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COMPETITION POLICY, SUSTAINABILITY, AND INCLUSIVE WEALTH

Eoin McLaughlin, Mirko Moro, and Frans P. de Vries

November 2025

Keywords: Wealth of Nations, Justice, Investment collusion, Antitrust, Sustainable Development

JEL: B21, D63, K21, L41, Q01

Competition Policy, Sustainability, and Inclusive Wealth*

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Abstract

The recent regulatory shift by competition and antitrust authorities—permitting limited industry collaboration on sustainability-related investments to better align markets with broader environmental and social objectives—signals a reconsideration of competition as a mechanism for advancing collective welfare. Drawing on Adam Smith's *Wealth of Nations* and *Theory of Moral Sentiments*, this paper traces this evolution from a historical perspective and situates it within the established literature on sustainable development—most notably the principles of intergenerational justice and inclusive wealth. Collectively, these insights provide a framework for understanding how competition policy can be employed to assess and evaluate trade-offs inherent in societies' broader welfare functions, including considerations of negative externalities and natural capital.

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1 Introduction

The objectives of competition and antitrust regulation have traditionally focused on promoting and maintaining efficient markets, preventing monopolies and abuse of market power, and safeguarding consumer welfare (Motta 2004). These regulations have primarily sought to ensure that firms compete fairly, warding off anti-competitive practices that could harm consumers by raising prices. At the same time, competition policy has been employed to create market conditions that incentivize firms to engage in research and development (R&D), with potential downstream benefits for consumers through innovation. However, there is an emerging discourse on whether competition and antitrust policy should go *beyond* merely promoting competitive markets and also aid other social objectives such as environmental sustainability (e.g., Nowag 2025).

In many senses Adam Smith can be seen as the intellectual forefather of both interpretations of modern competition policy. Smith saw competitive free markets favouring 'equality, liberty, and justice' and saw the provision of 'extraordinary privileges' to certain industries (such as the case under mercantilism) as a violation of this system (Kurz 2016). One of the most cited passages from the *The Wealth of Nations* refers to the dangers of collusion: '*People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices. It is impossible, indeed, to prevent such meetings, by any law which either could be executed, or would be consistent with liberty and justice.*' While the first part of this quote is widely known, the second is equally significant and somewhat echo the broader aspirations now being debated in competition discourse. How can competition policy be enforced in a manner that preserves both the efficiency of free markets and the principles of equitable justice?

The principle of modern competition policy is based on welfare theory which stresses that markets are competitive and lead to welfare gains for consumers. However, the trade-off between efficiency and equity are becoming more pertinent in competition policy discussions (e.g., OECD 2015; Stiglitz 2017; Ezrachi et al. 2023; OECD 2024), albeit with some strong defence of the traditional welfare standard approach (Ducci and Trebilock 2019; Vickers 2025). A key underpinning of the drive towards a more inclusive interpretation of competition law is a Rawlsian conceptualisation of justice (Pike 2021; Bietti 2025). Rawls saw his theory as a challenge to classical and utilitarian views of justice, such as those of Adam Smith. But this view has been challenged by Sen (2009), who argued that Smith's other masterpiece, *The Theory of Moral Sentiments*, is relevant to this debate. Smith was first and foremost a moral philosopher, a virtue ethicist, and therefore ethics underpins his approach. Reading Smith's work more broadly then can allow us to more fully appreciate the scope of his contributions (Salvadori and Signorino 2014). The question of relevance that this paper aims to reflect on is how justice (or fairness) can be thought of in the context of competition policy.

One domain where this is particularly pertinent is sustainable development, a concept

which has been defined in terms of intergenerational justice, understood as the requirement that present actions should not compromise the ability of future generations to achieve comparable levels of well-being (Rawls 1971; Solow 1974, 1986, 1993; Sen 2009).[1] Given the intensifying pressures on societies resulting from climate change, pollution, and environmental degradation (e.g., Pörtner et al. 2023; Rockström et al. 2023), competition and market authorities in jurisdictions such as the United Kingdom, Australia, Japan, Singapore, the Netherlands, and the broader European Union are increasingly re-examining competition frameworks with a view to facilitating sustainability-oriented industrial activity.[2] To accommodate this, a specific policy approach to restrain competition which has gained traction is that of (horizontal) sustainability agreements between firms (Schinkel and Treuren 2021). These cooperative agreements allow for explicit collaboration among competing firms, which would be permissible when they contribute to overarching public interests. In the realm of environmental sustainability, the objectives of such agreements could be to enhance firms and industries' ability to invest in products and/or processes that align with principles of corporate social responsibility (CSR) and/or more sustainable consumption and production (SCP) (Schinkel and Spiegel 2017; Schinkel et al. 2022; Schinkel and Treuren 2024).

In 2023, the EU introduced exemptions to Article 101(1) of the *Treaty on the Functioning of the European Union* (TFEU) to horizontal cooperation agreements. The European Commission (2023) guidelines state that: 'Horizontal cooperation agreements can lead to substantial economic benefits, including sustainability benefits, in particular where they combine complementary activities, skills or assets. Horizontal cooperation can be a means to share risk, save costs, increase investments, pool know-how, enhance product quality and variety, and launch innovation faster. Similarly, horizontal cooperation can be a means to address shortages and disruptions in supply chains or reduce dependencies on particular products, services and technologies.' At the same time, horizontal agreements could also lead to reduced competition (Veljanovski 2022). The analytical framework then is a case of assessing whether horizontal agreements lead to anticompetitive outcomes, and if the benefits of the agreements justify this outcome.

