

Is the SNA Still Useful? A Review Article on *The Measure of Progress: Counting What Really Matters*

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Abstract

Diane Coyle's *The Measure of Progress* offers a thought-provoking critique of traditional economic metrics, particularly GDP and the System of National Accounts (SNA). These metrics, she argues, are inadequate for capturing the complexities of modern economies and fail to provide a satisfactory answer to the question, "Are things getting better, and for whom?". This review article summarizes the key arguments, highlights the book's main contributions, and offers reflections on how the proposals intersect with recent advances in economic measurement.

Diane Coyle's book *The Measure of Progress: Counting What Really Matters* (Princeton University Press, 2025) offers a thought-provoking critique of traditional economic metrics, particularly GDP and the System of National Accounts (SNA). These metrics, she argues, are inadequate for capturing the complexities of modern economies and fail to provide a satisfactory answer to the question, "Are things getting better, and for whom?".

From the book, I have drawn three key messages, along with my own perspectives on them:

GDP is not a reliable measure of

societal progress. I fully support this assertion. While this insight is not new, Coyle introduces many compelling arguments and examples that strengthen the case.

GDP falls short even by its own standards as a measure of economic activity. Coyle makes the case that the underlying national accounts struggle to capture the economic structures of the 21st century. The book very well references the various challenges statisticians face when compiling GDP estimates. These challenges range from capturing intangible assets and free products to con-

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structing price indices. Although I agree with this list of issues, I diverge from Coyle's conclusion. Despite the many complexities that need resolving and the necessity for continued improvement, GDP and the underlying national accounts *do* provide a good tool for gauging economic trends, market incomes, and the key sectors driving activity.

Alternative frameworks for measuring progress are needed. This is a constructive and welcome approach. Coyle advocates for measuring *Comprehensive Wealth* — a generalized balance sheet approach — and for developing a *Time-Use Accounting Framework*. Both concepts have appeal, but I argue that many of the measurement challenges identified with GDP would not only persist but become even more pronounced when targeting *Comprehensive Wealth*. Her call for more attention to time as a metric is welcome and needed.

In her analysis, Coyle addresses both positive and negative aspects of modern life that are insufficiently gauged by our standard economic metrics. The latter include halted advances in life expectancy in some countries, inequalities in income, wealth, or health, and the effects of digitalization, where social media consumes people's attention and spreads misinformation.

The book includes many useful references and discussions on analyses of structural and secular changes in the modern economy. These largely serve as a backdrop for the measurement questions but are interesting in their own right. I will focus on the measurement aspects.

A Tour d'Horizon of Measurement Challenges

Chapters 2 to 7 deal with the complexities of modern economies and societies and the challenges they pose for measuring economic activity and societal progress.

Productivity without products. The discussion begins with a very useful primer on productivity measurement and the productivity puzzle, slower productivity growth in a period of apparent rapid technological change, offering a solid overview of the various hypotheses proposed to explain it. Coyle then focuses on two key areas. The first is the measurement of public sector productivity, where productivity improvements are often underreported. For instance, technological advancements — such as the digitization of administrative records — have clearly streamlined processes, yet productivity is still commonly measured by input metrics like hours worked by government employees. While this is a valid critique, it does little to explain the productivity slowdown in market sectors, particularly in manufacturing.

The second area, interesting and unconventional, is time. She argues that process innovations often drive productivity gains precisely because they save time: “just-in-time logistics in lean production, the time saved by keyhole surgery on outpatients rather than several days' stay in hospital”.

Time also matters for consumption. Many new services are designed to save consumers time — online banking, for instance, eliminates the need to travel to and queue at a physical branch. This means

that the productivity² of time use for consumers has increased, an effect that escapes measures of market productivity entirely (Coyle and Nakamura, 2002).

Moreover, these convenience gains are rarely reflected in quality adjustments of the output measures of market providers. Another time-related effect Coyle highlights is the shift of labour input across the production boundary as defined in the national accounts. For instance, when consumers perform online banking tasks themselves, they substitute their own time for the labour previously provided by bank employees. This raises measured productivity of the banking sector — but again it does not help explain a productivity slowdown.

Still, Coyle’s central point remains compelling: if we fail to account for time in both production and consumption, we risk misunderstanding the true nature of economic transformation.

