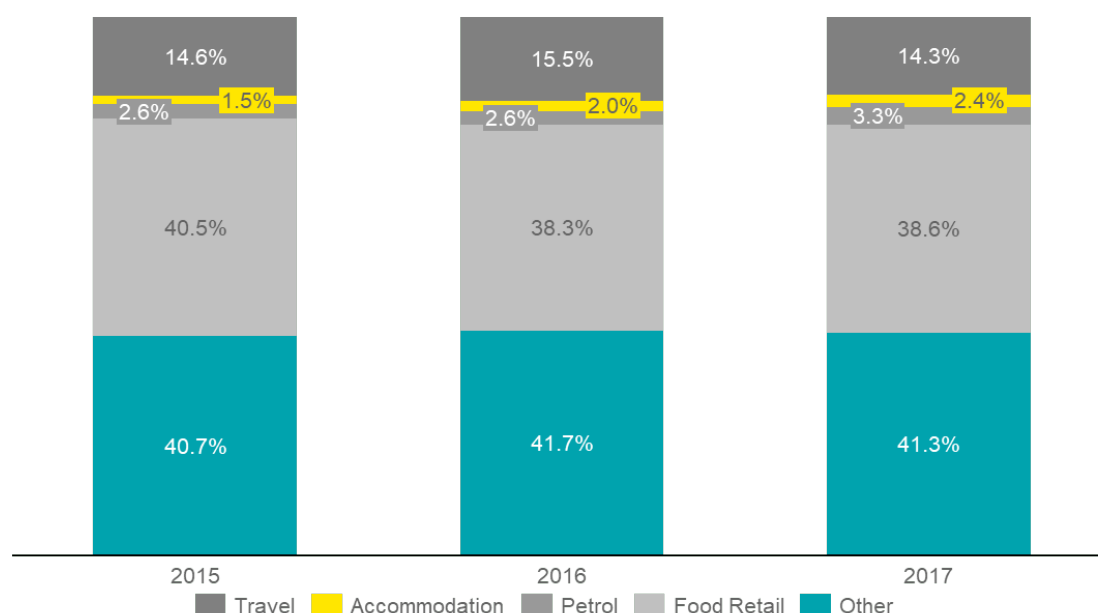
Acquirers surveyed reported that on average 18% of the merchants for which they acquire card payment transactions were located outside of the MS of the acquirer in 2015. This percentage grew to 20% in 2017. There is a tendency for specialization or segmentation across acquirers, with some acquirers reporting mostly acquisition of cross-border transactions while others only or mainly reporting acquisition of domestic transactions.

Acquirers surveyed reported that merchants in the food and retail sector were the most active in procuring cross-border acquiring services among the four focus sectors (travel, accommodation, petrol and food retail<sup>239</sup>) except the general category 'others', see Figure 97. However, merchants in other sectors slowly started to increase their use of cross-border acquiring services. Merchants in the food and retail sector also had lower MSCs than the other four sectors studied<sup>240</sup>. Given that MSCs observed are on average lower for cross-border acquired transactions, this suggests that merchants in the food and retail sectors were not only the largest users of cross-border acquiring services among the focus merchant sectors but also had a larger share of their overall transactions acquired cross-border. Hence, the use of cross-border acquiring services in the food and retail sector is high relative to the other focus sectors and in absolute terms.

<sup>239</sup> Only transactions made with MasterCard and Visa cards are included in this section since only these two schemes provide a split by merchant sector in their records.

<sup>240</sup> See Figure 63 in section 4.4.1.

## Share of cross border transaction value



Note: Data is limited to information from two large international schemes as they are the only respondents with information of cross-border acquired transactions per sector.

Source: IFR Survey.

Figure 97: Distribution of cross-border acquired transactions by merchant sector, 2015-2017

The majority of acquirers (60%) reported in the IFR Survey that cross-border acquiring services are typically provided to large merchants<sup>241</sup> with a turnover above EUR 50 million. Large multinational merchants increasingly centralize their procurements of acquiring services across multiple MS to benefit, among other factors, from economies of scale. This might favour large multinational acquirers that are able to offer multi-country acquiring services. This is confirmed by the finding that large merchants paid on average lower MSCs. Partial evidence that large merchants are able to contract lower MSCs compared to other merchants can be found in Figure 119 in Annex 4, but should be interpreted with caution because of data availability and proper identification of small merchants<sup>242</sup>.

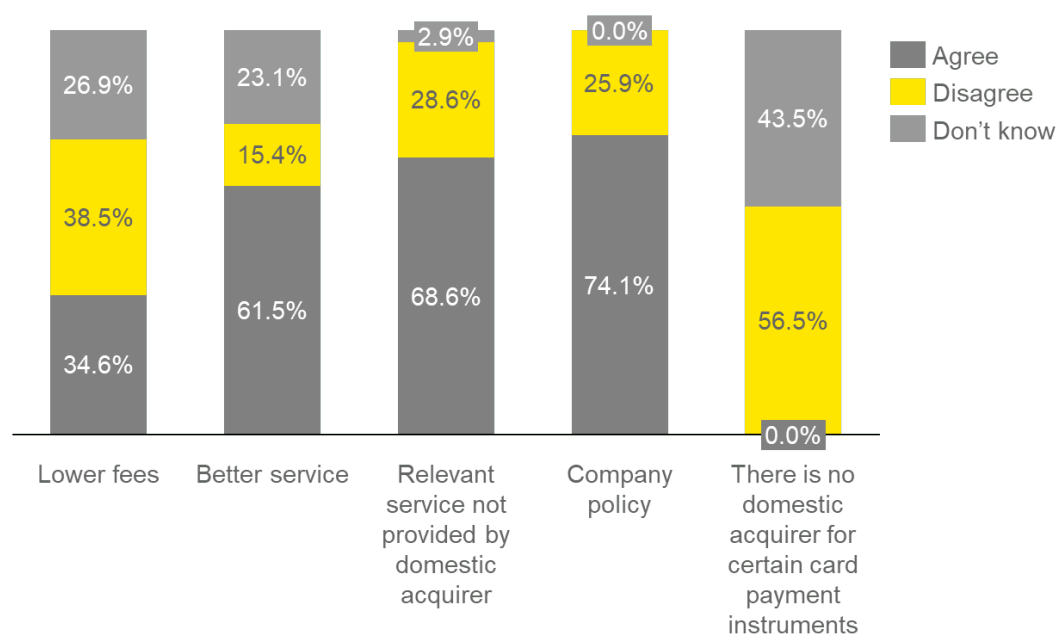
When asked on the reasons why they chose an acquirer outside of their MS, most merchants (62%) agreed that the quality of the service is an important factor in the decision to use a cross-border acquirer, see Figure 98. Other reasons mentioned for the choice of a cross-border acquirer

<sup>241</sup> Large merchants are defined as merchants with a turnover above EUR 50m.

<sup>242</sup> The IFR Survey contains many responses from merchants that are small at the MS level, but these merchants are usually part of a large group active in several MS. For analysing the relationship between MSC and merchant size, the total group size is relevant.

were: the offer of relevant services which were not provided domestically<sup>243</sup> (69%) and the company policy to use pre-defined service providers (74%). This is consistent with the observation that many merchants procuring cross-border acquiring services belong to large food and retail companies, where acquiring services are presumably procured centrally. Lower fees were mentioned by 35% of merchants as a reason to choose a cross-border acquirer. Multinational merchants may take advantage of the scale effects of using one single acquirer in all MS where they are active.

Share of respondents



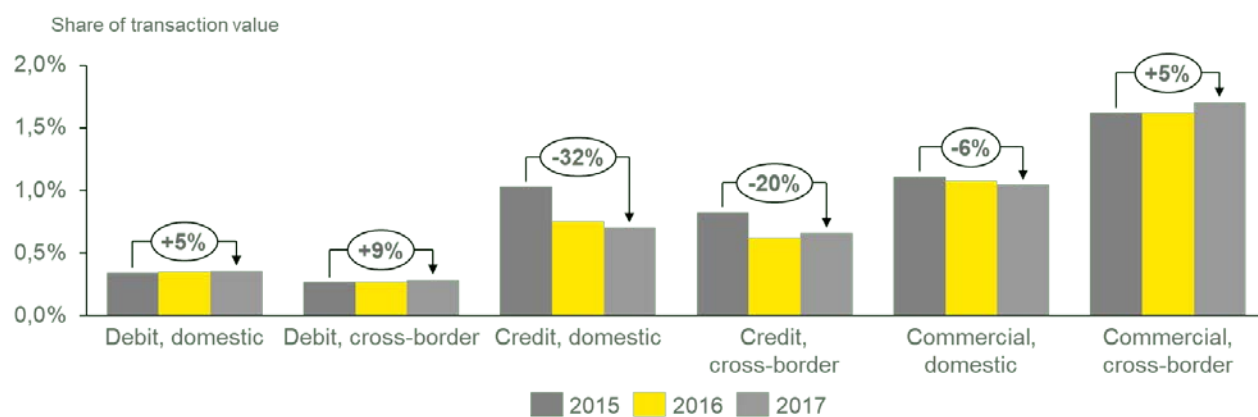
Source: IFR Survey

Figure 98: Reasons for merchants choosing a non-domestic acquirer

### 6.5.2 Merchant service charges for cross-border acquiring services

Finally, MSCs applied to cross-border transactions have either increased or declined less sharply compared to domestic card transactions after entry into force of the IFR, see Figure 99. A decline of 20% is reported for cross border transactions with credit cards, however the domestic transactions declined even further, 32%, between 2015 and 2017. Notably, acquirers reported that the level of MSCs for cross-border acquired transactions in 2015 were already slightly lower than the ones applied to domestically acquired transactions, with the exception of commercial card transactions. This can be linked to the fact that merchants procuring cross-border acquiring services are mostly large merchants, which might be able to negotiate more convenient fees with acquirers compared to smaller-size merchants.

<sup>243</sup> This answer differs from the other possible option “there is no domestic acquirer for certain payment instrument” as the former (“relevant service not provided by domestic acquirer”) may relate, for instance, with the capability of domestic acquirers to handle both domestic and cross-border transactions with the same payment instrument, while the latter may refer to specific payment instrument regardless whether the transaction is domestic or international. Moreover, relevant services provided by acquirers are not limited to the acceptance of certain payment instruments and can be related, for instance, with centralized management of payment account of multinational merchants.



Source: IFR Survey

Figure 99: Merchant Service Charge per transaction type and card category, 2015-2017

## 6.6 Application of rules for separation of schemes and processing

Processing refers to the actions required to handle the payment instruction between the acquirers and the issuer when a card-based transaction is performed. Card schemes often have their own branch for the processing of payment transactions. Among all processing activities, card schemes usually provide the authorization, clearing and settlement and switching services. However, there are many other independent companies in the market that can offer processing services.

Independent processors may be at a competitive disadvantage vis-à-vis processing entities owned by a card scheme because card schemes could, in principle, leverage their position in the card scheme market to favour their owned processing entities. For instance, card schemes could bundle their scheme and processing services or establish technical requirements that prevent interoperability of their systems. In this way, transactions performed within their card scheme may not be easily processed by independent processing entities.

The IFR established that card schemes and processing entities should be functionally independent (Article 7.1)(a). It makes it more difficult for schemes to favour their branch over competing processing entities and from bundling the services of their processing entity with other services offered by the scheme. The regulatory technical standards (RTS) that schemes should follow in order to comply with the IFR were published by the EC in January 2018<sup>244</sup>. The RTS introduces detailed requirements concerning the separation of certain functions, including limits on information exchanged, as well as separate profit and loss accounts, separate corporate organisation (workspaces, management and staff) and separate decision-making.

Independence between schemes and processing entities should make it easier for issuers and acquirers to choose processors and clearing and settlement service providers other than the one associated with the card scheme and thereby reduce the barriers for entering the processing market. It should therefore lead to a higher number of independent (non-scheme owned) processors and overall a higher level of competition on the market for processing services. Ultimately, prices for processing should be lower, incentivising merchants to increase acceptance of card payments.

This section examines the effects of this part of the IFR on the level of competition in the processing market and the extent of offering of multi-brand authorisation and clearing by processing entities. Market solutions applied to overcome technical problems related to the separation are assessed based on input from market players and public authorities in charge of the implementation of the IFR. These results are based on the IFR Survey as well as external resources. The acquirers and merchants' surveys regarding this topic cover a selected number of MS: Germany, Italy, Belgium, United Kingdom, and Denmark.

Overall, changes in the processing market since the implementation of the IFR do not appear to have led to observable impact yet. International card schemes have made their processing

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<sup>244</sup> Commission Delegated Regulation (EU) 2018/72 of 4 October 2017 supplementing Regulation (EU) 2015/751 of the European Parliament and of the Council on interchange fees for card-based payment transactions with regard to regulatory technical standards establishing the requirements to be complied with by payment card schemes and processing entities to ensure the application of independence requirements in terms of accounting, organisation and decision-making process.

entities functionally independent following entry into force of the IFR. Implementation of these provisions has posed some challenges to schemes, which were required to update their organizational structure and their systems to ensure independence of the entities and interoperability of the systems to allow processing of different brands. However, not all functionally independent scheme owned processing entities seem to offer multi-brand authorization and clearing services yet<sup>245</sup>. Moreover, processing services for increasingly demanded types of transactions as contactless and mobile payments are currently mostly offered by international schemes on their networks, which may hinder possible competition from domestic schemes for these types of payments.

With regards to domestic schemes, some of them stated in the IFR survey that they did not offer processing services also before the IFR entered into force. However, in most MS where they are present, there is only one or few interbank organizations that handle the processing of most of their transactions.

The number of independent processors does not appear to have increased. Switching to independent processing entities was not observed and the share of transactions processed by independent processors also does not seem to have changed significantly. According to the responses of the IFR survey, the development in the costs for processing services incurred by acquirers remains unclear while pricing complexity seems to have increased.

### **6.6.1 Functional separation of scheme and processing activities**

MasterCard has a functionally independent entity offering processing services. The functional separation between the scheme and processing business was implemented in 2016. MasterCard's processing entity offers processing services for brands belonging to MasterCard<sup>246</sup>. Visa has also complied with the regulation: scheme activities are offered by Visa Europe Limited, while processing activities are carried out by Visa Technology and Operation<sup>247</sup>. Both schemes declared that their processing services are not offered in bundles with other payment card services as foreseen by the IFR.

However, new types of card-based transactions as contactless and mobile payments function on standards and protocols that international schemes promoted. International scheme developed and offer their own proprietary services to process these transactions and, in most cases, are the only ones providing these solutions. An example of this is the tokenization technology that allows the storage of card details and secure payments with digital wallets.<sup>248</sup> This technology is mainly offered by international schemes, this has led digital wallets providers to integrate only international schemes in their wallets at the expense of domestic schemes. To the extent that

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<sup>245</sup> This consist in the ability of the processing arm of the scheme to authorize and route transactions made with cards that do not function on the scheme's network. When the cardholder initiates a card transaction with a merchant, the merchants's acquirer forwards an authorization and authentication request for the transaction that, in most cases, a switch directs it to the issuer that authorizes the transaction. The processing arms of the scheme in most cases offer the switch service for the transactions that use its rails. For the scheme's processor to authorize and route transactions made with other card brands than its own requires higher level of technical interoperability between the different schemes' networks.

<sup>246</sup> IFR Survey.

<sup>247</sup> Visa Europe (2019). April 2019. "Separation of Scheme and Processing Code of Conduct". [retrieved from: <https://www.visa.co.uk/dam/VCOM/regional/ve/unitedkingdom/PDF/visa-in-europe/code-of-conduct-update-april-2019.pdf>]

<sup>248</sup> ECB report: 'Card payments in Europe - current landscape and future prospects: a Eurosystem perspective' (2019).



international schemes do not offer multi-brand authorization services and are only able to authorize and clear transactions on their own card brands, acquirers and merchants are indirectly bound to use international schemes processing services to be able to offer these increasingly demanded payment options to their customers. In certain markets between 2015-2017 international scheme's switcher was able to process contactless transactions, while the domestic switcher. This helped international schemes growth in number of transactions during the period according to follow up questions for the IFR Survey.

Domestic schemes in Belgium, Germany and Italy responded to the IFR Survey that they do not offer processing services, nor did they offer these services before the IFR came into force. The Spanish scheme declared that scheme and processing activities are separated since 2011. In most cases the competition for authorisations, clearing and settlement processing of domestic schemes transactions seems limited as there is one or few entities, usually an interbank organization or contracted third party, that process most of the domestic scheme's transactions, see Table 64. In certain instances, e.g. Denmark, Portugal, these payment service providers are also the owners of the domestic scheme. In Belgium, Bancontact transactions are processed by French company Worldline and SIX payments system, while in Germany, girocard transactions are processed by multiple independent Network Service Processors. In Italy, PagoBancomat transactions processing is carried out by the interbank organization SIA, while in Bulgaria domestic scheme's transactions are processed by BORICA AD owned by the Bulgarian Central Bank. French Cartes Bancaires have a legally independent organization, STET, in charge of the switching and authorization. In Denmark, on the other hand, all Dankort cards transactions are processed by Nets which also owns the domestic scheme. Banks and merchants are required to contract with Nets in order to issue and accept Dankort cards<sup>249</sup>. Also, SIBS in Portugal owns local domestic scheme Multibanco. The scheme did not provide answers on its processing activity in the IFR survey and no additional information was found on their compliance with the IFR provision.

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<sup>249</sup> Dankort and Nets published a code of conduct to detail the general management, accounting and organisational measures to follow in order to ensure internal compliance with the regulation (Source: Nets. 29 September 2018. 'CODE OF CONDUCT. Separation of Dankort payment card scheme and Dankort processing business'. [retrieved from: <https://www.nets.eu/SiteCollectionDocuments/Code%20of%20Conduct.pdf>])

Member State	Domestic scheme	Main processors and clearing and settlement service providers of domestic cards
Belgium	Bancontact	EquensWorldline and SIX Payment Service
Bulgaria	Borica	BORICA AD appointed by the Bulgarian central bank
Denmark	Dankort	Nets, acquiring and processing company
France	Carte Bancaire	STET (Interbank organization)
Germany	girocard	18 independent Network Service Processors (NPS) compliant with German Banking Industry Committee (GBIC)
Italy	PagoBancomat	SIA (Interbank organization)
Portugal	Multibanco	SIBS (Interbank organization)
Slovenia	Activa/Karanta	Bankart, Banka Intesa Sanpaolo
Spain	EURO 6000/ServiRed/ Sistema 4b (merged into STMP in 2018)	Redsys Servicios de Procesamiento

Note: In Malta and in France there are closed-loop mono-bank card schemes. In those cases, however, issuer and acquirer are the same bank and thus they manage the to switch, clear and settle processing activities for their transaction.

Source: Copenhagen Economics research.

Table 64: Overview main processors and clearing and settlement service providers of domestic cards transactions

International card schemes reported a number of challenges in the implementation of these provisions of the IFR. First, the need to ensure that the functionally independent entity does not have access to the previously shared IT system. This is achieved through updates to the IT system to create 'Chinese walls' between the two entities. Second, the need to ensure technical interoperability of the processing systems to allow processing of other scheme brands in the absence of common technical standards. Considerable investments are required to develop the necessary technical functionality to connect with other schemes using their formats, standards, technical protocols and rules. At the time to the survey, it was not always possible for all international schemes to offer their customers processing of other brands not part of their schemes. Third, the need to create a fully-independent entity with its own divisions and decision-making processes. This is achieved through the duplication of certain activities within the two entities. Fourth, the need to offer a universal payment service to global client with separated scheme and processing activities limited to the European market. Fifth, the need to adopt an activity-based cost allocation – especially costs that are considered at the global level by the organization.

With the separation of scheme and processing activities, the regulation aims at moving away from single branded authorizations usually imposed by scheme processing entities and encourage the offer of multi-brand solutions usually provided by independent processors. As competition increases, acquirers would be better positioned to ask for this option. As a result, processors owned by card schemes would be incentivized to align their offer and provide clearing and authorization of transaction linked to card brands not part of their group.

At the time of the survey, however, multi-brand authorization and clearing did not seem to be offered by all functionally independent scheme owned processing entities. In the IFR survey, only 54% of acquirers that answered to the question declared that their scheme-owned

independent processors offered multi-brand authorization and clearing. In all the selected MS, there was at least one (acquirer) that answered affirmatively, except for Germany where there was only one respondent. However, no information was provided on which functionally independent scheme-owned processor was offering multi-brand authorization.

### **6.6.2 Developments in the processing market**

There is no evidence from the survey of an increase in the number of fully independent processing entities since the IFR came into force. All acquirers that expressed an opinion stated that there has not been any change in number of independent processing entities. Only two national regulators agreed to some extent with the statement that the number of independent processing entities has increased (Italy and Poland), while three disagreed (Finland, Portugal and Slovenia).

Acquirers that responded to the question stated that they used and still use functionally independent scheme-owned processing entities to process (at least part) their transactions. This is particularly necessary for international transactions. According to MasterCard, banks tend to rely on MasterCard network for their international transactions to avoid investments in multiple-country infrastructure. One third of the acquirers stated that, for a share of their acquired transactions, they also use fully independent processing entities. The share of transactions for which these acquirers used a fully independent processor stayed overall constant over the period 2015-2017, around 36-42%. Furthermore, no acquirer reported to have switched to a fully independent processor since entry into force of the IFR. The lack of switching observed should be considered in light of the long duration (sometimes several years) of the service contracts usually stipulated in this market and the high costs and technical changes that acquirers face in order to change processor.

The absence of substantial changes in the market may be partially attributed to the only recent publication in January 2018 of the regulatory technical standards which may have delayed the effects expected from the provision.

### **6.6.3 Developments in the cost of processing**

Acquirers' replies regarding the costs of processing were ambiguous: 18% of acquirers declared that it decreased, 45% declared that it increased, while it did not change for the remaining 37%. Parallel to that, 58% of respondent acquirers reported an increase in the complexity of the pricing structure of processing services while it remained unchanged for the remaining 42%.

Sixty-three per cent of merchants responding to the survey experienced a decrease in the cost for processing services since entry into force of the IFR, while the remaining 37% reported an increase. However, merchants, with the exception of special cases where large volume of transactions are managed, are not necessarily aware of the part of fees specifically linked to the processing activities. Those are dealt with separately between the acquirer and processor and enter in the acquirer margins. The decrease in the cost of processing observed after the regulation by merchant should also be considered as part of the general trend in declining costs brought by the consolidation processes in the acquiring market started several years ago in the

industry. This has created players with increasingly large processing capacities able to maximize economies of scales and provide services at lower prices<sup>250</sup>.

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<sup>250</sup> McKinsey (2018). 'Global payments 2018: A dynamic industry continues to break new ground'.

## 6.7 Interchange fees for medium- and high-value debit card transactions

The evolution in the distribution of card-based transaction values is relevant to understand the expected impact of different structures of interchange fee caps, for example the effect of introducing a maximum interchange fee amount.

In Article 3(1), the IFR sets the interchange fee cap at 0.2% for domestic and intra-EEA debit card transactions. In Article 17(k), the IFR calls for an assessment of setting instead the interchange fee cap as the lowest amount of EUR 0.07 and 0.2%. This is equivalent to a percentage interchange fee at 0.2% combined with a maximum interchange fee amount of EUR 0.07 and implies that all transactions above EUR35 are medium and high value transactions.

This assessment can benefit from the analysis of special provisions for domestic card-based transactions (Article 3)(2-4), see section 6.4. The IFR (Article 3)(2-4) stipulates that MS may define special interchange fee caps for domestic transactions performed with debit cards. In addition to an effect on the prevalence and use of debit cards, these provisions may have different implications for debit card transactions of varying amount.

First, this section assesses how the average transaction value evolved in EU MS in 2015-2017<sup>251</sup> as an indication of whether and how the distribution of transaction values evolved.<sup>252</sup> The insights from the quantitative analysis are supported by qualitative evidence from issuers on how high and low-value transactions developed after the implementation of the IFR. Second, this section assesses whether use, acceptance of cards, and merchant costs for accepting card payments evolved differently in MS that applied a maximum interchange fee amount. It has however to be considered that MS adopting lower IF levels MS might have done so to keep their lower IF levels prior to the IFR, while they already enjoyed high levels of card usage and acceptance. Therefore, it may be difficult to draw strong links between the maximum caps and the development in the use of cards.

In most MS, the average value of a debit card transaction decreased in the period 2015-2017. It means that the number of low-value transactions increased faster than the number of high-value transaction. This suggests that European consumers are increasingly using card payments for low-value transactions.