However, the main challenge with incorporating normative issues such as 'sustainability' (for what, for whom, and under what criterion) in competition policy is that it can be in conflict with traditional efficiency goals. Sustainable development is a normative concept, and while we can use a traditionally accepted definition, such as the 1987 Brundtland

[1] In the field of economics, sustainable development is commonly defined as a level of well-being that does not decline over time, which in the growth and resource economics literature is often operationalised as non-declining consumption paths across generations (Solow 1974, 1986, 1993). In a general intertemporal welfare framework, Arrow et al. (2003, 2004) show that this requires maintaining non-declining inclusive wealth, encompassing not only manufactured capital but also human, social, and natural capital. See Section 5 for a more detailed discussion of this framework.

[2] To the best of our knowledge, there has been little to no movement in North America toward explicitly incorporating sustainability goals into the scope of antitrust regulation. See Shapiro (2021) for a discussion on the fundamental mission of U.S. antitrust; Nowag (2025) offers a timely and comprehensive overview of how competition authorities worldwide approach sustainability, drawing on insights from economics, law, and enforcement across diverse jurisdictions and agencies.

Commission, it is still subject to debate. A standard criticism is the 'Friedman doctrine' where Friedman (1970) criticised nascent concepts of CSR for their *'analytical looseness and lack of rigor'*. Friedman (1962) was classically liberal in that his view was based on the competitive outcome of markets resulting in the socially optimum outcome: '*there is one and only one social responsibility of business — to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition, without deception or fraud.*' Friedman thus saw business interests preventing free competition through the use of the state (Smith 2025). In this sense, it was drawing on a 'narrow' reading of Adam Smith; narrow in the sense that it is a reading that sees the *Wealth of Nations* as independent of the *Theory of Moral Sentiments*. More recent scholarship has emphasised Smith's views based on a close reading of both of his masterpieces (e.g., Sen 2009, 2010; Kurz 2016).

These issues are directly relevant for competition policy today as illustrated by the case of horizontal block exemption regulations briefly mentioned above. These cooperative agreements allow firms to collude on sustainability initiatives in the pre-competition stage while continuing to compete in the final output market. The underlying idea here is to leverage competition policy such that sustainability benefits are generated for society at large while at the same ensuring that consumer surplus is protected. Fundamentally, this translates into a broadening of the social welfare function by not only considering consumer surplus but also other components, in particular environmental quality.

A case that illustrates the balancing of market competition and sustainability is the shrimp industry in the early 2000s. Here a horizontal agreement between shrimp wholesalers to limit the shrimp harvested to encourage sustainable fishing methods was denied by the Netherlands Competition Authority (NMa). The NMa argued that the agreement was not required to achieve this particular sustainability objective (NMa 2003). An example of a cooperative arrangement that was permitted to proceed is the European Commission's 1999 approval of an agreement among washing machine manufacturers to gradually phase out less energy-efficient models.[3] The Commission justified the exemption under Article 101(3) TFEU on the grounds that the environmental benefits, mainly reduced energy and water consumption, would directly benefit consumers and outweighed the potential loss of competition. Importantly, the agreement was found not to eliminate competition in other dimensions such as price or performance. This approval was later extended to similar agreements involving dishwashers and water heaters (European Commission 1999, 2001).

In another case, the Dutch Authority for Consumers and Markets (ACM) evaluated the environmental benefits in comparison to consumer surplus for a proposed agreement on closing old coal power plants to fasten the energy transition. Based on their analysis, the ACM decided against the proposal, arguing that the expected loss in consumer surplus (i.e., higher energy prices as a result of reduced energy capacity) would not be sufficiently

[3]The implementation was entrusted to the "Conseil Européen de la Construction d'Appareils Domestiques" (CECED), a Brussels-based association representing home appliance manufacturers and national trade associations. See https://eur-lex.europa.eu/eli/dec/2000/475/oj/eng (accessed 19 September 2025).

compensated for by the improvement of environmental quality (i.e., reduced pollution)– see ACM(2013). From a social welfare maximization perspective, utilising competition policy to serve multiple welfare components simultaneously—here consumer surplus versus environmental quality—is a challenging regulatory balancing act. This is amplified by the fact that environmental quality is a non-market good for which generally no market prices exist. One way to overcome this problem is by using shadow prices. Kloosterhuis and Mulder (2015) is one of the few studies that demonstrates, for the above case study, how this can be done, thereby explicitly recognizing the inclusion of environmental benefits in the economic welfare function.[4]

Regardless, the above examples highlight how arbitrarily applying a 'sustainability criterion' on an ad hoc basis can lead to some inconsistencies. What is needed is a clearer consistent theoretical approach that can be used systematically in a case-by-case basis and thereby providing a more solid foundation for policy objectives. The current EU assessment guidance for 101(1) exemption, while detailed, lacks a consistent theoretical framing. The European Commission (2023) is aware that, given the range of likely cooperative agreements, it would not be possible to provide specific guidance that satisfies each agreement, leading to uncertainty for firms engaging in cooperative behaviour. Therefore, a consistent theoretical framing can assist in this endeavour.

Building on these case studies, our paper draws on the economic theory of sustainable development (Dasgupta 2001; Dasgupta 2014; Hanley et al. 2015; Polasky et al. 2015), and in particular on the work of Arrow, Dasgupta and Mäler (ADM, henceforth), to examine how wider benefits can be coherently integrated into competition policy (see, e.g., Dasgupta and Mäler, 2000; Arrow et al. 2003; Arrow et al. 2004). Sustainable development is defined as non-declining well-being over time, and ADM show that this requires maintaining non-declining inclusive wealth, where inclusive wealth encompasses not only manufactured capital but also human, social, and natural capital. This perspective highlights that welfare should be viewed dynamically and inclusively, considering total and future welfare rather than only static consumer surplus (Motta 2004). Importantly, we do not suggest that competition authorities should apply the ADM criterion as a decision rule. Instead, we use it as a theoretical reference point to clarify the conditions under which wider public benefits could be coherently considered within existing assessment frameworks.

