

# **The Chinese National Accounts: the Perspective of a User**

Richard Herd<sup>1</sup>  
Economics Department, OECD

The provision of national accounts statistics is an essential part of the information infrastructure of a market economy. China recognised this by switching to gross domestic product rather than measuring material product. Since then the economy has evolved in way that exceeded all expectations. Depending on the metric, China is now either the second or fourth largest economy in the world and one where the private sector increasingly dominates economic activity. Such a change brings a need to improve the presentation and coverage of the quarterly national accounts. Low cost options would be to present quarterly constant price GDP ensuring that information about quarter to quarter movements in the economy is not lost. Timely estimates of constant price expenditure components and income appropriation accounts are also needed. Such improvements would generate significant benefits for decision-makers both in government and in the business sector of the economy.

The provision of economic information in China has undergone a number of changes over the past 15 years in order to adapt to the evolving nature of the economy. The most visible change has been the adoption of the system of national accounts to measure output and income in the economy. This movement to using the SNA was a major step forward in the production of economic statistics. An equally essential part of this transition has been the need to have accurate benchmarks for the output of all sectors of the economy and especially the service sector which was neglected in the material product system. However, in a number of ways, the focus of the previous system remains as can be seen from the publication, on a quarterly basis, of just two indicators from the possible universe of indicators, namely nominal and real output (GDP). However, the scale of the economy and its decentralised nature mean that a further improvement in the provision of economic statistics is now required to aid in the efficient functioning of the economy.

## ***The changing nature of the economy***

The Chinese economy has undergone a massive transformation over the past two decades. Economic growth has been extremely rapid. Official statistics show an average annual increase of over 10% annually in the decade to 2005, after taking account of the recent upward revision to GDP. The exact size of the economy relative to countries is more difficult to determine. Purchasing power parities take into account differences in relative prices across countries but their estimation is subject to large error and there are no official estimates for China.<sup>2</sup> One recent estimate put Chinese prices at around half of those in the United States. On this basis, the Chinese economy would be the second largest in the world. Even when measured at market exchange rates, which give a misleading impression of the relative purchasing power enjoyed by different countries, China was the fourth largest economy in the world by 2005. At that date, it also had the

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1 The views expressed in this paper are those of the author and should not be attributed to the OECD.

2 The estimate of the purchasing power parity used here was produced by Ren using the 1995 industrial census and has been updated to 2004 by using relative movements of the GDP deflator in a common currency. The estimate for 1995 was published in Motohashi (2005) in paper presented to an OECD conference on productivity in October 2005.

third largest impact of any country on the world economy, judged by its ranking in the average value of exports and imports of goods and services<sup>3</sup>

As importantly for economic policy makers, there has been a sustained change in the nature of the economy. Private sector firms increasingly control value-added, producing an estimated 57% of the value added of the non-farm business sector in 2003 and even 52% of the value-added of industrial companies that report directly to the NBS.<sup>4</sup> This change is continuing with, by 2005, the latter share estimated to have risen a further three percentage points according to the annual data. Moreover, whatever the ownership structure, micro-economic decisions are now driven by market forces. The proportion of prices set by market forces in the retail sector has risen from 34% when the switch to GDP was made in 1991 to 96% in 2003, with a similar but less rapid rise for producer prices. Thus, the previous emphasis of government policy makers of meeting output targets at predetermined prices has changed to one in which corporations are becoming increasingly free to adjust output according to the movement of cost relative to prices and to demand.

### ***Demand is driving the economy***

Much of the non-farm business sector is now concerned with fulfilling demand in way that generates profits. Prices are largely determined by the interaction of supply and demand. With many companies making only periodic adjustments to prices, the role of demand is crucial and firms invest in gathering information about the demand for their products. The relatively recent increased dependence on demand can be seen in the nominal national accounts. In the decade up to 1994, the increase in final demand represented only 93% of GDP, the remainder representing an increase in inventories that were often accumulated in order to meet output targets set administratively. By contrast, in the five years to 2004, final demand has accounted for all but 0.3% of output. The information provided by national accounts needs to follow this evolution in the functioning of the economy.

