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A Review Essay on *GDP: A Brief but Affectionate History* by Diane Coyle[†]

MOSHE SYRQUIN*

GDP, the most fundamental concept of aggregate economics, is often misunderstood and misused. In a brief book, Diane Coyle attempts to demystify and clarify the concept by providing what she calls “an affectionate history.” The product is a lucid and clear presentation that however must come with a caution sign. The story is often incomplete, and what it does contain is not always accurate. Among the salient and controversial topics discussed are the adequacy of GDP for the twenty-first century, the deficiencies of GDP as a measure of welfare, and the strange way in which banking services are calculated. (JEL B22, E01, E23)

If the matter of the book must be pronounced excellent, the same cannot be said of its manner.

— Roy F. Harrod (1969)

GDP¹ is everywhere, in the news headlines, in policy debates; it can affect our lives in countless ways from the mundane to life-and-death issues. It can topple governments and land statisticians in jail. Yet it is not well understood, if at all. “Half the people who talk about the GNP every quarter don’t understand what it means . . .” wrote

(quipped?) Robert Solow (1973, p. 105). Even economists may not be conversant with the intricacies of its construction and the passions in the debates about concepts and measurement; like meat sausages, it is best not to ask how it is done. This is the task that Diane Coyle set herself to do: to pierce the veil and attempt to demystify the concept by providing what she calls “an affectionate history” (more “tough love” than affectionate, as we shall see).

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[†] Go to <http://dx.doi.org/10.1257/jel.54.2.573> to visit the article page and view author disclosure statement(s).

¹GNP was the term used in the United States until the early 1990s. I follow Coyle in using GDP, but will not change the use where quotes are provided. When clear from the context I use GDP instead of GDP per capita.

1. Contents

Coyle presents two historical timelines: development of the concept of GDP (major

changes, challenges, revisions, etc.) and a parallel history of main events in the global economy since the 1930s that had some bearing on the development of the concept. This second narrative is concerned with major economic events (stagflation, reconstruction, the fall of communism) and with developments within economics (monetarism, residual, NAIRU, . . .).

Along the way, the book points out some conceptual and measurement problems, much of this around a main theme of GDP as welfare. We get an odd pattern where GDP is castigated for many sins of omission and commission, only to be repeatedly (partly) exonerated by an “it’s not what it was designed for” and, “in any case, it is the best we have.”

The book presents the basic definitions and variants for measurement and discusses related topics such as price deflators (including rebasing and chaining), exchange rates, and purchasing power parities for international comparisons, and the theme that will dominate the rest: the production boundary or, is GDP (per capita) a measure of welfare? It highlights the shortcomings of GDP as a measure of welfare and as a comprehensive measure of production, given its self-imposed limitations (only, or almost only, marketed goods and services) and the complexity of the twenty-first century economy.

Coyle also discusses previous attempts to fix, broaden, or replace the concept made in order to better approximate a measure of welfare (from the HDI to the Sarkozy commission).

A chapter, motivated by the financial crisis since 2008, looks at “two fundamental issues . . . about measuring economic output” (p. 97): the role of the financial sector and “the deeper reevaluation of economic growth caused by a massive crisis in the market economy, and the economic theory on which policy has been based for the past generation” (p. 98).

The final chapter goes deeper into some of the limitations, suggesting that GDP was (maybe) good for the twentieth century of physical mass production (p. 6), but seems woefully inadequate for the twenty-first because of its inability to deal with issues such as sustainability and innovation. The book ends with an affectionate note that though we are in a statistical fog about the negative and the positive aspects of growth, “GDP, for all its flaws, is still a bright light shining through the mist” (p. 140).

1.1 Audience and Level of Difficulty

It’s an odd book. Not the learned tome and not an extended blog post, though these days the borders are blurring. We are seeing now brief, fast-published e-books (Cowen 2011 is the pioneer and leading example) of the old venerable pamphlet. This is not that. It tries to be many things: a primer on GDP, its uses, and limitations; a history of economic thought; and some musings about the new economy. It shows signs of haste: there are problems of organization, presentation, faulty scholarship, and a level of carelessness in the use of the source material that is an order of magnitude larger than what could be benignly regarded as common oversights or typos (has Princeton done away with copy-editing?). I exaggerate? Here is one example (I give more below):

On page 114, a long, twenty-plus-line quote from Simon Kuznets is wrongly cited as coming from *National Income and Capital Formation* (1937b). It comes from Kuznets’s comments to Copeland in the first volume of *Studies in Income and Wealth*, 1937a. Page 114 seems unaware that the very same long quote (minus a few lines) had already been given on pages 13–14 but there, it appeared only as “cited in Mitra-Kahn,” an unpublished dissertation. Mitra-Kahn, incidentally, does give the correct source.

The target audience is presumably undergraduates and the average person interested

in current affairs, where GDP is ubiquitous but not well understood. Both groups will find a useful introduction to arcane topics. The level of presentation tries to navigate between the expert and the novice. When presenting the definitions of GDP, Coyle writes: “It is surprisingly hard to write down definitions of GDP that do not assume some prior knowledge. So this section will seem complicated for GDP novices, and yet will be considered laughably oversimplified by national accounts experts” (p. 24). This would seem to equally apply to various other sections in the book.

