

Frequently Asked Questions on The Conference Board’s Alternative China GDP series (revised version 10 November 2015)

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Why did TCB change its China GDP series?

1. Why is TCB so concerned about China's GDP numbers?

Throughout its near one-century presence, The Conference Board has conducted and commissioned studies in the areas of productivity measurement and GDP growth in many countries, including (since 2000) China. While we do rely heavily on government statistics, we do not subscribe to unquestionably adopting the official figures for any economy. But we also do not believe that reliance on judgmental, ad-hoc measures is a robust and credible methodology. In the case of China, we have therefore endeavored to reconstruct the Chinese GDP series bottom-up on a sector-by-sector basis, partly relying on official measures where we find those to be relatively unbiased, and partly constructing new estimates where we have concerns about the methodology of the published estimates.

We feel the alternative GDP series provides a better description of China's growth performance historically, and provides a better basis for projecting its growth going forward. We have discussed our alternative estimates at length with representatives from the academic and policy worlds in China and globally.

Over the past decade, we have worked closely with Professor Harry X. Wu (Japan's Hitotsubashi University) – to develop alternative growth and productivity estimates for China. Based on his latest work, as well as earlier studies he conducted in collaboration with the late Professor Angus Maddison (University of Groningen in the Netherlands), we have fully integrated Professor's Wu alternative estimates into this year's annual Global Economic Outlook.¹

While the new series suggests an upward bias in the previously published GDP growth series of, on average, 2.6 percentage points per year since the start of Deng Xiaoping's so-called "reform era" that began in 1978, this percentage has not been constant over time. In fact, our alternative series indicates much larger volatility in the year-on-year estimates (sometimes even showing faster growth rates than the official estimates), suggesting that the impacts of external and internal shocks on the Chinese economy are much more pronounced than the official statistics convey.

Our analytics provide a different perspective on the stability of the Chinese economy and the features of volatility that shape the business environment. This helps to better inform companies how to appraise and react especially in times of economic stress in China.

2. Why are China's GDP numbers important for business?

China's macro growth performance is a key measure of the "temperature" of the economy and business environment. Whereas in other countries GDP serves primarily as an ex-post performance measure, China's government has traditionally been strongly focused on targeting aggregate GDP growth via industrial policies and central planning. As a result, understanding the implications of either not reaching

¹ Van Ark, B et al. (2015), [The global economy in a holding pattern, The Conference Board Global Economic Outlook 2016](#). See also [Global Economic Outlook 2016](#).

or overshooting the GDP target is of considerable significance to the business and policy community in China. This will necessarily remain true until the significance of GDP as a national target diminishes for China – a notion that some in the policy community, both domestically and internationally, have argued will be forthcoming.

By identifying possible pitfalls in the existing GDP measure in China, as well as contributing to the improvement of the measurement framework, The Conference Board aims to provide business with a more accurate compass on the basis of which business decisions can be taken. For example, the perceptions about the progress (or lack thereof) of China's strategy to rebalance the economy from industry- and investment-driven growth to services- and consumption-driven growth hinge on adequate measures of output and expenditures. Better measures also help to identify how large (or small) the returns on investment are in an arguably overinvested economy. Or, they provide an answer to how large China's consumption potential really is.

When the Chinese economy is genuinely in a high-growth mode, an overstated growth rate by one or two percentage points may not be a problem for business planning. Opportunity cost is, after all, not a direct loss to business. However, when, in reality, the economy is slowing down markedly, the impacts of overstated growth measures are farther reaching and more risky in that they potentially undermine efficacy in business, policy, and household planning, both inside and outside of China. For business, growth projections that fail to depict downward trends or low-growth levels necessarily undermine the responsiveness businesses need to appropriately adjust planning, budgeting, and operations to assure competitiveness and sustainability through difficult times. This scenario is now clearly playing out in China.

