

BEYOND THE POLICY DEBATE: HOW TO QUANTIFY SUSTAINABILITY BENEFITS IN COMPETITION CASES LESSONS LEARNED FROM ENVIRONMENTAL ECONOMICS

Adina Claiici and Jasper Lutz¹

Abstract

The competition community is currently busy discussing the role of competition policy in supporting the Green Deal and other EU sustainability objectives. In this paper, we look beyond the policy debate and focus on the application of economic methodologies in quantifying sustainability benefits potentially stemming from an agreement, a merger, or state aid. We zoom in on the current rules to identify the boundaries of what could be the basis for incorporating sustainability in such cases before presenting well-established tools and methodologies from environmental economics that can be used in the quantification of sustainability. As with any quantitative assessment, there is a trade-off between accuracy and cost, and the methodological choices should be based on the circumstances of each case.

1 INTRODUCTION

In 2019, the European Commission (EC) launched the Green Deal – its plan to make Europe the first climate-neutral continent.² The EC aim is threefold: reaching zero net emissions of greenhouse gases by 2050, decoupling economic growth from resource use, and ensuring equity in achieving these targets (i.e., “no person and no place is left behind”).

To sustain this goal, the European Commissioner for Competition, Margarethe Vestager, launched a debate in 2020 on how EU competition policy can best contribute to the Green Deal. Stakeholders were invited to share views on how competition rules regarding antitrust, mergers, and state aid control can support these goals, and nearly 200 contributors responded. On 4 February 2021, DG

¹ We would like to thank Cezar Miu for valuable research assistance. We are indebted to Torben Thorø Pedersen and Mindaugas Cerpickis for valuable comments.

² EC, ‘A European Green Deal’ (2019) <https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en>. All links accessed 27 May 2021.

Competition organised a conference to discuss the various points of view with participants from industry, academia, private practice, and public institutions. Although focused on the Green Deal, the discussion encompassed the broader concept of sustainability in the context of the competition policy.

Two opposing opinions have crystallised in the debate. Some argue that the current competition policy regime is sufficient to incentivise sustainability efforts. Customers demand sustainable products and services and drive companies to compete on this parameter of competition. Others claim that the current competition regime risks precluding rather than promoting sustainability objectives. They advocate for reform, in different shapes and degrees. It is now up to policy makers to decide which approach to take.

In this paper, we go further than the political debate on whether the enforcement bar should be lowered and the extent to which competition policy should be a central tool in achieving sustainability objectives. We add the application of economic methodologies in quantifying sustainability benefits for different stakeholders in society. This is important as, notwithstanding where the threshold is set, competition enforcement remains a balancing exercise between the potential anticompetitive effects and the benefits stemming from an agreement, merger, or state aid. The result of such balancing depends on the magnitude of the benefits for consumers, including possibly those achieved in the area of sustainability. The remainder of this paper is structured as follows: In Chapter 2, we briefly summarise the two prevailing views on how competition policy can best support sustainable development. In Chapter 3, we shed light on the current status for sustainability considerations in antitrust and merger control. In Chapter 4, which is the core of the paper, we offer suggestions as to how economic analysis can further support the integration of sustainability in competition policy. In Chapter 5, we conclude and summarise our recommendations.

2 TWO OPPOSING COMPETITION POLICY APPROACHES TO ADDRESS SUSTAINABILITY GOALS

Before discussing the economic methodologies to measure consumers' valuation of sustainability, we review the different opinions on the relevance of competition policy in contributing to sustainability objectives.

2.1 First approach: the current competition policy regime is sufficient to drive sustainable outcomes

Some academics, enforcers and practitioners have put forward arguments supporting the idea that competition policy in its current form can effectively contribute to the Green Deal objectives by focusing on its core function of protecting effective competition in each market and thereby promoting efficiency and innovation.

Maarten Pieter Schinkel, for example, holds the view that 'green antitrust policy' comes with risks.³ One risk is so-called 'greenwashing', when companies exaggerate sustainability claims through marketing actions, making their products be perceived as more environmentally friendly than they are. Competitors who are allowed to coordinate have an incentive to provide minimal sustainability benefits for maximum price increases.

³ Maarten Pieter Schinkel & Leonard Treuren, 'Green antitrust: Friendly fire in the fight against climate change' (2021) Conurrences <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3749147>

Luc Peepkorn finds at least three objections to revising competition law to boost sustainability agreements.⁴ Firstly, the broadening of consumer welfare would be difficult to reconcile with case law which already sustains consumer welfare as the goal of competition law. Secondly, economic theory predicts that it is optimal to have one goal for each policy instrument, and, contrary to that, using an instrument to achieve different goals leads to slow, costly, and unpredictable outcomes for that policy instrument. Thirdly, this approach would be overloaded by practical difficulties because it would require measuring externalities and weighing up effects across multiple areas.