Coyle is a gifted writer and has the ability to synthesize complex issues and make complicated discussions understandable. A student can read with profit the lucid explanations of rebasing a price index and chaining, but will not find the substitution effect mentioned, which leaves the subject a bit unhinged. Paasche and Laspeyres also go unmentioned. Readers have to be on guard for problems with the historical narrative, both as concerning the events and the presentation of the results of research. Some are simple inaccuracies (the date for the second oil shock is 1979, not 1975) excused maybe as typos, were it not for their high frequency. Others might be more a matter of (mis)interpretation ranging from the innocuous (including Spain among the defeated countries (p. 41)) to the bizarre (“until just over ten years ago, economists trying to explain growth were really flying blind.” (p. 80)—that is, before Maddison’s book of 1999).

The book is presented as a history of a key concept, not an advocacy tract or a concrete proposal for a major rethinking, yet in addition to the technical part and the history, it lades the abstract GDP concept with a litany of complaints about the market, the market mentality, the corrupting impact of greed and commoditization, the excesses of the financial sector, degradation of the environment,

identification of value with money, misogyny in the accounts, and so on. Together, they sit ill under the same covers.

Coyle, in her book, ranges over a large number of themes, periods, and events, and has strong opinions on most; it would have been nice to have had a bit more discussion, nuance, and documentation, in addition to references to a Huffington post or unpublished LSE working papers (quite good, the ones I consulted . . .).

It may seem churlish to complain about omitted subjects in a brief book, but when an academic press book aims to present the history of what is arguably a central concept in economics, we can expect a more comprehensive mapping of the terrain—not necessarily exhaustive but showing awareness of past and current literatures covering similar ground and dealing with the problems that Coyle chooses to highlight. I illustrate the gap below for the key area of GDP as a measure of performance.

I will now illustrate some of the problems in the book and present a somewhat different view, less insular and British and more focused on the United States, not because of a parochial interest but because the United States was the center where most of the decisions of importance regarding GDP were made. Britain had John Maynard Keynes, but otherwise were mostly followers.

The next section deals with some of the early history and the events leading to the current system of national accounts, discusses the GDP and welfare conundrum and why it seems so intractable, and comments briefly on some of the chimeric attempts to create a unique welfare indicator. The last section takes on some of the problem areas in the book and critically assesses them.

1.2 *From Senator La Follette (1932) to the Young Turks at Commerce (1948)*

“Warfare is the mother of invention . . . GDP is one of the many inventions of World

War II” (p. 7). Right on the former, less so on the latter as we shall see.

GDP was no more invented in the early 1940s than it was in 2013, when the Bureau of Economic Analysis (BEA) released its comprehensive revision of the National Income and Product Accounts (NIPAs). At the beginning of the war, important, even momentous, changes were made to the way NIPAs were computed. However, the basic concepts of a) the net value of goods and services produced by the people comprising a nation, and b) its counterpart total income as the rewards to factors for their assistance in producing commodities and services, are those presented earlier by Kuznets (1933), who in turn was following in the footsteps of Wilford I. King and Wesley C. Mitchell at the NBER going back to Petty if not earlier.

The statement in Coyle about GDP having been invented during the war is probably due to her overlooking the important distinction between a measure of the economy (national income, net national product (NNP), GNP, GDP, etc.) and its being part of a system of national accounts. The debate between Kuznets and Commerce that erupted with great intensity in the pages of the *Review of Economics and Statistics* in 1948,² was over the inclusiveness of the income concept (what Coyle refers to as the production boundary) and the usefulness of the new system of national accounts. The system, which dates back to the early 1940s (with some early attempts by Copeland and Irving Fisher), first appeared in the United States in the Survey of Current Business in the early 1940s. After the war, it became identified primarily with Richard Stone, who was instrumental in the development of a

set of standardized accounts published in 1953 as the UN System of National Accounts (SNA) (Stone received the Nobel Prize for this work). Thus the embedment of income within a NIPA system dates back to the 1940s, but not so the concepts underlying GDP (or GNP—the common variant used most everywhere until the early 1990s). Conceptually, for virtually all of the issues discussed in the book, GDP is not that different from the modern national income concept developed and elaborated during the 1930s by Simon Kuznets and the NBER in the United States and by Colin Clark (and others) in the United Kingdom. For other precursors and contemporary developments in Europe, see the encyclopedic works of Studenski (1958) and Vanoli (2005), neither one mentioned in Coyle’s book.

The very first publication of the NBER in 1921 by Mitchell, King, Macaulay, and Knauth was on National Income (NI). Its objective:

A desire to learn whether the National Income is adequate to provide a decent living for all persons, whether this income is increasing as rapidly as the population, and whether its distribution among individuals is growing more or less unequal. (Prefatory note.)

