POLITICAL ARITHMETICK: PROBLEMS WITH GDP AS AN INDICATOR OF ECONOMIC PROGRESS

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Dedicated to Professor John Kenneth Galbraith, who in The Affluent Society in 1958 brought the consequences of consumer-led growth to the attention of the world.

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Contents

Summary

The standard measure of economic growth, gross domestic product or GDP, which is a measure of goods and services traded in the market, is seen worldwide as a scorecard of national performance. GDP not only measures economies, it defines them. Yet as a measure of economic progress GDP is deeply flawed. The problems will not be solved by incorporating social and environmental indicators into the accounts, as the conceptual core is defective.

GDP does not detect symptoms of fundamental economic malaise such as an unbalanced penetration of imports into strategic industries; the sinking of household and public savings into economically terminal consumption rather than infrastructure and asset regeneration; starvation of research or sunrise industries; rising defensive expenditure on remediating pollution or social decay; rampant speculation on asset prices such as real estate or the stock market; the accumulation of private or public debt; or the transfer of assets to foreign investors.

In all cases, GDP could be rising and financial commentators could be lauding those responsible, while the economy is degenerating in a self-reinforcing vicious cycle of unemployment, indebtedness, consumption and waste.

GDP is not an asset account, but without a balance sheet GDP does not flag depletion in stocks of irreplaceable resources in order to fund current waste. It reinforces the decidedly political view that more production (and hence consumption) is better. GDP does not measure the value added by government, so perpetuates the fiction that the public sector is parasitic whereas instead it facilitates many of the critical pre-conditions for economic activity. Charitable and household endeavour is largely ignored.

By misleading those responsible for public policy about the nature of desirable economic activity, GDP drives perverse economic policies throughout the industrialised and developing world.

1. Introduction

When William Petty in 1676 chose *Political Arithmetick* as the title for the book which earned him a reputation as a founder of modern economics, he could not have more neatly summed up the twin pillars of the discipline. For economics aspires to the precision, accuracy and predictability of arithmetic. Yet economics is ultimately a political discipline, because its models of how an economy functions directly and indirectly feed policy which determines what kinds of economic activity are encouraged and how the benefits and costs are distributed.

1.1 Three Dimensions

This paper uses Petty's title as a cue for an examination of whether GDP, the most widely used statistical measure of economic activity, is an adequate measure of 'economic progress'. Of course the answer depends on what exactly is 'economic progress'. The literature of mainstream economics mainly views progress as lying in 'economic growth' which is a increase in production of goods and services in a given period. GDP's adequacy in tracking growth can be evaluated simply by assessing its arithmetic adequacy in tracking economic activity. However, a broader definition of economic progress is suggested here: an increase in the capacity to produce goods and services, *sustainably* and *distributed equitably*. It follows that there are three dimensions of GDP's adequacy:

Arithmetical aspects — whether GDP is a satisfactory measure of *current economic activity*. Does GDP actually track economic growth?

The primary arithmetical features of an ideal index are:

- *precision*: factors can be quantified in sufficient detail;
- *accuracy*: factors can be quantified correctly;
- *reliability*: calculations yield the same results if repeated.

Precision is not usually lacking in national accounts and will not be pursued in this article.

Diagnostic aspects — whether GDP is a satisfactory measure of the kinds of economic activity which are conducive to *future beneficial economic activity*. Does GDP track sustainability?

The major diagnostic features of an ideal index are:

- *coverage* or *scope*: all significant contributing factors are includedand irrelevant ones are excluded;
- *condition and trend* in the key ingredients of economic activity are recorded.

Political aspects — whether GDP is a satisfactory measure of *economic justice*.

A test of economic justice is the percentage of a country's population who enjoy access to a material standard of living sufficient to underpin a healthy, secure and optimistic lifestyle, with choices, or in other words, capacity to purchase the conditions for self-fulfilment. Does GDP track the success of a country's economic policies in supporting all its citizens on their journey to fulfilment?

1.2 Relevance to this Encyclopedia

No treatment of sustainable development can be complete without a study of economic growth and its hand-maiden GDP, because of their relationship to 'standard of living'.

An improved 'standard of living' for their citizens is the proclaimed aim of most governments on earth and economic growth is almost universally considered necessary to achieve it.

So widely is GDP used as a base for economic analysis, that if it is unreliable, the foundations of macro-economic policy crumble. Unless we have a dependable measure of economic activity, our economic policies will often be addressing the wrong problems. Mostly, economists acknowledge that GDP suffers from limitations, but nothing better has yet been accepted by the profession.

1.3 Scope of the Article

The insight that material wealth does not necessarily lead to personal contentment or social harmony is deeply embedded in the literary and oral traditions of nearly all cultures. In the West, this awareness was elbowed aside by neo-liberal discourse in post-1970s political and economic commentary, but is being revived in a growing body of contemporary writing which advocates that society's goals should be re-orientated away from economic growth towards environmental sustainability and simplicity.