In addition to the academic work described above, we observe industry actions that seem to show sustainability-related efforts resulting from effective competition. For instance, the Adidas company has started to use plastic waste collected from beaches as input material for its shoe production.⁵ UPS has launched initiatives to lower the CO₂ emissions of their global logistics network. By 2025, they aim to have a 12% reduction (using 2015 as a baseline) in absolute greenhouse gas emissions in their global ground operations.

2.2 Second approach: guidance for companies needs to be improved to support the achievement of sustainability goals

Other stakeholders believe the guidance for companies on how they can collaborate needs to be improved to support sustainability objectives better. Many, including Commissioner Vestager, have said that an effective way to achieve sustainability goals is for firms to collaborate.⁶ Examples of such collaborations are agreements to reduce car emissions, to increase the collection of plastic waste, or to produce sustainable production. While many of these initiatives have gone ahead or have been approved under the current regime, many cases (e.g. ‘Chicken of Tomorrow’⁷) have been rejected or are not being pursued by the industry because of fears of potential competition law risks. For this side of the table, the guidance for companies is seen as insufficient.

Out of the 26 public authorities that responded to DG Competition’s consultation, around half believe that the guidance on current competition policy could be better adapted to tackle sustainability issues. There is consensus among those authorities that the notion of consumer welfare should be broadened to include more sustainable values. The authorities agree that maintaining a level playing field on the markets, with equal conditions of competition for all participants, is necessary to promote continuous innovation of sustainable products. However, environmental benefits should be taken into consideration and possibly quantified using environmental economics tools. The Dutch competition authority (ACM) is farthest in its development of adjusted competition guidelines.⁸

Researchers, such as Ristaniemi and Wasastjerna (2020)⁹ claim that current competition legislation is based on a narrow economic concept of consumer welfare that fails to take non-monetary values

⁴ Luc Peepkorn, ‘Competition and sustainability: What can competition policy do?’ (2020) *Concurrences*

⁵ Sina Port, ‘The Adidas Sustainability Story – Leading the Change’ (2020) <<https://www.gameplan-a.com/2020/06/the-adidas-sustainability-story-leading-the-change/>>

⁶ Margrethe Vestager, Keynote speech at Conference on Competition Law and Sustainability: Sustainability and Competition Policy: Bridging two Worlds to Enable a Fairer Economy (2019) <<https://www.youtube.com/watch?v=7mpWAOhkObY>>

⁷ ACM, ‘Industry-wide arrangements for the so-called Chicken of Tomorrow restrict competition’ (2015) <<https://www.acm.nl/en/publications/publication/13761/Industry-wide-arrangements-for-the-so-called-Chicken-of-Tomorrow-restrict-competition>>

⁸ ACM, *Second draft version: Guidelines on Sustainability Agreements* (2021) <<https://www.acm.nl/en/publications/second-draft-version-guidelines-sustainability-agreements-opportunities-within-competition-law>>

⁹ Michael Ristaniemi & Maria Wasastjerna, ‘Sustainability and competition: Unlocking the potential’ (2020) *Concurrences*

into account. They propose a pluralistic approach, accommodating a broader spectrum of values that considers the environmental impact and the costs of climate change. The necessary legal tools in the form of constitutional and competition provisions already exist. Article 3 TFEU, which sets out the EU's objectives, states that "the Union shall work for the sustainable development of Europe."¹⁰ Similarly, Article 11 TFEU holds that "environmental protection requirements must be integrated into the definition and interpretation of the Union's policies and activities."¹¹

Simon Holmes (2020)¹² states that the current narrow approach to competition law can often be damaging from an environmental and sustainability perspective and is holding back vital initiatives to combat climate change. While the current treaties and competition provisions already consider sustainability, he says the focus should not be on changing the law itself, but on how economics and competition policy should be applied. In his proposal for action, he encourages more positive statements from competition authorities as to what can be done without infringing competition law, and guidance to help companies seeking collaboration on sustainability agreements.

3 THE STATUS QUO AND BEYOND¹³

Notwithstanding the different views as regards the guidance on competition policy, competition enforcement is the result of balancing potential anticompetitive effects stemming from the conclusion of certain agreements or mergers against the rationale for these transactions and the potential benefits to society that they might bring.