### ***Financial markets are growing***

Deregulation of pricing has also affected financial markets with interest rates being progressively liberalised. Governments started borrowing from markets in the early 1990s and by 2004 outstanding government debt amounted to 20% of GDP. While this is not high relative to GDP, the absolute size of the Chinese bond market is only very slightly smaller than that of Korea and is thus the third largest market in the East and South-East Asia area. Moreover, the total turnover in Chinese financial markets is relatively high. Interest rates in bond markets are now freely determined. In free markets, prices depend on participants' expectations of future movements in the economy and so security houses and banks are avid users of economic data, as better interpretation of existing and future trends can yield significant profits. The lack of information in China makes for a relatively imperfect market and so the scope for price movements induced by unexpected movements of economic statistics is significant. Thus, improving the information flow to markets is likely to result in less volatility in markets and hence a lower cost of capital.

In China, the government has a double interest in improving the functioning of financial markets through the better provision of economic information. It is the predominant issuer of bonds and so would benefit from lower interest rates. Moreover, lower rates would raise the valuation of its holdings in listed companies, part of which is likely to be sold under the governments programme to allow companies to permit free trading in a greater proportion of their share capital. Already, even though the presence of foreign investors in government bond markets is still limited by capital controls, many major U.S. and European investment banks are devoting significant resources to gathering information and analysing

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3. OECD Economic Outlook database.

4. OECD Economic Survey of China, September 2005, p81.

short-term trends in the Chinese economy. In particular, they devote substantial effort to researching areas where Chinese statistics are seen to be deficient.

### ***Policy instruments are changing***

In reaction to the changing nature of the economy, the government is committed to moving away from using direct administrative controls to using interest rates and other indirect instruments to guide the economy. Of course, at present, economic policy makers need information to use administrative controls and so moving to the use of indirect instruments will not necessarily increase the need for information. However, in OECD countries the conduct of economic, and notably monetary policy, is generally seen to be more efficient and credible in ensuring stable economic conditions if it is transparent in its operation, revealing the reasoning behind changes in interest rates in terms of its perceptions of movements in the economy.

### ***A market economy needs information***

The transition to a market economy is thus in the process creating demand for more economic information. As long ago as 1953, a government report in the United States wrote "all good management is dependent on good records. Good external records or statistics – on the markets served and on the markets from which are secured materials, equipment, labour and capital – are essential... Every decision must be based on information – good or bad. In the main, they can be no better than the information on which they are based."<sup>5</sup> It added that "the economy was in the midst of great technological revolution which is accelerating change, hastening obsolescence, creating new industries and transforming old ones, remaking the industrial map of the country, and bringing within the range of the feasible great heights of production, productivity, and well-being...The need for the .. statistics .. is greater today than ever before, and promises to grow in intensity."<sup>6</sup> As a result of this report, the U.S. government instituted regular economic censuses and expanded its system of national accounts. These remarks, which helped generate a significant expansion of information gathering in the United States are as relevant today to the Chinese economy as when they were first written. Indeed, China has now completed its first economic census giving it a similar opportunity to improve the information in its national accounts.

### ***The economic data that is needed***

A full set of economic data is essential to adequately manage the economy and to ensure that the economy behaves in a stable fashion. In addition, the information has to be available in a timely fashion. For example, one key objective of economic management is to ensure a stable inflation rate. Economic theory suggests that achieving this result depends on keeping a balance between the level of output and the capacity of the economy to produce. It is necessary to know the level of real GDP and to be able to abstract from normal seasonal fluctuations. It is not sufficient to know the growth rates of the economy from one quarter to the same quarter one year ago. The importance of high frequency estimates of GDP can be seen from the extensive literature that seeks to explain the decision making of economic policy makers.<sup>7</sup> This literature has revealed the importance of the need for improving the quality of quarterly data and so getting a quicker more reliable view of economic performance. The literature has also clearly revealed that policy makers try to anticipate future developments in the economy in order to take pre-emptive action rather than waiting for a problem to become evident.