This approach ensures that economic progress does not compromise these forms of capital, securing broader well-being for future generations. If the goal of competition policy is broadened to incorporate a sustainability criterion then we argue that following such an approach *could* also take an inclusive wealth approach. This automatically brings us back to Adam Smith's *Wealth of Nation*s (1776) as well as his *Theory of Moral Sentiments* (1759).[5] We shall explore whether competition and antitrust policy can be an effective

[4]See Schinkel and Spiegel (2017, pp. 372-374) for a succinct overview of illustrative and informative cases; Vickers (2025) provides an overview of the traditional approach.

[5]There were five editions of *The Wealth of Nations*, the last edition was published in 1789. There were 6 editions of *The Theory of Moral Sentiments* with the last edition published in 1790 just before Smith died; the final edition underwent significant revision (Matson 2020).

regulatory tool for advancing inclusive wealth. By linking Smith's classical economic theories with contemporary challenges in industrial organization and sustainable development, our paper seeks to explore the potential for competition and antitrust policy to contribute to a more inclusive form of wealth creation.

In doing so we follow Sen (2010) in proposing that Adam Smith's insights can shed light on the use competition policy for sustainability. This was also the view of Boulding (1971) (one of the key thinkers in the emergence of modern sustainability science) who argued that it was possible to return to Smith and find new insights that may have been missed on first reading. A key distinction though is that we see Smith as a 'two-book man', and observe that many lines of departure proposed by Smith have not been fully explored. We examine one such line of inquiry, the role of ethics in competition policy, an issue that lies at the heart of Smith's work as both a virtue ethicist and economist. Drawing on the full corpus of Smithian thought, we show how an 'inclusive' competition policy could potentially be compatible with the views of modern competition policy and illustrate how this approach can be seen through the conceptualisation of 'inclusive wealth of nations' (McLaughlin 2026).

In what follows, we first discuss the ideas of competition and free trade as presented in *The Wealth of Nations*, and then extend the discussion to the concept of justice as presented both in *The Wealth of Nations* and *The Theory of Moral Sentiments*. We subsequently introduce the theory of inclusive wealth, which is based on intergenerational welfare, and conclude with some thoughts relating back to modern day issues in competition policy.

2 Competition, Free Markets, and the *Wealth of Nations*

The *Wealth of Nations* is considered a classic in academic and financial circuits, but as Barber (1967) wryly surmised, it 'has suffered the fate accorded to most classics: it is more talked about than read.' A similar point was made by Sen (2010) that there is a greater tendency to quote Smith than to actually read his arguments. The *Wealth of Nations* is a book of books (5 in total) that makes several complex arguments. While the central focus of Smith is on division of labour, capital accumulation and the importance of free markets, there is more to the arguments. In fact, book 5 lays out the limits of markets (Sen 2016) and, as a consequence, the importance of regulation (Salvadori and Signorino 2014; Kurz 2016).

The division of labour and specialisation is core to Smith's theory and is central to Book I.[6] The division of labour requires free and competitive markets for people to specialise in particular occupations. This is best illustrated using the iconic butcher, brewer, and baker passage:

> 'It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address

[6] Although here he drew on the ideas of the moral philosopher Francis Hutcheson, his predecessor at the University of Glasgow.

> ourselves, not to their humanity, but to their self-love, and never talk to them of our own necessities, but of their advantages.' (WON, I, ii).

Note here the example is of different trades operating in their own self-interest. When people of the same trade met, Smith saw this as a 'conspiracy against the public,' typically manifesting in higher prices (and thus reduced welfare) for the public (WON, I, x). Smith also raised the prospect of how conspiracies across industries could reduce the welfare of society; for example, through the collusion of employers against labour (WON, I, viii).

Smith disliked market distortions more generally, particularly import restrictions, which he believed led to the creation of domestic monopolies and reduced competition. These monopolies while beneficial to some interest groups, did not benefit the nation as a whole. The biggest issue that Smith had was that government intervention could distort markets and create incentives, and that it was uncertain whether the 'artificial direction is likely to be more advantageous to the society than that into which it would have gone of its own accord'. Without government interference Smith saw capital (investment) being allocated according to where the owners of capital saw best fit,'led by an invisible hand to promote an end which was no part of his intention' (WON, IV, ii). Ironically, the 'invisible hand' that Smith is now equated with was only mentioned once in *The Wealth of Nations*, although so much has been built around this powerful image. But given the possibility of collusion both within and across industries it was sometimes necessary to regulate competition in some way.

What is seldom mentioned is that the metaphor of 'an invisible hand' first graced the pages of *The Theory of Moral Sentiments*, yet modern economics has largely distanced itself from this original context.[7] Smith first invoked the metaphor of an 'invisible hand' as the mechanism that 'advance the interest of the society'. Smith saw this as a way that society had ordered itself through the actions of the poor to emulate the rich as this had led to the drive towards progress and industry, so that even selfish pursuits unintentionally benefit society and promote collective well-being through 'an invisible hand' (Smith 1776, TMS, Part iv, Chapter i).

In sum, it was 'an invisible hand' that Smith envisaged was what drove economic growth but note, in both the *The Theory of Moral Sentiments* and *The Wealth of Nations* Smith refers to 'an' and not 'the' invisible hand.[8]

[7]Smith first used the term in an essay written in 1755, 'The Principles which lead and direct Philosophical Inquiries; illustrated by the History of Astronomy', that was later published posthumously (Stewart 1799). The work, believed to have been written in 1755, refers to 'the invisible hand of Jupiter' when discussing the origins of polytheism. Smith's meaning of 'invisible hand' has been debated and is interpreted as 'ironic' in all three uses by Rothschild (1994), but the usage is seen as distinct by Grampp (2000).