A maximum interchange fee amount leads to lower interchange fees for high-value transactions. This could indirectly lead to more intensive use of cards, especially for high-value transactions – in particular if consumers are steered by merchants to use cards for these, and higher acceptance of cards. However, there is no correlation between the presence of a maximum interchange fee amount and trends in the average value of debit card transactions. This suggests that a maximum interchange fee amount might not influence the distribution of transaction values. Instead, the usage of debit cards increased more in MS with a maximum interchange fee amount.

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<sup>251</sup> The assessment conducted in this section is based on data collected in the IFR Survey rather than ECB since the latter does not provide figures for only domestic transactions divided between card type.

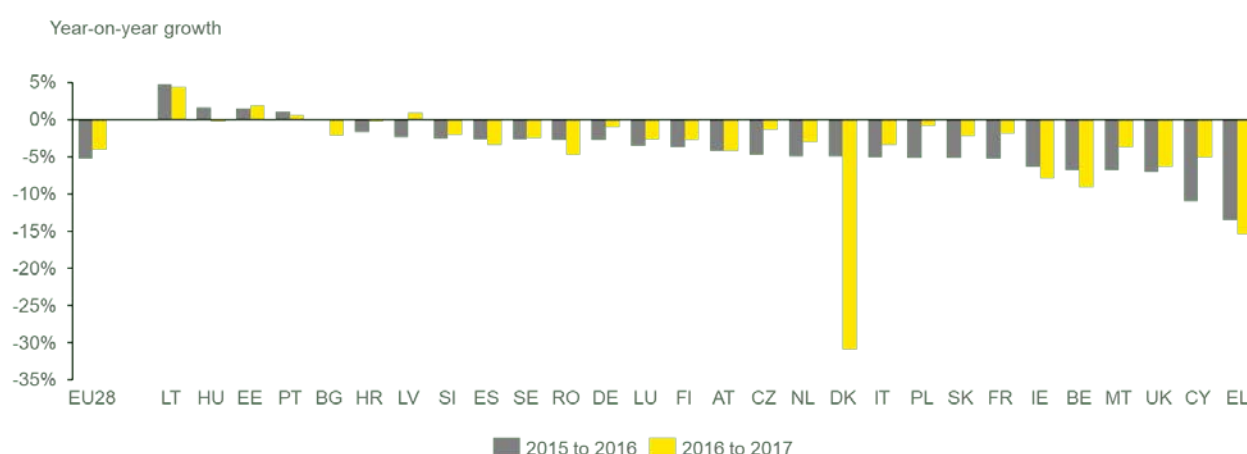
<sup>252</sup> The evolution of the average transaction value is assessed is analysed here as data on the distribution of transaction by value is not available.

### 6.7.1 Effect of a maximum fee amount on the level of interchange fees

A *percentage fee combined with a maximum fee amount* results in lower interchange fee for higher value transactions, see Figure 87. A percentage interchange fee of 0.2% combined with a maximum fee amount of EUR 0.07 as specified by the IFR (Article 17)(k) results in lower interchange fees for transactions of value above EUR 35.<sup>253</sup> While this option implies an overall lower level of interchange fees compared to the percentage fee option, the effect of applying a maximum fee amount has a larger or lower impact depending on the distribution of transactions with respect to the threshold EUR 35. The larger the share of transactions above this value, the higher the reduction in overall interchange fees.

### 6.7.2 Development of average transaction values for domestic card transactions

The average transaction value of domestic debit cards decreased by 5% and 4% in 2016 and 2017 respectively across Europe, see Figure 100. The only MS where the average transaction value of debit cards increased slightly are Lithuania, Estonia, Portugal and Hungary. These results suggest that consumers in most MS are increasingly using debit cards for lower-value transactions.

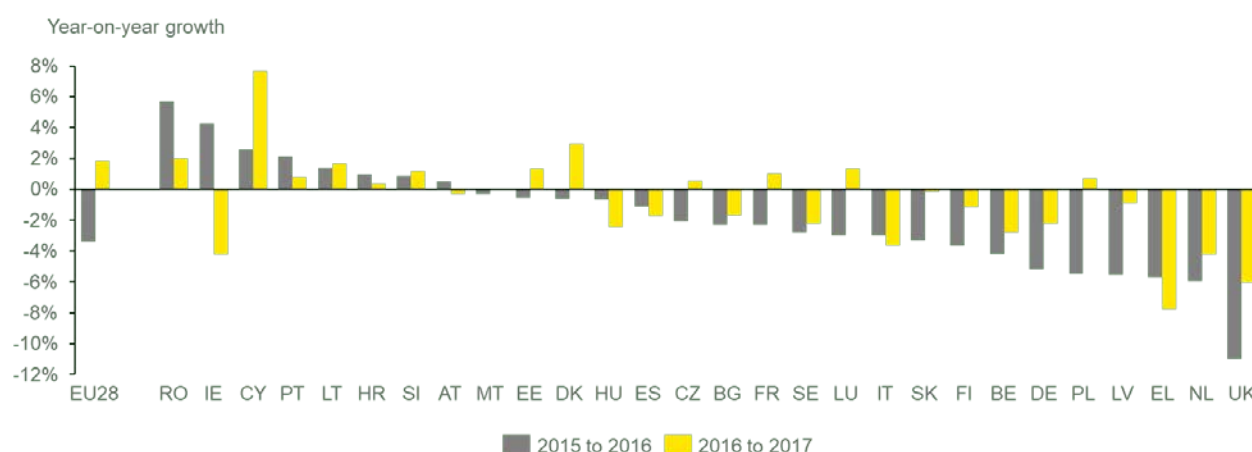


Source: IFR Survey.

Figure 100: Average domestic transaction value growth rates of debit cards, 2015-2017

Instead, the average domestic transaction value of credit cards remained overall stable across EU in the period 2015-2017, see Figure 101.

<sup>253</sup> The EUR 35 is the threshold after which the percentage interchange fee is higher than the maximum cap. Therefore, for transactions of value higher than EUR 35 the maximum cap applies.

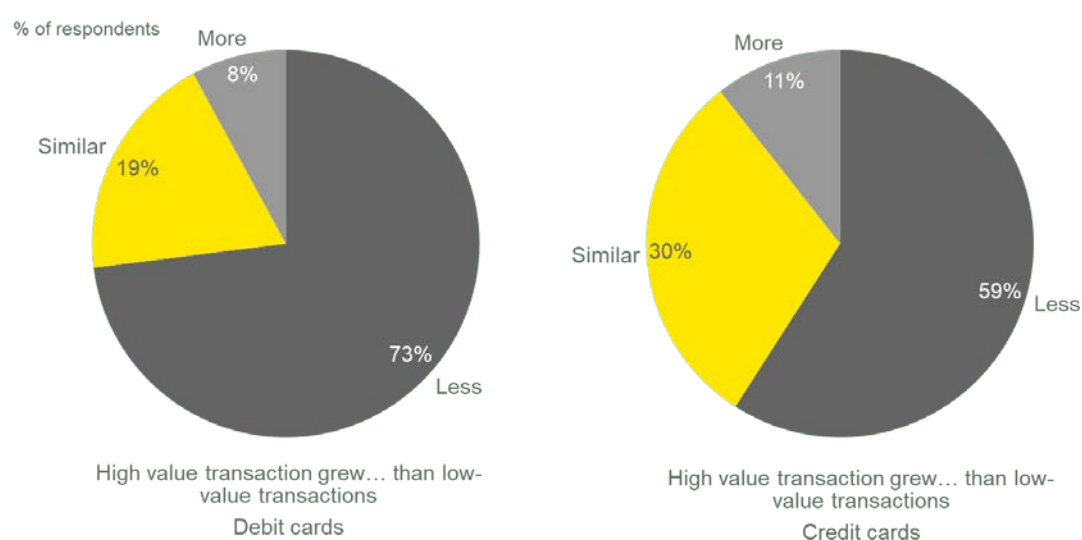


Source: IFR Survey.

Figure 101: Average domestic transaction value growth rates of credit cards, 2015-2017

### 6.7.3 Development of low and high-value transactions

Consistent with the decrease in the average value of debit and credit card transactions, most issuers (72% for debit cards and 58% for credit cards) responding to the survey stated that the number of low-value transactions grew at a faster pace than high-value transactions since entry into force of the IFR, see Figure 102. This confirms the conclusion that consumers increased their use of card payments for lower-value transactions. Overall, the distribution of transaction values is changing towards a higher share of lower-value transactions. This is partially driven by the increase in mobile and contactless payments, which are usually of lower value.



Note: Transaction value above EUR35 are considered high-value transactions and transaction values below EUR35 as low-value transactions.

Source: IFR Survey.

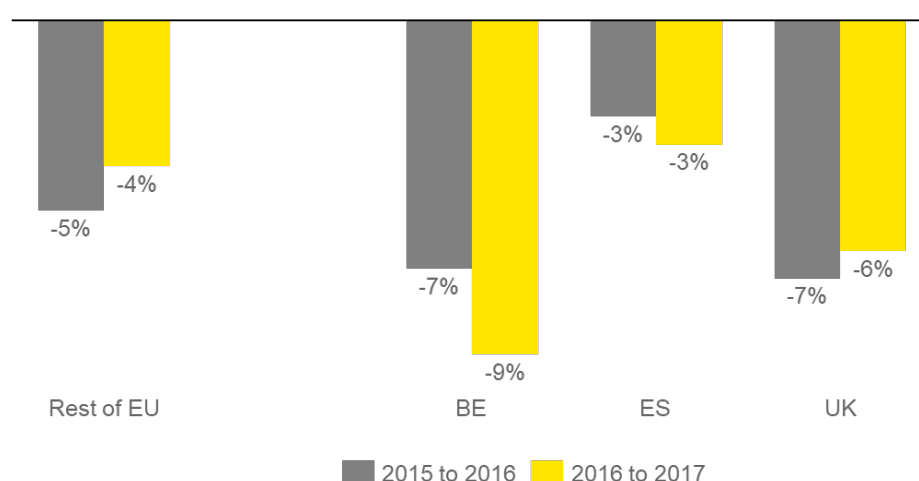
Figure 102: Growth of high and low-value debit and credit card transactions since entry into force of IFR

The magnitude of the reduction in interchange fees following the application of a maximum fee amount depends on the distribution of transaction values. The fact that the distribution of transaction values is shifting towards a higher share of low-value transactions suggests that the maximum fee amount would apply to a decreasing share of transactions. This would lead to a lower magnitude of the overall reduction in interchange fees collected.

#### 6.7.4 Average transaction values in Member States with a maximum fee amount

The average value of a debit card transaction decreased both in MS that applied a maximum interchange fee amount and overall across Europe in the period 2015-2017. In Spain the average value of a debit card transaction decreased at a similar pace as overall in Europe. In Belgium and the UK, where the cap on interchange fee is overall lower than in Spain<sup>254</sup>, the average value of a debit card transaction decreased more than the average in the rest of EU MS, see Figure 103. Nonetheless, the assessment is based on a limited sample and time period. Additionally, the univariate analysis conducted does not consider potential external factors that might influence the different development in card usage in those MS. Therefore, the results should be interpreted with caution.

Year-on-year growth



Source: IFR Survey

Figure 103: Growth in the average domestic transaction value of debit cards in Member States with a maximum fee amount, 2015-2017

#### 6.7.5 Use of debit cards in Member States with a maximum fee amount

A maximum interchange fee amount could be linked to more intensive use of card payments. The data collected with the IFR Survey provide evidence for the presence of this positive correlation. Between 2015 and 2017, both the number and the value of debit card transactions

<sup>254</sup> In Spain is 0.07 while in Belgium and the UK was 0.056.



increased at a faster pace in MS with a maximum interchange fee amount compared to the average in Europe, see Figure 91 and Figure 92.

#### **6.7.6 Acceptance of debit cards in Member States with a maximum fee amount**

A maximum interchange fee amount could lead to higher acceptance of card payments. As lower overall interchange fees may translate into savings for merchants which would start to accept and incentivize more payments with cards at the point of sale. However, it does not appear that a maximum interchange fee amount provides higher incentives for merchants to accept card payments compared to the percentage interchange fee. Acceptance of debit cards increased at a similar rate in MS with a maximum interchange fee and on average in Europe.

## Annex 1. Definitions

Term	Definition
Acquirer or Acquirers	A <i>payment service provider</i> contracting with a <i>payee</i> to accept and process <i>card-based payment transactions</i> , which result in a transfer of funds to the <i>payee</i> .
Acquiring Margin	Acquiring Margin (Acquiring Fees) is an additional mark-up added to Scheme Fee and <i>Interchange Fees</i> by the acquiring bank. The Acquiring Margin covers the cost for processing, risk, and services the Acquirers has contracted with the Merchant.
Annual cardholder fee	A flat annual amount charged to the account holder for having the relevant card product in addition to the bank account or as a standalone card account.
ATM cash withdrawal fee	A fixed amount and / or % charged for an ATM cash withdrawal.
Card-based payment instrument	Means any payment instrument, including a card, mobile phone, computer or any other technological device containing the appropriate payment application which enables the <i>payer</i> to initiate a <i>card-based payment transaction</i> which is not a Credit transfer, or a direct Debit as defined by Article 2 of Regulation (EU) No 260/2012.
Card-based payment transaction	A service based on a payment <i>Scheme's</i> infrastructure and business rules to make a <i>payment transaction</i> by means of any card, telecommunication, digital or IT device or software if this results in a <i>Debit</i> or a <i>Credit card transaction</i> . Card-based payment transactions exclude transactions based on other kinds of payment services.
Cards issued	The total number of cards that have been issued by the <i>card Issuer</i> resident in that MS, including both cards issued in the MS and cards issued abroad  Note: <i>Co-branded cards</i> should be included; all valid cards in circulation should be included, irrespective of when they were issued or how actively they are used. A card is included from the moment it is posted to the cardholder by the <i>card Issuer</i> , irrespective of whether the cardholder has activated it. Cards which are posted to the cardholder for the purpose of a regular re-issue on account of the card's limited period of validity are not counted – i.e. the card is only counted the first time it is issued. Expired or withdrawn cards should not be included. Cards that are inactive because of a temporary stop which is effective at the time of reporting should be included.
Card Issuer	The Issuer makes <i>payment cards</i> available to the <i>payer</i> , authorises transactions at terminals or their equivalent and may guarantee payment to the Acquirer for transactions that are in conformity with the rules of the relevant scheme. Therefore, the mere distribution of payment cards or technical services, such as the mere processing and storage of data, does not constitute issuing.
Scheme	A single set of rules, practices, standards and/or implementation guidelines for the execution of <i>card-based payment transactions</i> and which is separated from any infrastructure or payment system that supports its operation, and includes any specific decision-making body, organisation or entity accountable for the functioning of the scheme.
Co-badging	Means the inclusion of two or more payment brands or payment applications of the same brand on the same <i>card-based payment instrument</i> .
Co-branding	Means the inclusion of at least one payment brand and at least one non-payment brand on the same <i>card-based payment instrument</i> .
Commercial card	<i>Card-based payment instrument</i> issued to undertakings, public-sector entities or self-employed natural persons which is limited in use for business expenses where the payments made with such cards are charged directly to the account of the company, public-sector entity or self-employed natural persons.  <u>Note:</u> Commercial cards can be Debit, Credit, charge, and prepaid cards which may include Corporate Cards, Purchase Cards, Business Cards, Travel and Entertainment Cards.

	Retail Cards and Fuel Cards are only in scope of the survey if they are co-branded with a domestic and international Scheme.
Connected undertakings	<p>For the purpose of this survey "connected undertakings" are:</p> <p>(a) undertakings in which you, directly or indirectly:</p> <ol style="list-style-type: none"> <li>1. have the power to exercise more than half the voting rights, or</li> <li>2. have the power to appoint more than half the members of the supervisory board, board of management or bodies legally representing the undertaking, or</li> <li>3. have the right to manage the undertaking's affairs;</li> </ol> <p>(b) undertakings which directly or indirectly have, over you, the rights or powers listed in (a);</p> <p>(c) undertakings in which an undertaking referred to in (b) has, directly or indirectly, the rights or powers listed in (a); and</p> <p>(d) undertakings in which you together with one or more of the undertakings referred to in (a), (b) or (c), or in which two or more of the latter undertakings, jointly have the rights or powers listed in (a).</p>
Consumer	A natural person who, in payment service contracts covered by this Regulation, is acting for purposes other than the trade, business or profession of that person.
Credit card	<p>Means a category of <i>payment instrument</i> that enables the <i>payer</i> to initiate a Credit card transaction.</p> <p><u>Note:</u> whenever information is requested in this survey related to Credit cards please include deferred and delayed Debit / charge cards</p>
Credit card transaction	Means a <i>card-based payment transaction</i> where the amount of the transaction is Debited in full or in part at a pre-agreed specific calendar month date to the <i>payer</i> , in line with a prearranged Credit facility, with or without interest.
Cross-border acquired payment transaction	Means a <i>card-based payment transaction</i> where the <i>Acquirer</i> and Merchant point-of-sale are located in different MS
Cross-border payment transaction	Means a <i>card-based payment transaction</i> where the <i>Issuer</i> and <i>Acquirer</i> are located in different MS
Cross-border acquiring	A domestic <i>Acquirer</i> that has contracted payment-card acceptance business of a Merchant (at the entity level or at a lower level) based in a different MS.
Debit card	<p>Means a category of <i>payment instrument</i> that enables the <i>payer</i> to initiate a Debit card transaction</p> <p><u>Note:</u> In this survey Debit cards comprises <i>prepaid cards</i> (but not electronic purses) to the extent that they do not allow for credit card transactions. Otherwise they are counted as Credit cards.</p>
Debit card transaction	A <i>card-based payment transaction</i> , including those with <i>prepaid cards</i> that is not a <i>Credit card transaction</i> .
Domestic payment transaction	Any <i>card-based payment transaction</i> which a cross-border payment transaction is not.
Domestic / national Scheme	National Schemes that operate a payment card network in their domestic MS. Within EU-28 domestic Schemes existing in Belgium, Bulgaria, Denmark, France, Germany, Italy, Malta, Portugal, Spain, and Slovenia.
Interchange Fee ("IF")	<p>A fee paid for each transaction directly or indirectly (i.e. through a third party) between the <i>Issuer</i> and the <i>Acquirer</i> involved in a <i>card-based payment transaction</i>.</p> <p>Note: In this survey, Interchange Fee refers to any payment streams from Acquirer to Issuer related to card payment transactions based on cards issued under the Scheme</p>
Interchange Fee Regulation ("IFR")	Regulation (EU) 2015/751 of the European Parliament and of the Council of 29 April 2015 on Interchange Fees for <i>card-based payment transactions</i> in the EU MS.

Annual Interest rate or Annual Percentage Rate ("APR")	The annualised interest rate charged monthly on purchases made on the <i>payment card</i> and not paid in full by the payment due date.
Interest-free period	The interest-free period on new purchases starts on the date the cardholder makes a purchase and ends when the Credit card <i>Issuer</i> begins charging the <i>payer</i> interest on that purchase. The interest-free period includes the grace period determined by the Credit card <i>Issuer</i> . It may not apply unless certain conditions are met.
Foreign transaction fees ("FX fee")	Foreign transaction fees are assessed by the <i>Issuers</i> for each <i>payment transaction</i> made in a foreign currency.
MS	A MS that belongs to the European Union.
Merchant Category Code ("MCC") or Merchant Classification Code	A four-digit number listed in ISO 18245 for retail financial services. MCC is used to classify the business by the type of goods or services it provides. The code reflects the primary category in which the Merchant does business. See end of List of Definitions for relevant codes.
Merchant Service Charge ("MSC") or discount fee	Fee paid by the Merchant to the <i>Acquirer</i> in relation to <i>card-based payment transactions</i> . The Merchant Services Charge is consisting of three components: <i>Interchange Fee</i> , <i>Scheme Fees</i> , and <i>Acquiring Margin</i> .  <i>Acquirers</i> are obliged to specify and bill separately all components of the Merchant Service Charge (unbundled rates) for all card products unless the <i>payee</i> (Merchant) requests in writing a fee billing based on calculated averages for all transactions ("blended" rates).
On-us transactions	"On-us transaction" in a four-party scheme is a transaction where the same financial institutions provide both the acquiring and issuing services for this transaction.
Payee	A natural or legal person who is the intended recipient of funds which have been the subject of a payment transaction.
Payer	A natural or legal person who holds a payment account and allows a payment order from that payment account, or, where there is no payment account, a natural or legal person who gives a payment order
Payment card	A category of <i>payment instrument</i> that enables the <i>payer</i> to initiate a <i>Debit or Credit card transaction</i> .
Payment instrument	Any personalised device(s) and/or set of procedures agreed between the payment service user and the <i>payment service provider</i> and used in order to initiate a payment order.
Processing entity	Means any natural or legal person providing payment transaction processing services.
Payment Service Provider ("PSP")	A natural or legal person authorised to provide the payment services listed in the Annex to Directive 2007/64/EC or recognised as an electronic money <i>Issuer</i> in accordance with Article 1(1) of Directive 2009/110/EC. A payment service provider can be an <i>Issuer</i> or an <i>Acquirer</i> or both.
Payment transaction	An action, initiated by the <i>payer</i> or on its behalf or by the <i>payee</i> of transferring funds, irrespective of any underlying obligations between the <i>payer</i> and the <i>payee</i> .  <i>Payment transactions</i> include cash or cashless transactions performed at a physical terminal and includes card transactions at virtual <i>points of sale</i> , e.g. over the internet or the telephone. Note: ATM cash withdrawals are not covered.
Point of Sale ("POS")	The address of the physical premises of the Merchant at which the <i>payment transaction</i> is initiated.  However: (a) in the case of distance sales or distance contracts (i.e. E-Commerce) as defined in point 7 of Article 2 of Directive 2011/83/EU, the point of sale shall be the address of the fixed place of business at which the Merchant conducts its business regardless of website or server locations through which the <i>payment transaction</i> is initiated; (b) in the event that the Merchant does not have a fixed place of business, the point of sale

	<p>shall be the address for which the Merchant holds a valid business licence through which the payment transaction is initiated;</p> <p>(c) in the event that the Merchant does not have a fixed place of business nor a valid business licence, the point of sale shall be the address for correspondence for the payment of its taxes relating to its sales activity through which the <i>payment transaction</i> is initiated.</p>
Point of Sale (POS) transaction	<p>Payment transaction made at a point of sale. Point of sale transactions include face-to-face (i.e. card present) and at-distance (such as online) transactions.</p> <p><u>Note:</u> All transactions should be reported including on-us transactions.</p>
POS terminal	<p>A POS device allowing the use of <i>payment cards</i> at a physical (not virtual) point of sale. The payment information is captured either manually on paper vouchers or by electronic means, i.e. EFTPOS.</p>
Prepaid cards	<p>Means a category of <i>payment instrument</i> on which electronic money, as defined in point 2 of Article 2 of Directive 2009/110/EC, is stored. A prepaid card is not linked to a specific bank account, funds are preloaded onto it ("pay before" model).</p> <p><u>Note:</u> A prepaid card is different to an "electronic purse". For an electronic purse, an amount of electronic money can be stored on the chip of the card or on a central server, which is Debited when a payment is initiated. From a European legal perspective, such <i>payment instruments</i> are not regarded as <i>card payments</i> but as e-money. Hence, electronic purse payments are not in scope of this survey.</p>
Scheme Fees	<p>Scheme Fees that are paid by the <i>Issuer</i> and the <i>Acquirer</i> to the <i>Scheme</i> for each <i>payment transaction</i> made with the <i>Scheme</i>. The fee amount is set by <i>the Scheme</i>.</p> <p><u>Note:</u> in this survey Scheme Fees are defined as the total amount of Scheme Fees, charged by the <i>Schemes</i> to the <i>Issuers</i> and <i>Acquirers</i> - comprising transaction related fees (such as authorization fees, assessment fees) and non-transactional fees (such as membership &amp; licencing fees, innovation fees, etc.).</p>
Universal card	<p>Payment instruments enabling the payer to initiate card-based payment transactions that are not distinguishable as Debit or Credit card transactions by the payment Scheme as the choice between a Debit or a Credit card transaction is made by the cardholder and is unknown to the payment Scheme and to the Acquirer. Transactions with such cards are treated as Debit card transactions under the IFR. Until 9 December 2016 however, MS could define a share of no more than 30 % of these domestic universal card transactions as equivalent to Credit card transactions and subject to the 0.3% Interchange Fee cap.</p>

### Merchant categories

Merchant sector	Merchant code	Category	Description
Travel	3300-3500		Car Rental
	3000-3299		Airlines
	4011		Railroads
	4111		Local Commuter Transport
	4112		Passenger Rail
	4121		Taxicabs/Limousines
	4131		Bus Lines/Charter/Tour
	4411		Steamship/Cruise Lines
	4457		Boat Rentals & Leases
	4511		Airlines
	4582		Airports/Fields/Terminals
	4722		Travel Agencies
	4723		Other Travel/PKG Tour
	4784		Toll And Bridge Fees
	4789		Travel Service
	5541		Service Stations
	7512		Auto Rental
Accommodation	3501-4000		Hotels
	7011		Hotels
Petrol	9752		Gas/Automotive/UK. Petrol Stations-Electronic Hot File
	5542		Automated Gas Dispensers
Food Retail	5422		Freezer/Meat Lockers
	5441		Candy/Nut/Confection Store
	5451		Bakeries
	5462		Dairy Product Stores
	5921		PKG Stores/Beer/Wine/Liquor
	9751		Merchandise/UK Supermarkets-Electronic Hot File
	5411		Grocery Stores
	5499		MISC Food Stores
Other sectors	All other MCC codes		

## Annex 2. Survey process

### *Addressee identification and selection*

Survey addressees include all five relevant stakeholder groups:

1. Schemes (domestic and international players)
2. Issuer
3. Acquirers /Processors
4. Merchants (different sectors)
5. Consumer Associations

EY compiled a comprehensive database of Payment Service Providers (PSPs) and merchants for all EU-28 MS. EY applied selection criteria for each stakeholder category (by market relevance per MS, degree of internationalisation, company size) and proposed a total of 4,197 companies (20 schemes, 373 issuers, 171 acquirers, 3,633 merchants<sup>255</sup>) to be invited for participating in the IFR survey. A relevant proportion of the selected companies are market leaders with operations in multiple MS.