Chapter two questions the production function as the foundational concept behind productivity measurement. As Coyle notes, “This framing [of productivity measurement in a production function] has the effect of focusing attention on new inventions, machines or gadgets. Yet the giant leaps forward in productivity [...] owed much to process (rather than product) innovation [...]” (Coyle, 2025:56). She concludes that process innovation is unlikely to be well captured by a production function or by conventional growth accounting. However, this conclusion is questionable.

Conceptually — and even more so in practice — traditional total factor productivity measures are designed to capture process innovation, along with other factors: successful process innovation translates into an outward shift of the production possibility frontier, signalling that more, or higher quality, output can be produced with the same resources. There appears to be no compelling reason to discard the useful framework of a production function, which links inputs, outputs, and productivity.

Dematerialization and disintermediation. Chapters 3 and 4 explore the evolving nature of products, focusing in particular on the trend towards *servitization* — the shift from physical goods to service-based solutions, such as the rapid growth of cloud computing. Coyle rightly highlights the lack of data and understanding surrounding this phenomenon. One of the key measurement challenges lies in constructing appropriate price indices: What exactly is the unit of service being delivered? How should quality changes be accounted for? These questions are central to achieving accurate deflation, a recurring and well-justified theme throughout Coyle’s book (as discussed in Chapter 7 on Value).

Disintermediation — such as the rise of online shopping — is another aspect of digitalization that shifts activities across the production boundary defined in the national accounts, moving them from the

2 Most own-account household production of services falls outside the scope of GDP, as it does not involve explicit market transactions. Nevertheless, these production processes are very real—ranging from child care and booking a hotel to volunteer work. They generate service outputs and rely on inputs, typically in the form of labour or household time. Consequently, it is useful to talk about productivity of time use for consumers.

market to households. This chapter brings the discussion back to the issue of time measurement: labour in the market sector is increasingly being replaced by unmeasured household labour.

Two often-overlooked elements are highlighted here. First, there is not only time spent producing but also time required for consumption, both constrained by the 24-hour day available to consumers. Second, households are making greater use of capital services from durable goods in production. This includes the Uber driver using his own car (a market service counted in GDP), as well as the couple booking their next holiday on their private laptop (a non-market service not included in GDP). Treating household purchases of consumer durables purely as consumption expenditure fails to recognize the investment activity taking place within the household sector.

Coyle advocates for extending the production boundary to include own-account production by households. Her conjecture is that “...perhaps the long cycles observed in measured productivity growth would be partly smoothed away when work and innovation on both sides of the production boundary are accounted for” (Coyle, 2025; 125). Whether this would indeed yield a more accurate measure of productivity growth remains an open question. A major obstacle is accurately measuring quality-adjusted volumes of household production. This is almost always estimated using input volumes — namely, household time and capital — which effectively assumes zero productivity growth.

That said, Coyle’s call for improved measurement of household production and in-

novation is both timely and important. Encouragingly, it has already been acknowledged in the updated 2025 System of National Accounts (SNA).

Free and Borders. *Free* digital services and data assets are among the most visible manifestations of the digital economy, and chapters 5 and 6 discuss their welfare effects and their immense role in businesses’ competitiveness, while at the same time being “statistically invisible”. The text carefully highlights the differences between market (“exchange”) valuation — or its conceptual equivalent in the national accounts — and welfare valuation, which applies to free products, with the consequence that different valuations cannot simply be aggregated.

Chapter 6 on borders examines the impact of globalization on our ability to capture economic structures and activities — a challenge that becomes particularly complex when globalization intersects with digitalization, such as in the case of digital trade or cross-border data flows. Core issues — well known in the literature — include defining and measuring the volume and prices of storage and software services, as well as internationally traded data assets.

A common first step in addressing these challenges is to develop a typology to better understand business models and transaction types — an area where Coyle and Li (2021) have made a series of contributions. Further progress in defining and measuring digital trade has been achieved by the IMF, OECD, WTO, and UNCTAD, culminating in the publication of *Handbook on Measuring Digital Trade* (IMF *et al.*, 2023).