The focus was on personal income and its distribution. In 1930, the NBER returned to the subject and Kuznets was put in charge of the study under Mitchell’s supervision. The enterprise achieved national prominence in 1932 when Senator La Follette introduced a resolution instructing the Secretary of Commerce to prepare a report on the national income of the United States for each of the years 1929, 1930, and 1931 (without however providing a budget for this task). Commerce approached the NBER, which assigned the task to Kuznets. Coyle writes that

The government of Franklin Delano Roosevelt wanted a clearer picture of the state of an economy trapped in a seemingly endless

²The Young Turks at the National Income Division of the Department of Commerce that penned the reply to Kuznets’s critical review in 1948 were Milton Gilbert (division chief), George Jaszi, Edward F. Denison, and Charles F. Schwartz.

depression. The National Bureau of Economic Research was requested to provide estimates of national income. Kuznets, who later won the Nobel Memorial Prize in Economic Science for this work, took on the task of developing Clark's methods and applying them to the U.S. economy (pp. 12–13).

This is triply wrong: on Roosevelt's participation (he was not yet President), on Kuznets developing Clark's methods, and on Kuznets winning the Nobel for this work (the award was for his "empirically founded interpretation of economic growth").

By the late 1930s, Kuznets had already published several works on national income and had led to the establishment of the Conference on Research in Income and Wealth, where much of the conceptual apparatus was presented and discussed.³ His reports already show the three ways of measuring national income and one can even find an early use of the term GNP, shortly after it was first mentioned in print by Warburton (1935).

World War II was critical for further developments. For our story, the most important changes were the inclusion of all government expenditures into the computation of national income and product, which Kuznets had opposed, and the switch from NNP to GNP, namely, the adding of depreciation to the net figures that more closely relate to personal income, giving a larger total as production.

States since the nineteenth century and before had wanted a measure of the size of the economy for taxation purposes and for the means for waging wars. During World War II, the interest switched from consumption and distribution to the capacity of the economy to produce munitions without unduly compressing personal consumption,

and this led to a change in the measure more focused on production. The criterion for inclusion in GDP, given its basic definition, was that the good or service was transacted in a market and had a price. This principle was not strictly adhered to because of statistical constraints or for policy considerations (government consumption included at cost). In simple terms, the concept tries to value a point along the production–possibility frontier (PPF) defined by the availability of resources and the technology.

1.3 *The System of National Accounts—Keynesian Theory Gets Its Numbers*

A main reason for the inclusion of all government expenditures in GDP and for the switch to a system of accounts was to make the system amenable to the then newly developed Keynesian scheme. This was clear in Keynes's writings, but also in the New Deal advocates and their strong backers in the Commerce Department such as Jaszi.

These developments are well covered in the book, but it may be useful to expand on some of the unexpected effects from the shift, especially when we come to the analysis of growth, below.

Kuznets had advocated a focus on the consumer and on economic welfare, which is still a far cry from today's approaches trying to measure happiness or to include in GDP a great variety of nonmarket effects. Even if narrower than today's concepts, it was still based on the satisfaction of wants by consumers. The wartime revisions shifted the focus to the production side—to the capacity of the system and the constraints on the fabrication of munitions. Furthermore, it made the NIPA a tool for controlling the economy and the preferred scheme for research. In the United Kingdom, John Hicks had advocated a welfare approach and so had Clark, but given the exigencies of war and Keynes's dominance of the scene, they were no match. In the United States, Kuznets was

³Beginning in 1937, the conference began publishing the papers in the series of Studies in Income and Wealth; they are up to number seventy-six by now.

still a figure to reckon with and even though he came to accept the Commerce approach for a war economy, he regarded this as an exception to be abandoned after the war. The Keynesians ensconced now at Commerce determined the outcome.

One of the effects of adopting the new system was the disappearance for decades of any analysis of industrial structure and structural change. In Kuznets's studies, the third way of measuring product through the aggregation of value added at the sectoral level had always been part of the story, and it became more so later on when Kuznets embarked on his monumental comparative study of "Modern Economic Growth." Keynesian analysis elevated aggregate measures to the center stage, which may have been appropriate for short-run stabilization, but were less so for long-term growth and development.

Aggregate analysis that considers the sectoral composition reappeared in Wassily Leontief's input-output system, but not anymore as part of the GDP story. On Leontief and input-output, Coyle asserts that: "in the 1950s, Wassily Leontief (another Nobel Memorial Prize-winning economist) came up with the idea of input-output tables that tracked the sale and purchases of intermediate goods through the economy to calculate the 'value added' in production" (p. 29). Leontief had come up with the idea already in the 1930s and "value added" calculations preceded him by decades.

Economywide disaggregate analysis continues to flourish, but outside of the macro-GDP circles. It appears in Richard Stone's Programme for Growth project of the early 1960s, built around the expanded version of his accounts—the Social Accounting Matrices (SAMs)—and was very prominent in the form of planning models in development.

The omission of this facet of the story leads to ignoring important historical events

such as the debates on deindustrialization in the United Kingdom.

2. *Growth as the Objective*

There was a heated debate between Kuznets and other economists, especially Milton Gilbert of the Commerce Department, about . . . the meaning of economic growth and why were statisticians measuring it? (p. 15).

It is not much appreciated in the profession (including in the book under review) that economic growth was not an objective of economic policy or economic research before the 1950s.

The central issue for Roy Harrod and Evsey Domar and even the initial impetus for Solow's model was not secular growth, its measurement, determinants, and pattern, but rather the solution of the Keynesian problem of maintaining high employment when capital was accumulating.