Whereas harm to competition from agreements and mergers follows a relatively standard assessment, measuring benefits has always been more challenging. Focusing on sustainability may add a layer to the challenge. In this section, we zoom in on the wording offered by the current versions of the guidelines that could cater for the sustainability benefits of agreements and mergers.

3.1 AGREEMENTS

As far as the current EU policy regarding the potential benefits of agreements is concerned, existing provisions based on Article 101(3) TFEU are already being used. Horizontal agreements must fulfil the following four cumulative conditions to be recognised as beneficial:¹⁴

1. Contribute to improving the production or distribution of goods or to promoting technical or economic progress,
2. Allow consumers a fair share of the resulting benefit,
3. Be indispensable to the attainment of the objectives, and
4. Not eliminate competition.

Furthermore, the Horizontal Agreements Guidelines discuss various types of agreements and provide concrete guidance for the assessment of the benefits stemming from those. For instance, paragraph 329 of the Guidelines provides an example of an agreement pursuing environmental standards that could fulfil the conditions of Article 101(3), where all producers of washing machines agree, with the encouragement of a public body, no longer to manufacture products that do not comply with certain environmental criteria.

¹⁰ Consolidated Version of the Treaty on European Union [2012] OJ C326/13

¹¹ Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C326/47

¹² Simon Holmes, 'Climate Change, Sustainability, and Competition Law' (2020) 8 *Journal of Antitrust Enforcement*

¹³ This chapter elaborates on mergers and agreements only. The topic of state aid is vast and will be addressed in a parallel paper.

¹⁴ These four conditions are further analysed in the Commission Guidelines on the application of Article 81(3) TFEU.

The Star Alliance agreement, investigated by the Commission in 2013,¹⁵ serves as an example of where environmental benefits could have been considered. It concerned the horizontal cooperation amongst various European and North American airlines. As a result of the elimination of overlaps, the agreement enabled a considerable fleet reduction. This might have led to significant CO₂ reductions, besides the economic efficiencies. Back then, the parties did not claim environmental benefits.

3.2 MERGERS

As in for the case of horizontal agreements, the current Horizontal Mergers Guidelines foresee an efficiency defence. To be accepted, efficiencies stemming from a merger need to fulfil the following conditions:

1. To be verifiable.
2. To benefit consumers in a timely manner
3. To be merger-specific, i.e. not possible to be obtained through any less restrictive means

Verifiability has been interpreted rather strictly by the EC so far. However, we believe that in the potential case of sustainability benefits, environmental economics tools can be extremely useful to quantify precisely and objectively these types of efficiencies, as will be shown in Chapter 4.2. That the benefits must target the affected consumers and accrue in a timely manner is also challenging when applied to sustainability and will be further discussed in Chapter 4.1.

One intuitive example of environmental benefits in mergers can be found in the logistics sector. In the UPS/TNT case in 2013,¹⁶ despite the final prohibition, the EC acknowledged a significant share of economic efficiencies. When combining two logistics networks, by eliminating overlaps in both ground and air fleets, there is significant scope for cost savings. At the same time, the reduction in the number of cars and planes that transport packages leads to a clear CO₂ emissions reduction. However, those environmental benefits were not claimed by the parties.

More recently, there have been some mergers where sustainability aspects were discussed, though mostly in the context of the theories of harm. Mergers that might hamper innovation or production bringing markets closer to the environment are carefully scrutinised. In this spirit, Commissioner Vestager stated the following, in the context of the recent acquisition of Metallo by Aurubis: “Copper is an important input needed for electric mobility and digitisation. A well-functioning circular economy in copper is important to ensure a sustainable usage of resources in the context of the European Green Deal.”¹⁷

4 HOW TO QUANTIFY SUSTAINABILITY BENEFITS IN COMPETITION CASES

The integration of sustainability considerations into competition case assessments, in practice, relies on our ability to quantify sustainability benefits compellingly. Luckily, established economic methods provide us with the tools and methodologies to measure and balance the costs and benefits of taking sustainability goals into account. As recognised by *inter alia* Tilburg University professor

¹⁵ EC Case AT.39595 Continental/United/Lufthansa/Air Canada [2013]

¹⁶ EC Case M.6570 UPS/TNT EXPRESS [2013]

¹⁷ EC Case M.9409 Aurubis/Metallo [2019]

Giorgio Monti in his contribution to the EC consultation¹⁸, economists can support the quantification of environmental sustainability benefits to consumers and society.