[8]The adoption of a *definite* instead of an *indefinite* article to represent the concept of an invisible hand changes the connotation of the idea. With the definitive article 'the invisible hand' as the canonical phrase symbolises the self-regulating nature of markets or systems, whereas the indefinite article 'an invisible hand' suggests less certainty in the self-regulating nature of markets, and that the self-regulated market outcome is not realised in all cases. This is an important distinction when it comes to competition policy: the former implies market outcomes are 'optimal' and minimal interference is necessary, while the latter suggests an element of regulatory oversight may be required. The use of 'an' continued in Edwin Cannan's 1904 compilation of the fifth edition of *The Wealth of Nations*, where Cannan highlighted the various

3 Smithian Justice

An earlier generation of economists saw Smith's two great works as unrelated (Bonar 1926; Barber 1967), however a shift in appreciation came around the bicentenary of the publication of *The Wealth of Nations*; for example, Hutchinson (1976) placing emphasis on the intellectual journey of Smith as a moral philosopher, with *The Theory of Moral Sentiments* a key part of Smith's identity. Something that resonates with modern scholars (Mochrie 2024).

Adam Smith himself also viewed his work as interrelated. In the preface of the sixth (and final) edition of *The Theory of Moral Sentiments* he reflected on how he had promised to write on the principles of law and government and the 'different revolutions' that society had undergone in terms of justice and 'what concerns police, revenue and arms, and whatever else is the object of the law' (Smith 1790).[9] Smith said he had 'partially executed his promise' in *The Wealth of Nations* and had hoped to continue it, but he was already at an advanced age at that point. Later scholars of justice also saw a clear connection between both of Smiths works (Rawls 1971; Sen 2009).

Underpinning *The Wealth of Nations* was a framework of justice, without which society would collapse (Backhouse 2002). One of the most famous quotations from the *Wealth of Nations* relates to 'natural liberty', but what is equally important is the adherence to the 'laws of justice':

> 'All systems, either of preference or of restraint, therefore, being thus completely taken away, the obvious and simple system of natural liberty establishes itself of its own accord. Every man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interest his own way, and to bring both his industry and capital into competition with those of any other man, or order of men.' (WON, IV, c ix).

Justice was seen as one of the essential roles of the state in Book V of the *Wealth of Nations*, the other roles being national defence and the provision of public goods and institutions. Notably, as Sen (2016) highlights, these are the roles that are not performed by the free market. These roles Smith argues are for the 'general benefit of the whole society'. Sen (2016) describes Adam Smith's view of development as 'market-inclusive' because Smith recognized a role for the state, particularly in providing education.

changes that occurred in the editions 1 to 5 (most edits had been minor 'such as 'is' for 'it,' 'that' for 'than,' 'becase' for 'because"). Thus, the choice of 'an' and not 'the' in both works written close to two decades apart was a purposeful decision by Smith.

[9]The significance of this connection is best illustrated using a passage from Stewart (1799): 'The additions to *The Theory of Moral Sentiments*, most of which were composed under severe disease, had fortunately been sent to the press in the beginning of the preceding winter; and the author lived to see the publication of the work. The moral and serious strain that prevails through these additions, when connected with the circumstances of his declining health, adds a peculiar charm to this pathetic eloquence, and communicates a new interest, if possible, to those sublime truths, which, in the academical retirement of his youth, awakened the first ardors of his genius, and on which the last efforts of his mind reposed.'

What Smith implied by justice is clearly laid out in the *Theory of Moral Sentiments*. Justice is central to Smithian thought as it 'is the main pillar that upholds the whole edifice [of society]. If it is removed, the great, the immense fabric of human society, that fabric which to raise and support seems in this world, if I may say so, to have the peculiar and darling care of Nature, must in a moment crumble to atoms' (TMS, Part II, Section II, Chapter 3). Justice was of great importance to society and injustice could potential destabilise and 'destroy society' (TMS, Part II, Section III, Chapter 3). Negligence, stemming from an absence of care regarding all possible outcomes of an individual's action, were a key concern. For example, 'a person [who] happens to occasion some damage to another, he is often by the law obliged to compensated it... [As] nothing, we think, can be more just than that one man should not suffer by the carelessness of another; and that the damage occasioned by blamable negligence should be made up by the person who was guilty of it.' (TMS, Part II, section III, Chapter 3; Part II, Section III, Chapter 2). This is reminiscent of what we think of today as a negative externality, a public cost arising from a private gain.

This line of thinking was continued in *The Wealth of Nations*. As highlighted by Ogilvie (2025), Smith also alludes to externalities: 'when those exertions of natural liberty of a few individuals, might endanger the security of the whole society, are, and ought to be, restrained by the laws of all governments' (WON, II ii). That is, negative externalities were an example of costs arising from market based activities. In *Wealth of Nations*, the context of the discussion was in relation to the issue of bank notes by private-banks but Smith also thought it was analogous to the 'building party walls' to prevent the spread of fire. In another example, Smith used the example of controls on infectious disease through a restriction of natural liberty (by quarantining individuals or restrictions on markets), 'though, perhaps, no other public good might result from such attention, besides the prevention of a public evil' (WON, I, i part III). Thus, it was clear that private benefit should not come at the expense of the social good. Smith outlined a framework for judging one's actions based on the perception of an 'impartial spectator' and that to 'disturb the happiness' of others because it stands it the way of our own would be intolerable to the impartial spectator (TMS, Part II, Section I, Chapter 1).