In the United States, except for the notable efforts of Leon Keyserling, the non-economist chair of the CEA around 1950, growth does not assume center stage before the Kennedy administration (after 1960), when it becomes all-important. ". . . [T]he pursuit of growth quickly became one of the New Frontier's distinguishing features. . . . [James] Tobin [a member of the CEA] recalled, 'Growth was a good word, indeed the good word.' Soon after the inauguration, all the offices and desks in the Commerce Department displayed signs asking 'What have you done for Growth today?'" (Collins 2000, p. 52).

Paul Samuelson's textbook, which brought Keynes into the American classroom, did not have an entry for growth for several editions, until the sixth edition in 1964.

From the late 1940s on, we see the parting in the research and policy emphases between the United States and other advanced countries and the developing countries, most of which were in the process of achieving

independence. In the United States, Kuznets was among the very few prominent economists interested in secular growth for which, he argued, the new national accounts were not adequate. Kuznets kept revisiting the issue over the next thirty years, emphasizing the problem with using measures designed for short-run stabilization and demand management for the study of secular changes which, in addition to (a suitably measured) income, requires attention to the concomitant transformation that is part and parcel of economic growth.

2.1 *Empirical Studies of Growth*

Early theories of how economies grow . . . Harrod, Domar, Solow, Rosenstein-Rodan, in the 1950s had little empirical evidence available with which to test their theories” (p. 55).

Maddison provided these. They were published only from 1999 on. . . until just over ten years ago, economists trying to explain growth were really flying blind (p. 80).

In 1947, Kuznets and other individuals actively engaged in national income accounting research helped found the International Association of Research in Income and Wealth (IARIW), the international counterpart of the very successful Conference on Research in Income and Wealth he had cofounded in the United States a decade before. As chair of the Committee on Economic Growth of the Social Science Research Council (SSRC), Kuznets was able to sponsor through the IARIW a score of studies on comparative long-term economic growth in advanced countries. The results of these studies formed the backbone of the ten long articles on the “Quantitative Aspects of the Economic Growth of Nations” published in *Economic Development and Cultural Change* between 1955 and 1967. So rather than claim that Solow and others had “little empirical evidence available with which to test their theories” it would be more accurate to say that they had no interest in doing so.

Solow’s 1957 paper was empirical, of course, but restricted to the United States and to one aspect only.

The explosion of cross-country studies of growth in the last two decades has mostly used the Penn Tables data. Angus Maddison was, in my opinion, after Kuznets and Clark the most important chifrephelist⁴ of the twentieth century. His data, however, were not crucial or even important for that research.

2.2 *Postwar Spread of the SNA*

The SNA, widely lauded as the major accomplishment of Stone, spread rapidly around the world.

Without the SNA, and GDP at its center, we would not be able to make any international comparisons of income, growth, structure, etc., but, seldom noticed or mentioned, the “one size fits all” approach had a downside, too. The main shortcomings of the unique system were:

1. Establishing a unique standardized system ignored differences in the organization of society, in institutions, in values, and in the goals pursued by the nation and its citizens.
2. It fostered a “competitive league” mentality where nations and individuals came to see the ranking on GDP tables as a status good of intrinsic value. This was reinforced by Cold War considerations and it still persists. Could President Nicolas Sarkozy’s dissatisfaction with GDP have anything to do with the persistence of France’s (and the European Union’s) lag behind the United States in the GDP per capita tables?

⁴A word Maddison invented to characterize economists and economic historians with a strong predilection for quantification.

3. Since many global decisions were now based on these figures, it created incentives for gaming the system; manipulating data so as to qualify for aid, or for structural funds, or to hide deficits, or to join the euro.
4. Preparing and reporting standardized data became an almost mandatory requirement for dealing and applying to UN bodies, the IMF, and the World Bank. For a while, the bank even added to the list the preparation of a development plan. This fostered the illusion that what can be measured can be modeled and controlled. Hence the reservations by economists from the “Austrian School” about the construction of national accounts. Once available, it is easy and tempting to forget that they are artificial constructs aggregating the results of myriad decisions by individual agents into an aggregate devoid of volition or agency.

3. *Disillusionment after 1970*

The 1960s were the golden age for growth and development studies. There was a proliferation of econometric, planning, and optimal growth models. By the early 1970s, a confluence of events (see below) produced a crisis of faith that led to major questioning and rethinking about the objectives of social and economic policies and the way we measure and assess progress. Subsequently we witness periodic reruns of the questioning, fixing, replacing, and moving on. Coyle refers to the “Crisis of Capitalism” following the end of the golden age. It has been said that in times of trouble, people turn to mysticism as a solace. Same here.

Among the economic reasons (in addition to other major events such as the Vietnam War) was the fact that the promises of managed growth and development came

short. Stagflation led to disillusionment with Keynesian economics.

Data on income distribution in Latin America started to be published in the early 1970 and it revealed that in star performers such as Brazil, the distribution of income was extremely unequal. This led to a switch of attention in research towards *Redistribution with Growth* and a search for wider indicators than GDP alone. Finally, the environment. Rachel Carson on DDT, Paul R. Ehrlich’s *Population Bomb*,⁵ The Club of Rome’s influential *Limits to Growth*, and the oil shock helped to bring into question the desirability of growth of population and income. GDP was up for major rethinking, and reassessments came in droves.