Sustainability describes the notion that today's needs should not compromise future generations' possibilities to meet their needs.¹⁹ The EU follows this concept and regards sustainable development as the way to create a better life quality for everyone, now and for the generations to come. The 2012 UN Resolution 66/288 describes sustainable development as the development towards "an economically, socially and environmentally sustainable future for our planet and for present and future generations."²⁰

We link the following methodologies to quantify sustainability primarily to environmental sustainability. However, many of these methodologies can apply to other forms of sustainability, i.e., social or economic sustainability.

In this chapter, we present factors that need to be considered when quantifying sustainability benefits in general (Chapter 4.1). Further, we present four types of methodologies to quantify sustainability benefits (Chapter 4.2).

4.1 Factors that need to be considered when quantifying sustainability benefits

Quantifying sustainability benefits comes with a range of factors that need to be considered. The Dutch ACM addresses several challenges when balancing harm from reduced competition against sustainability benefits. We identify the following factors that require careful consideration.

What is a consumer willing to pay?

To integrate sustainability benefits into competition assessment, the benefits must be quantified in monetary terms. The well-established solution to quantify benefits is to determine the consumers' willingness to pay for a certain benefit.²¹

The economic and business literature has developed various methods to determine a consumer's willingness to pay, ranging from simply asking consumers directly to more complex experimental setups to infer willingness to pay. These methods have proven to yield good estimates of consumers' willingness to pay. We present the most common methods in Chapter 4.2.

Determining a consumer's willingness to pay can be challenging. Firstly, an individual might not always exactly know their willingness to pay and their willingness to pay might not flawlessly reflect their true perception of the importance of a sustainability benefit.²² For example, the question "What would I be willing to pay for cleaner air?" is not one to which you can easily find the answer.

¹⁸ Monti highlights environmental impact assessments that provide an all-around picture of the impact of a certain product or service on the environment. A full environmental impact assessment would include the harms to the environment, which prevents cherry-picking the benefits. See Giorgio Monti, 'Response to: Competition Policy Supporting the Green Deal' (2020) <https://ec.europa.eu/competition/information/green_deal/index_en.html>

¹⁹ See e.g. United Nations, 'Our Common Future' (1987) <<http://www.un-documents.net/ocf-02.htm#1>>

²⁰ United Nations, Resolution adopted by the General Assembly on 27 July 2012, '66/288. The future we want' [2012]

²¹ See e.g. Debra Israel & Arik Levinson, 'Willingness to Pay for Environmental Quality: Testable Empirical Implications of the Growth and Environment Literature' (2004) 3(1) Contributions to Economic Analysis & Policy <https://faculty.georgetown.edu/aml6/pdfs&zips/BEJEAP_Israel_Levinson_2009.pdf>

²² See e.g. Koichiro Ito & Shuang Zhang, 'Willingness to pay for clean air: Evidence from air purifier markets in China' (2016) NBER Working Paper Series 22367

Secondly, individuals tend to view willingness to pay as private information and might be reluctant to share this information in abundance.

Willingness to pay, though, remains the first-best and most straightforward principle of valuation of sustainability benefits.

What is the appropriate welfare function?

Most environmental sustainability benefits are enjoyed by society rather than by a group of consumers in a specific market. When companies, for example, cooperate to enhance production standards that lead to cleaner air, the benefits of cleaner air are enjoyed by others besides the customers of the respective companies.

Paragraph 43 of the 81(3) Guidelines requires that “... efficiencies achieved on separate markets can be taken into account provided that the group of consumers affected by the restriction and benefiting from the efficiency gains are substantially the same.”²³ Similarly, Paragraph 79 of the Horizontal Mergers Guidelines states that: “Efficiencies should be substantial and timely, and should, in principle, benefit consumers in those relevant markets where it is otherwise likely that competition concerns would occur.” Hence, in-market efficiencies (those accrued to the consumers directly affected by an agreement or a merger) are the ones most likely to be accepted. However, the use of the phrase “in principle” in the above paragraph leaves room for possible out-of-market efficiencies, which, in the case of sustainability benefits, are the most significant.

Which time horizon do the benefits occur in?

Sustainability benefits often only become substantial in the long term: think, e.g., about the benefits from reduced air pollution on ecosystems.²⁴ These time spans typically exceed any time horizon considered in ordinary competition assessments. For instance, the usual timeframe of two to three years for merger efficiencies to be realised will considerably underestimate the magnitude of any sustainability benefits.