Coyle critiques the approach taken in

the handbook, for instance by writing that “the handbook makes the startling claim that ‘digital trade’ is for the most part included in conventional trade statistics” (Coyle, 2025: 175). However, this may stem from a confusion between what is excluded (i.e., out of scope) and what is invisible (i.e., within scope but not identifiable). The handbook suggests the latter: overall monetary flows of international trade are largely observable but insufficiently classified to identify the value of digital trade. The examples given by Coyle fall into the category of ‘invisible’ rather than ‘excluded’: e.g., statistics combine cloud services and hosting services, and do not break out prices and volumes.

At a practical level, while it is true that small-scale international trade in goods and services often escapes traditional collection methods, compilers and regulators are actively working on the issue.

Chapter 7 on value is an excellent introduction to the conceptual and practical challenges of price measurement, including the complex issue of quality adjustment when products change characteristics over time. I do not subscribe, however, to the strong criticism of chain linking and the associated non-additivity in volume levels of national accounts. The most salient analytical questions — how do material living standards evolve? what is the growth contribution of a particular industry? to name

just two examples — rely on growth rates of volume measures, not on their levels. The associated weights or shares are based on current price levels that are additive.³

A noteworthy and important element in this chapter is Coyle’s reminder that the consumer theory underlying the construction of many price indices (such as Konüs (1939) *True Cost of Living Index*) implies that GDP is, however imperfectly, designed as a measure of economic welfare. Indeed, GDP — and even more so the volume of household consumption — are distinct from, but certainly not independent of, a notion of welfare.⁴

Comprehensive Wealth and Time Use: The Way Forward

Comprehensive Wealth

The main message of the chapter 8 on wealth and Chapter 9 on a new framework is that any true measure of progress — or rather, sustainability — must be rooted in a framework of wealth. Indeed, the notion of sustainability — leaving intact the options for future generations — amounts to examining how much capital is passed on between accounting periods. This relates directly to Hick’s (1946) definition of income⁵ and to a whole branch of the ‘green accounting’ literature, for which Weitzman

3 This is not to deny that there are fundamental questions around the need for keeping reference price vectors constant, i.e., not to use chain indexes, to achieve transitivity in welfare comparisons (McKenzie (1983), Fleurbaey and Blanchet (2013)). However, these go well beyond non-additivity of national accounts in volumes.

4 On this point see also Schreyer (2016).

5 “It would seem that we ought to define a man’s income as the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning” (Hicks, 1946: 172).

(1976) laid the foundations.

Coyle stresses the need for a comprehensive measure of wealth — well beyond produced assets — that encompasses natural capital, human capital (including health), social capital (such as trust among people), and various forms of intangible assets, such as organizational capital.

Along with a broad scope, a welfare interpretation of changes in comprehensive wealth requires valuation at shadow prices (or “accounting prices”, as they are sometimes referred to;⁶ Only then can real savings or comprehensive net investment be interpreted as a measure of discounted intertemporal social welfare.

It also requires introducing the notion of resource allocation mechanisms (Dasgupta (2009) and Arrow *et al.* (2003), i.e. mapping future paths of the economic–environmental–social system. Tracking changes in comprehensive wealth valued at shadow prices would thus appear to be the most important effort to pursue. However, it also turns out to be the most challenging venture, both in concept and in practice for at least three reasons.⁷

First, although “only” present changes in assets need to be observed, their valuation at shadow prices requires projections of the future evolution of the socioeconomic–environmental system. For example, the measurement of human capital as people’s earning potential is well established (Jorgenson and Fraumeni, 1989), but it requires projections of future income.

Projections are also needed for the shadow prices of natural capital, to reflect future environmental pressures or tipping points and their consequences. Here, we enter a different world from that normally inhabited by statistical offices — a world of scenario building, horizon scanning, and comprehensive modelling and forecasting. This raises important institutional issues and questions about the political economy of official statistics.

Second, determining the exact scope of the asset base is non-trivial. For example, whether or not health ought to be recognized as a separate asset from human capital is a matter of debate and can significantly affect results,⁸ to the point of potentially undermining the credibility of estimates. Many robust measures of social capital and trust are non-monetary (see, for instance, OECD (2013-2024)), and translating them into shadow prices would be a daunting task.

Finally, none of the measurement challenges that Coyle rightly highlights in relation to the SNA — deflation, free products, classifications, national boundaries, etc. — disappear when embarking on the measurement of comprehensive wealth. On the contrary, new challenges are added. This is only acknowledged in passing.