4 Intergenerational Justice

Smithian ideas of justice were challenged by Rawls (1971) who explicitly sought to distinguish his approach from the utilitarian tradition that had come before him; grouping Smith with utilitarians such as Bentham and Mill. While Smith places weight on utility, this was not the primary basis for action and, in this sense, Smith is closer in thinking to earlier classical thinkers (Gill 1976). Or, as McCloskey (2008) argues, Smith was a virtue ethicist. Moreover, Smith's work on moral theory has tended to be analysed in isolation from his canonical text on political economy, but together they help inform the other and helps to reconcile Smithian and Rawlsian theories of justice (Cowen 2021).

One important aspect of Rawls work was an idea of intergenerational justice and a 'just savings principle' whereby each generation makes a contribution towards future generations and subsequent generations receive a bequest from their predecessors:

> 'Each generation must not only preserve the gains of culture and civilization, and maintain intact those just institutions that have been established, but it must also put aside in each period of time a suitable amount of real capital accumulation. This saving may take various forms from net investment in machinery and other means of production to investment in learning and education.' (Rawls 1971 (p.285), 1999 (p.252)).

There are no guidelines for how this intergenerational accumulation and distribution of real wealth should be allocated, but Rawls does provide some ethical constraints. Rawls contrasts a utilitarian view with his own view of contracts. In the utilitarian view, future generations may have higher wellbeing if capital accumulation and technological improvements lead to improved conditions in the future (and an ability to support a larger population). Therefore, higher savings in the poorer generations could disadvantaged them. Rawls then compares the utilitarian approach to the contract approach, or the 'veil of ignorance', where people do not know what generation they belong too. In that context it is better to develop a consistent savings rule as every generation, apart from the first, would gain if a 'reasonable rate of saving is maintained' (Rawls 1971, 1999).

The Rawls interpretation of justice is very similar to the Brundtland Commission definition of sustainable development:

> 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' (WCED 1987)

The Rawlsian approach to intergenerational justice has also influenced how economists have approached the issue. Both Arrow (1973) and Solow (1974) explicitly draw on a Rawlsian approach to analyse intergenerational allocation of resources. Arrow focuses primarily on capital as conventionally defined whereas Solow expanded the definition of capital and also includes finite natural resources. Solow also operationalised the Rawlsian approach as maintaining constant consumption per capita across generations. Following Solow, the economist John Hartwick (1977, p.973) showed how intergenerational equity could be achieved by a savings/investment rule whereby, 'invest all net returns from exhaustible resources in reproducible capital'.[10]

Sen (2009) notes that Adam Smith recognised 'several different meanings' of justice (TMS, Part IV, Section II, Chapter 1), signalling an early awareness of its plural and context-dependent nature. Drawing on Indian traditions of jurisprudence, Sen develops this idea through the distinction between *niti*, the rules and procedures that define organisational propriety and behavioural correctness, and *nyaya*, which concerns realised or

[10]This is what Solow (1986) later referred to as the 'Hartwick Rule'.

substantive justice. To illustrate the gap between the two, Sen cites the declaration attributed to the Holy Roman Emperor Ferdinand I, 'Fiat justitia, et pereat mundus [Let justice be done, though the world perish]'. This represents an extreme commitment to *niti* at the expense of *nyaya*, the actual flourishing of justice in human lives. In extending this framework, Sen suggests that Rawlsian justice operates primarily within the domain of *niti*, focused on the design of just institutions and procedures. By contrast, Smith and other Enlightenment thinkers embody a more *nyaya*-oriented approach, concerned with the lived outcomes and social realisation of justice. For Sen, this shift from *niti* to *nyaya* reflects his broader project: to move beyond ideal theory toward a more comparative and capability-oriented understanding of justice as it is experienced in the world.

In discussing sustainability, Sen acknowledges Solow's contribution, commending his role in integrating the idea of sustainable development into economics. Sen believed that Solow had effectively adapted the Brundtland Commission's conception of sustainability, or, more precisely, Rawlsian ideas of justice, to economic theory. Yet, the deeper intellectual influence lay in Rawls's *A Theory of Justice* (1971), and Solow's key writings (1974, 1986) actually predated the Brundtland Report. At its core, therefore, the economic interpretation of sustainable development derives from applied Rawlsian principles. Still, Sen extends this framework by proposing a broader definition: sustainable development should mean ensuring that the capabilities of future generations are not compromised. This brings us back to the notion of 'just savings,' since maintaining capital in a broad sense is what enables future generations to expand their capabilities. Sen's inclusive, capability-based approach thus represents a synthesis of Smithian and Rawlsian ideas of justice.

The connection to *The Wealth of Nations* lies in the broader ethical and social framework that underpins Smith's thinking on competition. Concepts such as justice, as articulated by Smith, and 'just saving', as articulated by Rawls, imply responsibility to account for the wider societal impacts of economic actions. Externalities should be taken into consideration in the present ('Nothing, we think, can be more just than that one man should not suffer by the carelessness of another') but combined with the intergenerational perspectives drawn from thinkers like Rawls, Solow, and Sen, this view suggests that competition policy should not only maximize current welfare but also safeguard the welfare of present and future generations. In this sense, traditional competition policy, typically focused on present-day efficiency and consumer welfare, is extended to include long-term, intergenerational justice. Therefore, alongside considering present generations, competition policy should also ensure that equity for a 'just' outcome for future generations is included in assessing cooperative agreements. In this sense there need not be an incompatibility between a focus on the present or future generations if the criterion is to ensure a just outcome.

This section has shown that recent calls to broaden the remit of competition authorities towards societal and economic reform are rooted in a long-standing tradition of moral and economic thought developed by some of the discipline's leading thinkers. In essence, they reflect an evolving understanding of intertemporal justice and welfare. Yet for competition policy to move in this direction, normative claims alone are not sufficient. It requires a

robust theoretical foundation capable of providing operational guidance. Recent work has taken steps toward formalising sustainability as a policy criterion. To these contributions we turn next.