Moreover, the time horizon and the effects of sustainability benefits are to some extent uncertain.²⁵ If a production facility installs an enhanced filtering system, the effects of such a system on the local and global air quality and the time horizon for such effects to materialise are difficult to predict with standard modelling techniques. Technological advances, political and social opinions, and more general changes in the climate add to the uncertainty.

To combat the abovementioned uncertainty, environmental economics developed non-traditional modelling techniques which help internalise uncertainty. One simple non-traditional modelling ap-

²³ Communication from the Commission (EC) - Notice - Guidelines on the application of Article 81(3) of the Treaty [2004] OJ C101/08

²⁴ For example, it might take around 25 years before health benefits from reduced pollution exceed costs, see Dean E. Schraufnagel et al., ‘Health Benefits of Air Pollution Reduction’ (2019) ATI Focused Review <<https://www.atsjournal.org/doi/pdf/10.1513/AnnalsATS.201907-538CME>>

²⁵ Geoffrey Heal & Antony Millner, ‘Uncertainty and Decision Making in Climate Change Economics’ (2013) NBER Working Paper Series 18929

proach employs social discount rates for environmental impacts that in general lie below market interest rates.^{26 27} A lower discount rate entails that more ‘weight’ is placed on later periods, and hence, the long-term future and the sustainability effects occurring there are reflected adequately. The social discount rate could even be declining over time, indicating the increasing importance of future periods.²⁸

4.2 Four quantification methods to assess environmental sustainability benefits

Environmental and climate economics offer various tools and methodologies to assess environmental sustainability benefits. Although the focus in this chapter lies on environmental sustainability, many of these methodologies find application for other forms of sustainability as well.

The proposed methodologies can be divided into four groups, according to whether they generate new data or not, that we describe in more detail below:²⁹



We start by presenting those groups of methodologies that require the generation of new data, i.e., revealed and stated preferences. Next, we introduce the transfer of data from other, case-specific studies, before finally presenting methods that derive the valuation of sustainability benefits either from economic instruments, stated policy objectives, or other estimations.

Revealed preference methods with case-specific data

Revealed preference methods analyse observed market data to identify individuals' valuation of sustainability. Market data is gathered either directly from the good or service traded or via proxy data from surrogate markets. The valuation is then used to quantify benefits in the assessment of agreements or mergers. The most common revealed preference methods in environmental economics are the following:

²⁶ Stefano Giglio et al., ‘Climate change and long-run discount rates: Evidence from real estate’ (2015) NBER Working Paper Series 21767

²⁷ Oxera, ‘A formula for success: reviewing the social discount rate’ (2020) <<https://www.oxera.com/insights/agenda/articles/a-formula-for-success-reviewing-the-social-discount-rate/>>

²⁸ See LSE for an overview of social discount rates, e.g. LSE, ‘What are social discount rates?’ (2018) <[https://www.lse.ac.uk/granthaminstitute/explainers/what-are-social-discount-rates/#:~:text=Social%20discount%20rates%20\(SDRs\)%20are,climate%20change%20in%20the%20future](https://www.lse.ac.uk/granthaminstitute/explainers/what-are-social-discount-rates/#:~:text=Social%20discount%20rates%20(SDRs)%20are,climate%20change%20in%20the%20future)>

²⁹ See Roman Inderst et al., ‘Technical Report on Sustainability and Competition’ (2021) <<https://www.acm.nl/sites/default/files/documents/technical-report-sustainability-and-competition.pdf>>; Eva van der Zee, ‘Quantifying Benefits of Sustainability Agreements under Article 101 TFEU in terms of Human Well-Being’ (2020) ILE Working Paper Series No. 31; Julian Nowag, ‘Competition Law’s Sustainability Gap? Tools for an Examination and a Brief Overview’ (2019) Legal Research Paper Series 3/2019; Anna Gerbrandy, ‘Solving a Sustainability-Deficit in European Competition Law’ (2019) 40(4) World Competition

*First, Demand for sustainable products:*³⁰ Whenever an individual chooses a more sustainably produced good or service over its conventional substitute, the individual reveals their willingness to pay for sustainability. Imagine a customer who buys an organic apple and thereby disregards the offer of conventionally sourced apples. The price premium for the organic apple over the conventional apple marks the least willingness to pay for/their valuation of organic products.³¹

*Second, Travel cost method:*³² How much does someone spend to get to a recreational area? To answer this question, researchers count the number of visits of an individual to a specific recreational site and the cost for an individual to arrive at the site. Both parameters can be determined by a questionnaire. Multiplying the number of visits with the cost per visit yields a valuation of recreational areas.