3. What are the biases in data collection and how much do they affect the GDP numbers?

Despite significant changes to and improvements in the Chinese statistical program, including a gradual transition from the former Material Product System (MPS), which was adopted from the former Soviet Union in the earlier period of central planning, to the internationally harmonized System of National Accounts (SNA), China's official economic statistics still suffer from many deficiencies. These range from inconsistencies in definition, classification and coverage, to errors caused by inappropriate statistical approaches to data collection and reporting inaccuracies attributable to institutional deficiencies.

Unlike most advanced economies, China's measurement of GDP is traditionally and primarily based on an output method - i.e. measuring production by sector - rather than an expenditure method which measures investment and consumption. The latter is more commonly used in advanced economies and requires a more sophisticated data generation framework comprising well-developed surveys of consumer spending and business investment. Such expenditure-based metrics are often not available, nor of sufficient quality, in developing economies. China's recent efforts to improve measurements on the expenditure-side are important, but are still under development and not transparent in methodology.

Output measures have their own drawbacks. They are largely based on regular data collection and reporting via administrative channels from the bottom up involving records of firms, local governments

and state agencies. Those official records are inevitably affected by various political incentives. We argue that the upward bias in the published GDP numbers in China is attributable to two sources: (1) a “misreporting effect” which accounts for about two-thirds of the upward bias; and (2) a “price effect” which accounts for the remaining one third. While originating from the old MPS system, both bias-causing problems have basically prevailed since the beginning of the so-called “reform period” which began in 1978.²

The misreporting effect

The “misreporting effect” refers to inconsistencies in the data collection process, methodological problems in data processing, as well data reporting inaccuracies that occur at any level of the data-generation process, from the localities on up to the central authorities. The misreporting effect includes the tendency of firms and local and provincial officials to exaggerate their output achievements to the central authorities relative to their respective plans or growth targets. This dynamic has caused significant overstatements in both levels and growth rates of output. For example, it has been reported that the value added of so-called “above size” industrial enterprise (which until 2011 used to cover all firms with annual sales of more than 5 million yuan) as reported through the statistical system was 10 percent higher than the reported industrial GDP in the national accounts. Even the growth rates of provincial GDPs, in aggregate, suggest faster growth than the national account-level GDP, and this growth gap has increased over time. For example, from 2001 to 2013, aggregate GDP growth at a provincial level was 2.4 percent faster than the national accounts growth rate. Hence, while statistical adjustments were made to account for over-reporting, it stands to reason that such adjustments were kept to a minimum.

An additional misreporting effect relates to the possibility of adjustments at the central level under the influence of political intervention from the political entities that set the growth targets, and from which the National Bureau of Statistics is not institutionally independent. Deliberate data manipulation at the central level is a cause of the unlikely smoothness of China’s GDP series, but less so on the upward bias in the growth rates. The latter is more likely due to the systematic, skewed-data problems that emanate from the manual data corrections that occur throughout the data generation process at all levels.

The price effect

A rather retrograde approach to price measurement is deeply engrained in China’s political-economic system; and specifically, there is a potentially deleterious lack of clarity on how the deflation of nominal GDP is carried out. In short, the concern is that prices are significantly understated in the statistical data. An understatement of prices is in part a legacy of the central planning period (1952 to 1977) when

² Wu, Harry X. (2014a) [Re-Estimating Chinese Growth: How fast has China’s economy really grown?](#) Special Briefing Paper, The Conference Board China Center for Economics and Business, June. Wu, Harry X. (2014b), [China’s Growth and Productivity Performance Debate Revisited](#), The Conference Board Economics Working Papers, February.

output was typically valued at “comparable prices”, which are institutionally determined “constant prices” over long time intervals (typically 10 to 13 years). In 2002 this system was abandoned, but there is still a near total lack of clarity around how the new GDP deflator was designed and implemented, and there still seems to be a significant downward bias in price measurement. For example, while the (implicit) GDP deflator for the industrial sector – obtained by dividing nominal output growth by real output growth – has increased faster since 2002 than before, its growth rate remains significantly lower than the officially reported producer price index. Our adjusted (lower) productivity assumptions for so-called “non-material services” (see below) also show much higher inflation than that suggested by the implicit national accounts deflators, for example in healthcare and education.