I will refer to some of these after revisiting the perennial question of GDP as a measure of welfare.

4. *GDP and Welfare*

A key theme running through the book is the relationship between GDP and welfare. Much of the popular discontent with GDP, when not guided by an aversion to markets and to pecuniary measures of value, expresses the belief that GDP includes much that shouldn’t be there and excludes much of what makes our lives worthwhile.

Is GDP an indicator of welfare or can we at least infer changes in welfare from the growth of GDP?

The book uses a large number of welfare-related concepts, presumably as synonyms, but never gets around defining welfare. Coyle uses often the following: economic welfare (sometimes preceded by national), social welfare, well-being, and living standard. She also feels (quite properly) the need to clarify that social welfare “does not mean welfare payments,” but not before page 112.

⁵Coyle refers to it as a diatribe on p. 69 but by p. 150 the text is elevated to “canonical” status.

The entry for *welfare* in the American Heritage Dictionary begins with: “*I. Health, happiness, and good fortune; well-being.*” No wonder GDP is found wanting as a measure of such an all-encompassing definition.

Economics for over eighty years has followed Arthur Cecil Pigou (not mentioned by Coyle) in defining *economic welfare* as “. . . that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money” (1932, I.I.5), not because of a myopic identification of value with money but rather because

Welfare . . . is a thing of very wide range. . . . [we need to focus on] something measurable, on which analytical machinery can get a firm grip. The one obvious instrument of measurement available in social life is money (I.I.5).

Pigou also observed the obvious fact that

. . . it is not in the ordinary business of life that mankind is most interesting or inspiring. One who desired knowledge of man . . . would seek it in the history of religious enthusiasm, of martyrdom, or of love; he would not seek it in the market-place (I.I.1).

Economics until recently has mostly followed Pigou in eschewing the role of philosopher-kings, the term used by Arthur Melvin Okun (1971), one of many prominent economists forcefully arguing against the identification of income with social welfare. Even Kuznets, portrayed not inaccurately as advocating a measure of economic welfare rather than one focused on production, stayed within the strictures of the Pigouvian definition.

As some of his critics pointed out, Kuznets was not always consistent on the scope of the desired measures (or maybe was just pragmatic). He seems to be in favor of a very wide definition when he writes “National income is for man and not man for the increase of the country’s capacity” (1946, p. 114), but earlier in the Senate volume he

had made clear that “The welfare of a nation can . . . scarcely be inferred from a measurement of national income” (1934, p.7). He is most extreme in the 1947 debate where he argues forcefully for the exclusion of many “regrettable necessities” for which he is rebuked nastily: “The moralistic flavor he wishes to inject into national income measurement might be in the tradition of Ruskin—it is not in the tradition of quantitative economics.” (Gilbert and others 1948, p. 189).

The most strident opponent of having GDP as a measure of welfare was Jaszi, who was to become the Director of the Bureau of Economic Analysis [BEA]. He regarded as one of his principal contributions to have resisted successfully “the will-o’-the-wisp of forging national output into a measure of economic welfare. I was a minority of one in a company that included such mental giants as Simon Kuznets and John Hicks, and at one point I had to defy a forceful Secretary of Commerce who had instructed the BEA to prepare a measure of welfare” (Jaszi 1986, p. 411).

There is a certain schizophrenia in the profession regarding the relation of GDP to welfare and this is also reflected in this book. We find repeated statements that GDP is not for welfare, and yet we also find it used for welfare pronouncements or in attempts to make it better approximate welfare.

I counted at least seven strong statements interspersed through the book arguing that GDP is not and was not intended to be a measure of welfare. The conviction and the nuance vary:

“GDP definitely does not attempt to measure welfare” (p. 14).

“GDP is not, and was never intended to be a measure of welfare” (p. 91).

“. . . economic growth measured by GDP . . . is not an accurate indicator of well-being” (p. 112).

“Although GDP does not measure welfare directly, it does contribute to it and is

highly correlated with things that definitely do affect our well-being” (p. 117).

“GDP growth is closely linked to social welfare” (p. 136),

“The way the economy has changed has made the gap between GDP and welfare bigger than it used to be. . . . GDP growth increasingly underestimates increases in welfare” (p. 140).

Yet, as Coyle writes on p. 113, “despite such cautions, economists and politicians often give the impression that GDP and welfare are more or less the same” As a proxy most would still use it even if, as Blinder (1980) does, they feel a need to apologize:

The ultimate purpose of an economy . . . is to enhance the material well-being of its people. . . . such a crass and narrow goal may not appear as lofty as . . . inner peace and spiritual uplift. But, . . . it is difficult to feed the soul while the stomach is empty. (p. 415)

The essay begins with a strategic retreat . . . to a concept that is measurable but possibly uninteresting (money income as defined by the US Bureau of the Census). . . . dictated more by expedience than by principle. . . . Political freedom, peace, inner tranquility, a happy family life, and so on may be far more important . . . Still, it would be the height of folly for an economist to write an essay on these more ephemeral aspects of human welfare. On grounds of comparative advantage . . . I restrict my attention to what is normally considered *economic* well-being. (p. 417)