*Third, Hedonic pricing:*³³ The hedonic pricing method determines an individual's willingness to pay for a non-marketed good by observing their willingness to pay for a related, marketed good. Both products need to be related such that the non-marketed good is implicitly traded via the marketed good. This method derives originally from housing market observations. Besides quantifiable characteristics such as its size, a price for a house reflects non-marketed values, such as local air quality and noise levels. Hedonic pricing models use statistical techniques to isolate the implicit prices of such non-marketed goods from observed, marketed goods.

*Fourth, Averting behaviour and defensive expenditure:*³⁴ Individuals show averting behaviour when buying goods or services to avoid environmental damage, so-called defensive expenditures.³⁵ The price for the marketed good or service reflects an individual's willingness to pay to avoid harm from environmental influence. Imagine a customer buying a sunshade to protect herself against exposure to increased sunshine. The price of the sunshade serves as a surrogate for the non-marketed value of avoidance of exposure to direct sunlight. Similarly, individuals' expenses for medication and medical treatment in response to health effects from environmental impacts indicate their willingness to pay to avoid such adverse health effects.

Stated preference methods with case-specific data

Stated preference methods elicit individuals' valuation of sustainability, most commonly of using surveys. In its basic form, a questionnaire sheds light on people's intended behaviour in constructed

³⁰ Martini & Tiezzi have e.g. analysed demand for clean air to conclude willingness-to-pay for this type of sustainability benefits. See Chiara Martini & Silvia Tiezzi, 'Is the environment a luxury? An empirical investigation using revealed preferences and household production' (2014) 37 *Resource and Energy Economics* 147

³¹ The full willingness to pay might be higher and not reflected in the price difference. Hence, observing market behaviour and using the lower bounds of willingness to pay yields a rather conservative estimation.

³² For a more detailed outline of the travel cost method, see Trudy A. Cameron, 'Combining Contingent Valuation and Travel Cost Data for the Valuation of Nonmarket Goods' (1992) 68(3) *Land Economics* 302

³³ For an example of a hedonic pricing approach to evaluate the impact of farming to maintain rural landscapes on local tourism, see Isabel Vanslebrouck et al., 'Impact of Agriculture on Rural Tourism: A Hedonic Pricing Approach' (2005) 56(1) *Journal of Agricultural Economics* 17

³⁴ For an example of defensive expenditure in Italy to reduce pollution, see Timothy J Bartik, 'Evaluating the benefits of non-marginal reductions in pollution using information on defensive expenditures' (1988) 15(1) *Journal of Environmental Economics and Management* 111

³⁵ For an overview over this and other revealed preference methods, see OECD, 'Cost-Benefit Analysis and the Environment', 'Chapter 3. Revealed preference methods' (2018) <<https://www.oecd-ilibrary.org/sites/9789264085169-6-en/index.html?itemId=/content/component/9789264085169-6-en>>

or hypothetical markets and thereby states their valuation of environmental and other sustainability benefits that adds to the assessment of benefits of an agreement or merger.

First, Contingent valuation method: As the most commonly applied and most direct stated preference method, the contingent valuation method asks participants in a survey to state their willingness to pay for a certain sustainability benefit (or the willingness to accept forgoing such a benefit). The otherwise non-marketed good or service is placed in a hypothetical market. The contingent valuation method can determine valuations for a wide range of non-marketed goods and services. Imagine a random sample of individuals is asked to state their willingness to pay for a green or electrified last-mile delivery compared to a conventional last-mile delivery. The participants' statements then form the valuation of green or electrified last-mile delivery.

Second, Choice modelling/conjoint analysis: Whereas contingent valuation methods are only able to quantify the change in valuation of one good or service, choice modelling can capture multi-dimensional changes in valuation. Different variations of choice modelling have been established:

- a. In discrete choice experiments, participants are asked to choose between options with different attributes.
- b. In contingent ranking, participants rank options with different attributes according to their valuation.
- c. In contingent rating, participants rate options with different attributes on a semantic or numeric scale.
- d. Combining discrete choice and contingent rating techniques, the paired comparison approach asks participants to rate options with different attributes and to make a choice for one option.