4. Have the frequent adjustments in GDP series by the NBS taken care of the problems in the output data?

Statistical agencies need to regularly refresh and revise their measurement framework to record output from hitherto unobserved (and often new) enterprises. Especially if the economy changes rapidly, the historical series understate growth if new economic activities remain unmeasured for substantive lengths of time. In five-year intervals since 2004 the National Bureau of Statistics (NBS) has adjusted the GDP data series several times when economic census data become available always leading to significant increases in the level and growth rates of China’s GDP. There were few if any downward adjustments most likely because of political constraints. For example, the 2004 economic census generated a substantial GDP adjustment from 1993 through 2003 but it left the relatively high 1998 growth rate untouched even though it was questioned internally and internationally as China was badly hit by the Asian Financial Crisis. Also the deteriorating manufacturing performance since 2011, after the effect of the unprecedented fiscal injection in previous years died out, was not reflected in the newly released 2013 census-based adjustment, which instead confirmed the original growth rate estimate for 2013. Also, despite the needed revisions to reflect genuinely new economic activities, the latest censuses also reflect better measurement of already existing activities that had simply remained uncounted until then. To treat all undercounting as new economic activity therefore creates an upward bias in the growth rate of historical economic activity.

5. Why introduce an alternative GDP series now?

The recent turmoil in China’s financial markets and the implications it may have regarding the strength of the Chinese economy has intensified concerns about China’s true growth performance and the official government numbers have been even more widely challenged.³ Even the latest growth report of 2015

³ For an overview of recent estimates, see World Economics, [China Growth Tracker](#), November 2015, suggesting GDP growth at half the official estimate. See also Bloomberg, [Six ways to gauge how fast China's economy is actually growing](#), 2 November, 2015; Citi, [Is China leading the world into recession](#), 8 September 2015; CNBC, [China changes GDP calculation method to improve accuracy](#), 9 September 2015; Financial Times, [Favourable GDP data reflect reality, says China](#), 15 July 2015; Financial Times, [China data: Making the numbers add up](#), 28 September 2015; Peterson Institute for International Economics, [China's new GDP measurement: impact of growth income and productivity](#), 7 October 2014; The Diplomat, [How much will China's GDP continue to grow?](#), 15 July 2014; Wall Street Journal, [China revises its GDP calculations](#), 19 December 2014.

third quarter real GDP at 6.9 percent (year-over-year), which is just below the government’s 2015 target of 7 percent, has led even heretofore non-sceptics to assert that the results are unrealistically high. Meanwhile, staunch defenders of the official measurement practices argue that the official statistics do in fact reflect a moderate slowdown compared to previous years.

Against this backdrop of contention and confusion, we felt compelled to air our views publicly. After having researched and debated the issue of GDP measurement in China over many years, we began to report our alternative GDP series to TCB members in several reports in 2014.⁴ While we agree with the sceptics that there is an upward bias in the GDP measures, we disagree with the view that a sudden sharp collapse in growth is now occurring.

Our estimates, which systematically rebuild China’s real output (GDP) growth from the bottom up, suggest that the economy has already experienced a significant slowdown over the past four years, beginning in 2011. Our assessment is that the current episodes of financial market turmoil are mainly caused by the much greater volatility that occurs when the proximate low-point of a slowing growth trend is reached – especially from such previously heady peaks and high trend ranges. The slowdown over the last four years, will continue, we believe, but at a slower pace. We have dubbed the dynamic a “long soft fall”. We assert that the trend will continue for another decade or so.

How did TCB produce its new GDP series?

6. What are the most important changes in the TCB series compared to the official series?

The Maddison-Wu approach, which The Conference Board has adopted, reconstructs aggregate real GDP growth from the bottom-up on a sector-by-sector basis. The biggest adjustments are for the industrial sector and the so-called “non-material services” sector, which includes banking and financing, real estate, professional services, education, healthcare, culture and entertainment services, and government services.⁵

*China’s Industrial Sector*⁶

The biggest data adjustment is for China’s industrial sector, which focuses on correcting the misreported annual output values and price series. The estimates are based on a consistently built volume series of

⁴ See, for example, Hoffman, David and Andrew Polk, [The Long Soft Fall in Chinese Growth: Business Realities, Risks, and Opportunities](#), The Conference Board, October 2014.