Having said so, that theme is not the main subject of this article. Although this article will briefly (in 6.4) scrutinise the meaning of 'progress', it does not dispute that economic wealth is a major source of human well-being and enables people to achieve other, deeper aspirations. People must be fed before arts and letters can flourish. This article takes the primacy of economic considerations as given and examines the adequacy of GDP and the consequences of growth mainly in economic terms.

2. Background Economics

2.1 The Assumptions

The basic axioms of mainstream economics deserve a brief digression as some of the deficiencies of GDP derive from these origins.

Self-interest: economic activity is driven by rationally self-interested individuals who seek to maximise their own 'utility' or welfare. This assertion portrays humans as essentially materialistic individuals. Consumers are sovereign and have perfect foresight, so if they want something, it is legitimate for industry and commerce to dedicate efforts to provide it. Whether it is strategically prudent for the economy to devote productive capacity in that direction is considered irrelevant.

Equilibrium: competitive markets trend towards an equilibrium condition in which goods and labour both 'clear' efficiently, without surplus or inflation. Reliance on this steady state model confines mainstream economics to a static conception of the economy: technological innovation and institutional change are exogenous to the model, which is problematic when trying to explain growth.

Aggregation: the behaviour of an economy can be modelled by aggregating individual transactions upwards. This assumption disregards systems dynamics and imbalances of

power. It assumes that a modern industrialised economy featuring large corporations, many mobilising resources internationally, behaves in the same way as the craft-based village economy experienced by the founders of economics.

It is legitimate to postulate unrealistic assumptions as an intermediate aid to analysis, but any theory is valid only to the extent that its underlying assumptions are valid. The flaws in the above assumptions are an obstacle to evolution of a satisfactory theory of growth and a satisfactory index of growth.

2.2 Theories of Growth

The Western belief in material progress is of relatively recent origin. Fatalism is a feature of traditional societies and it was not until the Enlightenment in the eighteenth century and the decline of religious rigidity that Europeans recognised that humans need not be resigned to some pre-ordained status in life.

In the West, between AD 500 and 1500, GDP grew on average by only 0.1 per cent a year, in total as much in percentage terms over 1000 years as these economies grew over the 20 years between 1950 and 1970. The absolute increase in the latter period was of course even more dramatic. From the beginning of the Industrial Revolution in about the 1760s in Britain, per capita income grew sufficiently quickly that people could observe changes in living standards during their own lifetimes. Observation that it was possible to improve society and one's circumstances by conscious endeavour aroused ambition to do so.

Public confidence in scientific achievements in the eighteenth and nineteenth centuries subtly altered the cultural viewpoint of Europeans to become deeply optimistic about the prospect of human material and other progress, an outlook which they exported to the world.

Growth was central to the studies by classical economists in the tradition of Adam Smith (1723-90), Thomas Malthus (1766-1834) and David Ricardo (1772-1823). Growth was attributed to specialisation of labour facilitated by investment. Later, technical invention came to be viewed as the major driver. In the early 1930s John Maynard Keynes, in attempts to explain the Great Depression, argued that the scale of private investment was largely determined by demand and that expansion of aggregate domestic demand was a sufficient condition for growth. In the 1960s it became widely held that the accumulation of capital was the main driver. Theoretical interest in growth subsequently waned and economics became re-focused on the allocation of resources at a point in time.

In the 1980s, interest in explaining the observed large and widening differences in income between countries and over time was re-kindled. Since then a 'new growth economics' which assumes somewhat imperfect competition and internalises innovation has arisen. The pre-eminence of cultural receptivity, especially education, to overcome fatalism, in explaining why some societies host economic expansion and some don't, is now recognised. However, a model that explains the persistent sluggishness in growth of the poor countries, the expansion of the Asian economic 'tigers' and the latter day

plateau in the growth of the mature industrial economies despite an explosion in scientific research, still eludes analysts. There is yet no theoretical agreement as to the root causes of economic growth, or whether social inequality hinders or aids growth, or how (and whether) to stem the continuing transfer of wealth from the poor countries to the rich. This lack of consensus in the literature is remarkable and is a hint that indicators more finessed than GDP are needed to highlight the causative variables.

3. Kuznets to Keuning

3.1 History of GDP

The national accounts show the relationship between economic agents and the results of their economic activity. In so doing they serve two distinguishable but convergent purposes: to act as an orderly framework for gathering and disseminating economic statistics; and to facilitate analysis of economic policy. Loosely, one tails the past, the other seeks to signpost the future.

National accounts in the West can be said to date from 1662, when John Gaunt published *National and Political Observations Upon the Bills of Mortality* and 1665, when William Petty published his calculations of England's taxable capacity. Similar work was produced in France. However, Western public accounting draws upon deep roots in ancient Sumer, Babylon and Egypt. Separately in China during the Han dynasty (206 BC-220 AD) the department of the Chancellor kept centralised records of population, finances and harvests in the c.100 provinces.