The famous Chicken of Tomorrow case³⁶ in the Netherlands serves as an example for the application of both, a contingent valuation method and a conjoint analysis in competition policy.³⁷ In 2015, the Dutch competition authority ACM decided that cooperation between suppliers and retailers to set industry-wide standards for chicken in supermarkets restricted competition disproportionately and was thus not in line with Article 101(3). The initiative aimed to increase animal welfare by setting a standard for chicken sold in supermarkets to be farmed for a lifetime of 45 rather than 40 days and with 19 rather than 21 chickens per square metre. The ACM conducted a survey with 1,600 consumers to ask for their valuation of increased chicken welfare. Consumers were asked to state their willingness to pay for increased welfare directly and could choose between options with different attributes of chicken welfare and price. The additional consumers' willingness to pay for better chicken welfare amounted to 0.82 EUR per kilo. As the additional costs indicated by the initiative were estimated at 1.56 EUR per kilo, and thus outweighed the benefits, the ACM found the initiative would not lead to net benefits for consumers and prohibited the standard.

Benefit transfer from related cases

The abovementioned valuation methods are well established and find wide application. However, besides other advantages and drawbacks, conducting these methods might quickly become time- and resource-consuming. As time and resources are scarce in many competition assessments, it

³⁶ Case ACM/DM/2014/206028 [2015]

³⁷ See e.g., ACM, 'ACM's analysis of the sustainability arrangements concerning the "Chicken of Tomorrow"' (2015) <https://www.acm.nl/sites/default/files/old_publication/publicaties/13789_analysis-chicken-of-tomorrow-acm-2015-01-26.pdf.pdf>

seems appropriate from a commercial position to consider adopting results from previous studies and transferring the values from their results.

With a benefit transfer, existing values for non-marketed goods and services are transferred from one study to another one. The existing values serve as a proxy for similar non-marketed goods and services in the assessment of the agreement or merger at hand.³⁸

The transferred values can be adjusted to the case-specific context. Sophisticated approaches determine the underlying function that leads to the values in the original study and adjust this function with the socioeconomic and physical parameters of the competition assessment at hand. For example, one half of an individual's willingness to pay for a good or service may be determined by their income, one quarter by their spare time, and the last quarter by the climate conditions:

$$\text{Willingness to pay} = 1/2 \text{ income} + 1/4 \text{ spare time} + 1/4 \text{ climate conditions}$$

To transfer the willingness to pay to a case at hand, the parameters 1/2 and 1/4 from the original study are transferred, and median income, spare time, and climate conditions are replaced by values that apply to the competition assessment at hand.

One hypothetical example could be of two packaging and delivery companies that aim to agree to implement new technology. This technology allows the companies to reduce the residual air in packages, which again reduces the package size. Smaller packages allow loading more packages on a delivery vehicle. Fewer delivery vehicles translate into lower CO₂ emissions. Environmental economics helps to quantify the value of such emission reductions. Incorporating this value of reduced emissions could influence the decision of whether to allow such an agreement. In this example, an existing study on the willingness to pay for environmental benefits from more efficient loading of vehicles for other industries, e.g. the wood processing industry, might allow conclusions to be drawn about the willingness to pay for emission savings of these delivery companies. For heavier industries, the payers for delivery services may have different characteristics than the payers for other delivery services, e.g. wood businesses; this needs to be accounted for.

Valuation derived from implemented economic instruments, stated policy objectives, and estimations

In many instances, especially in the early phases of the integration of sustainability benefits, it might be hard if not impossible to find related cases from which to derive sustainability valuation. For these cases, and specifically for those where a valuation of emission reduction is required, economists can fall back onto a two-step approach to quantify sustainability benefits:³⁹

Step 1: Quantify reduction in emissions from a certain agreement or merger. This step is somewhat technical, and environmental economists thus utilise research in areas such as physics or engineering. At the end of such an estimation of emission reduction, a number for the quantity of reduction in emissions is found, e.g., in tonnes.

³⁸ For a more detailed overview over benefit transfers in environmental evaluation, see Matthew A Wilson & John P Hoehn, 'Valuing environmental goods and services using benefit transfer: The state-of-the art and science' (2006) 60(2) Ecological Economics 335

³⁹ For an example of such analyses, see Copenhagen Economics, 'Multiple benefits of energy renovations of the Swedish building stock' (2016) <<https://www.copenhageneconomics.com/publications/publication/multiple-benefits-of-energy-renovations-of-the-swedish-building-stock>>

Step 2: Multiply the reduction in emissions identified in Step 1 by the price per additional unit of emissions that enters the atmosphere to determine the valuation of emission reduction, following a simplified formula:

$$\text{Valuation of emission reduction} = \text{Emission reduction} * \text{Price per unit of emissions}$$

The prices for non-marketed goods (such as emissions) are so-called “shadow prices”, as they are not defined by a market equilibrium, but stem from other sources. In the following, we present three types of data sources to derive shadow prices.