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5 Mark E. Wallace (2001) *The Economic Census: Two moments of Truth 1954 and 1997*, US Bureau of the Census

6 *Ibid.*

7 Athanasios Orphanides, "Historical Monetary Policy Analysis and the Taylor Rule," *Journal of Monetary Economics*, vol. 50 (July 2003), pp. 983-1022 and same author "Monetary Policy Rules Based on Real-Time Data," *American Economic Review*, vol. 91 (September 2001), pp. 964-985

In order to anticipate economic developments, economic projections are necessary. Production of such forecasts in OECD member countries requires the full exploitation of the information offered by the complete system of national accounts. Such a system of presenting information ensures a degree of consistency between the different parts of the projections that is otherwise hard to achieve. In particular, most projections rely on knowledge of the movement in the real demand counterparts to GDP broken down by the main economic sectors (households or the personal sector, companies, government and the rest of the world) and of the incomes of these sectors. Moreover, such information needs to be produced quarterly. Other economies of a similar size to China, such as the United Kingdom and France, regularly produce such information. Given the greater availability of quarterly data, the OECD changed the time interval of its projections to quarterly several years ago. Of course, sophisticated users of economic data look well beyond GDP data. In particular, labour market and price data are important.

### *Current information provision*

When judged against the standards of a modern large-scale economy, as outlined above, the current provision of economic data could be markedly improved. Essentially, the NBS produces only two quarterly series drawn from the universe of SNA indicators. By contrast, the United Kingdom produces almost 100 tables and the United States almost 200 tables, with each table containing between 5 and 50 variables.<sup>8</sup> There is a complete absence of constant price demand data. Even in the annual data, there are only six nominal demand series (rural and urban household consumption, fixed capital formation, inventories, government consumption and net exports). It is possible to obtain capital formation and inventory data for different sectors from the income appropriation accounts, but these are published with a considerable lag. For example, in the 2005 Yearbook, these income accounts end in 2002. Moreover, investment is not broken down by type of asset. As a result, it is not possible, for example to distinguish outlays on housing from outlays on other assets, despite their very different impact on the economy. The absence of national accounts demand data does not mean that policy makers are not well aware of the impact of demand. The recent NBS press release discussing the movement of GDP in 2005 illustrates this. After dealing with the growth of real GDP, it details the movement in sales of consumer goods, investment and foreign trade, as well as giving information on consumer incomes. However, what is missing from the discussion is the integration of these indicators into the unified architecture of the system of national accounts.

It is not just analysis of short-term developments that is hampered by the absence of adequate national accounts. Medium-term analysis is also hindered. Without constant price data, there is no official estimate of the capital stock, though there are a number of academic estimates.<sup>9</sup> Such estimates are crucial for consideration of issues such as possible over-investment in the economy and for estimating the speed with which the economy can grow. A further problem in this area is the absence of adequate capital consumption data as current depreciation rates are based in the historical cost of assets. In addition, while longer-term growth depends on the availability of saving, the national accounts also only produce estimates of the supply of domestic saving with a considerable lag (the most recent data is for 2002). While lags in the estimates of household saving may not have been serious five years ago, as it was then possible to make estimates by looking at the growth of household bank deposits, liberalisation of financial markets in the past five years has meant that households are now able to borrow and invest in other financial assets so ending the previous correspondence. Changes in financial markets are thus also pointing to the need for an evolution in the coverage of national accounts.

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8 Nonetheless significant improvements have been suggested both for the U.S and U.K. accounts see Dale W. Jorgenson, J. Steven Landefeld and William D. Nordhaus, Editors (2006), The University of Chicago Press, 2006 and the two reports by Allsopp and Atkinson respectively, for the United Kingdom.