This ambivalence shows that the issue has been in the mind of economists all along. In addition to the various updatings of the system of national accounts, there has been a substantial amount of academic work on many of these issues. It has figured prominently (more so during the crises of faith periods) in a large number of NBER conferences devoted to the measurement of performance, to economic well-being, and to some of the other issues raised by Coyle such as new goods and the output of the service

sectors. A partial sample of the most relevant volumes includes:

- 1973, *The Measurement of Economic and Social Performance*, Milton Moss, ed.
- 1977, *The Distribution of Economic Well-Being*, F. Thomas Juster, ed.
- 1985, *Horizontal Equity, Uncertainty, and Economic Well-Being*, Martin David and Timothy Smeeding, eds.
- 1992, *Output Measurement in the Service Sectors*, Zvi Griliches, ed.
- 1996, *The Economics of New Goods*, Timothy F. Bresnahan and Robert J. Gordon, eds.
- 2006, *A New Architecture for the U.S. National Accounts*, D. Jorgenson, J. S. Landefeld, and W. D. Nordhaus, eds.
- 2014, *Measuring Economic Sustainability and Progress*, D. W. Jorgenson, J. S. Landefeld, and P. Schreyer, eds.

Key chapters in this most recent volume include:

“Measuring Economic Sustainability and Progress,” D. W. Jorgenson, J. S. Landefeld, P. Schreyer

“Expanded Measurement of Economic Activity: Progress and Prospects,” K. G. Abraham

“Measuring Social Welfare in the U.S. National Accounts,” D. W. Jorgenson, D. T. Slesnick

“Household Production, Leisure, and Living Standards: Paul Schreyer,” W. E. Diewert

“Accounting for the Distribution of Income in the US National Accounts,” D. Fixler, D. S. Johnson

Actually, the introduction to a 1970 paper by Juster “On the Measurement of Economic and Social Performance,” could have been used as the opening paragraph of Coyle’s book simply by changing GNP to GDP:

Although most economic concepts remain a mystery to the majority of even well-informed laymen, the “Gross National Product” has

become part of our everyday vocabulary. The widespread use of this concept, both at professional and popular levels, attests to the fact that GNP is generally thought to be a simple, unambiguous, and comprehensive measure of economic performance. But what has always been recognized by professionals is now beginning to be recognized by others: that the GNP is neither simple, nor unambiguous, nor comprehensive; and that it is not necessarily a good measure of economic performance.

You will not learn about any of this research from the book. Instead, we do get to meet some of the alternative measures proposed in the literature, especially the Human Development Index (HDI) published by the United Nations Development Programme since 1990.

In the 1970s, dissatisfaction in the developing countries with the progress achieved and with the persistence of poverty led to various proposals for better measurement of the development efforts. A prominent one was the Basic Needs approach. The review by Hicks and Streeten (1979) was critical of suggestions to replace GDP by another measure or to devise new composite measures. Instead they concluded that “the use of social and human indicators is the most promising supplement to GNP” (p. 567), not to replace but to supplement.

Coyle, in spite of her endorsement of GDP as a useful concept, suggests the need to replace, not to supplement, GDP: “The crisis has given fresh impetus to the continuing debate about whether we should be measuring GDP . . . or instead looking for a measure of well-being or social welfare” (p. 104); “An old debate has been reopened, namely, whether or not a measure of welfare should replace GDP as the target for economic policy” (p. 121). She apparently answers in the affirmative when she repeatedly endorses the HDI as “an indicator of welfare” (p. 74). About the HDI she writes: “there have been numerous initiatives over the years to develop an index of welfare as

opposed to GDP, which measures output only. One widely used by economists, especially in discussing developing countries, is the Human Development Index . . . published in 1990, and has been widely adopted by economists as a useful single indicator of national welfare” (p. 115). “There are already good indicators of welfare and all the components that go into the GDP alternatives. The HDI is a well-understood measure” (p. 137).

This seems wrong on various levels, as convincingly argued by Srinivasan (1994), among others, more than twenty years ago. If GDP is not welfare, how can anyone argue that we solve this by constructing an index of GDP and two other variables very highly correlated with GDP itself. And then we just add up the three indicators with fixed weights! The value of the additional information is, at best, very low and it is obliterated by the equal weights and implicit assumption of perfect substitutability among the three desiderata. Furthermore, for long-term growth comparisons it is inadequate by construction. If this is a measure of welfare, then let’s just stick with GDP and save all the bureaucracy and hype.

5. *GDP for the Twenty-First Century*

The last two chapters are among the most interesting, stimulating, and frustrating.

They deal generally with the issue that if GDP is not a welfare measure, is it at least doing a good job at measuring the size of the productive economy? Coyle would seem to hold the view that it has outlived its usefulness, but she confusingly ends up giving it two cheers.

I will offer a few comments on the most important issues discussed.

5.1 *Household Production*

The main reason for not counting unpaid housework as part of “the economy,” . . . is the difficulty of measuring it. . . . It can

be measured by surveys, . . . but. . . official statistical agencies have never bothered—perhaps because it has been carried out mainly by women (p. 108).