5 The Sustainability Criterion and Cooperative Investment Agreements

5.1 Macroeconomic Foundation of Sustainability

To evaluate whether an investment is sustainable, or rather if a 'just saving' criterion is achieved, we draw on the theoretical framework developed by ADM (Arrow et al. 1995; Dasgupta and Mäler 2000; Dasgupta 2001; Arrow et al. 2003; Arrow et al. 2004), which has been applied by others, including Hamilton and practitioners at the World Bank (Hamilton 2000, 2002; Hamilton and Clemens 1999). These works are, in turn, based on the aforementioned Rawlsian (1971) view of 'just saving' as operationalised by Arrow and Solow (Hanley et al. 2015).

Welfare is central to the ADM framework. The 'just saving' criterion requires that welfare of society be maintained over time. It rests on the widely accepted principle that current decisions should not compromise the well-being of future generations. The framework provides a theoretically grounded basis for assessing sustainability (Polasky et al. 2015) and is embedded in the above-cited definition of sustainable development put forward by the Brundtland Commission (WCED, 1987) as well as the inclusive capabilities definition proposed by Sen (2009).

As a point of departure, the framework encompasses an economy-wide intertemporal welfare function

$$V_t = \int_t^{\infty} U(C_\tau)\, e^{-\delta(\tau - t)} d\tau, \tag{1}$$

where V_t is the intertemporal social welfare at time t, which captures the present value of the stream of utility $U(\cdot)$ derived from *inclusive* consumption, C_τ, of the entire society at each future time $\tau \geq t$, and δ is the social rate of pure time preference. By *inclusive consumption*, C_τ, we refer to a broad concept that encompasses not only the consumption of goods and services but also the enjoyment of environmental quality, leisure, and other non-market contributors to well-being. In this context, sustainability implies that V_t must not decline over time

$$\frac{dV_t}{dt} \geq 0. \tag{2}$$

This is the fundamental sustainability criterion introduced by ADM. V_t depends directly on the future path of inclusive consumption C_τ, which depends on the economy's productive base, K_τ, that is, the stock of *inclusive wealth* enabling production and well-being. The productive base includes man-made capital (infrastructure, equipment), natural capital

(ecosystems, air, and water), human capital (health and education), and technology

$$V_t = V(K_t, t). \tag{3}$$

The state of the economy at time t, summarised by its productive base K_t, therefore determines the feasible path of future consumption and hence intertemporal welfare. Differentiating (3) with respect to time yields

$$\frac{dV_t}{dt} = \sum_{i=1}^{n} \frac{\partial V_t}{\partial K_{it}} \frac{dK_{it}}{dt} + \frac{\partial V_t}{\partial t}. \tag{4}$$

The first term in (4) captures the change in welfare due to accumulation or depletion of the productive base; the second term reflects any direct effect of time. Defining the shadow price of each capital asset i as $p_{it} = \partial V_t / \partial K_{it}$, and assuming no explicit time-dependence in $V(\cdot)$ so that $\partial V_t / \partial t = 0$ (as is common in the literature), gives

$$\frac{dV_t}{dt} = \sum_{i=1}^{n} p_{it} \frac{dK_{it}}{dt}. \tag{5}$$

This expression shows that the rate of change in welfare equals the total change in *inclusive wealth*, that is, the productive base weighted by the shadow price of each asset. The term $\sum_i p_{it}(dK_{it}/dt)$ represents the economy's *inclusive investment*, analogous to the concept of *genuine savings* used in applied work by the World Bank (Hamilton and Clemens 1999).[11]

The sustainability condition in (2) is therefore satisfied when the shadow-valued measure of inclusive investment is non-negative

$$\frac{dV_t}{dt} = \sum_{i=1}^{n} p_{it} \frac{dK_{it}}{dt} \geq 0. \tag{6}$$

Equation (6) provides the macroeconomic foundation of the sustainability criterion: society is on a sustainable development path when the shadow-valued stock of inclusive wealth is non-declining. This is a *point-in-time* test, evaluated using current information on asset stocks, their rates of change, and shadow prices. If it holds at each moment t, inclusive wealth—and therefore intertemporal welfare—is non-declining. Thus, in operational terms, this test can be updated at any other points in the future to verify that the criterion holds.[12]

5.2 Microeconomic Foundation of Sustainability

Arrow et al. (2003) show that the macro-level criterion can also be applied at the micro level by analysing small deviations—or *perturbations*—to the economy's trajectory. Let an

[11] This could also be referred to as *genuine investment*. Arrow et al. (2004) and McGrath et al. (2025) argue that investment rather than saving is the more appropriate empirical measure of the concept.

[12] This point-in-time test is also far more operational than, say, a Rawlsian 'worst-off generation' rule, which would require identifying the least advantaged future cohort and prohibiting any trade-offs that might reduce their welfare.

investment project induce a perturbed path of inclusive consumption $C_\tau(\epsilon)$, where $\epsilon = 0$ corresponds to the unperturbed baseline trajectory. Under standard regularity conditions, the first-order welfare effect of such a perturbation is

$$\frac{dV_0}{d\epsilon} = \int_0^\infty \frac{\partial U(C_\tau)}{\partial C_\tau} \frac{\partial C_\tau}{\partial \epsilon} e^{-\delta\tau}\, d\tau. \tag{7}$$

Using the envelope result $p_{i\tau} = \frac{\partial U(C_\tau)}{\partial C_\tau} \frac{\partial C_\tau}{\partial K_{i\tau}}$ and applying the chain rule, this welfare effect can be expressed as the discounted flow of shadow-valued changes in capital accumulation (evaluated at $\epsilon = 0$)[13]

$$\frac{dV_0}{d\epsilon} = \int_0^\infty \sum_{i=1}^{n} p_{i\tau} \frac{d}{d\tau}\left(\frac{\partial K_{i\tau}}{\partial \epsilon}\right) e^{-\delta\tau}\, d\tau. \tag{8}$$

A project is welfare-improving if and only if $dV_0/d\epsilon \geq 0$. A positive perturbation increases welfare when, say, the discounted future gains in inclusive consumption from accumulated assets outweigh immediate losses due to higher prices or reduced output. As in the macro formulation outlined in the previous subsection, this condition is evaluated at a point-in-time (or decision date of a competition authority's project evaluation outcome), holding current shadow prices constant.

