



Contents lists available at ScienceDirect

Economic Analysis and Policy

journal homepage: www.elsevier.com/locate/eap

Full length article

National accounting and the digital economy[☆]



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ARTICLE INFO

Article history:

Available online 9 June 2014

Keywords:

National accounting
Information economy

ABSTRACT

The construction of national accounts by Colin Clark and others was a major contribution to, and assisted the documentation of, the prosperity of the second half of the 20th century. In the 21st century, the crucial problem is to account for the value of information. Information is, naturally a public good, even though it is costly to produce. Moreover, the distinctions central to the 20th century economy, such as those between primary, secondary and tertiary industry, and between households and the market economy are increasingly irrelevant. These changes bring new policy challenges and, with them, the need for new systems of national accounting.

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1. Introduction

Colin Clark was one of two great Australian economists (the other being Trevor Swan) whose location, at least arguably, denied them a share in the Nobel Prize in Economic Sciences. His greatest contribution to economics was the development of the first system of national accounts for the UK (Clark, 1932). This work was undertaken at the same time as, but independently of, Kuznets (1934) development of national accounts for the United States, which was the primary basis for the award of the 1971 Nobel.

This was far from being Clark's only achievement. He was a student of Beveridge, a colleague and protégé of Keynes and a co-author of Pigou, all of whom clearly regarded him as an intellectual equal. His work on world food supply led him to be named by the World Bank as one of the pioneers of development along with Sir Arthur Lewis, Gunnar Myrdal, W.W. Rostow and Jan Tinbergen (all of whom, except Rostow, were Nobelists).

Despite the potential for a glittering career in his native England, he agreed in 1937, to take on the position of Government Statistician, Director of the Bureau of Industry, and Financial Advisor to Queensland Treasury, beginning a 50 year association with Queensland, which included a lengthy period as Research Consultant to the Department of Economics at the University of Queensland.

It is, therefore, a great honour to be asked to give the Colin Clark Memorial lecture, and natural to choose as my topic the future of national accounting. I will argue that, just as Clark developed a new set of concepts to meet the needs of the 20th century industrial economy, we are now faced with the task of developing accounting concepts for the digital economy of the 21st century.

The key problem for national accounting in the 20th century was that of the input–output relationships between industries. The solution in national accounting terms was the concept of 'value added'. This concept was crucial in measuring economic activity for the purposes of macroeconomic management and in assessing the rate of economic growth.

[☆] Twenty-third Colin Clark Memorial lecture, 14 November 2013.
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In the 21st century, the crucial problem is to account for the value of information. Information is, naturally a public good, even though it is costly to produce. Moreover, the distinctions central to the 20th century economy, such as those between primary, secondary and tertiary industry, and between households and the market economy are increasingly irrelevant. These changes bring new policy challenges and, with them, the need for new systems of national accounting.

2. The 20th century national accounting framework

The idea of national accounts, developed by Clark and Kuznets, was one of the great conceptual advances of 20th century economics.

Estimates of national income go back at least to the work of Sir William Petty (1662, republished in 1899). Petty was largely concerned with the capacity of the economy to generate revenue, a concern that was central to earlier surveys such as the famous Domesday Book.

Governments have always been concerned with their capacity to raise revenue. However, it was only in the 20th century that the demands of economic management reached the point where a more comprehensive measurement of the volume and value of economic activity was urgently required.

Two developments were critical to the initial development of national accounts in the 1930s and 1940s. The first was the rise of Keynesian macroeconomic theory, which gave a formal basis for the idea that the actual output of the economy could remain below potential output for lengthy periods, with the associated unemployment of labour and underutilisation of capital. The second was the need for centralised allocation of resources in the context of a war economy. Wartime planning required the ability to measure the existing output of different sectors of the economy in order to reallocate resources to the needs of the war effort, while maintaining essential productive activity.

These challenges continued, in a different form, in the aftermath of World War II. Although the planning systems and controls of the war economy were gradually dismantled, the economic role of the state had grown dramatically, both in qualitative and quantitative terms, relative to the interwar period and, even more, relative to the largely free-market economy of the period of economic stability before 1914.

During the postwar decades, the economy was transformed by the rise of Keynesian macroeconomic management and the social democratic mixed economy. The anti-Keynesian counter-revolution of the 1970s halted, but did not reverse, the growth of the state, whether this was expressed in terms of the ratio of tax revenue to national income or of the share of the public and regulated sector in economic activity.

The activist state of the 20th century required statistical information about economic activity, and a framework for analysing the impact of policy on economic welfare. National accounts were vital for this task. For various reasons, a single number, Gross Domestic Product, or GDP came to encapsulate the complex picture of the economy presented in the accounts.

3. The industrial economy

The central intellectual challenge in national accounting arose from the nature of the industrial economy that emerged in the 19th century and reached its apogee during the postwar long boom. As those who received their school education in this period will recall, the standard representation of the industrial economy involved three stages of production: primary, secondary and tertiary.¹

The primary stage (agriculture, forestry, fisheries and mining) involved the exploitation of land and natural resources to produce food, fibre and mineral commodities. The secondary stage (manufacturing, construction and related activities) involved processing primary products to produce consumer goods. Finally, the tertiary stage (wholesale and retail trade, transport, financial services) involved the set of activities needed to deliver goods to consumers.

This multi-stage production process created problems for national accounting and also for public policy, in areas such as taxation. The problems may be illustrated by considering a simple item such as a loaf of bread. The delivery of bread to the household would typically involve a series of transactions such as the sale of wheat by farmers to millers, the sale of flour by millers to bakeries, the sale of bread by bakeries to supermarkets and the final sale to consumers. Each of these transactions would be measured in the process of collecting data for national accounts. Moreover, in a transactions-based tax system, such as that prevailing in many European countries in the early 20th century, each of these transactions might be subject to tax.

The problem is that the total value of the transactions involved will be larger than, and perhaps many times larger than, the final value of the loaf of bread. If all transactions are counted (and taxed) the result will be a misleading set of national accounts (and a burdensome and inefficient taxation system).

The solution, for both national accounts and taxation, is to focus on 'value added'. That is, the market value of primary products is attributed entirely to the primary sector. This value is then netted out from the wholesale value of goods to determine the value added by secondary industry. This value, in turn is netted out from the retail price of goods to determine the value added in the tertiary sector.

¹ This terminology, reflecting the temporal stages of production, was commonly associated with a ranking of economic virtue, with primary industry being superior to secondary, and the tertiary stage of production seen as an unfortunate, but unavoidable, cost burden.

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