9 Carsten A. Holz, "New Capital Estimates for China." Nov. 2005. Forthcoming in the *China Economic Review*

The presentation of the two quarterly GDP numbers has improved in recent years by showing the growth rate from the current quarter to the same quarter one year ago. However, it is still not possible from the current data to deduce the level of GDP for a given quarter and consequently adjust data for seasonal fluctuations. By contrast, many OECD statistical agencies focus entirely on the seasonally adjusted level of the GDP data.

The data for quarterly cumulated nominal GDP give the impression that it is possible to determine the level of quarterly nominal GDP by differencing the cumulated data for each quarter. However, such a procedure is not justified, given the methodology used to align quarterly GDP to annual GDP. At present, the initial quarterly estimates for GDP are revised when the annual GDP data is published by multiplying each quarterly estimate by the ratio of the annual and the sum of the quarterly estimates. This ratio can vary from year to year and so can give rise to a step change in the level of quarterly GDP between the fourth quarter of one year and the first quarter of the following year that cannot be interpreted as a change in economic activity between these quarters. Any alignment process is arbitrary but there are statistical routines that ensure that the quarterly adjustment factors are spread smoothly over each quarter and that a reasonable adjustment factor is applied to the incoming quarterly data for which a benchmark is not yet available. One example is the proportional Denton algorithm.<sup>10</sup> The annual benchmarking procedure described above has been adopted as standard by the NBS. When the quarterly nominal GDP data are revised, following the economic census, it will be important to make smooth adjustments to each quarter.<sup>11</sup>

### ***Demands for monthly GDP estimates are growing***

For the purpose of economic policy making, the three-monthly interval between the publications of data may be long and so considerable reliance is placed on the interpretation of monthly data. In a few cases (Canada, Chile, Finland, Peru and Sweden) this has led to the publication of monthly GDP estimates by statistical offices, while at least one country is studying the introduction of monthly data.<sup>12</sup> Such indicators generally use a number of existing monthly indicators as guides.<sup>13</sup> When official data do not exist, private bodies often publish estimates of monthly GDP.<sup>14</sup> Monthly indicators for industrial output have long been produced in China and elsewhere, though tertiary sector indicators are lacking. The production of an index for tertiary sector output would be a major improvement in the availability of economic information. The Canadian experience suggests that many of the indicators necessary for the measurement of monthly tertiary sector output exist in China.<sup>15</sup> Moreover, publication of such an index, all the more necessary given the strength of the service sector, would bring closer a monthly GDP series.

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10 A routine to implement this procedure is to be found at <http://www.estima.com/Interpolation.shtml>. The algorithm is described in Adriaan M. Bloem *et al.* (2001), *Quarterly National Accounts Manual - Concepts, Data Sources, and Compilation*, International Monetary Fund, May.

11 The alternative of placing all of the revision in the fourth quarter cumulated data would greatly reduce the value of quarterly GDP statistics. According to the CEIC database, 27 January 2006, revisions had only been made to the cumulated fourth quarter GDP data but this could not be confirmed in an NBS publication.

12 The United Kingdom is working towards this objective as is set out in the following document [http://www.statistics.gov.uk/methods\\_quality/quality\\_review/downloads/STOIR\\_table2.pdf](http://www.statistics.gov.uk/methods_quality/quality_review/downloads/STOIR_table2.pdf)

13 The current status of monthly indicators is discussed in Derek Blades and R. Nillsson (2004) "Monthly GDP: Progress and Prospects." <http://www.iariw.org/papers/2004/dblades.pdf>

14 For the United States, data are available from Macroeconomic Advisers and E-Forecasting while for the United Kingdom and Japan data are published by the NIESR and JCER, respectively.