The selection of consumer associations per MS was based on the information provided by the EU Commission on national consumer bodies<sup>256</sup> and the list of consumer organizations affiliated to the European consumer association BEUC<sup>257</sup>. This way, a total of 211 consumer organisations were identified.

In addition to those five categories, the survey team also set up a survey of National Competent Authorities. DG COMP provided a list of relevant institutions.

### *Questionnaire preparation*

Questionnaires for schemes, issuers, acquirers, merchants, and consumer associations were developed in two steps. The main motivation was achieving better understanding of upcoming challenges such as low response rates (as evidenced from the previous study targeting merchants), high reliance on participation of leading market players, or sensitivity and confidentiality of the requested data and information.

As **first step**, a 3-weeks exploring survey was performed with focus on availability of the targeted data with 24 relevant market participants (schemes, issuers, acquirers, merchants) in October 2019 (so-called "Phase Zero"). Objective of this step was **data availability testing**, i.e. to assess to what extent data that are planned to collect was available or at all accessible, whether addressees were willing to share this data, and whether there were specific legal, regulatory or other reasons that prevented addressees from disclosing the information.

In the **second step**, dedicated questionnaires per stakeholder category were developed for:

- Schemes (separate questionnaires for 4- and 3-party schemes),
- Issuer,

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<sup>255</sup> One quarter of the total number of Merchants (962) were large companies with a turnover above EUR 50 m while three quarters (2,672) were Small and Medium Size Enterprises (SME) with turnover below EUR 50 m (revenue data was taken from the Amadeus dataset).

<sup>256</sup> [https://ec.europa.eu/info/policies/consumers/consumer-protection/our-partners-consumer-issues/national-consumer-organisations\\_en](https://ec.europa.eu/info/policies/consumers/consumer-protection/our-partners-consumer-issues/national-consumer-organisations_en).

<sup>257</sup> See <https://www.beuc.eu/beuc-network/our-members>. Due to regulations under the General Data Privacy Directive (GDPR), no umbrella association was able to provide contact details of relevant executives.

- Acquirers,
- Merchants,
- Consumer Associations, and
- National Competent Authorities.

All questionnaires consisted of quantitative and qualitative questions to cover all information necessary to assess the relevant topics listed in article 17 of the IFR and specified in Section 1.2 of this report. The final questionnaires used for the survey are provided in Annex 7.

### *Survey implementation*

The approved questionnaires were implemented into EY's web-based survey tool. To access the survey tool, addressees received a personalised email invitation with login details for secure data transfer as well as supplemental information on data privacy and treatment to confidential information. The invitation also included a support letter by DG Competition to strengthen credibility of the request.

To provide further information to addressees, a website was developed with general information on the IFR, downloadable pdf versions of all questionnaires, technical instructions on the survey, FAQs etc.<sup>258</sup> The website also includes a functionality for interested companies to request an invitation for the IFR survey.

### *Recruiting and on-boarding of survey addressees*

Survey invitations were sent to addressees in staggered order in six intervals in January and early February 2019, starting with merchants, issuers, acquirers, schemes, consumer associations and national competent authorities. In total, about 2,700 emails and 1,980 letters were dispatched during this first wave.

In parallel, the survey team reached out to relevant industry associations to increase awareness across European PSPs and merchants as well as to re-emphasise the relevance of the survey. The list of contacted consumer associations includes:

- Umbrella associations of European merchants focussing on retail (EuroCommerce, Independent Retail Europe), SMEs (SMEUnited), E-Commerce (E-Commerce Europe), Accommodation (Hotrec) and fuel distributors (European Conference of Fuel Distributors ECFD).
- Umbrella associations of European PSPs include European Banking Federation (EBF), European Savings and Retail Banking Group (ESBG), the European Association of Co-operative Banks (EACB), the European Payment Council (EPC) and the European Payment Institutions Federation (EPIF).

In addition, national associations were contacted in different MS, including HDE, UNITI, Dehoga and BVZI in Germany, the British Retail Consortium (UK), PAN-Nordic (Scandinavia and Baltic States), AFEPAE (France), ANAED (Spain), PONIP (Poland) or VBIN (Netherlands).

To enable onboarding of additional addressees, the survey website was used as a platform to which cooperating associations were asked to direct their members. The website included an online form, where interested parties could request a survey invitation. Each request was verified

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<sup>258</sup> [www.de.ey.com/ifr-survey](http://www.de.ey.com/ifr-survey). Reference to the IFR survey website has also been added to the EU Commission website under heading 'Support study on the functioning of the Interchange Fee Regulation'.



by the survey team to rule out potential misuse. Overall, the website has received about 170 requests for participation across all categories.

### *Interaction with survey addressees*

Throughout the survey period, the EY project team provided ongoing support to survey participants:

Already with sending the invitation, addressees were given several recommendations to ensure smooth data collection. For instance, the survey team suggested all merchants to either ask the required information from their merchant service providers (acquirers), or look it up themselves in their financial accounting systems or finally, make estimations based on their daily, weekly or monthly data. In addition, several expected FAQs were provided with focus on secure treatment of data, dealing with confidential information, avoidance of conflicts etc.

In communication with addressees, the survey team proactively offered the possibility to submit readily available information or already compiled data sets in available formats instead of submission via the survey tool in pre-defined format.

Addressees of all stakeholder categories have also contacted the survey team by email and/or phone to discuss open questions.

Requests and questions received by addressees can be distinguished into general and specific questions:

- **General questions** mainly referred to timing of the survey (and possibility for later submission), submission of compiled data sets in other formats (i.e. not via the survey tool, as elaborated above), concerns and reassurance with respect to confidentiality and avoidance of potential conflict of interest, relevance of submission of information for different countries, need to provide complete versus partial information or dealing with information that cannot be disclosed due to binding non-disclosure agreements with third parties.
- **Specific questions** were asked across all categories. The focus has been on understanding of terms and underlying definitions, e.g. with respect to detailed aspects related to payment cards, card package, co-badged card, price for package, transaction related versus non-transaction related, active acquiring services, gross versus total MSC, and Gross Scheme Fees versus mark up, revenues transfers, blended rate, or consideration of E-Commerce merchants. Further, frequently addressed issues include the differences between domestic and EEA fees, foreign currency fee versus currency exchange fee, or handling of Scheme Fees that are not directly related to a POS transaction (e.g. licensing fees, market development fees, Commercial reporting fees, chargeback fees, etc.).

### *Challenges during survey execution and steps to address those*

Accounting for addressees' willingness to participate has been very difficult throughout the survey period. In consultations with addressees, the following factors were identified as underlying reasons for the reluctant feedback:<sup>259</sup>

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<sup>259</sup> In several cases, these factors have also caused addressees to cancel participation. This is illustrated in more detail in a separate paragraph on cancellations.

- **General scepticism of Stakeholders with regards to any kind of survey:** addressees have frequently reported that they are generally not participating in surveys and not responding to survey invitations. Several addressees also indicated limited interest without legal obligation to participate. Confronted with this argument, the survey team has stressed the relevance of the IFR survey and direct support by DG Comp.
- **Issue of time and available resources:** given the list of issues to be covered (as required by the tender specifications), the questionnaires comprise of more than 30 questions across the different categories with detailed questions on transaction volumes and fees, broken down by type of card and type of transaction. During the initial pre-testing phase (Phase Zero), participants estimated the required time for survey data provision to be between 6-16 weeks (excluding holiday periods).

To address those challenges, the survey team engaged early on follow ups with addressees with pending feedback. In parallel, the survey team continued to identify additional contacts with responsibility for payments and/or compliance. All contacts received personalised follow-up messages, urging on the relevance of the assessment and stressing the value of every additional response.

Since dispatch of the first wave of invitations, addressees were asked to submit their responses until 31st of March. Until mid of March, response rates were rather low. Accordingly, the survey team started to expand its efforts – in addition to ongoing follow up as described above – by further calls to addressees to receive feedback or identify names and contact details of responsible executives in payment and/or compliance. For issuers, acquirers and schemes, about 100 issuers and 40 acquirers with pending feedback were approached by phone, in most cases several times. For merchants, about 100 calls and additional follow-ups were initiated with focus on larger companies with multi-MS operations (where it was expected that the addressee reports for more than one MS). For consumer associations, the survey team called to all addressees for which no personal contact had been identified before (190).

In a further attempt to maximise the number of validated responses, the project team has also extended the deadline for submission of survey responses. This has allowed participation of addressees, who confirmed participation only in late March/April or even later. In agreement with the Commission, the final deadline for submission of responses has been extended by 2 months, from end of March to end of May. Submission of responses will also be possible in June. Ultimately, the final deadline for data submission will be June 30 when the first project phase ends according to the contract. Throughout this extended period the EY data collection teams have remained fully available to provide all requested support to the survey participants.

The survey team also reached out to national authorities who have recently conducted industry surveys to exchange on addressee lists and contacts. The UK Payment Systems Regulator has supported the IFR survey by promoting participation across UK-based PSPs.

DG COMP actively supported the survey by sending out direct messages to selected survey addressees.

Overall, the additional efforts and follow-up process have significantly improved participation rates.

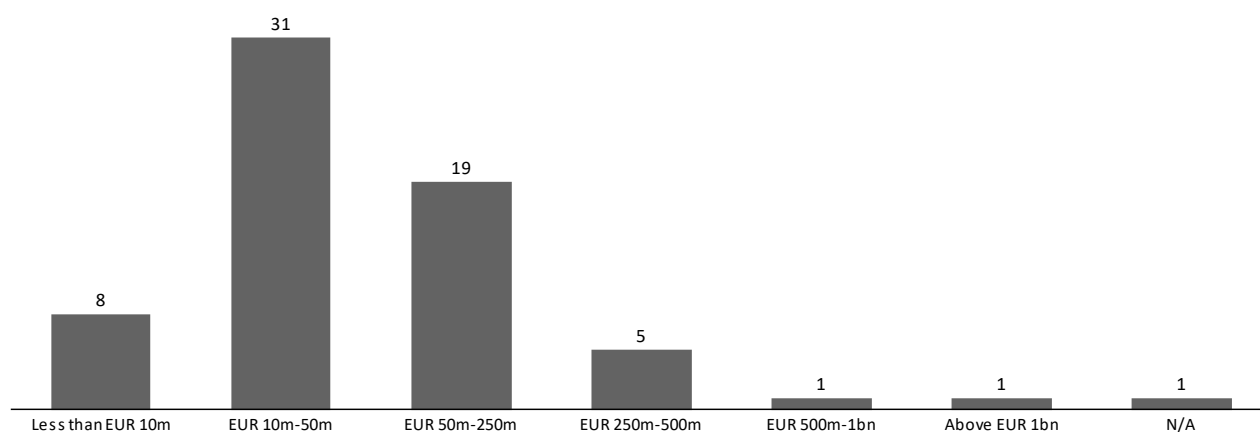
### *Refusals to participate*

The survey team has received several refusals to participate. The reasons can be clustered as follows:

- **Lack of resources and capacity** for providing the required information, e.g. due to actual work load, competing work demands, lack of proper human and financial services, thin headquarter, small team, small family-owned business, etc. (*"no time, thin head office"*); in some cases, addressees referred to ongoing preparations for merger, IPOs, etc. which requires all available capacities.
- **Lack of relevant data** or data in the requested level of detail; in some cases, addressees also argued they do not want to disclose such an amount of information (*"we do not have such a detailed information"*).
- Some addressees have been invited to provide input to more than one category and **refused to participate in one (or more) category** while providing data for other categories (*"we only provide a response for our Issuer business"*).
- Several addressees argued that their participation will **not add value** since similar competitors in e.g. merchant segments or relevant peers in banking associations such as savings banks or cooperative banks will already participate (*"other Sparkassen did already participate and thus, we are already represented"*).
- Several addressees argued that since **participation is optional**, they will not participate (*"we do not participate as this is optional"*).
- Other addressees argued that their **participation is not relevant**, e.g. because their main activities are located outside the EU-28 in e.g. Switzerland or Norway, they do not offer Credit cards, mainly provide b2b services, or account only for a very limited number of payment cards; some addressees also argued that they have sold the relevant service or only started it very recently. Moreover, numerous small merchants (in particular, hotels recruited with the support of merchant associations) have reported a lack of relevance of their response for the overall study.
- Finally, some addressees argued that they are **not impacted by the IFR**.

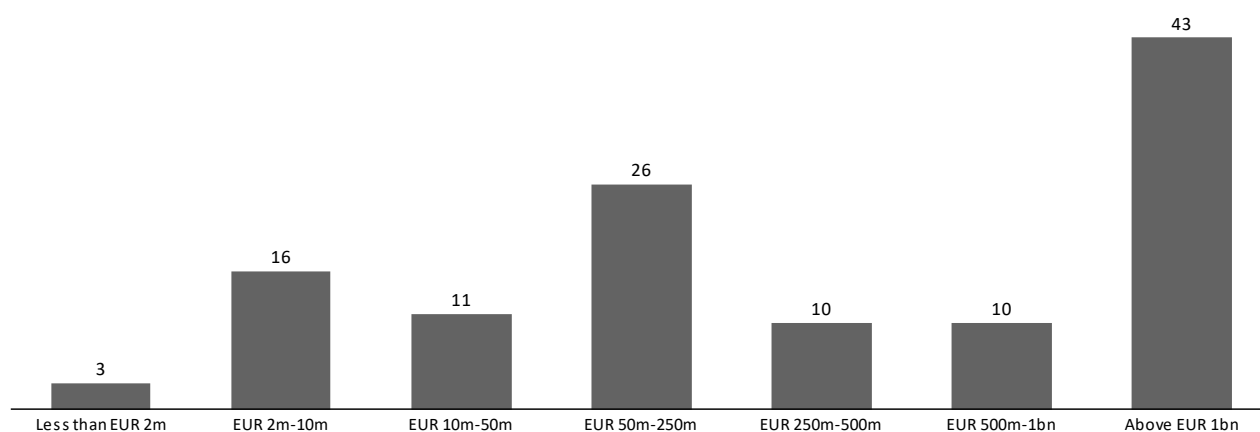
When possible, the survey team replied to addressees immediately after receipt of the notification and asked to reconsider their response. Main arguments to encourage participation are that (i) receiving a limited number of data points is better than receiving no feedback, (ii) resource requirements have to be compared to economic relevance of IFR for your company, (iii) having a full view on the different operations of the same addressee is superior to being limited to core activities, (iv) emphasising that the IFR is particularly relevant for small addressees such as merchants.

*Survey responses by revenue category*



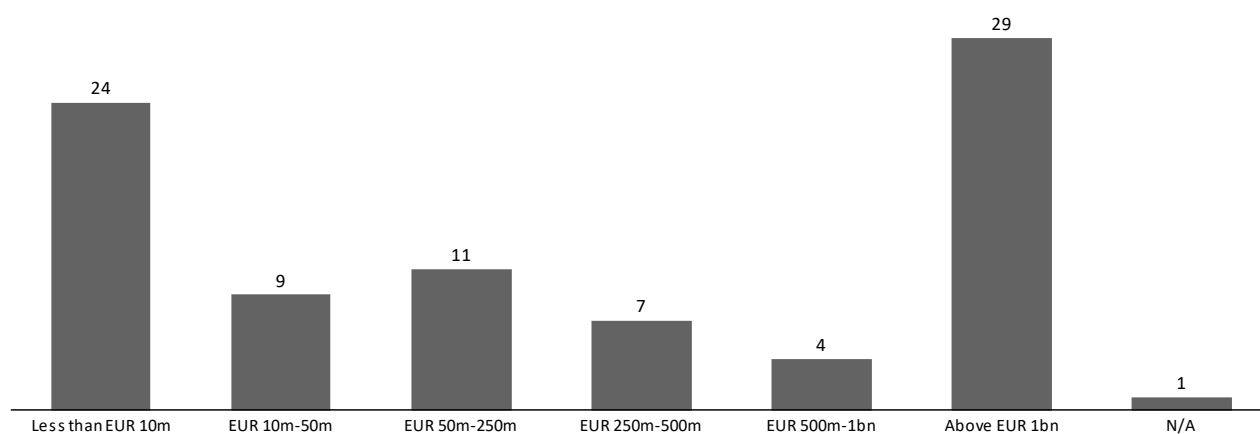
Source: IFR Survey.

Figure 104: Annual gross turnover categories for 4p-schemes



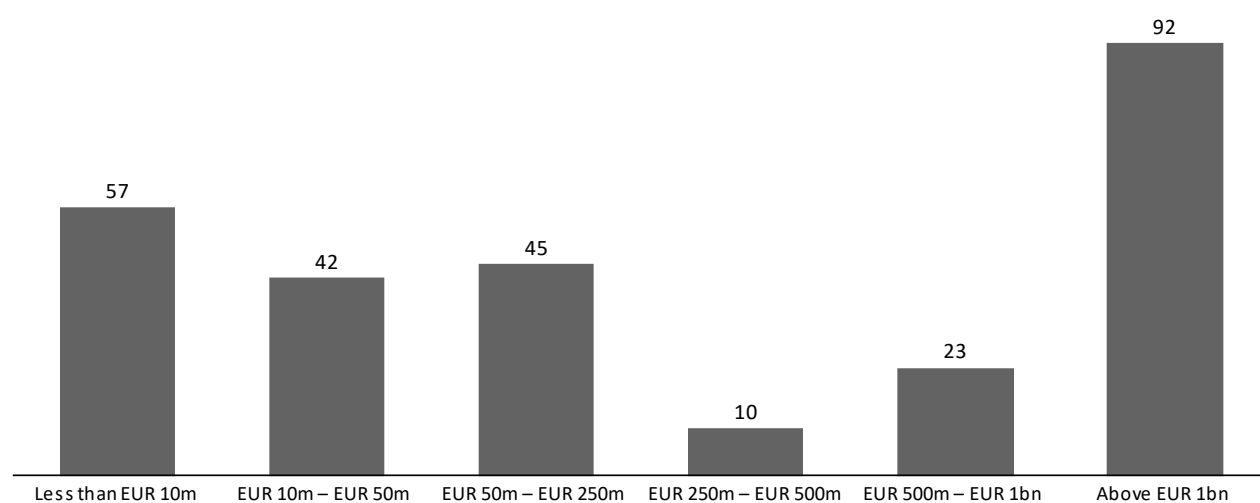
Source: IFR Survey.

Figure 105: Annual gross turnover categories for issuers



Source: IFR Survey.

Figure 106: Annual gross turnover categories for acquirers



Source: IFR Survey.

Figure 107: Annual gross turnover categories for merchants

Annual gross turnover categories for four-party-schemes per country and EU 28							
Country	Less than EUR 10m	EUR 10m – EUR 50m	EUR 50m – EUR 250m	EUR 250m – EUR 500m	EUR 500m – EUR 1bn	Above EUR 1bn	N/A
Austria		1	1				
Belgium		2	1				
Bulgaria	1	2					
Croatia		2					
Cyprus		2					
Czech Republic		1	1				
Denmark		1	1				
Estonia	1	1					
Finland		2					
France		1	1	1			
Germany			1	1			1
Greece		1	1				
Hungary		1	1				
Ireland			1	1			
Italy		1	1	1			
Latvia		2					
Lithuania	1	1					
Luxembourg	1	2					
Malta		2					
Netherlands	1		1	1			
Poland			2				
Portugal		2	1				
Romania		1	1				
Slovak Republic		2					
Slovenia	1	1					
Spain	1		2				
Sweden			2				
United Kingdom	1				1	1	
<b>EU 28</b>	<b>8</b>	<b>31</b>	<b>19</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>1</b>

Source: IFR Survey.

Table 65: Annual gross turnover categories for four-party-schemes per country and EU 28

Annual gross turnover categories for issuers per country and EU28							
Country	Less than EUR 2m	EUR 2m – EUR 10m	EUR 10m – EUR 50m	EUR 50m – EUR 250m	EUR 250m – EUR 500m	EUR 500m – EUR 1bn	Above EUR 1bn
Austria			1	1			
Belgium				2			2
Croatia		1	1		1		
Czech Republic		1					1
Denmark		1					1
Estonia							1
Finland			1				1
France				2	2	2	5
Germany		2	1	8		1	4
Greece				1			2
Hungary		1					1
Ireland		1					
Italy	2	1	2	4	1		7
Latvia						1	
Lithuania		1					1
Malta				1		2	
Netherlands				1	1		2
Poland		1	2		1	2	2
Portugal					2		1
Romania		1		1			
Slovak Republic		1	1				
Slovenia						1	
Spain		1		2	2		2
Sweden		1	1	2			3
United Kingdom	1	2	1	1		1	7
<b>EU 28</b>	<b>3</b>	<b>16</b>	<b>11</b>	<b>26</b>	<b>10</b>	<b>10</b>	<b>43</b>

Source: IFR Survey.

Table 66: Annual gross turnover categories for issuers per country and EU28

Annual gross turnover categories for acquirers per country and EU 28							
Country	Less than EUR 10m	EUR 10m – EUR 50m	EUR 50m – EUR 250m	EUR 250m – EUR 500m	EUR 500m – EUR 1bn	Above EUR 1bn	N/A
Austria	2					1	
Belgium	3					1	
Croatia					1		1
Cyprus		1					
Czech Republic						1	
Denmark	2				1		
Estonia	1					1	
Finland	1						
France	1	2				5	
Germany	2	1		1			
Greece	1					2	
Hungary						1	
Ireland	1		1	1			
Italy	1	1	2			3	
Latvia	1					1	
Lithuania						1	
Luxembourg						1	
Malta	1		3		1		
Netherlands	1	1		1		2	
Poland	1	1					
Portugal		1	2	1			
Romania	1	1				1	
Slovak Republic				1			
Slovenia				1			
Spain	2				1	3	
Sweden	2		1			2	
United Kingdom			2	1		3	
<b>EU 28</b>	<b>24</b>	<b>9</b>	<b>11</b>	<b>7</b>	<b>4</b>	<b>29</b>	<b>1</b>

Source: IFR Survey.