First, Valuation derived from implemented economic instruments: Many jurisdictions have implemented economic instruments to target increased sustainability. In Europe, CO₂ taxes and emission trading schemes have been established. For example, CO₂ emissions are levied in some Nordic countries on the combustion of fossil fuels,⁴⁰ and the European Emission Trading Scheme is the world’s most developed marketplace for carbon certificates that emitting companies need to acquire. Although fundamentally different in their functionality (price- vs. quantity-based), both establish a shadow price per unit of CO₂ emission. Forecasts of these prices can, under appropriate consideration of econometric tools, readily be applied to the valuation problem at hand.

Second, Valuation derived from stated policy objectives: Besides already-implemented economic instruments, valuation of sustainability can further be derived from stated policy objectives. Politicians agree on a certain policy objective, e.g. the reduction of emission levels by 40 per cent compared to 1990 levels. These policy objectives come with a certain price tag of implementation. Dividing the price tag by the required magnitude of emission reduction results in a price per unit of emission reduction. In the beforementioned example, a reduction of 40 per cent compared to 1990 levels translates into a reduction by 250 million tonnes CO₂.⁴¹ To reduce this level of emissions, investments of the magnitude of several billion Euros are required. Dividing this level of aggregated investments by the required absolute reduction in emissions yields a shadow price per unit of emission.

Third, Valuation derived from the estimation of the Social Cost of Carbon (SCC): Valuation techniques derived from implemented economic instruments or stated policy objectives establish carbon prices on a cost basis. What does it cost to implement “technology” to reduce one unit of emissions? Pricing of CO₂ can, however, be established from the opposite side, answering the question “What is the harm to society from another unit of pollution (e.g., emissions in the atmosphere)?” Harm in this context can be defined as the loss in socioeconomic welfare, measured either via health-economic consequences of pollution, individuals’ willingness to pay to avoid pollution or from other indicators.

In the above example of two delivery companies that would like to agree to implement a new packaging technology, a valuation from stated policy objectives, like the EU ETS, allows us to find the valuation of emission reduction of the reduced fleet of delivery vehicles. The new technology enables operators to use fewer delivery vehicles to deliver all parcels. The emission savings from fewer

⁴⁰ See e.g. the case of Sweden: Bengt Johansson, ‘Economic Instruments in Practice 1: Carbon Tax in Sweden’ (2000)

⁴¹ Illustrative figures, see e.g., CarbonBrief, ‘Analysis: Why the UK’s CO₂ emissions have fallen 38% since 1990’ (2019) <<https://www.carbonbrief.org/analysis-why-the-uks-co2-emissions-have-fallen-38-since-1990>>

vehicles can be calculated in a first step. In a second step, the value of these savings can be determined by applying the CO₂ price resulting from the EU ETS.

5 CONCLUSION

The Green Deal and other EU sustainability objectives have a high priority on the European policy-makers' agendas. On its end, the competition community is discussing how best to contribute to the Green Deal without endangering its primary purpose of protecting consumers. Various views have emerged as regards the suitability of the current competition policy regime to cater for sustainability objectives. We believe that, independent on where the enforcement bar is set, quantification of sustainability is a necessary step in the balancing exercise performed in any competition case assessment. The current rules on agreements and mergers already provide to a large extent for the possibility of considering sustainability benefits.

In this paper, we show concretely how sustainability objectives can be incorporated in the assessment of competition cases. We borrow well-established tools and methodologies from environmental economics that can be used to different degrees in such quantification of sustainability benefits. The most accurate methods for such exercises are based on gathering new, case-specific data regarding consumers' willingness to pay for sustainability advances. In addition, there are simpler methods which rely on existing information, e.g. benefit transfers from similar cases and sustainability quantification based on emission handbooks and the literature on the social cost of carbon. As in any quantitative assessment, there is a trade-off between accuracy and cost, and the choice of the methodology should be based on the circumstances of each case. The good news is that a plethora of methodologies exist.

Finally, with this paper, we seek to encourage the business community to start claiming sustainability benefits, should they be associated with agreements and mergers. It is feasible to quantify such benefits concretely and robustly. It is possible to present such evidence compellingly to the competition enforcers in line with the current competition policy framework. Competition authorities need numerous test cases of sustainability analyses before establishing a practice that could be confidently applied. A Court case could also add certainty to the application of the competition rules in the sustainability area.