The above should in no way detract from the fact that *Comprehensive Wealth* provides an excellent reference framework for reasoning about societal progress and sustainability. However, its empirical imple-

⁶ See Dasgupta (2009) who capture the positive and negative externalities associated with each form of capital.

⁷ See Fleurbaey and Blanchet (2013) for a broader discussion of measurement and theoretical questions.

⁸ See for instance Arrow *et al.* (2003).

mentation with the ambition of delivering a comprehensive, single monetary indicator raises more questions than it may answer, and pragmatism is called for.⁹

There are many powerful ways to measure the evolution of assets, either in non-monetary form¹⁰ or through the monetary valuation of a subset of assets that remains robust and reproducible.¹¹

Last, but by no means least, Chapter 35 of the 2025 SNA (EC *et al.*, 2025) *Descriptions and Boundaries in Measuring Types of Capital*, now explicitly identifies natural capital, human capital, and social capital alongside economic capital. It discusses the SNA asset boundary and provides significant detail on the measurement of the various types of capital, in an effort to strengthen the analytical base for assessing sustainability and to present a broader picture of our economies and societies.

Time as a Metric

Time as a metric in an accounting framework is a recurrent topic in *The Measure of Progress*. Time is an immutable constraint, and it plays an increasingly important role in the production and consumption of — often digital — products, in-

cluding those outside the SNA production boundary. Yet, time is not systematically accounted for, except in the tradition of Becker (1965), where measures of “full incomes”, or the sum of utilities over time, taking into account paid work, household work, and leisure, and measuring the well-being derived from each activity, are considered.

Coyle remarks that, otherwise, economists have paid little attention to the time budget constraint and the changing allocation of time in modern economies, and she calls for “a time-use accounting framework alongside the measurement of comprehensive wealth [that] provides a holistic approach to understanding progress” (Coyle, 2025: 258).

This call for better and more systematic inclusion of time in accounting and modelling can only be supported. Indeed, there has been progress on this front: conceptually¹² as well as empirically through an expanding number of time-use surveys and by way of accounting standards. For the first time, the 2025 SNA (EC *et al.*, 2025) offers an internationally agreed accounting standard for the measurement of household non-market production, with time allocation as a major pillar.¹³

⁹ For a more extensive discussion, see Schreyer (2022).

¹⁰ The Dasgupta Review (Dasgupta, 2021) showcases the many empirical and theoretical aspects involved in measuring biodiversity and ecosystem services, even in physical terms. The OECD’s *How’s Life?* series (OECD, 2013-2024) organizes and presents available cross-country evidence on assets, offering a picture of trends in produced, human, social, and natural capital.

¹¹ The work of the UK Office for National Statistics on Inclusive Wealth and Income (ONS, 2024) is a good example.

¹² See, for instance, Coyle and Nakamura (2022) or Schreyer and Diewert (2014).

¹³ Paragraph 2.94 introduces this element: “Data from these [extended household] accounts can be used to derive [...] extended measures of household disposable income that reflect the implicit income derived from unpaid household service work.” Chapter 34 provides detailed classifications and an extended Use Table for Unpaid Household Service Work.

Final Thoughts

In several places, Coyle portrays the existing statistical system in general and the National Accounts in particular as a “conceptual framework for classifying activities and collecting data from the 1940s”. This overlooks the tremendous development that economic statistics have undergone over the decades in response to structural changes in our economies and societies. The most recent such effort dates back only a few months and has introduced salient features of digitalization, globalization, well-being, and sustainability into the SNA. In Coyle’s view, these changes may be too timid and insufficient, but securing global agreement on an updated accounting framework while maintaining conceptual clarity and continuity for users, and at the same time embracing new aspects of modern economies was no small achievement. We understand the economy much better thanks to SNA. Without it we would be at a loss about what drives our economy, why some countries are rich and others are poor and how to steer macroeconomic policies.

Moreover, the statement that the “existing SNA [does not provide an accounting framework] when its components are measured in real rather than current price terms” (Coyle, 2025:253) reduces the notion of an accounting framework to the (often misunderstood) issue of the non-additivity of chain volume data in level form. It neglects the many characteristics that truly define an accounting framework, such as quadruple entry, consistency of valuation, well-defined transactions, institutional sectors, and more.