Table 67: Annual gross turnover categories for acquirers per country and EU 28



Annual gross turnover categories for merchants per country and EU 28						
Country	Less than EUR 10m	EUR 10m - EUR 50m	EUR 50m – EUR 250m	EUR 250m – EUR 500m	EUR 500m – EUR 1bn	Above EUR 1bn
Austria	5	3	2		1	4
Belgium	2	3	3	1	1	3
Bulgaria	3	2	1			1
Croatia	2	1	2		2	1
Cyprus	3					
Czech Republic	5	2	1			6
Denmark		2	4	1	1	
Estonia	2		1			
Finland	1	3	1	1		2
France	4		2			9
Germany	4	3	4		4	12
Greece	1	2	1		1	2
Hungary	1	2	1		1	4
Ireland		3	2			1
Italy	1		5	1	2	7
Latvia	1	1		1		
Lithuania	2					
Luxembourg	2	3	1		3	1
Malta	4					
Netherlands	1	2	1	1		4
Poland	2	1	2		1	5
Portugal	1	2		2	4	1
Romania	2	3		1		6
Slovak Republic	4	1				3
Slovenia	2					1
Spain	1	1	4		1	7
Sweden	1	1	3			2
United Kingdom		1	4	1	1	10
<b>EU 28</b>	<b>57</b>	<b>42</b>	<b>45</b>	<b>10</b>	<b>23</b>	<b>92</b>

Source: IFR Survey.

Table 68: Annual gross turnover categories for merchants per country and EU 28

### Annex 3. Payment sector evolution

Number of payment cards (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	12.2	12.4	13.3	13.2	13.6	3%	12%
BE	21.9	22.6	22.5	21.7	23.8	2%	8%
BG	7.2	7.2	7.5	7.5	7.4	1%	3%
CY	1.0	1.1	1.1	1.2	1.2	5%	23%
CZ	11.0	11.8	11.9	12.1	12.4	3%	12%
DE	135.4	139.2	142.7	144.4	146.8	2%	8%
DK	8.9	9.8	8.8	9.0	9.3	1%	4%
EE	1.8	1.8	1.8	1.9	1.9	1%	4%
EL	12.5	13.6	14.7	15.8	15.8	6%	26%
ES	68.0	70.3	74.9	79.6	84.1	5%	24%
FI	9.0	9.4	9.6	9.8	10.1	3%	12%
FR	81.0	77.7	78.9	79.9	81.8	0%	1%
HR	8.5	8.6	8.7	8.7	8.4	0%	-1%
HU	8.9	9.0	9.0	9.1	9.4	1%	5%
IE	6.2	6.5	7.1	7.1	7.5	5%	21%
IT	73.6	77.2	76.4	77.5	84.6	4%	15%
LT	3.5	3.5	3.4	3.3	3.2	-2%	-8%
LU	2.1	2.2	2.3	2.6	2.8	8%	34%
LV	2.3	2.4	2.4	2.3	2.2	-1%	-4%
MT	0.8	0.9	0.9	0.9	0.9	1%	6%
NL	32.0	32.4	32.0	32.3	33.0	1%	3%
PL	36.1	35.2	36.9	39.1	41.2	3%	14%
PT	20.3	20.4	20.6	21.2	21.7	2%	7%
RO	14.4	14.9	15.9	16.4	17.4	5%	21%
SE	22.1	21.7	21.0	20.3	19.4	-3%	-12%
SI	3.2	3.4	3.3	3.4	3.5	3%	12%
SK	5.3	5.5	5.6	5.3	5.5	1%	1%
UK	159.0	163.5	163.6	162.3	162.5	1%	2%
<b>EU-28</b>	<b>768.2</b>	<b>783.6</b>	<b>796.8</b>	<b>807.9</b>	<b>831.3</b>	<b>2%</b>	<b>8%</b>

Note: Cards issued by resident PSPs, all cards except e-money function.

Source: ECB.

Table 69: Number of payment cards, 2014-2018

Number of debit cards (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	9.0	9.1	10.1	9.8	10.0	3%	11%
BE	16.2	17.0	16.9	16.0	18.0	3%	11%
BG	6.3	6.2	6.3	6.4	6.2	0%	-2%
CY	0.7	0.7	0.8	0.9	0.9	7%	30%
CZ	9.4	9.8	10.1	10.4	10.7	3%	14%
DE	104.1	106.1	109.0	109.3	110.9	2%	7%
DK	7.1	7.9	7.0	7.2	7.5	1%	5%
EE	1.5	1.5	1.5	1.5	1.5	1%	5%
EL	9.7	10.8	11.6	12.4	13.2	8%	36%
ES	24.4	25.1	25.8	26.9	47.1	18%	93%
FI	7.1	7.4	7.5	8.0	8.7	5%	22%
FR	41.8	43.7	44.5	46.4	50.6	5%	21%
HR	6.8	6.8	6.9	6.9	6.6	0%	-2%
HU	7.5	7.5	7.6	7.7	8.1	2%	8%
IE	4.4	4.3	4.5	4.7	4.9	3%	11%
IT	47.0	50.3	52.4	54.1	56.3	5%	20%
LT	2.9	3.1	3.0	2.9	2.9	0%	-1%
LU	0.7	0.7	0.7	0.8	0.8	5%	20%
LV	1.8	1.7	1.6	2.0	2.0	3%	11%
MT	0.7	0.7	0.7	0.7	0.7	2%	9%
NL	25.6	17.9	17.9	18.3	18.6	-8%	-27%
PL	29.7	29.1	30.7	33.0	35.1	4%	18%
PT*	-	-	-	-	-	-	-
RO	12.1	12.4	13.1	13.6	14.5	5%	20%
SE	9.5	10.4	10.6	10.0	11.1	4%	16%
SI	2.4	2.6	2.6	2.6	2.7	3%	14%
SK	4.4	4.5	4.7	4.5	4.7	2%	3%
UK	95.7	98.8	99.6	98.3	97.9	1%	2%
<b>EU-28</b>	<b>488.4</b>	<b>496.3</b>	<b>507.5</b>	<b>515.4</b>	<b>552.3</b>	<b>3%</b>	<b>13%</b>

Note: Cards with a debit function issued by resident PSPs, all cards except e-money function. (\*) ECB only reports for Portugal data for cards with debit/delayed debit function.

Source: ECB.

Table 70: Number of debit cards, 2014-2018

Number of credit cards (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	3.1	3.2	3.3	3.4	3.6	3%	13%
BE	5.0	5.6	5.6	5.7	5.9	4%	18%
BG	0.9	0.9	1.2	1.2	1.2	7%	32%
CY	0.3	0.4	0.3	0.4	0.4	7%	32%
CZ	1.6	2.0	1.9	1.8	1.6	0%	2%
DE	31.3	33.1	33.7	35.1	35.9	4%	15%
DK	1.8	1.9	1.8	1.8	1.8	-1%	-3%
EE	0.3	0.3	0.3	0.3	0.3	-1%	-2%
EL	2.8	2.7	3.0	3.3	2.6	-2%	-8%
ES	43.6	45.2	49.1	52.7	37.0	-4%	-15%
FI	4.6	4.9	4.9	4.5	4.8	1%	3%
FR	32.2	27.5	28.5	31.7	29.5	-2%	-9%
HR	1.7	1.7	1.8	1.8	1.7	0%	1%
HU	1.4	1.4	1.4	1.4	1.3	-2%	-8%
IE	1.5	1.9	1.8	1.8	-	-	-
IT	26.6	26.8	24.0	23.4	28.3	2%	6%
LT	0.6	0.4	0.4	0.4	0.4	-13%	-41%
LU	1.5	1.5	1.6	1.8	2.0	9%	40%
LV	0.6	0.7	0.8	0.4	0.3	-14%	-45%
MT	0.2	0.2	0.2	0.2	-	-	-
NL	6.4	6.2	6.3	6.4	6.5	0%	2%
PL	6.3	6.1	6.1	6.1	6.1	-1%	-3%
PT	7.8	8.1	8.2	8.3	8.5	2%	9%
RO	2.3	2.5	2.8	2.8	2.9	6%	26%
SE	10.8	12.6	10.4	9.5	8.3	-6%	-23%
SI	0.8	0.8	0.8	0.8	0.8	1%	4%
SK	0.9	0.9	0.9	0.8	-	-	-
UK	63.4	64.7	64.0	60.7	61.0	-1%	-4%
<b>EU-28</b>	<b>260.3</b>	<b>264.0</b>	<b>265.3</b>	<b>268.4</b>	<b>255.8</b>	<b>0%</b>	<b>-2%</b>

Note: Cards with a credit and/or delayed function issued by resident PSPs, all cards except e-money function. EU-28 data for credit/delayed debit cards for 2014 and 2017 is calculated over reporting MS. EU-28 data for only delayed debit cards for 2014 is calculated over reporting MS.

Source: ECB.

Table 71: Number of credit cards, 2014-2018

Number of debit/delayed debit cards (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	-	-	-	-	-	-	-
BE	-	-	-	-	-	-	-
BG	0.00	0.00	0.00	0.00	0.00	-	-
CY	0.00	0.00	0.00	0.00	0.00	-	-
CZ	-	-	-	-	-	-	-
DE	-	-	-	-	-	-	-
DK	-	-	-	-	-	-	-
EE	-	-	-	-	-	-	-
EL	-	0.00	0.00	0.00	0.00	-	-
ES	-	-	-	-	-	-	-
FI	-	-	-	-	-	-	-
FR	13.46	6.53	5.80	1.74	1.70	-40%	-87%
HR	0.04	0.03	0.03	0.04	0.04	4%	15%
HU	-	-	-	-	-	-	-
IE	-	-	-	-	-	-	-
IT	-	-	-	-	-	-	-
LT	-	-	-	-	-	-	-
LU	-	-	0.00	0.00	0.00	-	-
LV	-	-	-	-	-	-	-
MT	0.00	0.00	0.00	0.00	0.00	-	-
NL	-	6.82	6.29	6.13	-	-	-
PL	-	-	-	-	-	-	-
PT	17.64	17.80	18.17	19.21	-	-	-
RO	0.00	0.00	0.00	0.00	0.00	-	-
SE	1.79	1.94	0.00	0.00	0.00	-	-
SI	-	-	-	-	-	-	-
SK	-	-	-	-	-	-	-
UK	-	-	-	-	-	-	-
<b>EU-28</b>	-	-	-	-	-	-	-

Note: Cards with a debit/delayed function issued by resident PSPs, all cards except e-money function.

Source: ECB.

Table 72: Number of debit/delayed debit cards, 2014-2018

Number of card transactions (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	559	580	649	746	864	11%	55%
BE	1,511	1,476	1,694	1,935	2,095	9%	39%
BG	65	80	94	130	161	25%	147%
CY	39	44	50	59	71	17%	85%
CZ	484	594	735	889	1,090	23%	125%
DE	3,434	3,691	4,044	4,486	5,297	11%	54%
DK	1,516	1,706	1,870	2,050	2,109	9%	39%
EE	247	264	286	313	340	8%	38%
EL	88	144	302	505	631	64%	617%
ES	2,760	2,987	3,464	4,039	4,703	14%	70%
FI	1,331	1,419	1,536	1,643	1,829	8%	37%
FR	9,438	10,288	10,997	12,005	13,291	9%	41%
HR	218	237	266	298	335	11%	54%
HU	359	430	532	670	834	23%	132%
IE	438	615	761	907	1,101	26%	151%
IT	2,034	2,270	2,613	2,796	3,177	12%	56%
LT	172	207	235	275	328	18%	91%
LU	102	111	124	143	172	14%	69%
LV	191	215	243	272	311	13%	63%
MT	19	22	25	29	35	16%	81%
NL	3,169	3,533	3,902	4,285	4,732	11%	49%
PL	1,873	2,557	3,202	3,865	4,713	26%	152%
PT	1,250	1,353	1,472	1,608	1,767	9%	41%
RO	228	277	350	461	635	29%	178%
SE	2,620	2,845	3,166	3,352	3,548	8%	35%
SI	140	148	162	180	203	10%	45%
SK	273	328	365	414	469	14%	72%
UK	15,778	17,284	19,055	20,794	22,782	10%	44%
<b>EU-28</b>	<b>50,335</b>	<b>55,704</b>	<b>62,194</b>	<b>69,149</b>	<b>77,624</b>	<b>11%</b>	<b>54%</b>

Note: Cards issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 73: Number of card transactions, 2014-2018

Number of debit card transactions (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	431	451	504	576	661	11%	53%
BE	1,306	1,276	1,482	1,694	1,835	9%	41%
BG	47	58	68	101	131	29%	180%
CY	24	27	32	39	52	22%	121%
CZ	416	496	624	767	957	23%	130%
DE	2,595	2,723	2,963	3,275	3,912	11%	51%
DK	1,467	1,653	1,815	1,993	2,046	9%	39%
EE	223	240	260	284	310	9%	39%
EL	34	82	222	407	519	98%	1425%
ES	1,387	1,712	2,100	2,520	3,221	23%	132%
FI	1,190	1,269	1,381	1,492	1,670	9%	40%
FR	4,924	6,125	7,635	8,335	9,335	17%	90%
HR	125	141	164	188	219	15%	75%
HU	302	362	454	580	724	24%	140%
IE	358	516	564	688	-	-	-
IT	1,390	1,617	1,836	1,941	2,125	11%	53%
LT	154	189	214	251	301	18%	95%
LU	52	56	62	71	83	12%	59%
LV	157	171	199	239	278	15%	77%
MT	13	15	18	21	-	-	-
NL	3,037	3,392	3,743	4,105	4,529	11%	49%
PL	1,599	2,252	2,853	3,480	4,283	28%	168%
PT*	-	-	-	-	-	-	-
RO	189	234	300	403	564	31%	198%
SE	1,989	2,343	2,604	2,778	2,954	10%	49%
SI	97	104	116	133	153	12%	58%
SK	248	276	329	375	-	-	-
UK	12,963	14,182	15,794	17,170	18,989	10%	46%
<b>EU-28</b>	<b>36,717</b>	<b>41,960</b>	<b>48,335</b>	<b>53,905</b>	<b>61,153</b>	<b>14%</b>	<b>67%</b>

Note: Cards with debit function issued by resident PSPs, except cards with an e-money function only. (\*) ECB only reports for Portugal data for cards with debit/delayed debit function.

Source: ECB.

Table 74: Number of debit card transactions, 2014-2018

Number of credit card transactions (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	128	129	145	171	203	12%	59%
BE	159	200	217	254	271	14%	71%
BG	19	22	26	29	30	13%	62%
CY	15	18	19	20	19	6%	28%
CZ	68	98	110	121	132	18%	95%
DE	839	968	1,080	1,211	1,386	13%	65%
DK	49	53	55	57	64	7%	29%
EE	23	24	26	29	31	7%	32%
EL	54	62	80	98	112	20%	107%
ES	1,373	1,275	1,363	1,519	1,482	2%	8%
FI	141	150	155	151	159	3%	13%
FR	2,058	2,940	3,362	3,612	3,955	18%	92%
HR	78	80	82	84	85	2%	8%
HU	57	68	79	90	110	18%	93%
IE	74	86	106	113	-	-	-
IT	644	653	776	855	1,052	13%	63%
LT	17	19	21	24	27	12%	59%
LU	50	54	62	73	88	15%	77%
LV	34	44	43	33	33	-1%	-3%
MT	6	7	7	9	-	-	-
NL	131	141	159	180	203	12%	55%
PL	274	305	350	385	431	12%	57%
PT	50	55	68	75	87	15%	74%
RO	39	43	50	58	71	16%	81%
SE	450	502	562	574	520	4%	15%
SI	43	45	46	48	50	4%	15%
SK	25	31	35	39	-	-	-
UK	2,815	3,102	3,261	3,621	3,793	8%	35%
<b>EU-28</b>	<b>9,714</b>	<b>11,171</b>	<b>12,347</b>	<b>13,532</b>	<b>14,666</b>	<b>11%</b>	<b>51%</b>

Note: Cards with credit and/or delayed debit function issued by resident PSPs, except cards with an e-money function only. EU-28 data for only delayed debit cards between 2014-2017 is calculated over reporting MS.

Source: ECB.

Table 75: Number of credit card transactions, 2014-2018



Number of debit/delayed debit card transactions (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	-	-	-	-	-	-	-
BE	-	-	-	-	-	-	-
BG	0	0	0	0	0	-	-
CY	0	0	0	0	0	-	-
CZ	-	-	-	-	-	-	-
DE	-	-	-	-	-	-	-
DK	-	-	-	-	-	-	-
EE	-	-	-	-	-	-	-
EL	-	0	0	0	0	-	-
ES	-	-	-	-	-	-	-
FI	-	-	-	-	-	-	-
FR	2,455	1,170	0	58	-	-	-
HR	1	1	1	1	1	10%	46%
HU	-	-	-	-	-	-	-
IE	-	-	-	-	-	-	-
IT	-	-	-	-	-	-	-
LT	-	-	-	-	-	-	-
LU	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-
MT	0	0	0	0	0	-	-
NL	-	-	-	-	-	-	-
PL	-	-	-	-	-	-	-
PT	1,200	1,299	1,404	1,533	-	-	-
RO	0	0	0	0	0	-	-
SE	180	0	0	0	0	-100%	-100%
SI	-	-	-	-	-	-	-
SK	-	-	-	-	-	-	-
UK	-	-	-	-	-	-	-
<b>EU-28</b>	<b>3,837</b>	<b>2,469</b>	-	-	-	-	-

Note: Cards with debit/delayed debit function issued by payment service providers (PSPs) resident in EU, except cards with an e-money function only.

Source: ECB.

Table 76: Number of debit/delayed debit card transactions, 2014-2018

Value of card transactions (EUR m)								
Country	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14- '18
AT	33,134	33,178	35,705	39,159	43,309	7%	31%	23%
BE	80,861	83,204	91,800	99,820	102,774	6%	27%	19%
BG	2,297	2,813	3,194	5,138	5,196	23%	126%	123%
CY	2,852	3,223	3,456	3,869	4,996	15%	75%	78%
CZ	13,496	15,564	18,761	22,894	27,731	20%	105%	95%
DE	235,184	245,743	257,244	280,149	313,967	7%	33%	27%
DK	58,797	64,721	68,287	76,872	77,359	7%	32%	29%
EE	4,304	4,692	5,160	5,799	6,389	10%	48%	37%
EL	6,064	8,882	15,419	21,497	23,149	40%	282%	279%
ES	121,914	131,049	147,756	166,574	186,696	11%	53%	49%
FI	42,512	44,058	45,796	47,433	51,043	5%	20%	17%
FR	443,310	472,062	492,130	527,884	569,507	6%	28%	24%
HR	6,554	6,886	7,289	8,182	9,272	9%	41%	39%
HU	8,622	10,337	12,781	16,184	19,553	23%	127%	114%
IE	24,897	35,157	41,121	46,343	52,249	20%	110%	108%
IT	142,280	157,344	174,175	179,762	199,951	9%	41%	37%
LT	3,118	4,002	4,682	5,586	6,683	21%	114%	102%
LU	7,331	7,831	8,469	9,580	10,813	10%	47%	41%
LV	3,823	4,249	4,614	5,035	5,373	9%	41%	33%
MT	1,229	1,394	1,568	1,947	2,282	17%	86%	77%
NL	109,503	117,825	126,992	134,019	142,866	7%	30%	26%
PL	37,512	43,681	50,419	61,135	73,116	18%	95%	91%
PT	60,949	64,700	70,031	77,179	85,898	9%	41%	36%
RO	7,356	8,736	10,781	13,696	17,882	25%	143%	135%
SE	107,775	97,967	105,932	107,622	105,057	-1%	-3%	-8%
SI	4,831	4,868	5,193	5,794	6,532	8%	35%	32%
SK	13,092	14,722	12,629	13,098	11,593	-3%	-11%	-14%
UK	981,652	1,170,227	1,095,410	1,047,033	1,078,989	2%	10%	4%
<b>EU-28</b>	<b>2,565,248</b>	<b>2,859,117</b>	<b>2,916,796</b>	<b>3,029,283</b>	<b>3,240,223</b>	<b>6%</b>	<b>26%</b>	<b>21%</b>

Note: Cards issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 77: Value of card transactions, 2014-2018

Value of card transactions (national currency m)								
	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14-'18
BG	4,492	5,501	6,248	10,049	10,162	23%	126%	123%
CZ	371,629	424,586	507,194	602,701	711,219	18%	91%	82%
DK	438,325	482,736	508,411	571,824	576,567	7%	32%	29%
HR	50,033	52,430	54,909	61,067	68,782	8%	37%	35%
HU	2,661,746	3,204,571	3,980,339	5,003,833	6,235,175	24%	134%	121%
PL	156,960	182,767	219,990	260,254	311,583	19%	99%	95%
RO	32,688	38,837	48,409	62,576	83,221	26%	155%	146%
SE	980,593	916,335	1,003,062	1,036,951	1,077,699	2%	10%	4%
UK	791,330	849,392	897,670	917,907	954,588	5%	21%	14%

Note: Cards issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 78: Value of card transactions in national currency, 2014-2018

Value of debit card transactions (EUR m)								
Country	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14- '18
AT	21,177	21,230	22,745	24,699	26,716	6%	26%	19%
BE	63,329	65,231	73,185	79,560	81,483	7%	29%	20%
BG	1,439	1,818	2,123	3,791	3,893	28%	170%	167%
CY	1,551	1,734	1,961	2,288	3,225	20%	108%	111%
CZ	11,481	12,706	15,531	18,981	23,724	20%	107%	96%
DE	152,220	160,497	167,131	182,451	205,662	8%	35%	29%
DK	54,221	59,774	63,436	71,247	71,114	7%	31%	29%
EE	3,622	3,967	4,384	4,930	5,468	11%	51%	40%
EL	1,833	4,486	10,270	15,757	17,167	75%	836%	829%
ES	56,182	67,657	80,523	92,733	114,979	20%	105%	99%
FI	34,359	35,287	36,913	38,742	42,062	5%	22%	20%
FR	215,763	258,012	310,066	331,745	361,482	14%	68%	62%
HR	2,897	3,198	3,642	4,210	4,951	14%	71%	68%
HU	7,107	8,597	10,800	13,896	16,883	24%	138%	124%
IE	17,958	26,256	26,825	30,992	35,623	19%	98%	97%
IT	88,365	103,196	111,829	113,928	119,615	8%	35%	32%
LT	2,512	3,339	3,961	4,762	5,751	23%	129%	115%
LU	2,997	3,174	3,351	3,709	4,074	8%	36%	30%
LV	2,518	2,700	3,081	3,705	4,247	14%	69%	59%
MT	702	818	931	1,140	1,394	19%	99%	89%
NL	97,398	104,417	112,542	118,334	125,882	7%	29%	25%
PL	29,324	35,421	41,266	50,997	61,997	21%	111%	108%
PT*	-	-	-	-	-	-	-	-
RO	6,032	7,244	8,947	11,539	15,274	26%	153%	144%
SE	66,418	71,483	77,274	79,399	78,170	4%	18%	11%
SI	3,171	3,224	3,522	4,014	4,617	10%	46%	42%
SK	12,074	10,321	11,449	11,768	10,241	-4%	-15%	-18%
UK	769,989	923,584	872,163	843,580	865,392	3%	12%	6%
<b>EU-28</b>	<b>1,726,638</b>	<b>1,999,371</b>	<b>2,079,849</b>	<b>2,162,897</b>	<b>2,311,085</b>	<b>8%</b>	<b>34%</b>	<b>29%</b>

Note: Cards with debit function issued by resident PSPs, except cards with an e-money function only. (\*) ECB only reports for Portugal data for cards with debit/delayed debit function.

Source: ECB.