15. For the Canadian experience see [www.oecd.org/dataoecd/59/58/2960363.ppt](http://www.oecd.org/dataoecd/59/58/2960363.ppt)

At the OECD, while not attempting to produce monthly GDP estimates for member countries, monthly indicators are used to obtain estimates of the current quarter's GDP. Econometric techniques are used to combine incoming data in a statistically efficient manner.<sup>16</sup> While the accuracy of this procedure varies considerably across countries, it does appear to convey significant information about current economic trends, especially for countries where monthly data are produced following a national accounts framework. In China, a number of time series exist which might be used in such an exercise, if that is, they were all produced as level series rather than cumulated series. There would be a number of additional problems though that might limit the usefulness of certain series. Several are published in value terms only (investment and retail sales). Moreover, the investment series does not correlate well with the national accounts measure of investment in recent years. Ensuring that monthly data are produced in way that is compatible with an easy integration with the national accounts architecture should be a priority.

### *A possible development plan*

The evolution of Chinese national accounts towards the model found in economies of similar size would clearly have a significant cost. Nonetheless, some of the improvements suggested above could be carried out with minimal extra resources. For example, presentation of data in level form would have no cost but would give significant information to analysts. Only a very slight cost would be incurred by adopting a smoothing procedure to ensure that discontinuities are not introduced when quarterly data are benchmarked to annual data. Similarly, the provision of seasonally adjusted data would have little ongoing cost, especially as recent routines are able to better handle the specificities of Chinese data. Publication of quarterly real and nominal seasonally adjusted GDP would bring China into conformity with the practices of other large economies.

The National Bureau of Statistics has been considering the publication of quarterly expenditure based for a number of years. The provision of both annual and quarterly should be considered a very high priority. The production of such accounts should not necessarily involve large ongoing costs as they would draw on a number of existing sources (survey and reports on retail sales, investment, foreign trade and government expenditure, together with a number of price indices) to generate estimates. One major shortfall in price data, the absence of foreign trade unit values, has now ended with the publication of data since January 2005. A major effort should be made to estimate past unit values using customs records.

The extra costs of producing expenditure data might also improve the overall quality of the measurement of real GDP. The GDP deflator derived from the use of expenditure series does not suffer from the use of single deflation of components of value added using price indices that essentially refer to gross output rather than value added. Thus, better measures of underlying inflation might be obtained as. Experience in the United States points to a marked difference in the movements of the gross output deflator and that of the value-added deflator, though this is not reflected to the same extent in measures of real gross output and value-added.<sup>17</sup>

Better monthly data is also needed. Despite the importance of the service sector of the economy, there is no systematic measurement of the output of this sector on a monthly basis. Production of a monthly index of tertiary activity should be a third priority.

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16 For details of the methodology in Franck Sédillot and Nigel Pain (2003) "Indicator Models of Real GDP Growth in Selected OECD Countries" OECD Economics Department Working Paper, [http://www.oilis.oecd.org/olis/2003doc.nsf/linkto/eco-wkp\(2003\)18](http://www.oilis.oecd.org/olis/2003doc.nsf/linkto/eco-wkp(2003)18)

17 Erich H. Strassner *et al.* (2005) "Annual Industry Accounts: Introducing KLEMS Input Estimates for 1997–2003" Survey of Current Business, September

The above recommendations might be achieved a relatively low cost. There is a need, however, for a more fundamental expansion of quarterly statistics so that the full set of national accounts is produced on a quarterly basis, covering income and expenditure of the principal sectors of the economy. It is only when these accounts are produced with a reasonable time lag that policy makers will be able to fully analyse and understand short-term developments in the economy. Such accounts would also provide the base for the integration of wealth and capital stock data into the national accounts system. Given the size of the Chinese economy, its importance in the world economy and the expansion in the size of the economy since GDP was first measured, consideration should now be given to ensuring the that national accounts evolve in order to provide a tool for helping to managing the large, modern market economy that the China has become.