Unpaid production has been excluded from GDP because it is not part of the market economy, it is not a variable on the PPF that can be transformed, and GDP measures market transactions. Willford King, the NBER pioneer of income studies, made clear in 1930 that “the value of the service of the housewife” is not different conceptually from “the value of the services of the head of the household when he performs such physical labor as building fires, caring for the lawn, and shaving himself instead of going to the barber” (King 1930, p.35).

More productive than looking for misogynistic motives would have been to look at the effect those statistical decisions have on our measures and at the research that has been done on how best to deal with home production. You don’t need to find bias to determine that the weight of women in the measured economy is affected by the decision whether to search work outside the home and that in interpreting the growth figures in the postwar period, we have to consider the increased participation of women in the labor force.

On research the most important contribution was Gary Becker’s theory of the allocation of time. It helps in analyzing the question of (for example) why some women work for market pay and others stay at home, and in considering the impact on the national accounts of different ways of estimating the value of work at home. It is not a matter of conducting a survey or not but one of economic analysis and statistical feasibility.

5.2 Sustainability

This is an important issue where sound economics has been scarce. On the technical side, first note that the definition

of the Brundtland Commission ignores substitutability. Coyle cites approvingly the Nordhaus and Tobin definition of 1972, derived within a steady-state growth solution. In their analysis, sustainability requires enough investment to cover depreciation, to supply the new entrants to the labor force with the existing capital–labor ratio, and to assure growth in consumption per capita at the rate of technological progress assumed to be labor augmenting (otherwise no steady state). Should this be now part of our definition of sustainability?

Finally, on natural capital, I quote Kuznets’s concluding comment in the NBER volume on *The Measurement of Economic and Social Performance*:

. . . resources and reproducibility are functions of the existing state of knowledge and technology; and will change as the latter change. Indeed, it is this dependence that may explain the omission from national accounts of depletion of even observable natural resources. If the depletion were to be counted, so would additions to resources produced by new discovery and knowledge—and the latter measured not by the small inputs of labor and capital into the process but by the much bigger addition to capacity.

. . . The same reasoning applies to depletion by pollution, etc. Since the original contribution of natural resources, and particularly of improvements in their use (of air, water, etc.), when represented by new technology, had not been included in the estimate of changes in stock, it is illogical and biased to enter a minus sign for pollution or deterioration [1973, pp. 582–83].

5.3 Digital Economy

It is a measure designed for the twentieth-century economy of physical mass production, not for the modern economy of rapid innovation and intangible, increasingly digital, services (p. 6).

. . . difficulty of collecting data measuring the services sector of the economy, now the major part of GDP (p. 37).

First, let's dispose of the fallacy of services having become dominant only in the twenty-first century. BEA data show that already by 1947, tangibles were no more than 40 percent of GDP.⁶

Coyle argues that the growth of the digital economy makes GDP increasingly inadequate as a measure of output and productivity, let alone welfare. If you pay a zero price regardless of the quantity or of the benefit derived it will appear (or rather not appear) as zero in GDP (Brynjolfsson and Saunders 2009). There is no revenue from the direct sale of these services, but the benefit or real contribution could be computed by the consumer surplus derived. Various studies have shown the feasibility of such computations and the magnitudes involved even for seemingly trivial commodities such as apple flavored Cheerios.

GDP by definition deals with the aggregate, while consumer surplus is mainly a partial equilibrium concept strictly defined for compensated demand curves. Hotelling demonstrated its use in a general equilibrium case when considering changes in the vector of prices and showed that the multiproduct analogue was path dependent. If the digital economy spreads widely, could we still calculate its benefit by some aggregate consumer surplus? A principal definition of consumer surplus regards it as the willingness to pay, rather than go without it; going without *everything* is of course nonsensical and besides, willingness to pay is clearly bound by income. So are we back measuring benefits by income?

It is not immediately clear that indeed the digital economy has drastically changed the issue of measuring GDP. To the extent that GDP is still trying to measure market transactions and outputs that could be transformed along a PPF, free goods are appropriately excluded.

⁶http://www.bea.gov/scb/pdf/2005/12December/1205_GDP-NAICS.pdf

There is a similar problem emphasized by Tyler Cowen and others, but different in subtle and important ways.

How to count public goods? Government expenditures are measured at cost; they capture the cost of provision but not the willingness to pay. For such goods, Kuznets suggested using the equivalent price in markets but, in the case of free goods, by definition we have no such price. But, again, it is not clear whether GDP should include them (*reminder*—we are not measuring welfare). Should we say that for a given amount of a public good, a larger population implies a higher GDP only because they now partake of the existing public good? This would be good news for advocates of immigration reform, since any new migrant would yield an immediate spike in GDP because of the consumption of the public good.

It is not GDP that needs adjusting, but rather our theories that made GDP such a determinant factor. For Keynes, income was almost a proxy for employment. If in the digital economy value is created but with little additional employment, it is the income–employment link that may need rethinking.

The R&D behind the digital economy is real investment and should be treated as such. It is so treated now even if this was not always the case.

5.4 Financial Sector

The financial sector and the recent financial crisis are the central issue of chapter 5. There is much justified (I believe) indignation about the fraudulent and immoral doings at the time which, unfortunately, is followed by some strange pronouncements about GDP and sundry.