Table 79: Value of debit card transactions, 2014-2018

Value of debit card transactions (national currency m)								
Country	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14- '18
BG	2,815	3,555	4,152	7,415	7,614	28%	170%	167%
CZ	316,140	346,598	419,869	499,682	608,448	18%	92%	83%
DK	404,209	445,839	472,296	529,978	530,023	7%	31%	29%
HR	22,120	24,348	27,438	31,424	36,728	14%	66%	63%
HU	2,194,060	2,665,124	3,363,558	4,296,524	5,383,758	25%	145%	132%
PL	122,699	148,205	180,053	217,095	264,201	21%	115%	111%
RO	26,803	32,203	40,174	52,717	71,083	28%	165%	156%
SE	604,307	668,615	731,697	765,021	801,888	7%	33%	25%
UK	620,704	670,370	714,723	739,545	765,617	5%	23%	16%

Note: Cards with debit function issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 80: Value of debit card transactions in national currency, 2014-2018

Value of credit card transactions (EUR m)								
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18	Real Δ '14-'18
AT	11,958	11,948	12,960	14,460	16,594	9%	39%	31%
BE	28,930	17,973	18,694	20,833	22,157	-6%	-23%	-28%
BG	857	995	1,071	1,347	1,303	11%	52%	50%
CY	1,301	1,488	1,495	1,581	1,771	8%	36%	38%
CZ	2,015	2,859	3,230	3,913	4,007	19%	99%	89%
DE	82,964	85,246	90,111	97,693	108,291	7%	31%	25%
DK	4,576	4,947	4,851	5,625	6,245	8%	36%	34%
EE	682	725	776	869	921	8%	35%	25%
EL	4,231	4,396	5,149	5,741	5,982	9%	41%	40%
ES	65,713	63,392	67,233	73,841	71,717	2%	9%	6%
FI	8,153	8,771	8,884	8,691	8,981	2%	10%	8%
FR	114,309	159,189	182,026	192,737	207,890	16%	82%	75%
HR	2,616	2,649	2,696	2,838	2,944	3%	13%	10%
HU	1,515	1,740	1,980	2,288	2,670	15%	76%	66%
IE	6,027	7,067	8,659	8,985	-	-	-	-
IT	53,915	54,148	62,345	65,834	80,336	10%	49%	45%
LT	606	663	721	824	932	11%	54%	45%
LU	4,334	4,657	5,118	5,870	6,715	12%	55%	49%
LV	1,305	1,549	1,532	1,330	1,126	-4%	-14%	-19%
MT	527	577	637	807	-	-	-	-
NL	12,104	13,407	14,450	15,685	16,983	9%	40%	36%
PL	8,188	8,260	9,153	10,138	11,119	8%	36%	33%
PT	3,224	3,285	3,396	3,549	3,785	4%	17%	13%
RO	1,324	1,492	1,834	2,158	2,608	18%	97%	90%
SE	28,753	26,484	28,659	28,223	27,041	-2%	-6%	-11%
SI	1,660	1,644	1,672	1,780	1,915	4%	15%	12%
SK	1,019	1,102	1,180	1,330	-	-	-	-
UK	211,663	246,643	223,247	203,453	213,598	0%	1%	-5%
<b>EU-28</b>	<b>664,471</b>	<b>737,297</b>	<b>763,762</b>	<b>782,423</b>	<b>841,702</b>	<b>6%</b>	<b>27%</b>	<b>22%</b>

Note: Cards with credit and/or delayed debit function issued by resident PSPs, except cards with an e-money function only. EU-28 data for only delayed debit cards between 2014-2017 is calculated over reporting MS.

Source: ECB.

Table 81: Value of credit card transactions, 2014-2018

Value of credit card transactions (national currency m)								
Country	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14-'18
BG	1,677	1,946	2,095	2,634	2,548	11%	52%	50%
CZ	55,489	77,987	87,325	103,019	102,770	17%	85%	76%
DK	34,116	36,897	36,115	41,846	46,544	8%	36%	34%
HR	157,748	168,744	174,268	189,121	197,505	6%	25%	23%
HU	37,526	40,857	39,242	31,479	31,123	-5%	-17%	-22%
PL	434,124	502,373	581,479	679,788	824,077	17%	90%	86%
RO	31,241	31,667	36,487	39,701	44,113	9%	41%	36%
SE	186,304	105,809	100,572	107,163	62,846	-24%	-66%	-68%
UK	113,100	178,102	207,529	184,546	239,474	21%	112%	100%

Note: Cards with credit and/or delayed debit function issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 82: Value of credit card transactions in national currency, 2014-2018

Value of debit/delayed debit card transactions (EUR m)								
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18	Real Δ '14-'18
AT	-	-	-	-	-	-	-	-
BE	1,536	-	-	-	-	-	-	-
BG	0	0	0	0	0	-	-	-
CY	0	0	0	0	0	-	-	-
CZ	-	-	-	-	-	-	-	-
DE	-	-	-	-	-	-	-	-
DK	-	-	-	-	-	-	-	-
EE	-	-	-	-	-	-	-	-
EL	0	0	0	0	0	-	-	-
ES	-	-	-	-	-	-	-	-
FI	-	-	-	-	-	-	-	-
FR	113,238	52,645	39	3,402	-	-	-	-
HR	23	25	28	32	36	11%	54%	51%
HU	-	-	-	-	-	-	-	-
IE	-	-	-	-	-	-	-	-
IT	-	-	-	-	-	-	-	-
LT	-	-	-	-	-	-	-	-
LU	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-	-
MT	0	0	0	0	0	-	-	-
NL	-	-	-	-	-	-	-	-
PL	-	-	-	-	-	-	-	-
PT	57,725	61,415	66,635	73,630	-	-	-	-
RO	0	0	0	0	0	-	-	-
SE	12,603	0	0	0	0	-	-	-
SI	-	-	-	-	-	-	-	-
SK	-	-	-	-	-	-	-	-
UK	-	-	-	-	-	-	-	-
<b>EU-28</b>	-	-	-	-	-	-	-	-

Note: Cards with debit/delayed debit function issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 83: Value of debit/delayed debit card transactions, 2014-2018



Value of debit/delayed debit card transactions (national currency m)								
Country	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14-'18
BG	0	0	0	0	0		-	-
CZ	-	-	-	-	-		-	-
DK	-	-	-	-	-		-	-
HR	176	191	207	241	264	11%	50%	47%
HU	-	-	-	-	-		-	-
PL	-	-	-	-	-		-	-
RO	0	0	0	0	0	-	-	-
SE	114,673	0	0	0	0	-	-	-
UK	-	-	-	-	-		-	-

Note: Cards with debit/delayed debit function issued by resident PSPs, except cards with an e-money function only.

Source: ECB.

Table 84: Value of debit/delayed debit card transactions in national currency, 2014-2018

Number of ATMs withdrawals (# millions)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ' 14-'18
AT	297	293	301	302	300	0%	1%
BE	331	311	305	291	281	-4%	-15%
BG	93	108	111	-	-	-	-
CY	19	20	19	18	19	0%	1%
CZ	181	182	176	178	178	0%	-1%
DE	2,067	2,210	2,214	2,167	2,129	1%	3%
DK	-	-	71	63	59	-	-
EE	39	38	37	37	35	-2%	-9%
EL	190	242	218	219	227	5%	19%
ES	871	885	889	900	907	1%	4%
FI	148	140	128	-	-	-	-
FR	1,607	1,719	1,682	1,577	1,519	-1%	-5%
HR	98	102	103	105	107	2%	9%
HU	108	109	108	109	106	-1%	-2%
IE	102	161	179	177	192	17%	87%
IT	953	1,014	1,010	1,027	1,029	2%	8%
LT	67	66	61	57	59	-3%	-12%
LU	19	19	19	20	20	2%	9%
LV	56	55	54	51	48	-4%	-14%
MT	13	-	-	-	-	-	-
NL	415	346	333	308	306	-7%	-26%
PL	768	724	719	679	653	-4%	-15%
PT	452	448	452	455	458	0%	1%
RO	223	232	244	257	275	5%	23%
SE	212	151	136	117	88	-20%	-58%
SI	57	56	56	56	56	-1%	-3%
SK	89	93	94	90	-	-	-
UK	2,890	2,857	2,794	2,660	2,459	-4%	-15%
<b>EU-28</b>	<b>12,098</b>	<b>12,311</b>	<b>12,229</b>	<b>11,850</b>	<b>11,491</b>	<b>-1%</b>	<b>-5%</b>

Note: Cash withdrawals at ATMs provided by resident and non-resident PSPs, with cards issued by resident PSPs. Data for CZ, HU, SE and EU only contain ATMs provided by resident PSPs.

Source: ECB.

Table 85: Number of ATM withdrawals, 2014-2018

Value of ATMs withdrawals (EUR m)								
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18	Real Δ '14-'18
AT	48,247	48,520	50,717	52,460	53,087	2%	10%	4%
BE	45,881	43,581	43,517	40,987	41,572	-2%	-9%	-15%
BG	7,958	9,722	10,430	11,197	-	-	-	-
CY	2,801	3,151	3,101	2,853	3,469	5%	24%	26%
CZ	24,680	24,356	25,670	27,471	29,724	5%	20%	14%
DE	342,609	373,410	385,196	389,531	394,159	4%	15%	10%
DK	-	-	12,415	11,970	11,642	-	-	-
EE	3,685	3,797	3,861	4,009	4,105	3%	11%	3%
EL	40,341	45,592	42,825	39,462	40,426	0%	0%	-1%
ES	105,956	109,408	112,324	116,706	119,966	3%	13%	10%
FI	14,818	14,262	13,461	-	11,828	-5%	-20%	-22%
FR	133,236	144,595	146,697	147,096	147,073	3%	10%	6%
HR	9,125	9,654	10,086	10,532	-	-	-	-
HU	20,403	21,684	21,826	23,637	22,264	2%	9%	3%
IE	12,643	18,645	21,877	22,001	-	-	-	-
IT	178,540	194,346	193,970	198,349	201,589	3%	13%	10%
LT	7,468	8,020	8,100	8,382	9,130	5%	22%	15%
LU	3,137	3,130	3,279	3,740	3,947	6%	26%	21%
LV	5,473	5,579	5,577	5,574	5,560	0%	2%	-4%
MT	1,536	1,551	1,661	-	-	-	-	-
NL	51,670	48,570	47,513	46,148	48,694	-1%	-6%	-9%
PL	71,815	71,798	71,365	76,139	78,147	2%	9%	7%
PT	29,667	30,039	30,780	31,214	31,819	2%	7%	3%
RO	27,053	30,126	33,761	37,858	42,457	12%	57%	51%
SE	23,241	17,889	13,442	14,980	-	-	-	-
SI	5,642	5,738	5,842	6,051	6,202	2%	10%	7%
SK	12,520	13,262	13,865	13,525	-	-	-	-
UK	243,378	276,707	245,659	222,761	200,651	-5%	-18%	-22%
<b>EU-28</b>	<b>1,433,289</b>	<b>1,530,787</b>	<b>1,530,099</b>	<b>1,529,251</b>	<b>1,528,898</b>	<b>2%</b>	<b>7%</b>	<b>3%</b>

Note: Cash withdrawals at ATMs provided by resident and non-resident PSPs, with cards issued by resident PSPs. Data for CZ, HU, SE and EU only contain ATMs provided by resident PSPs.

Source: ECB.

Table 86: Value of ATM withdrawals, 2014-2018

Value of ATMs withdrawals (national currency m)								
Country	2014	2015	2016	2017	2018	CAGR '14- '18	Δ '14- '18	Real Δ '14-'18
BG	15,563	19,014	20,399	21,900	-	-	-	-
CZ	692,227	686,070	715,584	745,660	-	-	-	-
DK	-	-	92,432	89,038	86,770	-	-	-
HR	69,661	73,500	75,983	78,611	-	-	-	-
HU	6,298,470	6,722,052	6,797,504	7,308,291	7,099,872	3%	13%	6%
PL	300,493	300,412	311,382	324,124	333,021	3%	11%	9%
RO	120,214	133,921	151,603	172,966	197,597	13%	64%	59%
SE	211,459	167,322	127,281	144,330	-	-	-	-
UK	196,192	200,844	201,313	195,289	177,517	-2%	-10%	-15%

Note: Cash withdrawals at ATMs provided by resident and non-resident PSPs, with cards issued by resident PSPs. Data for CZ, HU, SE and EU only contain ATMs provided by resident PSPs.

Source: ECB.

Table 87: Value of ATM withdrawals in national currency, 2014-2018

Number of EFTPOS terminals (#)							
Country	2014	2015	2016	2017	2018	CAGR '14-'18	Δ '14-'18
AT	134,652	142,352	163,706	173,324	166,612	5%	24%
BE	198,717	211,384	222,615	250,901	240,980	5%	21%
BG	75,694	81,548	86,692	91,550	95,482	6%	26%
CY	-	-	-	-	-	-	-
CZ	101,081	143,184	148,761	159,510	183,373	16%	81%
DE	702,626	708,363	724,281	725,273	781,514	3%	11%
DK	139,436	140,231	121,306	135,354	137,928	0%	-1%
EE	28,748	31,606	34,759	35,486	38,282	7%	33%
EL	194,975	219,200	422,247	544,388	565,166	30%	190%
ES	1,224,383	1,381,289	1,497,449	1,573,667	1,643,200	8%	34%
FI	-	-	-	-	-	-	-
FR	1,604,495	1,495,855	1,487,272	1,606,739	1,809,853	3%	13%
HR*	99,515	103,434	106,084	118,626	-	-	-
HU	115,355	122,957	133,855	161,311	173,981	11%	51%
IE	82,715	-	-	-	87,904	2%	6%
IT	1,852,457	1,983,727	2,220,348	2,479,833	3,193,864	15%	72%
LT	39,166	47,090	53,347	57,179	58,141	10%	48%
LU	17,347	18,184	16,630	16,452	18,727	2%	8%
LV	28,436	30,313	35,417	38,348	39,225	8%	38%
MT	13,651	-	-	-	-	-	-
NL	404,663	451,476	468,099	488,203	503,834	6%	25%
PL	437,824	510,004	578,918	658,446	825,403	17%	89%
PT	269,320	285,407	302,940	321,189	348,883	7%	30%
RO	128,041	142,001	160,630	192,824	201,197	12%	57%
SE*	196,985	183,818	257,874	219,158	-	-	-
SI	33,096	38,250	37,306	35,430	35,585	2%	8%
SK	45,276	53,545	58,987	58,742	63,253	9%	40%
UK	1,701,867	1,958,352	2,157,053	2,417,041	2,693,619	12%	58%
<b>EU</b>	<b>7,726,577</b>	<b>7,960,056</b>	<b>9,160,445</b>	<b>9,877,773</b>	<b>11,564,998</b>	<b>11%</b>	<b>50%</b>

Note: EFTPOS terminals provided by resident PSPs and located in the reporting Member States. Data also includes EFTPOS terminals provided by PSPs resident in LU, DE and ES for which a complete breakdown of their EFTPOS terminals located in other countries is available. LU also include EFTPOS terminals of BE PSPs, while DE also include EFTPOS terminals from AT PSPs. For CZ, FR, IE, UK and SE, all POS terminals provided by resident PSPs are included (which may include terminals only accepting e-money cards and terminals located outside the reporting Member State) because information on EFTPOS is either not available or not reliable. PSPs in DK and PT do not distinguish EFTPOS terminals located only in the reporting Member State.

Source: ECB.

Table 88: Number of EFTPOS terminals (2014-2018)



## Annex 4. Fee and cost development

This annex contains technical details and supplementary information relevant for the chapter about fee and cost development.

### Introduction to card schemes

The so-called four-party card scheme model is the most widely used model for card payments in Europe. In this model, the issuer and the acquirer have separate contractual relationships with the cardholder and the merchant. This differs from the three-party scheme model where the card scheme function as both issuer and acquirer and thus enters into direct contractual agreement with both cardholder and merchant. Example of four-party schemes in Europe are MasterCard, Visa and most domestic schemes, i.e. Girocard, Cartes Bancaires. The interchange fee caps apply to four-party card schemes, but not to 'pure' three-party schemes, see Article 1 of the IFR. American Express and Diners Club are two examples of three-party schemes. However, the caps do apply to three-party schemes when they license third parties to issue cards and to acquire transactions, or when they issue cards with a co-branding partner or an agent.<sup>260</sup>

In terms of pricing structure, a payment card is a classic example of what economists call a *two-sided platform* which operates on a *two-sided market*<sup>261</sup>. The platform (the payment card) connects two distinct user groups (cardholders and merchants) that affect each other positively by participating on the platform. The value that members of one of the groups receive from participating on the platform is higher the more members of the other group participate, and vice versa. Taking the typical case where the payee is a merchant: the more cardholders that use a certain payment card, the more valuable it becomes for the merchant, to accept the specific card brand. Similarly, the more merchants that accept a certain payment card brand, the more valuable it becomes for cardholders to hold and use the payment card. These positive spill-over effects are called *network externalities*.

Fees flow between the participants that are connected through the payment card platform to pay for the costs of providing payment services and incentivise desired behaviour, see Figure 108. The costs are ultimately borne by the end customers on the two sides of the platform: the cardholders and the merchants. However, the fees collected on one side of the platform do not need to cover the costs of providing the services to that side. Depending on the characteristics of the platform and its user groups, one side may subsidise the other.

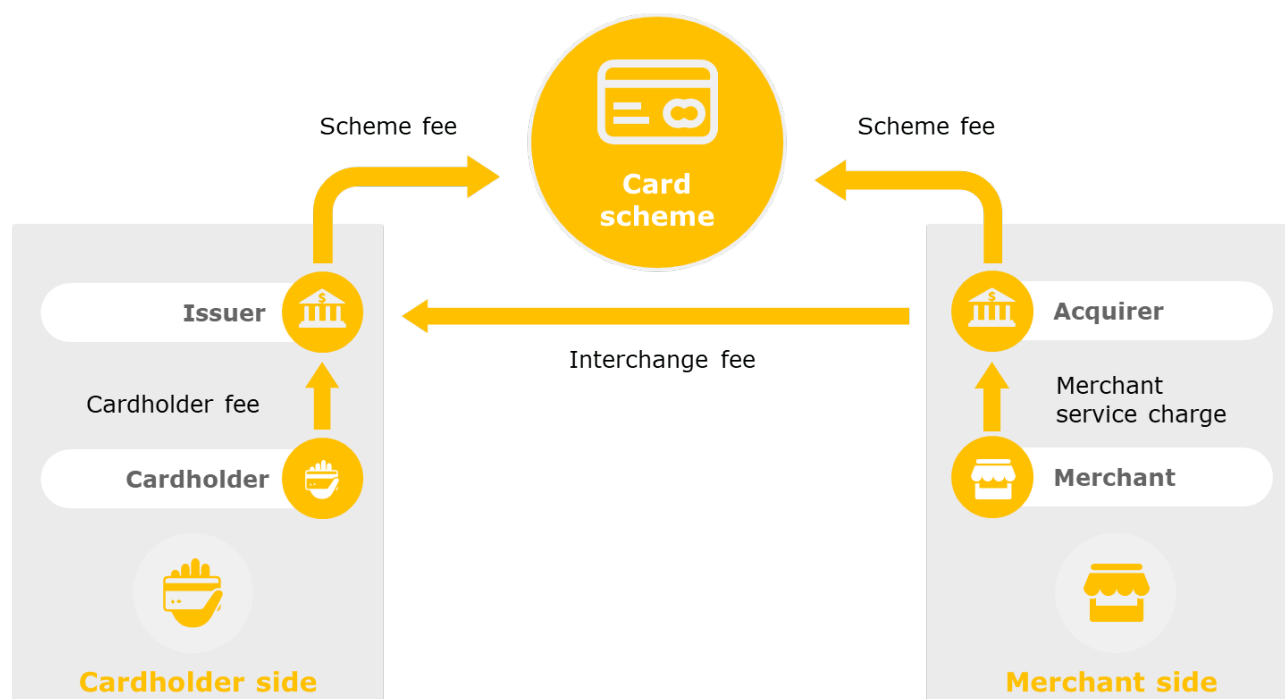
Cardholders typically pay fees to issuers for using payment cards that the issuers have issued. Merchants pay a merchant service charge (MSC) to acquirers for the accepting, processing and bearing the financial risk of the merchants' card-based payment transactions as well as the

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<sup>260</sup> MS could decide until 9 December 2018 to exempt three-party schemes that license to an issuer or acquirer or issue card-based payment instruments through a co-branding partner or agent, from the caps on domestic consumer card transactions provided the value of these transactions is no more than 3% of the market.

<sup>261</sup> See for example European Commission (2013) 288 final; "Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions." Annex 5 or Evans, D. S. (2011). Interchange Fees – The Economics and Regulation of What Merchants Pay for Cards. Competition Policy International, p. 6-7.

provision of the merchants' bank account. One part of the MSC is the interchange fee (IF) that acquirers pay to issuers. The IF is typically determined by the card scheme and is alleged to cover the issuer's costs of handling the card-based payment<sup>262</sup>. The IF can be thought of as a subsidy from the merchant side of the platform, paid by acquirers, to the cardholder side and received by issuers. The subsidy can ensure profit-maximisation on the platform, although profits may not be maximised separately on each side of the platform. The remaining components of the MSC are scheme fees and the acquirer's fee for service provision and profit, the acquiring margin. Card schemes also define the scheme fees, which are paid by issuers and acquirers to schemes for participating on the platform, as well as the level of IFs. Therefore, scheme fees could also be used to subsidise one side of the platform at the expense of the other side. The sum of cardholder fees and the MSC can be thought of as the total fees of the card scheme, since cardholders and merchants are the end customers on their respective sides of the platform. Rebates and bonus systems are also common on payment card platforms to incentivise certain behaviours. Card schemes, for example, often offer issuers and acquirers rebates on the scheme fee based on the volume of transactions with cards under the scheme or for switching to the card scheme.



Source: EY and Copenhagen Economics.

Figure 108: Illustration of fee flows within a four-party card scheme

<sup>262</sup> Interchange fees are also set in bi-lateral agreements between acquirers and issuers.



Interchange fees are usually justified to stimulate the card issuing business and the efficient use of cards as means of payments. Critiques have argued that interchange fees are excessive and inefficient rent transfers justifying regulatory intervention.<sup>263</sup> A breadth of economic literature has studied the optimality of privately set interchange fees in the last two decades. Rochet and Tirole (2002)<sup>264</sup> laid the foundation for the current welfare analysis of interchange fees. They found that privately set interchange fees could be either socially optimal or too high leading to overprovision of card services. Other papers have built on the foundation of Rochet and Tirole (2002) and developed in two directions. One set of papers find that interchange fees can be at the socially optimal level, too low or too high depending on assumptions about the market characteristics, see for example Wright (2004)<sup>265</sup>, Evans (2011)<sup>266</sup> and Rochet and Tirole (2011)<sup>267</sup>. Other papers find that interchange fees are likely to be too high which could justify regulatory intervention, see for example Wright (2012)<sup>268</sup>.

The motivation for the interchange fee regulation, and in particular the interchange fee cap, was that the incentive structure of the card payment platform could lead to situations where more competition between card schemes would lead to higher interchange fees which would eventually be passed on to higher retail prices through the merchant service charge and lower card usage as well as act as an entry barrier for more efficient schemes or other means of payment with lower or no interchange fees.<sup>269</sup> Card schemes would have an incentive to increase the interchange to incentivise issuers, who act as gatekeepers to cardholders, to issue cards to cardholders under the card schemes' own brand. This mechanism is limited by merchants' willingness to accept payments with cards issued under the card scheme. The higher the interchange fee, the higher will the merchant service charge be that merchants have to pay for accepting the card.

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<sup>263</sup> European Commission (2013) 288 final, "Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions.", p. 11.

<sup>264</sup> Rochet, J-C., and Tirole, J., (2002) "Cooperation among Competitors: Some Economics of Payment Card Associations".

<sup>265</sup> Wright, J., (2004), "Determinants of Optimal Interchange Fees in Payment Systems".

<sup>266</sup> For examples and discussion, see Evans, D. S. et al. (2011), "Interchange Fees – The Economics and Regulation of What Merchants Pay for Cards."

<sup>267</sup> Jean-Charles Rochet, J-R., Tirole, J., (2011), "Must Take Cards: Merchant Discounts and Avoided Costs".

<sup>268</sup> Wright, J., (2012), "Why payment card fees are biased against retailers", RAND Journal of Economics, Vol. 43 n°4 Winter 2012.

<sup>269</sup> European Commission: The Interchange Fees Regulation. Competition policy brief - Occasional discussion papers by the Competition Directorate-General of the European Commission. Issue 2015-3 | June 2015.

## Database preparation

### *Calculations and adjustments of variables*

#### Interchange fees

The interchange fee variable,  $IF(CT, i, t, c)$ , is in principle defined as the interchange fee payment in EUR for a respondent  $i$  in MS  $c$  in a given year  $t$  for a given card type  $CT$  divided by the corresponding total transaction value in EUR for the same respondent, MS, year and card type:

$$IF_{itc}^{CT} = \frac{\text{Interchange fee payment}_{itc}^{CT}}{\text{Total value of transactions}_{itc}^{CT}}$$

All variables are derived from the IFR Survey, unless mentioned specifically. The average annual  $IF(CT, i, t, c)$  is calculated for schemes, issuers, acquirers and merchants<sup>270</sup> for the years 2015, 2016 and 2017.

However, some adjustments are necessary to convert the total value of transactions as reported by the respective respondents to the value of transactions that correspond to the interchange fee payments. Schemes record interchange fees only for transactions they process themselves. The interchange fee values reported by schemes are therefore divided by the total value of transactions processed by the scheme.