The Measure of Progress is a welcome reminder that official statistics are an under-resourced arm of public activity, and Coyle highlights this in several places. Good evidence does not come for free — not for the current frameworks, and even less so if Coyle’s call for systematic coverage of new economic, environmental, and social dimensions is to be followed.

To conclude, this book is clearly worth reading. Thorough in substance, with numerous references to the academic literature and evidence to support her arguments, Coyle’s style is excellent: non-technical unless truly necessary, and consistently delivering her messages with great clarity. The book offers valuable material for policymakers, researchers, and anyone interested in the future of economic statistics. One may not agree with all of Coyle’s conclusions, but there is certainly more than enough food for thought.

References

- Arrow, K. J., P. Dasgupta, and K.-G. Mäler (2003) “Evaluating Projects and Assessing Sustainable Development in Imperfect Economies,” *Environmental and Resource Economics* Vol. 26, No. 4, pp. 647–685.
- Becker, G. S. (1965) “A Theory of the Allocation of Time,” *Economic Journal* Vol. 75, pp. 493–517.
- Coyle, D. (2014) *GDP: A Brief but Affectionate History* (Princeton, NJ: Princeton University Press).
- Coyle, D. and W. C. Y. Li (2021) “The Data Economy: Market Size and Global Trade,” *ESCoE Discussion Paper* No. 2021-09.
- Coyle, D. and L. Nakamura (2022) “Time Use, Productivity, and Household-Centric Measurement of Welfare in the Digital Economy,” *International Productivity Monitor* No. 42, pp. 165–186.
- Coyle, D. (2025) *The Measure of Progress: Counting What Really Matters* Princeton University Press.

- Dasgupta, P. (2009) "The Welfare Economic Theory of Green National Accounts," *Environmental and Resource Economics* Vol. 42, No. 1, pp. 3–38.
- Dasgupta, P. (2021) *The Economics of Biodiversity: The Dasgupta Review* (London: HM Treasury).
- European Commission, IMF, OECD, United Nations, and World Bank (2025) *System of National Accounts 2025*, Pre-edit version. https://unstats.un.org/unsd/nationalaccount/docs/2025_SNA_Pre-edit.pdf
- Fleurbaey, M. and D. Blanchet (2013) *Beyond GDP: Measuring Welfare and Assessing Sustainability* (Oxford: Oxford University Press).
- IMF, OECD, United Nations, and WTO (2023) *Handbook on Measuring Digital Trade, 2nd Edition* (Paris: OECD Publishing).
- Hicks, J. (1946) *Value and Capital*, 2nd ed. (Oxford: Oxford University Press).
- Jorgenson, D. and B. Fraumeni (1989) "The Accumulation of Human and Nonhuman Capital, 1948–84," *National Bureau of Economic Research (NBER)*.
- Konüs, A. A. (1939) "The Problem of the True Index of the Cost of Living," *Econometrica* Vol. 7, pp. 10–29.
- OECD (2011–2024) *How's Life?* (Paris: OECD Publishing).
- McKenzie, G. W. (1983) *Measuring Economic Welfare: New Methods* (Cambridge: Cambridge University Press).
- Office for National Statistics (2024) *Inclusive Wealth and Income Accounts 2005–2022*.
- Schreyer, P. (2016) "GDP," in *Oxford Handbook of Well-Being and Public Policy* (Oxford: Oxford University Press).
- Schreyer, P. (2022) "Framing Measurement Beyond GDP," in *Advances in Economic Measurement* (Singapore: Palgrave Macmillan).
- Schreyer, P. and W. E. Diewert (2014) "Household Production, Leisure, and Living Standards," in *Measuring Economic Sustainability and Progress* eds. Dale W. Jorgenson, J. Steven Landefeld, and Paul Schreyer. (Chicago: University of Chicago Press for NBER).
- Weitzman, M. L. (1976) "On the Welfare Significance of National Product in a Dynamic Economy," *Quarterly Journal of Economics* Vol. 90, pp. 156–162.
- United Nations Economic Commission for Europe (2017) *Guide on Valuing Unpaid Household Service Work* (Geneva: United Nations Economic Commission for Europe).