Coyle takes a stab at explaining the arcane way in which banking services have been considered in the National Accounts. The issue has vexed the experts since the 1930s and various revisions have been made

along the way. She takes aim at the 1993 revision that introduced the concept of “financial intermediation services indirectly measured,” or FISIM. Her exposition of the concept is as good as you will find, so I will cut to the chase and take issue with her conclusions which, as an economist, I found extraordinary.

Given the strange way that banking services have been calculated and the excesses of the banking sector, Coyle concludes that finance should be completely excluded from GDP. In a typical case of the “fallacy of the excluded middle,” she seems to say that since banking has not been as great as Alastair Darling, the UK chancellor of the exchequer, would have had us believe, then its contribution has really been nil. She sees no value for financial intermediation and expresses doubts about the wisdom of having abandoned Adam Smith’s distinction between productive and unproductive work; financial services belonging to the latter.

6. *Economics*

According to Coyle, a fundamental issue raised by the crisis is “the deeper reevaluation of economic growth caused by a massive crisis in the market economy, and the economic theory on which policy has been based for the past generation” (p. 98).

Here are a few quotes that illustrate what she has in mind. I leave it to the reader to assess their soundness and validity:

“. . . [L]oss of perspective about the purpose of business, which is not . . . maximization of short-term profit . . . but rather delivering goods and services to customers in a mutually beneficial transaction. Profit and share price increase are a side effect, not a goal” (p. 95).

“If money is an addiction, it’s not surprising that some people think society needs help being weaned off it” (p. 112). Coyle

cites Frank and Layard as advocating a tax on purchases of luxury items.

“One of the consequences of the financial crisis has been to raise widespread doubts about the merits of markets, and economics in general” (p. 110). Mentions the “. . . advocacy of markets that made the financial excesses possible” (p. 110) and quotes Michael Sandel’s non sequitur about the “assumption that informs much market-oriented thinking . . . that all goods can be translated without loss into a single measure or unit of value” (p. 110).

Other statements at odds with what I would teach in my intro course:

On p. 43 she runs afoul of Frédéric Bastiat: “Wip[ing] out assets . . . will increase the growth of GDP.”

“Another debate asks whether activities that do not contribute positively to welfare . . . say, . . . polluting industries, . . . should be excluded from the measure of output, GDP” (p. 106). Confuses a tort with a crime. Pollution is bad, polluting industries are not—or would you rather do without electricity, paper, and even sheep (among the worst polluters around; Google sheep and methane)?

Finally, two additional malsourced references:

On page 15, a long quote about a decision in the US national accounts is attributed to Carson without a page number. The quote comes from p. 39 of “U.S. National Income and Product Statistics Born of the Great Depression and World War II” By Rosemary D. Marcuss and Richard E. Kane, *Survey Of Current Business*, February 2007.

On p. 113 there is a long quote from Abramovitz 1959. The name is misspelled as Abramowitz, the page number is not indicated, and worse, the source is nowhere to be found. Googling the quote, it appears that it was copied from a *Foreign Policy* feature with no sources. The correct source is in the references below.

7. Summing Up

GDP is misused and misinterpreted and that may call for clarification and better dissemination, a job nicely being done by the growing legion of bloggers, Diane Coyle included, some of whom reach beyond the profession.

GDP and welfare: GDP was always intended to be a measure of production. Well, yes and no. It was so in the immediate postwar period, when the accounts systems were set up (SNA, NIPA) and were seen as tools for the implementation of Keynesian stabilization policies and research, primarily for the short run. For long-term growth analysis, a measure more oriented to consumption and individual well-being was the preferred one, but even when labeled welfare it was always seen as *economic* welfare, namely “that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money” (Pigou 1932, I.I.5).

Wider measures of welfare or even of just economic welfare are best pursued in parallel to GDP, rather than as a substitute for the still-useful productivity measure that has continued to evolve with changing conditions, increased availability of data, new methods, better theoretical formulations, and, yes, response to populist grievances.

It may be correct, as argued in the book, that GDP has outlived its usefulness in the digital age. The main problem, I believe, lies elsewhere; the idea that what you think you are measuring you can control. Macro measures in the NIPA were a product of their times—the success of planning during the war decolonization and the league mentality in part fostered by the Cold War, where alternative systems were being judged by such data. Without going all the way to the Austrian dismissal, we need to reevaluate the concept and take more seriously Knightian uncertainty. If we cannot design a better

alternative, maybe we should consider that the time for creationism is over.

A general issue: *one* number designed for multiple objectives yields an undetermined system. This can be easily remedied by adding tools/measures, which is the way we have been going all along. We do lose the one number and not everyone will agree to this.

The later parts of the book suggest that the financial crisis might have led to one of those recurring soul-searching crises of faith that descend on the profession with Juglar-like regularity. The crisis has led to welcome rethinking of economics (GDP included) and it is being aired out in appropriate fora. Coyle has been an active leader of such efforts in the United Kingdom. But it may be too early for the severe judgement expressed in the final chapters of what is meant to be an “affectionate” reflection on a workhorse of the statistics of the economy.

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