There is no interchange fee payment for on-us transactions, which are transactions where the issuing and the acquiring bank are the same. The interchange fee values reported by issuers are therefore divided by the total value of transactions excluding on-us transactions. The IFR Survey to issuers provides data on the share of on-us transactions of the number of all POS-transactions per responding issuer, MS and year. One minus this share is multiplied with the total value of reported transactions to calculate the total value of transactions excluding on-us transactions. For acquires, data from the IFR Survey is more limited. The IFR Survey to acquirers does not provide data on the share of on-us transactions. To be able to make the same calculation for acquirers as for issuers, we approximate the share of on-us transactions of an acquirer by the weighted average share of on-us transactions, weighted by total transaction value, of the issuers reporting from the same MS.

For merchants the interchange fee variable is calculated as the total value of interchange fees divided by total value of transactions, but only for merchants that have the IF+ or IF++ pricing models. Merchants with blended MSC do not observe the actual value of the interchange fee and these merchants are therefore excluded from the calculation of the interchange fee variable.

#### Scheme fees

The issuer and acquirer gross scheme fees are in principle defined as  $SF(CT, i, t, c)$ , the actual payment of scheme fee in EUR by respondents  $i$  in MS  $c$  in a given year  $t$  for a given card type  $CT$  divided by the related transaction value in EUR for the same respondent, MS, year and card type:

$$SF_{itc}^{CT} = \frac{\text{Scheme fee payment}_{itc}^{CT}}{\text{Total value of transactions}_{itc}^{CT}}$$

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<sup>270</sup> Only for merchants who pay MSC according to the model IF+ or IF++.

All variables are derived from the IFR Survey, unless mentioned specifically. The average annual  $SF(CT, i, t, c)$  is calculated for schemes, issuers, acquirers for the years 2015, 2016 and 2017. Data from schemes and issuers are used to calculate issuer scheme fees, while data from acquirers are used to calculate the acquirer scheme fees. However, one adjustment is necessary to convert the scheme fee payments and the total value of transactions as reported by the respective respondents to make them as comparable as possible.

Respondents provided data on both variable (transaction-based) and fixed (non-transaction-based) scheme fees. Some respondents provided the variable and fixed scheme fees split by type of card (consumer debit, consumer credit and commercial cards), while other respondents reported only the variable scheme fees split by type of card. For the latter respondents, the fixed scheme fees, which were reported on an all-cards basis, were allocated between the different types of cards according to the relative share of total transaction value of the respective card types. That is:

$$\text{Gross } SF(CT, i, t, c) = \text{Variable } SF(CT, i, t, c) + \text{Share}(CT, i, t, c) * \text{Fixed } SF(i, t, c),$$

$$\text{where } \text{hare}(CT, i, t, c) = \frac{\text{Transaction value}(CT, i, t, c)}{\text{Transaction value}(i, t, c)}.$$

Despite these adjustments the scheme fee levels calculated by data reported by international schemes on the one hand and data reported by domestic schemes, issuers and acquirers on the other hand are not strictly comparable. The reason is that scheme fees reported by many issuers and acquirers contain both scheme fees and processing fees, while schemes have schemes have separated processing fees from scheme fees in their reported data. While this difference in reporting affects the levels of the "scheme fees", the changes between 2015 and 2017 are less affected since the difference in reporting existed both in 2015 and in 2017.

Furthermore, we calculate net scheme fees as total gross scheme fees less the total estimated value of rebates and benefits provided by schemes to issuers and acquirers. According to information provided by Visa and MasterCard, these rebates and benefits are granted at a company-level, which means that it is not possible to distinguish rebates and benefits on the issuing-side from the acquiring-side since one company can be both issuer and acquirer. By the same logic, it is not possible to break down rebates and benefits by card type.

### Merchant service charge

The MSC is defined as  $MSC(CT, i, t, c)$ , the actual payment of the MSC in EUR by respondents  $i$  in MS  $c$  in a given year  $t$  for a given card type  $CT$  divided by the related transaction value in EUR for the same respondent, MS, year and card type:

$$MSC_{itc}^{CT} = \frac{\text{Merchant service charge payment}_{itc}^{CT}}{\text{Total value of transactions}_{itc}^{CT}}$$

Responses from acquirers and merchants are used to calculate the MSC. However, two adjustments are necessary to reach this step.

First, some merchants pay a blended MSC to their acquirers. These merchants pay a single fee that does not depend on the value of the transaction or the card used. These merchants have therefore only reported a total MSC for all card transactions. To calculate the MSC for each card type, the total MSC is allocated according to the different types of cards based on their relative share of the total value of transactions.

Second, some merchants provided the variable and fixed MSC split by type of card, while other respondents reported the fixed MSC split by type of card. For the latter group, the fixed MSC is

allocated between the different card types according to their relative share of the total value of transactions in the same way as for scheme fees.

### Acquiring margin

Responses from acquirers are used to calculate the acquiring margin. The respondents do not report the acquiring margin, but instead they report its components: the MSC, gross scheme fees and interchange fees. The acquiring margin for a respondent is calculated as:

$$AM \text{ in EUR}(CT, i, t, c) = MSC \text{ in EUR}(CT, i, t, c) - SF \text{ in EUR}(CT, i, t, c) - IF \text{ in EUR}(CT, i, t, c)$$

### Cardholder fees

Issuers report data on total cardholder fees charged from their cardholder for the average consumer card. We convert these data into cardholder fees in % of transaction value by using data reported by issuers on their number of cards and transaction value:

$$CF_{itc}^{CT} = \frac{CF \text{ per card}_{itc}^{CT} * \text{Number of cards}_{itc}^{CT}}{\text{Total value of transactions}_{itc}^{CT}}$$

### *Matching IFR Survey data with Zero Study data*

The interchange fee caps were implemented in December 2015. Observations from 2015 are therefore a mix of pre-cap observations (predominantly) and post-cap observations. This makes 2015 an imperfect base year, because some of the changes that were results of the caps may have occurred already in 2015. In addition, some stakeholders, may have made changes earlier than in December 2015, because they may have anticipated the caps. This problem with the data can be mitigated if it is possible to merge the Zero Study, which contains data from 2014, database with the IFR Survey database and make the analysis based on the merged database. The merge may be feasible if:

1. the same calculations can be made using data from the Zero Study and data from the IFR Survey,
2. there is a large enough number of respondents that are the same in both databases, and
3. these respondents' responses in 2015, which is included in both databases, are comparable.

Our conclusion after assessing these conditions is that the Zero Study cannot be used as a baseline for the IFR Survey data in a meaningful way due to a lack of respondents that participate in both the Zero Study and the IFR Survey.

### Replicating IFR Survey calculations using the Zero Study database

In the Zero Study, the EC asked market participants to provide information on the situation before the implementation of the interchange fee caps as set by the IFR, which means the situation until 2015. For this exercise, the Commission requested information from market participants in 12 MS (France, Belgium, Spain, Italy, Portugal, United Kingdom, Sweden, Germany, Netherlands, Poland, Romania and Austria).

The Zero Study can be used to make almost or exactly the same calculations as for the survey data, with the exception of calculating gross turnover for issuers and acquirers, see Table 89. Note that the term "almost the same" calculations is used due to differences in the structure of

the data between the Zero Study and the IFR Survey data. This translates to similar, but not identical, calculations.

Variable	Data from stakeholder:	Possible to exactly replicate IFR Survey calculation using Zero Study data?	Possible to almost replicate IFR Survey calculation using Zero Study data?
Annual gross turnover	Issuer		
Number of payment cards per MS	Issuer	X	X
Number of payment cards per card type	Issuer		X
Value of POS-transactions per MS	Issuer		X
Value of POS-transactions per card type	Issuer		X
Avg. value per POS-transaction per MS	Issuer		X
Avg. value per POS-transaction per card type	Issuer		X
Total value of IF per MS	Issuer		X
IF per EUR of transaction per card type	Issuer		X
Total value of gross SF per MS	Issuer		X
SF per EUR of transaction per card type	Issuer		X
Annual gross turnover	Acquirer		
Volume of card-based POS-transactions per MS	Acquirer	X	X
Value of card-based POS-transactions per MS	Acquirer	X	X
MSC per MS	Acquirer		X
MSC per EUR of transaction	Acquirer		X
IF per EUR of transaction per MS	Acquirer		X
SF per EUR of transaction per MS	Acquirer		X
Acquiring Margin per EUR of transaction per MS	Acquirer		X

Source: IFR Survey and Zero Study.

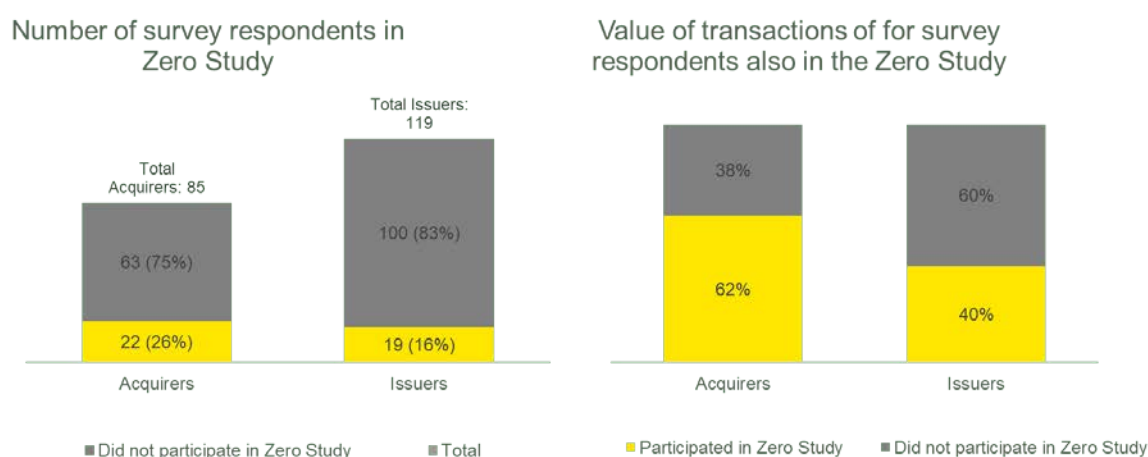
Table 89: Overview of possibility to replicate IFR Survey calculations using Zero Study data

For data from acquirers, the Zero Study database contains 77,587 rows of data, covering a total of 58 acquirers across 12 MS. Note that the number of acquirers included in these numbers changes over the years in some MS. In France, for example, four acquirers reported in 2012, while eight reported in 2015. Additionally, not all acquirers provide data points for all topics. For example, for France eight Acquirers provide data on interchange fees, while only four provide data on scheme fees. Thus, the composition of acquirers is not consistent across topics, nor is it consistent within topics throughout the period investigated.

For data from issuers, the Zero Study database contains 11,355 rows of data, covering a total of 76 issuers across 12 MS. Note that the number of issuers included in these numbers change over the years in some MS. For example, the number of issuers reporting interchange fees in Spain went from one in 2012 to two in 2014. Additionally, not all issuers provide data points for all topics. For example, no issuers provide data on scheme fees in Spain. Thus, the composition of issuers is not consistent across topics, nor is it consistent within topics throughout the period investigated.

### Few responded to both the IFR Survey and the Zero Study

Only 26% of acquirers and 16% of issuers responding to the IFR survey also responded to the Zero Study. This low number of overlapping observations means that it is not feasible to carry out a meaningful benchmark analysis. It is worth noting that the respondents that replied in both the Zero Study and the IFR Survey account for 40% (issuers) and 62% (acquirers) of the total reported value of transactions in the survey, see Figure 109.



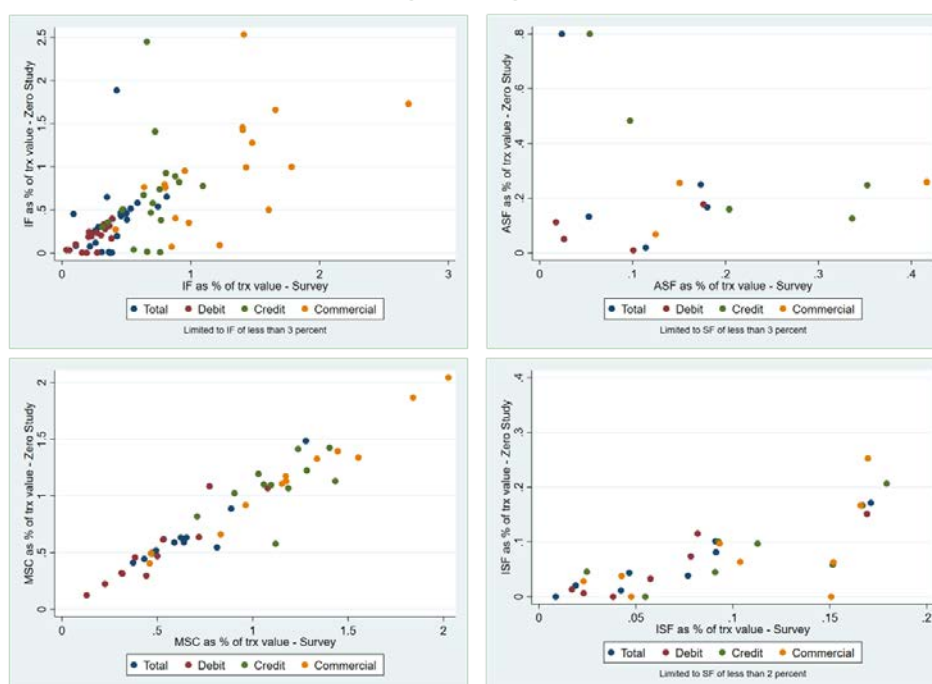
Source: Survey and Zero study.

Figure 109: Share of respondents and share of their transaction value present in both survey and Zero study, 2015

### Consistency between the IFR Survey and the Zero Study databases

To investigate the consistency of the results, the responses for 2015 to the same questions were compared for the respondents that participated in both the IFR Survey and the Zero Study. In some cases, the reported values are relatively consistent, in particular for interchange fees and MSC. If responses would be perfectly consistent, the scatter plots in Figure 110 would form straight 45 degree lines, which is only the case for MSC and to some extent interchange fees.

Fees as percentage of transaction value. Calculated from the survey data on the x-axis and from the Zero Study on the y-axis.



Source: Survey and Zero study.

Figure 110: Comparison of fee levels in 2015 reported by respondents in the IFR Survey and the Zero Study

To investigate consistency further, the regressions for the development in the interchange fee were re-run, with only the respondents that participated in both the IFR Survey and the Zero, using:

1. The 2015 interchange fees from the IFR Survey
2. The 2014 interchange fees from the Zero Study instead of the IFR Survey value of 2015

The regressions are less statistically significant than the regressions based on the IFR Survey using the full data set. It is natural for the level of significance to decline as the number of observations falls and the noise in data increases. The regression using only matching respondents with the survey value in 2015 suffers only from fewer observations. The regressions using only matching respondents and the Zero Study value for 2014 suffers both from fewer observations and increased noise in the data (as the structures of the two datasets are not identical, it is not possible to calculate the interchange fee in the exact same way. Combining the two datasets thus adds noise). This illustrates the problem with carrying out a meaningful benchmark analysis using the Zero Study.

The two below regressions result in similar conclusions, see Table 90. This indicates that, although not feasible to conduct a meaningful benchmark analysis, the results obtained using the survey data are roughly consistent with the results obtained using the Zero Study.

IFR Survey	OLS	WLS	Q Reg
Consumer Debit	-0.040	0.002	-0.015
	(88; 0.76)	(88; 0.81)	(88; 0.49)
Consumer Credit	-0.269***	-0.275***	-0.319***
	(86; 0.81)	(86; 0.67)	(86; 0.56)
Commercial	-0.013	0.024	-0.021
	(87; 0.54)	(87; 0.29)	(87; 0.45)

Zero Study	OLS	WLS	Q Reg
Consumer Debit	-0.754	-2.089	-0.042
	(84; 0.13)	(84; 0.23)	(84; 0.12)
Consumer Credit	-0.651**	-0.222	-0.446***
	(85; 0.21)	(85; 0.18)	(85; 0.28)
Commercial	0.101	0.184	0.182
	(79; 0.53)	(79; 0.38)	(79; 0.40)

Note: OLS: Ordinary Least Squares, WLS: Weighted Least Squares, Q Reg: Quantile Regression. Two-sided test for change in IF: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated effect of the IFR on the mean IF as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // MS fixed-effects.

Source: IFR Survey, Zero Study.

Table 90: Change in interchange fees per card type for issuers and acquirers that participated in both the IFR Survey and the Zero Study, 2014/2015-2017



## Statistical and econometric methodology

### *Econometric analysis*

To be able to make any kind of conclusions about the evolution of fees, the observed results need to be statistically significant<sup>271 272</sup>. In the econometric analysis, results are deemed statistically significant at the 95% level. This level is the most commonly used value for the level of significance in economic research.

The tests for whether there have been statistically significant changes in fees and other variables from 2015 to 2017 are based on a fixed effects econometric model. The model for estimating changes is generally defined as:

$$\text{Dependent variable}_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \text{Fixed effects} + \text{Controls} + \varepsilon_t$$

Where:

- *Dependent variable*<sub>itc</sub><sup>CT</sup> is the investigated variable (interchange fee, scheme fee, MSC, cardholder fee etc.)
- *D*<sub>itc</sub><sup>17</sup> is a dummy that is one for the year 2017 (after the interchange fee regulation was implemented) and zero otherwise
- *Fixed effects* are fixed effects for the MS
- *Controls* control for the respondent's type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent's total number of transactions)

The three estimation methods are:

- Ordinary Least Squares (OLS). This regression method minimises the sum of squared residuals. The residual is the difference between the actual value of the variable of interest and the modelled value of the variable of interest. This method puts an equal weight on all responses.

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<sup>271</sup> ThoughtCo. (2019). 09 April 2019. "Understanding Significance Level in Hypothesis testing". [retrieved the 24 October 2019 from: <https://www.thoughtco.com/significance-level-in-hypothesis-testing-1147177>]

<sup>272</sup> Statistical significance relates to if one should maintain or reject a given hypothesis. Given a data set one can compute statistics (e.g. averages) and/or determine the magnitude of various relationships (e.g. correlations and regression coefficients) between different variables. Statistics enables determining if the sample data contains enough evidence to conclude that the relationships are true for the whole population (e.g. the market) from which the sample (e.g. the IFR Survey data) origins, or if the observed relationships in the sample data are simply due to coincidence. This is done by computing some sample statistic that would exhibit certain characteristics if the relationship is true, but not if the relationship is false. The extent to which the sample statistic exhibits the characteristics expected if the statement is correct is a matter of degree, but in order to conclude that the statement is accepted or rejected there must be an arbitrary cutoff. If the sample statistic falls within or on one side of the cut-off value then it is said to conform with the characteristics expected under the null hypothesis and can be considered statistically significant for the given cut-off value (e.g. at the 5 % significance level, which means that the probability that the relationship is just a coincidence is 5 %). If it falls on the other side of the cut-off value then it is said not to conform with the characteristics expected if the statement is correct, and thus the result is not considered statistically significant.

- Weighted Least Squares (WLS). This regression method minimises the sum of weighted squared residuals, where the weight is the transaction value. This method puts a larger weight on larger respondents with higher transaction values.
- Quantile Regression (QReg). This is a quantile (median) regression and minimises the sum of absolute residuals. This estimation method puts equal weight on all responses and is robust to outliers.

For both the OLS and WLS regressions, corrections need to be made for outliers. Outliers are extreme values, possibly due to measurement error, that have a large impact on the regression results. These should not be included in the regressions, as it will bias any conclusions made. A simple and consistent rule is used to exclude outliers: for each variable of interest, the bottom and top percentiles as well as zero values are excluded<sup>273</sup>. The QReg is robust to outliers. This method is used as a consistency check to assess whether the outliers have been correctly identified and excluded from the two regressions.

The preferred estimation method to present and interpret the results is the WLS method. This is because larger, and therefore relatively more important respondents in terms of effect on the entire market, are given a larger weight compared to the OLS. The interpretation of estimated changes in fees per transaction value is also more straight forward: the estimate measures the average change in fee per transaction value for the average EUR of transaction value. For OLS, the interpretation is the average change in fee per transaction value experienced by the average respondent.

Many of the regressions use data from several types of stakeholders, so called “pooled regressions”. Pooled regressions increase the number of observations in the regressions and increases the likelihood of detecting statistically significant results. However, different types of stakeholders may report data on for example fee levels differently leading to inconsistencies in the data. The level of variables is likely to be more affected by the inconsistency than the results on development the development of variables. However, several adjustments are made, as previously described in this annex, to accommodate for this fact.

### *Causal effects of the interchange fee caps*

Statistically significant changes are not necessarily caused by the IFR. The econometric models described do not necessarily distinguish between changes due to the IFR, changes due to other regulations or changes due to general market trends that would in any case have occurred. Causal effects of the IFR are investigated by comparing how fees of different groups of respondents or how different fees of the same respondent have developed in relation to each other. This is done by comparing groups of respondents or fees that are directly affected by the interchange fee cap to those that are not or only indirectly affected. That is, establishing whether any observed diversity in the evolution of other fees in fact can be related to the interchange fee cap. The idea is, that the only difference between the two groups should be the effect of the IFR. Therefore, the difference in outcomes between the two groups must be the causal effect of the IFR. This is done by using a differences-in-differences estimation.

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<sup>273</sup> The only exception is for the investigation of cardholder fees, where fees per card of more than 1,000 EUR are excluded. There are fewer observations for cardholder fees, which means that excluding only the bottom and top percentiles, the results are still impacted by outliers.

This method tracks the difference between a “treated” group and a “control” group before and after the interchange fee cap was implemented, measuring the variation in the relationship between the interchange fee cap and fee developments between the two groups. The benefit of this method is that it mitigates the effects of unobservable variables that affect the outcome variable of interest (here, the degree of relationship between fee developments and the interchange fee cap). One requirement is that both the treated and control groups are affected by these unobserved variables in the same way. Another requirement is that the control group needs to be independent of the treatment group or, in other words, that there are no spill-over effects. This means that the effect of the interchange fee cap on the treated group does not affect the control group. Any spill-over effects will most likely give a downward bias of the estimated effects of the cap.

The potential issue with the differences-in-differences approach is the two assumptions it relies on: that the treated and untreated groups would have followed the same trend in the absence of the interchange fee cap (parallel trends assumption) and that the compositions of the two groups do not change because of the IF cap.

We use two different methods to define treated and control groups and present results of both in the main report. In the first method, we use IFR Survey data on the interchange fee changes to split respondents into groups with “large” and “small” reductions in the interchange fee following the IFR. “Large” are defined as having interchange fee reductions larger than the average in the EU, and “small” below the average. The idea behind this split is that the respondents in the treatment group have been more affected by the IFR than respondents in the control group. If issuers see a large decrease in their revenues due to the cap, they may be more likely to raise other fees to make up for lost revenue. If issuers see little (or no) change in their revenues, they will not be as strongly incentivised to raise other fees. Therefore, the difference in the change between 2015 and 2017 for these two groups is likely to reflect the causal effect of the IFR.

In the second method, we define consumer cards, to which the interchange fee cap applies, to belong to the treated group and commercial cards to the control group. The idea is that only interchange fees of consumer cards should have changed.

The differences-in-differences model is specified as follows:

$$Fee_{itc}^{CT} = \alpha + \mu D_{itc}^{17} + \beta D_{itc}^{treated} + \delta D_{itc}^{treated} D_{itc}^{17} + Fixed\ effects + Controls + \varepsilon_t$$

Where:

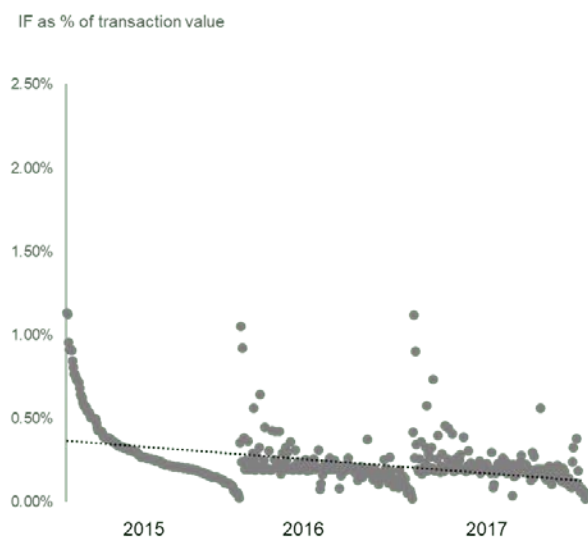
- $D_{itc}^{17}$  is a dummy that is one for the year 2017 and zero otherwise
- $D_{itc}^{treated}$  is a dummy variable that is one if the respondent or card type (depending on the method) belongs to the treated group and zero if it belongs to the control group
- *Fixed effects* are fixed effects for the MS
- *Controls* control for the respondent’s type (scheme, issuer, acquirer or merchant) and size (in terms of the log of the respondent’s total number of transactions)

The coefficient,  $\delta$ , shows whether the fee (scheme fee, MSC, cardholder fee, etc.) in the treatment group developed differently than in the control group. Or in other words, whether there was a change in fees that can best be explained as a causal effect of the interchange fee caps.