To connect this welfare measure to practical competition analysis, it is useful to relate it to the conventional consumer surplus approach used by competition authorities. In standard competition analysis, changes in welfare are approximated by variations in aggregate consumer surplus, which provide a static snapshot of market welfare. The ADM framework extends this logic dynamically by recognising that welfare also depends on how current decisions affect the productive base sustaining consumption over time.

This connection becomes clearer when, for instance, inclusive consumption, C_τ, is expressed as the sum of a market component, C_τ^M, and a non-market component, C_τ^N. Only market consumption (C_τ^M) contributes to consumer surplus, as it refers to goods and services traded at observable market prices. By contrast, non-market consumption (C_τ^N)—such as improvements in environmental quality or human capital—lacks explicit market prices and cannot be valued directly through consumer surplus. Its welfare contribution instead arises through changes in the shadow value of the underlying assets that sustain it, as captured by the ADM framework (Equation (8)).

In this sense, consumer surplus (CS) represents the observable, market-based component of welfare, while the ADM criterion broadens the analysis to include unpriced and dynamic dimensions of well-being. Evaluating a cooperative agreement through the sustainability or 'wider public benefits' lens, such as under Article 101 TFEU, therefore entails assessing

[13] Where exchanging $d/d\tau$ and $\partial/\partial\epsilon$ uses standard smoothness conditions.

$$\frac{dV_0}{d\epsilon} = \underbrace{\int_0^\infty \frac{\partial CS_\tau}{\partial \epsilon}\, e^{-\delta\tau}\, d\tau}_{\text{market } (CS) \text{ part}} + \underbrace{\int_0^\infty \sum_{i=1}^{n} p_{i\tau}\, \frac{d}{d\tau}\left(\frac{\partial K_{i\tau}}{\partial \epsilon}\right) e^{-\delta\tau}\, d\tau}_{\text{non-market (capital) part}}, \tag{9}$$

which provides the bridge between the standard consumer surplus measure and ADM's sustainability criterion. The first term reflects the discounted flow of instantaneous changes in consumer surplus, CS_τ.[14] While it resembles the conventional measure used in competition analysis, it is dynamic. The second term extends the analysis beyond markets by incorporating dynamic non-market effects, valuing changes in the accumulation of all capital assets at their shadow prices and discounting them over time.[15]

The ADM criterion therefore clarifies the analytical basis for a 'wider public benefits' approach to competition policy. The two frameworks differ along three main dimensions. First, standard competition analysis is static, comparing two equilibria at a single point in time, whereas the ADM framework is dynamic, integrating welfare effects continuously through time and explicitly discounting the future. Second, the former focuses on market consumption, while the latter extends welfare to include market, non-market sources of well-being, and externalities by tracing changes in all relevant forms of capital. Third, competition analysis values outcomes using observed market prices, whereas ADM employs shadow prices reflecting each asset's marginal contribution to intertemporal welfare. Consequently, the decision criteria differ: in the standard framework, a policy is beneficial if $\Delta CS \geq 0$; in ADM it is sustainable if $dV_t/dt \geq 0$.

5.3 Operationalising the Sustainability Rule for Cooperative Investment Agreements

In practice, when assessing cooperative agreements, a competition authority could complement the standard consumer-surplus test with an assessment of how a cooperative initiative affects the economy's underlying productive base. For example, an agreement among cement producers to invest jointly in low-carbon technology might raise prices and reduce consumer surplus in the short run, yet simultaneously build cleaner production capital, enhance workers' skills, and potentially preserve natural capital through lower greenhouse-gas emissions in the long run. Within the ADM framework, these effects are reflected in changes to the shadow values, $p_{i\tau}$, associated with the relevant forms of capital. The regulatory authority would therefore need to estimate the shadow value of: (i) man-made capital, such as new equipment and process innovations; (ii) human capital, reflected in workforce training and knowledge spillovers; and (iii) natural capital, represented by the

[14] In the case of market consumption, totally differentiating V with respect to ϵ yields the utility-based term $\frac{\partial U(C_t)}{\partial C_t}\frac{\partial C_t^M}{\partial \epsilon}$. Consumer surplus provides a monetary counterpart of this utility-based effect, which is written as $\frac{\partial CS_t}{\partial \epsilon}$.

[15] This component is mathematically identical to Equation (8). In Equation (9) it appears alongside the market-based component, showing that the ADM framework nests the conventional welfare measure as a static case within a broader, dynamic formulation.

net environmental effect of the project, accounting not only for reduced carbon emissions but also for possible increases in other externalities such as waste generation or resource use. Each shadow value measures the marginal contribution of the corresponding asset to intertemporal welfare and can, in principle, be positive or negative. By integrating these shadow-valued effects with the short-term market impacts captured by consumer surplus, authorities can reach a more complete welfare judgement. It is, therefore, possible that an initiative appearing restrictive under a static consumer surplus test may prove welfare-enhancing in the ADM sense if, on balance, it expands the shadow-valued productive base and supports sustainable well-being over time.