In 1890 Alfred Marshall of Cambridge articulated a consolidated theory of marginal utility which became the corner-stone of mainstream micro-economics. By this theory, price is a measure of the level of satisfaction (utility) derived from a product or service and is determined by the matching of supply and demand at the margins. Traded non-physical services were brought into national accounting; but non-traded family and community activity was disregarded and price was disconnected from costs of supply or consumption of materials.

In 1932-4, drawing on work of Colin Clark (UK), Wilfred King (USA) and others, Simon Kuznets at the US National Bureau of Economic Research prepared the prototype for modern GDP: a set of national accounts, including indices of wages, investment, consumption, public revenues and borrowing. The accounts neatly fed Keynes' emerging theories for managing demand. This led to the publication in 1939 by the League of Nations of national income statistics, then in 1947 of a report which transformed national accounts from a simple compilation of separately calculated aggregates into a coherent system on a double-entry basis.

Subsequent milestones include publication of Systems of National Accounts by the United Nations in 1953, 1968 and 1993. The latest version (SNA 93) has been endorsed by the five powerful international organisations concerned with economic development (Organisation for Economic Cooperation and Development – OECD, United Nations, World Bank, International Monetary Fund and European Community). Until about 1990, most centrally planned economies used a different index with Marxian ancestry,

called the Material Product System, which tallied the final cost of physical goods alone. As with nearly all countries, they are now moving to adopt SNA 93. The extent to which countries have implemented the new system varies, however.

SNA 93 showed for the first time how the production accounts, the financial accounts and the balance sheets could be integrated in a conceptually consistent framework, comparable between nations. The interpretations placed upon the components, reinforced by the years of scholarship behind the SNA, are those of orthodox economics. They are now embedded in a single web, linking theory with accounting and serving the application of econometric models world-wide. This comprehensiveness and homogeneity make SNA 93 resistant to challenge. In its own words, SNA not only determines the kinds of analysis which can be carried out, but also influences the way that economic and social issues are considered.

3.2 Satellite Accounts

Environmental and social indicators are not included in the core accounts, traditionally because of the conceptual and practical difficulties in assigning monetary or even numerical estimates to them. However, SNA 93 established a System for Environmental Economic Accounts as a *satellite*.

Satellite accounts expand the analytical capacity of the central system without overburdening or disrupting it. They can link monetary and physical data and can be used to shed light on social and environmental issues of policy concern. For example, in a household satellite account the production boundary could be expanded to include unpaid household work, which can then be compared with household market production. The present satellite accounts also offer insight on distribution of wealth.

What satellite accounting has not provided is a single measure of well-being to supplant GDP. Various 'genuine progress indicators' have been proposed. Many start with GDP as their base, confirming how universally GDP is accepted as a measure of basic economic activity.

Several (notably European) countries publish parallel accounts constructed differently. Steven Keuning and colleagues in the Netherlands have developed a multi-dimensional System of Economic and Social Accounting Matrices and Extensions. This tabulates monetary and non-monetary data in an integrated matrix which allows trends and summaries to be drawn but avoids manipulating the data into a single price-based index like GDP. It is a statistic, not the output of an implicit economic model.

The next generation of statistics could either increase the sophistication of satellite or parallel accounts, or could fully integrate the satellite indicators into the core. But so long as the micro-economic core remains, they cannot rescue GDP.

3.3 How GDP is Calculated

GDP is only one composite which is aggregated up from the detailed sector-by-sector tables in the national accounts. Numerous items (such as stocks of assets) omitted from

GDP are still available for more in-depth analysis.

GDP is a flow account and sums the economic activity of the five accepted domestic institutional sectors: financial corporations, non-financial corporations, general government, non-profits and households. GDP is tallied, at least annually and often quarterly, in three ways, which should all yield an identical figure:

- *production*, the sum of prices of goods and services less the intermediate costs of production; in other words, the value added by industry;
- *income*, the sum of incomes generated by domestic production;
- *expenditure*, the sum of net final expenditure on goods and services, including exports minus imports. This includes current investment in durable assets.

Taking Australia as an example, prior to the 1990s these three were calculated separately. Later, they were averaged to produce the accepted figure for GDP, with small residuals inserted to cover statistical discrepancies. Nowadays, the input-output tables which are assembled in conformity with SNA 93 enable statisticians to confront production, income and expenditure progressively and a greater degree of confidence can be held over the final figures.

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Biographical Sketch

Geoff Edwards is qualified in ecological science and public administration. From 1991-2006 he was a public servant formulating policy in natural resource management. He has been a local government councillor and Shire President. In his doctoral studies at Griffith University he is seeking to define the 'public interest'. He currently manages South West NRM Ltd, a community-based catchment and landscape planning organisation in remote rural Queensland, Australia.