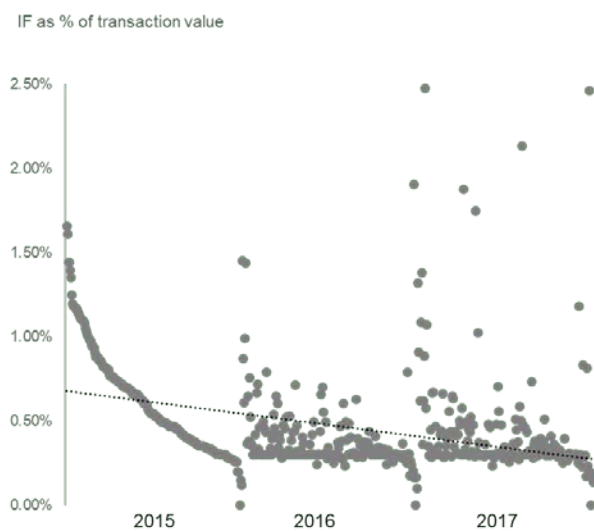
## Supplementary results and robustness checks

### *Supplementary results*

#### Debit card transactions



#### Credit card transactions



Note: The first and last percentile of the interchange fee values are excluded. The figures contain observations for 2015, 2016, 2017 sorted chronologically from left to right, with observations for 2015 comprising the leftmost third of the figures, and so forth.

Source: IFR Survey.

Figure 111: Scatter plot of interchange fee observations for debit and credit card transactions, 2015, 2016 and 2017

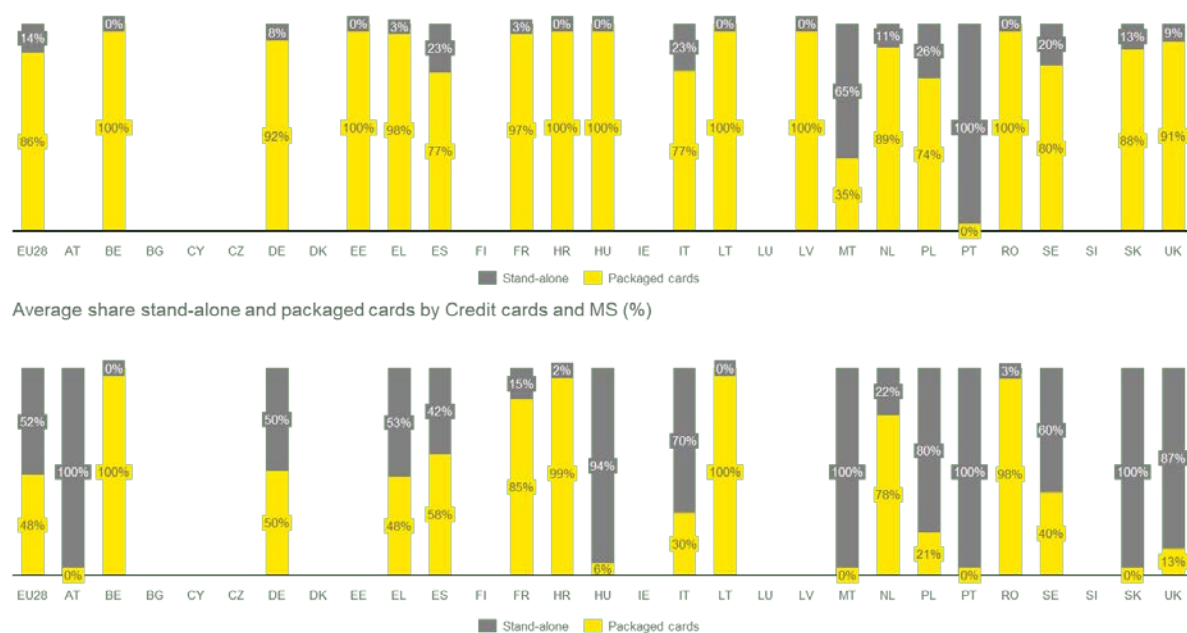
## Consumer cardholder and banking fees

Country	Consumer Debit				Consumer Credit			
	2015	2016	2017	Obs	2015	2016	2017	Obs
Austria	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Belgium	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Bulgaria	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Croatia	0.50%	0.64%	0.56%	3	3.74%	4.14%	3.60%	3
Cyprus	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Czech Republic	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Denmark	0.21%	0.16%	0.16%	1	0.80%	0.77%	0.72%	1
Estonia	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Finland	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
France	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Germany	0.27%	0.24%	0.19%	1	1.72%	1.77%	1.62%	4
Greece	1.55%	0.83%	0.88%	1	2.63%	2.34%	1.56%	1
Hungary	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Ireland	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Italy	0.57%	0.54%	0.50%	5	1.30%	1.24%	1.13%	5
Latvia	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Lithuania	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Luxembourg	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Malta	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Netherlands	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Poland	0.77%	0.75%	0.60%	3	1.84%	1.70%	1.64%	3
Portugal	0.42%	0.43%	0.41%	2	1.31%	1.44%	1.50%	2
Romania	0.73%	0.47%	0.31%	1	1.21%	0.74%	0.41%	1
Slovak Republic	1.20%	0.95%	0.74%	1	1.82%	1.63%	1.57%	1
Slovenia	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
Spain	0.40%	0.34%	0.42%	2	2.53%	2.20%	2.11%	2
Sweden	0.26%	0.26%	0.26%	1	0.00%	0.00%	0.00%	0
United Kingdom	0.09%	0.10%	0.10%	3	0.51%	0.51%	0.55%	4
EU-28	0.18%	0.18%	0.18%	24	0.74%	0.75%	0.81%	27

Note: The fees are weighted averages of the fees reported by respondents. Weights are total value of transactions of each respondent.

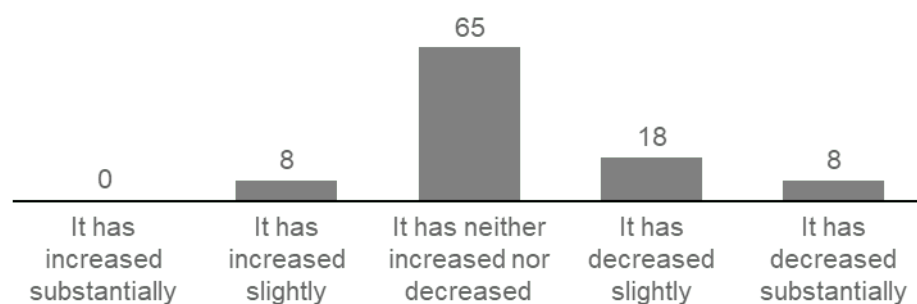
Source: IFR Survey.

Table 91 Cardholder fees per card type and MS reported by issuers, 2015-2017



Source: IFR Survey.

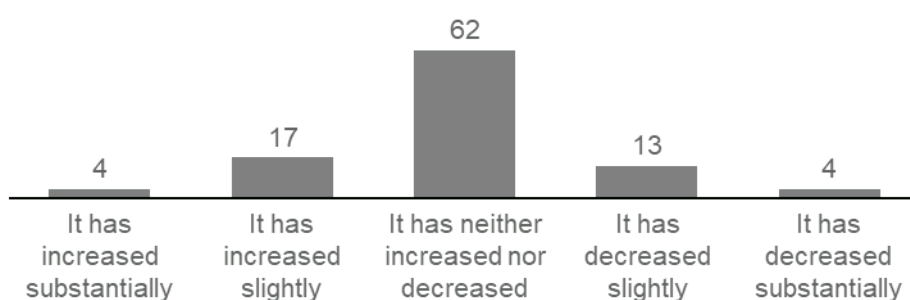
Figure 112: Share of stand-alone cards and packaged cards for debit and credit cards per MS, 2017



Note: The numbers in the figure refer to shares (in %) of respondents choosing each category describing the development of their cardholder benefits.

Source: IFR Survey.

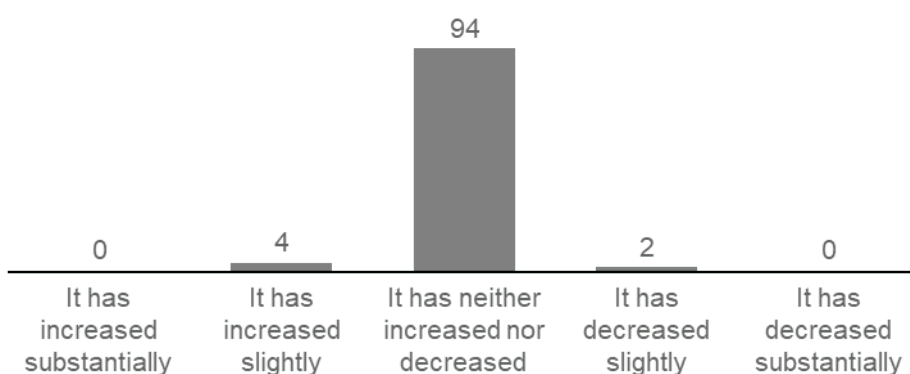
Figure 113: Development of issuers' provided value of cardholder benefits during 2015-2017



Note: The numbers in the figure refer to shares (in percent) of respondents choosing each category describing the development of their number of consumer banking products with a payment card included.

Source: IFR Survey.

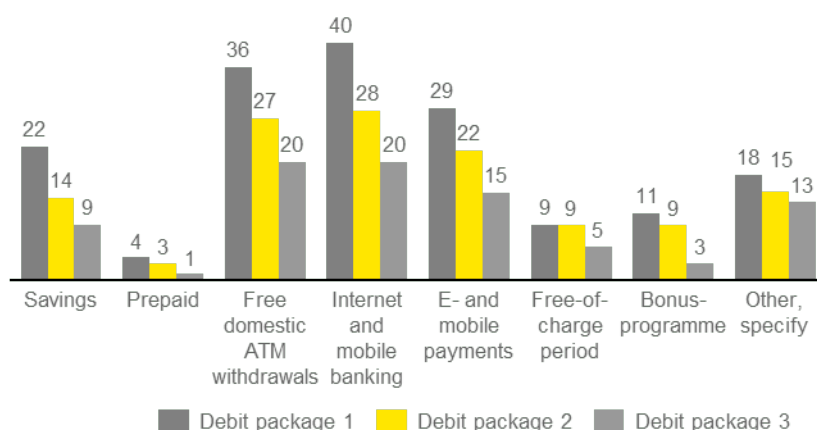
Figure 114: Development of issuers' number of banking products with payment cards during 2015-2017



Note: The numbers in the figure refer to shares (in percent) of respondents choosing each category describing the development of the length of their interest free periods for credit cards.

Source: IFR Survey.

Figure 115: Development of issuers' length of interest free periods for credit cards during 2015-2017

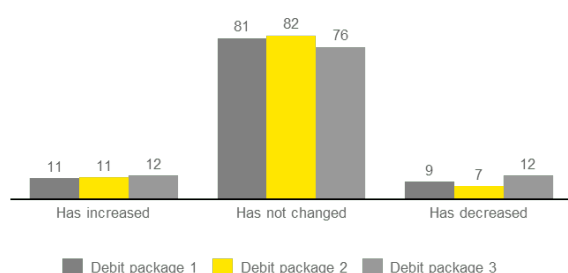


Note: The numbers in the figure refer to shares (in percent) of respondents choosing each category describing the development of the length of their interest free periods for credit cards.

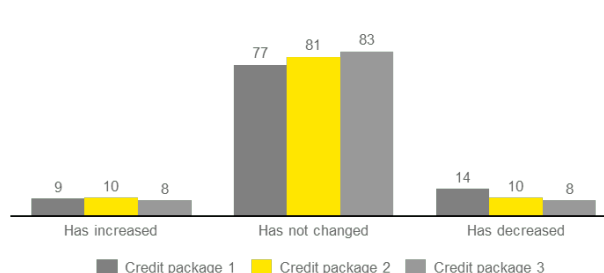
Source: IFR Survey.

Figure 116: Products included in debit account packages in the period 2015-2017

### Debit account packages



### Credit card packages

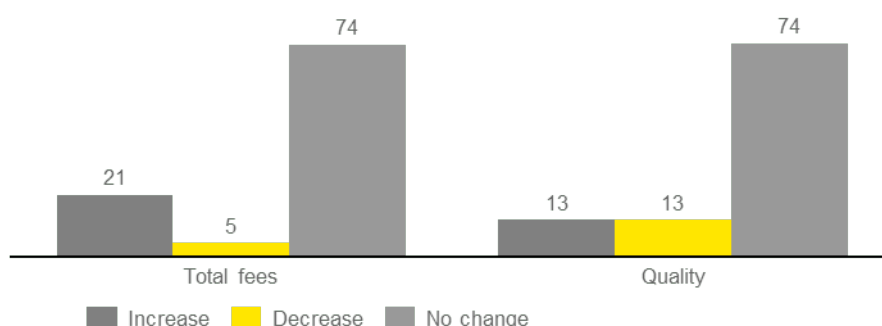


Note: The numbers in the figure refer to shares (in percent) of respondents choosing each category describing the development of the length of their interest free periods for credit cards.

Source: IFR Survey.

Figure 117: Development in the number of features included in debit account and credit card packages in the period 2015-2017



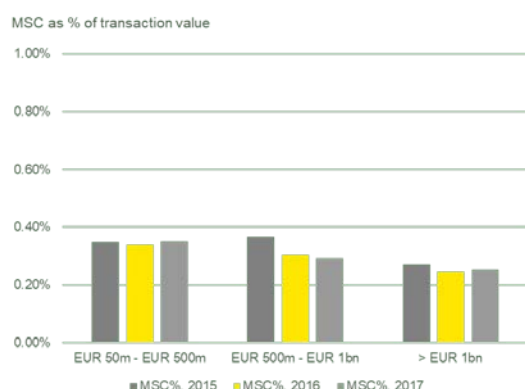


Note: The numbers in the figure refer to shares (in percent) of respondents choosing each category describing the development of the length of their interest free periods for credit cards. Quality was exemplified to respondents as for example quality of service, variety, innovation, etc.

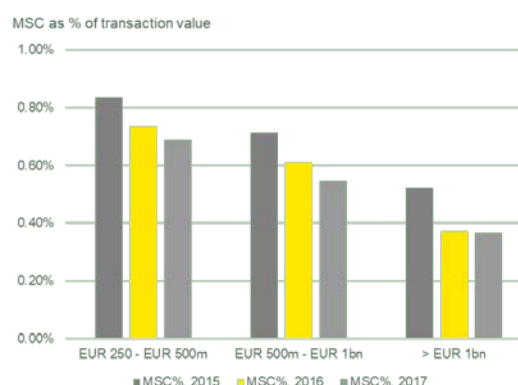
Source: IFR Survey.

Figure 118: Perceived impact of issuers of the IFR on fees and quality of banking packages

### Debit card transactions



### Credit card transactions

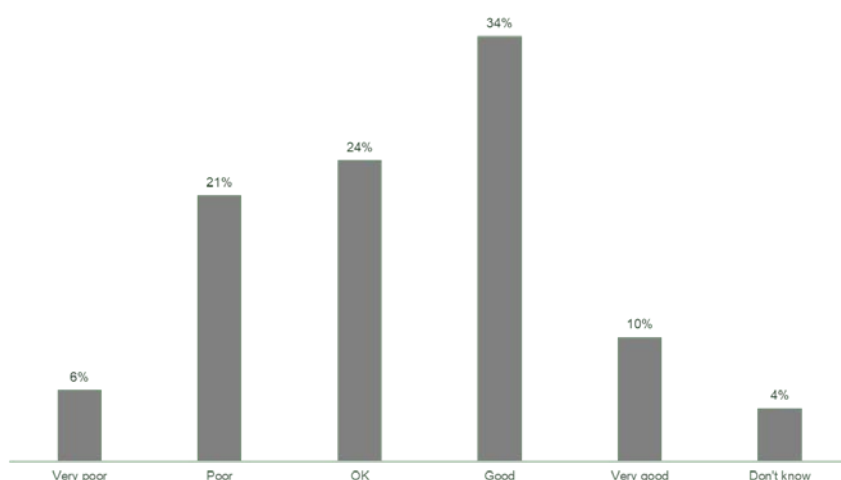


Note: The size category EUR 50m-EUR 500m contains 5 respondents for debit and credit card transactions and the size category EUR 500m-EUR 1bn only 1 respondent. The size category >EUR 1bn contains 52 respondents for debit and credit card transactions depending on the year. Merchant size is measured at the aggregate EU level.

Source: IFR Survey.

Figure 119 Merchant service charge per merchant size, 2015-2017.

% of respondents that reply report that the quality of information is



Note: Information was collected from merchants located in Germany, Greece, Denmark, Italy and Bulgaria. Extrapolating conclusions based on these results to other MS should be done with caution.

Source: IFR Survey.

Figure 120 Merchants' perception about the quality of information about unblended rates provided by acquirers

## Robustness checks

The econometric results reported in section 4 are generally robust to changes in the assumptions underlying the analysis. The following types of robustness checks have been investigated to come to this conclusion:

- Impact of model specification
- Impact of outlier specification
- Impact of calculations and adjustments to variables
- Impact of using data from one stakeholder

### Impact of model specification

To investigate the model specification, the choice of controls and fixed effects is investigated, together with the results obtained from the three different regression methods, OLS, WLS and Q Reg.

The base regression uses MS fixed effects and controls for the type of respondent (scheme, issuer, acquirer, merchants) and the size of the respondent approximated by the logarithm of the respondent's total number of transactions. For robustness, the regressions are also estimated using respondent fixed effects and the logarithm of the respondent's total value of transactions as an approximation of the respondent's size. The below results show that the estimated effects are robust to the choice of controls and fixed effects.

IF	OLS	WLS	QReg
Consumer Debit	-0.091*** (390; 0.43)	-0.031*** (390; 0.51)	-0.063*** (390; 0.26)
Consumer Credit	-0.176*** (394; 0.59)	-0.244*** (394; 0.67)	-0.164*** (394; 0.37)
Commercial	0.027 (366; 0.46)	-0.063 (364; 0.62)	-0.011 (366; 0.34)

Note: Two-sided test for change in interchange fees: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change of the interchange fees as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // respondent fixed-effects // controls for value of transactions.

Source: IFR Survey.

Table 92: Result of robustness check: Change in interchange fees with changed the control and fixed effects variables, 2015-2017

ISF	OLS	WLS	QReg
Consumer Debit	-0.005 (156; 0.32)	0.006** (156; 0.66)	0.002 (156; 0.44)
Consumer Credit	0.015*** (154; 0.90)	0.013*** (154; 0.92)	0.014*** (154; 0.65)
Commercial	0.013*** (144; 0.64)	0.003 (144; 0.71)	0.008 (144; 0.37)

Note: Two-sided test for change in issuer gross scheme fees: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent estimated change of the issuer gross scheme fees as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // respondent fixed-effects // controls for value of transactions.

Source: IFR Survey.

Table 93: Result of robustness check: Change in issuer gross scheme fees with changed the control and fixed effects variables, 2015-2017

ASF	OLS	WLS	QReg
All cards	0.012*** (248; 0.40)	0.010*** (248; 0.41)	0.012*** (248; 0.41)
Consumer Debit	0.026* (82; 0.47)	0.014*** (82; 0.77)	0.014** (82; 0.39)
Consumer Credit	0.030** (84; 0.31)	0.011 (84; 0.54)	0.025*** (84; 0.41)
Commercial	-0.008 (78; 0.34)	0.020 (78; 0.58)	0.008** (78; 0.34)

Note: Two-sided test for change in acquirer gross scheme fees: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the acquirer gross scheme fees as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // respondent fixed-effects // controls for value of transactions. Data from four-party schemes and acquirers for the "All cards" estimation, and from acquirers for the remaining estimations.

Source: IFR Survey.

Table 94: Result of robustness check: Change in acquirer gross scheme fees with changed the control and fixed effects variables, 2015-2017

MSC	OLS	WLS	QReg
Consumer Debit	-0.124*** (224; 0.58)	-0.008 (224; 0.74)	-0.061*** (224; 0.48)
Consumer Credit	-0.140*** (230; 0.63)	-0.169** (230; 0.62)	-0.114*** (230; 0.48)
Commercial	0.015 (256; 0.60)	0.018 (256; 0.89)	-0.028 (256; 0.54)

Note: Two-sided test for change in merchant service charge: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the merchant service charge as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // respondent fixed-effects // controls for value of transactions.

Source: IFR Survey.

Table 95: Result of robustness check: Change in merchant service charge with changed the control and fixed effects variables, 2015-2017

For interchange fees, acquirer gross scheme fees and merchant service charge, both the conclusion and the level of significance for the preferred model specification (WLS) are robust to the change in control variables. For the estimated change in issuer gross scheme fees, the conclusion remains the same but is slightly less significant than when using the base control variables (at the 5% level rather than 1% level).

Out of the three regression specifications, the WLS is deemed the most appropriate to use to establish statistical significance of the results, as discussed in the section about Econometric

analysis in Annex 4 and throughout chapter 4. However, for completeness, we show the results of all three models in the main chapter. In some cases, the OLS and the QReg models do not result in the same conclusions as the WLS model. This is for example the case for the MSC for consumer debit cards, see Table 32 in section 4.4, where the OLS and QReg show a statistically significant decrease but the WLS shows no significant change. This does not come as a surprise when looking at the descriptive figure per MS: the EU averages for 2015 and 2017 are almost identical, despite some MS that have experienced large decreases in the MSC (which could be due to unidentified outliers). These MS typically also have low transaction values. The WLS weighs these observations lightly because of low transaction value. The OLS and the QReg on the other hand do not since these models treat each observation equally.

### **Impact of outlier specification**

The robustness of the outlier specification is investigated. The preferred method is to exclude all values in the bottom and top percentiles as well as zero values. Another outlier method investigated is capped outliers: removing all values larger than a given threshold from the regressions. One problem with this method is that it is that the fee level threshold for excluding is a variable arbitrarily chosen.

To investigate the outlier specification, the results obtained from OLS are compared to the QReg results. The OLS regression estimates the average change in a fee, while the QReg estimates the median change in a fee. Generally, the QReg is more robust to outliers. Therefore, if the two regressions yield similar conclusions, this lends credibility to the chosen outlier specification.

The results in chapter 4 show that this indeed is the case. In the regressions, there are few discrepancies between the conclusions from the OLS and QReg estimations. This supports that the conclusions are actual observed changes and not due to chance or driven by outlier values.

### **Impact of calculations and adjustments of variables**

The role of the adjustment for on-us transactions is investigated, see the description of Annex 4 calculations and adjustments of variables for an explanation for how and why this is done. For issuers, their reported percentage of on-us transactions are used when calculating the interchange fee as a percentage of transaction value. However, for the acquirers the IFR survey data are more limited, and the weighted average of on-us transactions reported by issuers in a given MS and year is used instead. The impact of this is investigated by conducting the interchange fee regressions without this adjustment for the acquirers.

The econometric results of the changes in interchange fees are robust to the adjustments made to the variables and hence any errors introduced from these changes should not affect the results much.

IF	OLS	WLS	QReg
Consumer Debit	-0.088*** (388; 0.33)	-0.032*** (388; 0.44)	-0.048*** (388; 0.21)
Consumer Credit	-0.152*** (388; 0.37)	-0.258*** (388; 0.62)	-0.168*** (388; 0.25)
Commercial	0.042** (358; 0.47)	0.029 (358; 0.50)	0.041 (358; 0.35)

Note: Two-sided test for change in interchange fees: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent estimated change of the average interchange fees as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // country fixed-effects // no adjustments for on-us transactions when calculating acquirers' IF%.

Source: IFR Survey.