It should be emphasised that this framework is not proposed as a direct decision rule for competition authorities. Rather, it provides and clarifies the analytical meaning of the 'wider public benefits' remit that some authorities are giving increasing consideration to when evaluating the welfare impacts of projects and cooperative agreements. Although it provides a sound theoretical framework, it also underscores how challenging such an assessment would be in practice. Authorities would, in principle, need to account for the shadow values of different forms of capital and evaluate how cooperative horizontal agreements affect inclusive wealth.[16] Estimating shadow prices for all relevant assets and applying them consistently to test whether a cooperative agreement increases inclusive wealth would require analytical and empirical capacity of regulatory authorities.

However, the use of shadow prices to assess welfare changes resulting from potential shifts in market structure or from efforts to reshape an industry's sustainable capacity base is both feasible and instructive. Kloosterhuis and Mulder (2015) provide an illustration through their analysis of an agreement among Dutch electricity producers to collectively reduce coal-fired generation capacity. In their study, the authors monetise the environmental benefits of accelerating the closure of five coal-fired power plants by applying shadow prices to the estimated reductions in CO_2, SO_2, NO_x emissions and particulate matter (PM10). These estimated emissions reductions are converted into welfare values using shadow prices drawn from the Environmental Prices Handbook (CE Delft 2024).[17] The Handbook not only offers a comprehensive methodological framework for deriving shadow prices, but also an extensive catalogue of pollutant-specific values. Moreover, its periodic updates further enhance its usefulness for conducting dynamic welfare assessments. The values can also be used for sensitivity analyses, thereby supporting more robust, sustainability-oriented evaluations of cooperative investment agreements.

[16] A further empirical challenge arises from uncertainty about the degree of substitutability among capital assets. Mathematically, the shadow price $p_{it} = \partial V_t / \partial K_{it}$ reflects the marginal contribution of asset K_i to intergenerational welfare V_t. If other assets cannot substitute for K_i, even small declines in its quantity can cause large welfare losses, implying a steep increase of the shadow price. In the extreme case of zero substitutability (an essential asset), p_{it} tends toward infinity. Such dynamics are often influenced by non-linearities, thresholds, or irreversibilities (Arrow et al. 2004); for example, when the degradation of climate-regulating ecosystems passes a critical tipping point beyond which lost functions cannot be restored by technological means.

[17] For the latest version see https://cedelft.eu/publications/environmental-prices-handbook-2024-eu27-version/ (last accessed 14 November 2025).

6 Concluding Remarks

Competition policy involves the collection of regulations and laws designed to prevent restrictions on market competition that could lower overall economic welfare (Motta 2004). However, beyond protecting total economic surplus—comprising producer and consumer surplus—there is a shift of using competition policy as a tool to encourage investment in sustainability initiatives by firms and industries with the objective to generate wider public benefits (European Commission 2023). This implies that the standard economic welfare concept is implicitly being broadened to account for environmental quality, or any other social benefit that accrues to the wider public as a result of sustainability investments. This can include reductions in polluting emissions, improvement in biodiversity, 'green' R&D, acceleration of energy transition, or any other effort targeted at sustainability improvements under the broad header of (credible and effective) corporate social responsibility.

This growing focus on sustainability has introduced an expanded role for competition policy. One concrete arrangement allowed under competition policy is that of horizontal agreements where competing firms are permitted to cooperative collude on sustainability investments so long as consumers can reap a 'fair' share of the (expected) public benefits to be generated. A critical aspect in evaluating such cooperative agreements is determining what constitutes sustainability improvements. Relatedly, investments typically take time to materialize, implying that the public benefits may not be instantaneous. That is, future welfare as well as current welfare is relevant and would need to be taken into account in any investment project evaluation. In this paper, we show how an inclusive wealth framework incorporates the capital stock over time. As such, this framework can support competition authorities in assessing to what extent (horizontal) cooperative agreements can meet the fundamental sustainability criterion ensuring that current generation's resource use does not compromise future generation's ability to meet their needs.

Through an intergenerational lens, an inclusive wealth approach towards measuring sustainability embeds an ethical dimension into assessing market functioning, underscoring Adam Smith's emphasis on justice, market failure and the State's role in providing and sustaining public goods. In *The Wealth of Nation*s, Smith identifies justice as the foremost duty of the State, where justice involves preventing harm (e.g., external effects) to individuals and society, and ensuring that those responsible for harm are held accountable. This directly aligns the idea of sustainability fairness across generations. In *The Theory of Moral Sentiments*, Smith argues that negligence that causes external effects (harm) must be compensated to restore justice. This aligns sustainability with the 'polluter pay' principle, hence fostering fairness. One approach could be to draw more on the virtue ethics approach of Smith and to think in terms of an 'impartial spectator' as though they were either to judge based on the inclusive welfare of future generations; or the inclusive welfare today rather than on conventional traditional consumer welfare or total welfare (i.e., lower prices are preferred but these prices often exclude the external costs of the goods

and services consumed and produced).

Without robust sustainability criteria, the application of competition policy risks the introduction of other market distortions. A growing body of literature on horizontal sustainability agreements does not only show that more directed investments are not guaranteed (e.g., Schinkel and Treuren 2021), but also that it may 'spill over' to higher prices (e.g., Cason et al. 2025). This begs the question whether competition policy is adequately equipped as a tool to address sustainability or environmental externalities? Whether it is wise to use competition policy as a 'quasi' environmental policy tool to internalise negative externalities is highly questionable and subject to increasing academic and policy debate. We argue that, if competition policy is to be used in this way, it requires a more rigorous analytical foundation; one that makes the trade-offs between strict consumer price protection and broader societal welfare more transparent. For instance, by clarifying that, in some cases, higher prices may be a necessary condition for delivering long-term sustainability gains. Rather than keeping these tensions implicit, policy should confront them openly allowing for a more informed reflection on whether the antitrust regulatory framework is the appropriate tool for addressing them. In this regard, the inclusive wealth framework may offer a valuable starting point.

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