Table 96: Results of robustness check: Change in interchange fees with changed adjustments to variable calculation, 2015-2017

## Stakeholder results

The regressions are investigated on a stakeholder level. This reduces the number of observations for each regression, and thus increases statistical uncertainty. However, this analysis is conducted to ensure that the pooled results presented in the main text represent a general market trend, rather than being driven by one specific stakeholder. The results are presented below. The stakeholder results show that the estimations are generally consistent across stakeholders.

IF	OLS	WLS	QReg
Consumer Debit			
4P Schemes	-0.142*** (114; 0.63)	-0.033 (114; 0.65)	-0.077*** (114; 0.23)
Issuers	-0.110*** (110; 0.69)	-0.045** (110; 0.78)	-0.055*** (110; 0.41)
Acquirers	-0.046 (106; 0.37)	-0.028** (106; 0.52)	-0.065*** (106; 0.17)
Merchants	-0.042** (58; 0.63)	-0.019 (58; 0.58)	-0.015 (58; 0.33)
Consumer Credit			
4P Schemes	-0.207*** (112; 0.63)	-0.203** (112; 0.69)	-0.159*** (112; 0.23)
Issuers	-0.272*** (116; 0.70)	-0.309*** (116; 0.61)	-0.214*** (116; 0.35)
Acquirers	-0.005 (104; 0.39)	-0.285*** (104; 0.77)	-0.171*** (104; 0.23)
Merchants	-0.244*** (60; 0.55)	-0.217*** (60; 0.62)	-0.141*** (60; 0.24)
Commercial			
4P Schemes	-0.032 (112; 0.59)	-0.051 (110; 0.84)	0.016 (112; 0.39)
Issuers	0.058 (92; 0.72)	0.059 (92; 0.57)	0.044 (92; 0.57)
Acquirers	0.053 (100; 0.54)	0.002 (100; 0.64)	0.055 (100; 0.41)
Merchants	0.077 (60; 0.59)	0.144 (60; 0.50)	0.022 (60; 0.50)

Note: Two-sided test for change in interchange fee: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 // values in cells represent the estimated change in the interchange fee as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 97: Result of robustness check: Change in interchange fees per stakeholder, 2015-2017

ISF	OLS	WLS	QReg
Consumer Debit			
4P Schemes	-0.005 (108; 0.27)	0.010*** (108; 0.67)	0.009 (108; 0.15)
Issuers	0.003 (46; 0.92)	0.003 (46; 0.87)	0.001 (46; 0.75)
Consumer Credit			
4P Schemes	0.017*** (110; 0.44)	0.013*** (110; 0.56)	0.005 (110; 0.21)
Issuers	0.019 (42; 0.49)	0.014*** (42; 0.59)	0.004 (42; 0.38)
Commercial			
4P Schemes	0.020*** (108; 0.65)	0.004 (108; 0.78)	0.011*** (108; 0.44)
Issuers	0.005 (34; 0.93)	0.019*** (34; 0.91)	0.014*** (34; 0.73)

Note: Two-sided test for change in issuer gross scheme fee: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent the estimated change in the issuer gross scheme fee as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 98: Result of robustness check: Change in issuer gross scheme fees per stakeholder, 2015-2017

ASF	OLS	WLS	QReg
All cards			
4P Schemes	0.003 (130; 0.55)	0.007*** (130; 0.91)	0.010*** (130; 0.37)
Acquirers	0.021*** (114; 0.38)	0.013*** (114; 0.65)	0.015*** (114; 0.37)

Note: Two-sided test for change in acquirer gross scheme fee: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent the estimated change in the acquirer gross scheme fee as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 99: Result of robustness check: Change in acquirer gross scheme fees per stakeholder, 2015-2017



MSC	OLS	WLS	QReg
Consumer Debit			
Acquirers	-0.210*** (108; 0.59)	-0.006 (108; 0.69)	-0.124*** (108; 0.43)
Merchants	-0.041*** (116; 0.80)	-0.016 (116; 0.59)	-0.054*** (116; 0.54)
Consumer Credit			
Acquirers	-0.070 (110; 0.45)	-0.165** (110; 0.57)	-0.166*** (110; 0.30)
Merchants	-0.196*** (120; 0.57)	-0.142*** (120; 0.65)	-0.096*** (120; 0.42)
Commercial			
Acquirers	0.040 (100; 0.62)	0.019 (100; 0.51)	0.014 (100; 0.44)
Merchants	0.004 (156; 0.53)	0.070 (156; 0.33)	-0.005 (156; 0.42)

Note: Two-sided test for change in merchant service charge: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  // values in cells represent the estimated change in the merchant service charge as % of transaction value // number of observations and R-squared in brackets // outliers for the OLS and WLS regressions are determined by excluding the top and bottom percentiles as well as values of zero // only respondents that have replied in both 2015 and 2017 are included // MS fixed-effects.

Source: IFR Survey.

Table 100: Result of robustness check: Change in merchant service charge per stakeholder, 2015-2017

## **Annex 5. Merchant pass-through of Interchange Fee reductions: Estimations and methodology description**

### **Data sources**

#### **Public data**

##### **ECB**

Based on the ECB data, we calculate the average volumes and values of card-based transactions in the MS of interest between 2011 and 2017. The figures are used in the regression analysis as explanatory variables for pass-through rates.

##### **Eurostat**

The Eurostat database is freely and publicly accessible. The covered data provides information on annual average rate of change in the different MS. The data is available for the period 2005–2015 and is thus useful to capture evolutions over time. We use the database to obtain the number of private households in the EU MS.<sup>274</sup>

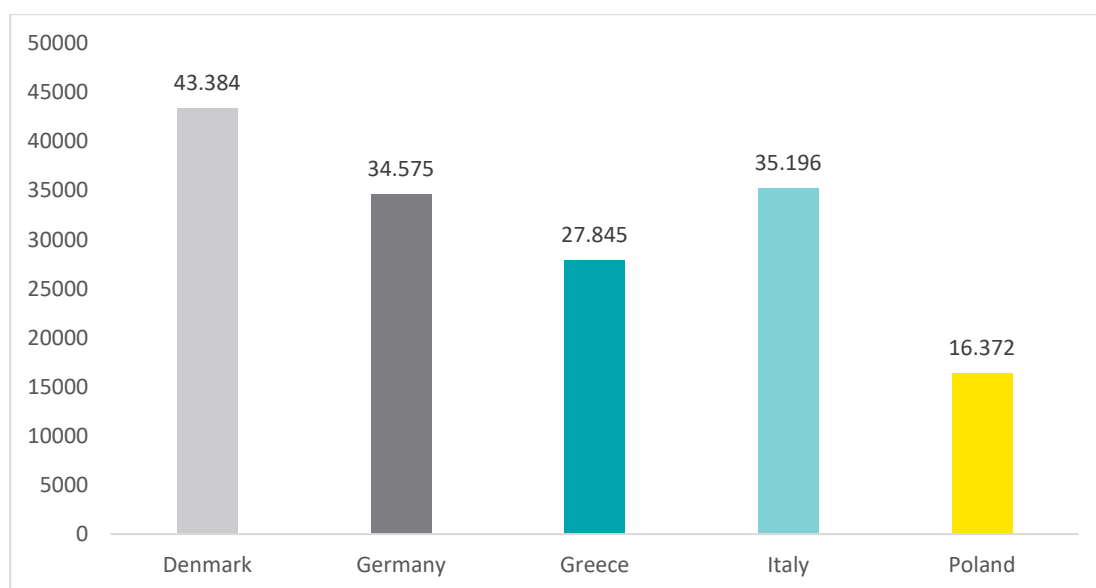
##### **OECD Data**

The OECD Database is publicly accessible and free to access. Here, we use the Gross Domestic Product (GDP) provided by the OECD, which is the standard measure of the value added created through the production of goods and services in a country during a certain period, see Figure 121. The GDP indicator that is applied in the meta-study is based on nominal GDP (also called GDP at current prices or GDP in value) and is measured in USD per capita (current PPPs). Moreover, the GDP is averaged over the years 2006 until 2017 to ensure a representative measuring of economic health in the investigated MS.

All OECD countries compile their data according to the 2008 System of National Accounts (SNA).

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<sup>274</sup> Based on the Eurostat data, we also calculate the inflation volatility in the different MS for the meta-study. However, this information is not statistically significant in explaining the estimated pass-through rates and therefore not included in the regression.



Note: The depicted figure states the average GDP in USD per capita between 2006 and 2017.

Source: OECD.

Figure 121: Gross domestic product (GDP)

### ***Firm-level data***

#### **Amadeus data**

In this study, we use firm-level data from the Amadeus database to capture sector-specific characteristics in the meta-study. The Amadeus database is provided by Bureau van Dijk and contains ownership and accounting data for around 21 million companies across Europe. Specifically, the database contains company financial information in a standard format with a focus on private company information. That way, companies can be compared across borders.

Based on the Amadeus data for the period 2006 until 2015, we calculate the average labour productivity in the different sectors of EU MS to approximate economic output in the investigated sectors and countries. Labour productivity is calculated as the revenue per employee per year for each firm in each sector of each country. Then, we calculate the average labour productivity over the years 2006 to 2015.<sup>275</sup>

<sup>275</sup> We also calculate the average simple sector concentration as well as the average Herfindahl Index (HHI) based on employee numbers per year from each firm in each sector of each country. However, this information is not statistically significant in explaining the estimated pass-through rates and therefore not included in the regression.

## Literature study

For the meta-study, we collect literature on cost pass-through covering European countries. The focus in this study is on European countries since they have the largest basis of comparison to the EU MS of interest for this analysis, specifically Denmark, Germany, Greece, Italy and Poland. In total, we collect 32 studies, of which 25 contain information on cost pass-through rates. We then extract the available pass-through rates together with information on the country, the sector and cost characteristics of the cost pass-through to compile a meta-study. Cost characteristics include the direction and the size of the cost change, as well as information on whether the affected costs are direct or indirect costs. Moreover, we collect information on the level of the value chain where the pass-through occurred.

Sector	Number of studies	Number of studies covering MS of interest	Number of cost pass-through rates	Number of pass-through rates from MS of interest	Number of MS (all)
Retail	13	5	74	31	16
- of which food retail	(11)	(4)	(57)	(27)	(7)
Electricity	5	3	20	11	4
Wholesale trade	2	2	42	10	18
Materials (cement, glass, etc.)	2	1	13	6	7
Refining	1	1	12	6	6
Financial leasing	1	1	4	4	1
Automotive	1	-	1	-	1
<b>Total</b>	<b>25</b>	<b>13</b>	<b>166</b>	<b>68</b>	<b>-</b>

Note: Sectors are defined according to Nace Rev. 2 – Statistical classification of economic activities in the European Community. The sector division in the Amadeus data is also done according to Nace Rev. 2. The studies often include multiple pass-through estimates for different products, sectors and/or countries. The MS of interest are Denmark, Germany, Greece, Italy and Poland.

Source: Copenhagen Economics based on meta-study.

Table 101: Collected pass-through rates in meta-study from the five MS of interest

## **Compiling database**

In the next step, we compile the data set for the meta-study.

## **Available data**

First, we collect the available data points. These are obtained from the literature study, the ECB data, the OECD data and the Amadeus data. Specifically, we include the following data points from each data source.

### **Literature study**

- Pass-through rates from the literature
- Country of pass-through
- Sector of pass-through
- Cost increase or cost decrease
- Direct or indirect cost
- Firm-specific or industry-wide cost change
- Level of value chain of pass-through

### **ECB**

- Average volume of card-based transactions per MS (2011-2017)
- Average value of card-based transactions per MS (2011-2017)

### **OECD**

- Average GDP per capita per MS (2006-2017)

### **Amadeus**

- Average labour productivity per sector per MS (2006-2015)

The meta-study includes pass-through rates from several different sectors in different countries. The following table shows example sector and country combinations with their average pass-through rates of cost increases or cost decreases available from the literature:

Sector	DE	DK	EL	IT	PL
Fuel retail (cost increase)	1.03	1.03	0.99	0.93	-
Food retail (cost increase)	0.71	-	-	-	-
Food retail (cost decrease)	0.45	0.41	-	-	-
Electricity (cost increase)	0.56	-	-	-	-
Wholesale trade (cost increase)	0.55	0.72	-	0.50	0.78
Refining (cost increase)	0.90	-	1.00	0.90	1.00
Financial leasing (cost increase)	1.05	-	-	-	-

Note: The stated pass-through rates are averages from all pass-through rates from the specific sector-country combination in the literature. All rows show average pass-through rates of either cost increases or cost decreases for the specific sector-country combinations.

Source: Copenhagen Economics based on meta-study.

Table 102: Average pass-through rates of cost changes collected from the literature

However, only one of them is characterised by a relatively high share of card-based payments and therefore of interest to us in estimating the pass-through of IF savings, namely the retail sector. The main retail sector of interest is the food retail sector. Pass-through rates for this specific sector are available for Germany and Denmark. Moreover, pass-through rates for the automotive fuel retail sectors in Denmark, Germany, Greece and Italy are available. The only MS of interest for which there are no pass-through rates for the retail sector in the literature is Poland, see Table 103.

It is important to note that the available pass-through rates in the retail sector apply to cost increases and decreases of direct costs, whereas IF caps refer to a decrease of indirect costs. Hence, the literature does not provide any pass-through rates of indirect cost changes in retail.

Sector	DE	DK	EL	IT	PL
Food retail: <b>Direct cost increase</b>	✓	-	-	-	-
Food retail: <b>Direct cost decrease</b>	✓	✓	-	-	-
Other retail - Automotive fuel: <b>Direct cost increase</b>	✓	✓	✓	✓	-
Retail: <b>Indirect cost decrease</b>	-	-	-	-	-

Note: The food retail sector corresponds to the NACE (Nomenclature of Economic Activities) code 4711, which describes Retail sale in non-specialised stores with food, beverages or tobacco predominating. The automotive fuel retail sector corresponds to the NACE (Nomenclature of Economic Activities) code 4730, which describes Retail sale of automotive fuel in specialised stores.

Source: Copenhagen Economics based on meta-study.

Table 103: Available cost pass-through rates in the literature

### To be predicted data

After the compilation of the available data, the data set is manually expanded with the to be predicted data points. First, we identify the pass-through rates that are missing per sector and country of interest. Then, we build the to be predicted observations by including all the available information on sector- and country-specific characteristics as well as on the desired cost change characteristics without including accompanying pass-through rates, see Table 104 for an example.

Country	Sector	PTR	Cost decrease	Merchant to consumer	Avg. GDP p.c. (2006-2017)	Avg. volume card trx	Avg. value card trx	Avg. LP
Denmark	Retail	1.04	Yes	Yes	\$44,914	1,576 M	EUR 64,377 million	226.24
Germany	Retail	0.43	Yes	Yes	\$42,849	3,633 M	EUR 232,629 million	495.86
Denmark	Retail		No	Yes	\$44,914	1,576 M	EUR 64,377 million	226.24
Greece	Retail		Yes	Yes	\$27,858	181 M	EUR 9,986 million	165.55

Note: PTR stand for pass-through rate, trx stands for transactions and LP stands for labour productivity. The white rows are the available observations. The grey rows are the to be predicted observations.

Source: Copenhagen Economics.

Table 104: Compiling of database for meta-study

## Regression model

### Regression method

We estimate the merchant pass-through by conducting a meta-study based on the above described data set. As mentioned above, the cost pass-through rate is estimated as a linear function of a set of explanatory variables including cost change, sector- and country-specific characteristics. The model setup for estimating the pass-through rates of cost changes from merchants to consumers is based on an OLS regression method, which minimises the sum of squared residuals.

Here, the pass-through rate is defined as:

*PTR = Pass-through rate in a specific sector of a specific country for a specific cost change*

The following model is estimated:

$$PTR = \beta_0 + \beta_1 v_1 + \beta_2 x_2 + \beta_3 z_3 + \varepsilon,$$

*PTR = Pass-through rate*

*v<sub>1</sub> = Cost change characteristics*

*x<sub>2</sub> = Sector-specific characteristics*

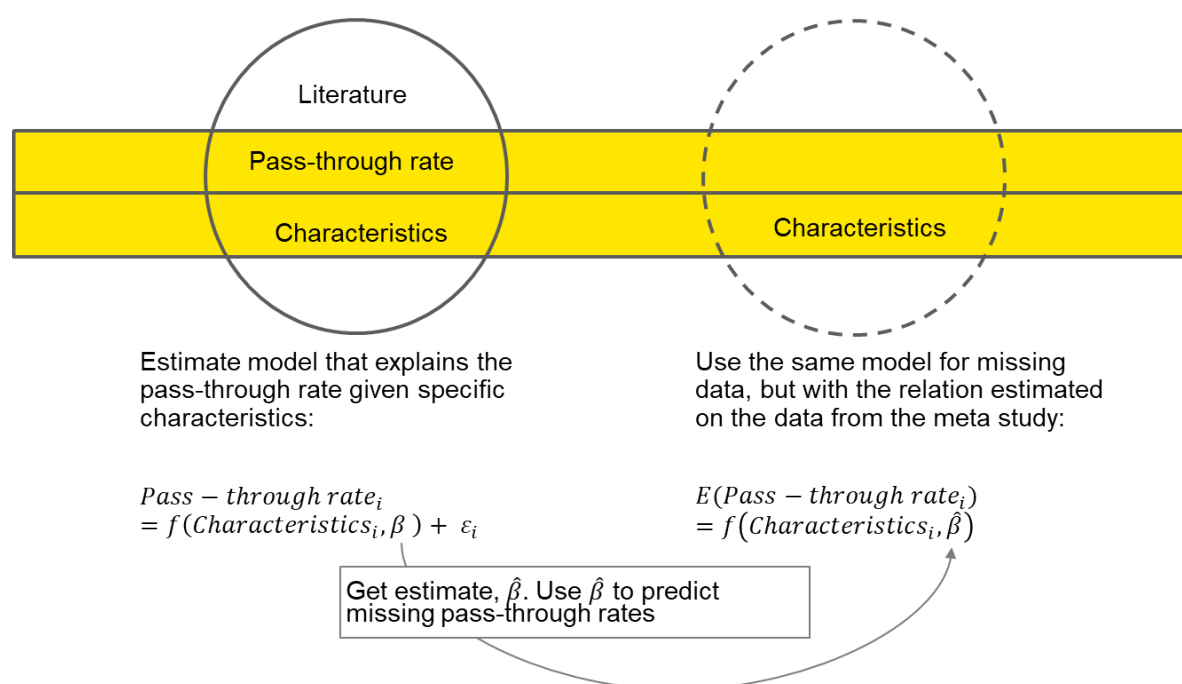
*z<sub>3</sub> = Country-specific characteristics*

*ε = Unexplained component of the pass-through rate (residual)*

The applied model is a reduced form estimation of how cost change characteristics as well as sector- and country-specific characteristics affect the pass-through rate of cost changes.

In the estimation approach, we first fit the model on the sample by regressing the available pass-through rates from the constructed data set on the explanatory variables (i.e., the cost change, sector-specific and country-specific characteristics), resulting in a so-called fitted model. The fitted model gives us the relation between the response variable (i.e., pass-through) and the explanatory variables. The estimated pass-through rates are then used to predict the pass-through rates for sectors and countries, where no information on pass-through rates is available, see Figure 122.

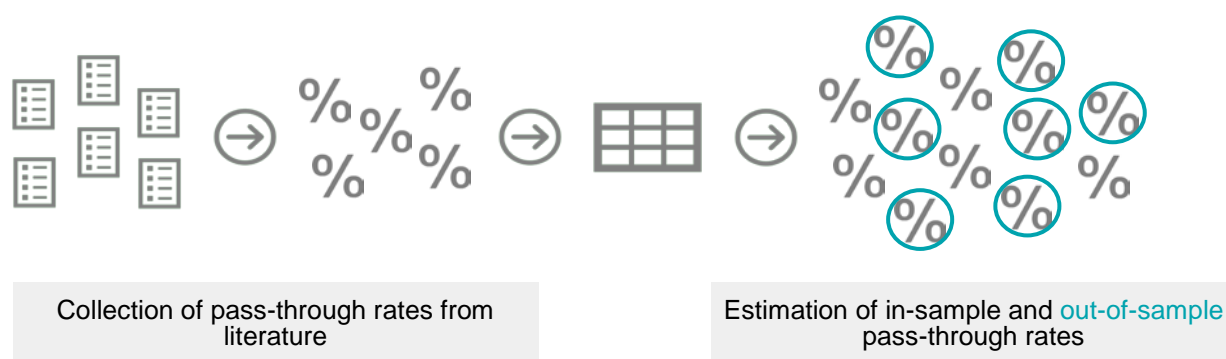




Source: Copenhagen Economics.

Figure 122: Model-based pass-through imputation

Specifically, the model predicts the in-sample pass-through estimates for the sector-country-cost change combinations where pass-through rates are available and out-of-sample pass-through estimates for the sector-country-cost change combinations with missing pass-through rates, see Figure 123. For instance, the meta data contains pass-through rates of cost increases in retail in Greece. However, it does not contain pass-through rates of cost decreases in retail in Greece. Hence, we first estimate a model that explains the pass-through of cost increases in Greek retail given the specific sector and country characteristics. Then, we can use the same model as well as the same sector and country characteristics to estimate the missing pass-through rate of cost decreases in Greek retail. In other words, we can use the variation in the explanatory variables of the model to predict missing pass-through rates for countries and sectors.



Source: Copenhagen Economics

Figure 123: Prediction of missing pass-through rates

## Explanatory variables

The regression model includes the following explanatory variables describing cost change as well as sector- and country-specific characteristics which might impact the cost pass-through rate from merchants to consumers:

Explanatory variable	Description
Cost decrease	Dummy variable that indicates whether the cost change is a cost decrease or not
Merchant to consumer	Dummy variable that indicates whether the cost pass-through occurs from merchant to consumer or not
Average GDP (2006-2017)	Average gross domestic product in USD per capita for each MS between 2006 and 2017
Average labour productivity (2006-2015)	Average revenue per employee per sector and country between 2006 and 2015
Average volume of card-based transactions (2011-2017)	Average volume of card-based transactions per MS between 2011 and 2017
Average value of card-based transactions (2011-2017)	Average value of card-based transactions per MS between 2011 and 2017

Source: Copenhagen Economics.

Table 105: Explanatory variables in the regression model

## Questions for merchant pass-through interviews

### Introduction

- Thank you for taking time to talk to us about pricing.
- Before starting, I would like to emphasize that we ask to understand, not to quote. Company names will not be disclosed
- I will also emphasize that we are interested in the general pricing behaviour of merchants, not in your company's specific behaviour. We are interested in your general sector insight.

### Our task

- Overall, we are interested in how changes in input cost for businesses like yours end up as changes in prices for your customers. How much and how fast!
- For example, when your suppliers increase their product price, when changes in exchange rates make your input costs less expensive, when your wage cost increases in your headquarter, or when banks lower the costs of using card payments.
- We already know from academic studies how changes in average costs end out as changes in prices for your customers. In this case, we are particular interested in how different types of cost changes may end out as changes in prices in different ways.

Topic	Questions
<b>Cost change questions</b>	<ul style="list-style-type: none"> <li>• Please describe how changes in costs typically make their way into changes in prices</li> <li>• How often do price changes occur?</li> <li>• Do price changes depend on the type and size of the cost change?</li> <li>• Do price changes occur uniformly across all goods and markets?</li> </ul>
<b>Card payment questions</b>	<ul style="list-style-type: none"> <li>• Would changes in costs of card payments (the Merchant Service Charge) be factored in as any other cost change? Is there any reason why it would be treated differently?</li> <li>• What would each of the below cost characteristics mean for their way into price changes? <ul style="list-style-type: none"> <li>◦ Product costs versus payment costs?</li> <li>◦ Small versus large cost changes? (relative to product sales price)</li> <li>◦ Cost reductions versus cost increases?</li> <li>◦ Costs on all sales versus some sales</li> <li>◦ Costs in some countries but not in all countries</li> </ul> </li> </ul>
<b>Optional Merchant Service Charge questions</b>	<ul style="list-style-type: none"> <li>• Do know if any specific policy of how you factor in Merchant Service Charge?</li> <li>• How to policies of factoring in Merchant Service Charge differ between countries and relate to the prevalence of card versus cash payments</li> <li>• Do you have any idea of how Merchant Service Charge actually was factored in following the IFR?</li> <li>• How did you factor in the subsequent changes in MSC after the IFR was implemented?</li> </ul>

Source: EY and Copenhagen Economics.

Table 106: Guide for interviews with merchants

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