⁵ Maddison, Angus (1998), *Chinese Economic Performance in the Long Run*, OECD Development Centre, Paris; Maddison, Angus and Harry X. Wu (2008), “Measuring China’s Economic Performance”, *World Economics*, Vol. 9 (2), April-June; Wu, Harry X. (2014b) [Re-Estimating Chinese Growth: How fast has China’s economy really grown?](#) Special Briefing Paper, The Conference Board China Center for Economics and Business, June.

⁶ See Wu, Harry X. (2013), “How fast has Chinese industry grown? – The upward bias hypothesis revisited”, *China Economic Journal*, Vol. 6 (2-3): 80-102.

commodities and commodity groups, with multi-level and multi-year pricing and weighting using input-output table weights. In a nutshell the following steps were taken:

- 1) The first step aggregates 165 available series of commodities or commodity groups from the China Industrial Economy Statistical Yearbook into (larger) groups that could be matched to 83 basic (3-digit) industries in a specific year's Chinese input-output table (CIOT). Each basic CIOT industry may contain several commodity groups. Benchmark-year price data are first used in intra-group weighting and then in aggregating the groups to produce indices that match the basic CIOT industries.
- 2) The second step is to use the gross value of output of the 83 basic (3-digit) CIOT industries to weight and aggregate these commodity groups to match 25 major (2-digit) CIOT industries (or branches).
- 3) The third step is to construct a quantity index for each of the major CIOT industries by assuming the unidentified part of the output value in an industry moves together with the identified part of the output value within each industry.
- 4) The final step is to estimate gross value added at the major industry level, using a time series of the ratio of gross value added to gross value of output by industry based on Chinese input-output tables for 1987, 1992, 1997, 2002 and 2007.

As a result of these adjustments, the growth rate of real value added in industry (including energy, primary inputs, and semi-finished and finished products) was on average 7 percent per year from 1977 to 2014, compared to the average 11.3 percent stated in the official estimates from the NBS. However, there are substantial differences in the growth gap between our estimates and the NBS series for sub-periods. For example, for the period from 2001 to 2007, our index growth was faster, at an average 12.3 percent per year, than the NBS series which increased at 11.8 percent on average. However, for the period since 2007, real industry value added has increased at 4.8 percent per year on average according to our alternative series, compared to 9.8 percent per year average according to the NBS data. We also observe, in our series, a much higher variation in the annual growth rates of industry value added than does the NBS.

China's Non-Material Services⁷

The estimates for the so-called "non-material services" which include, for example: banking and financing, real estate, professional services, education, healthcare, culture and entertainment services, and government services (but exclude "material" services such as transportation, telecommunications and postal services, trade, and hotel and catering services), are based on changes in the number of people employed in each of those sectors, and assuming average labor productivity improvements of 1 percent per year from 1982 to 1991 and 2 percent from 1992 onward. These labor productivity growth estimates in non-material services are much lower than the implicit measures in the official accounts,

⁷ See Wu, Harry X. (2014c), ["The growth of "non-material services" in China – Maddison's "zero-labor-productivity-growth" hypothesis revisited"](#), *The Economic Review*, Institute of Economic Research, Hitotsubashi University, Vol. 65 (3).

which show output per worker (deducting employment growth from output growth) at 6 per cent per year, on average.

The labor productivity adjustments are judgmental in that they are based on the empirical experience of other, precursor, emerging and mature markets. For example, in other East Asian economies, productivity growth rates in non-material services sectors typically range at between 0 to at most 2 percent per year, depending on the relative level of economic development. In all cases, productivity in East Asian economies is less than half of the implied 6 percent labor productivity growth rates in non-material services in China according to the official data.

The exaggeration of labor productivity growth for non-material services in the published GDP figures is likely caused by deficient measures of price changes for the output of the non-material services – i.e. the Chinese official measurements didn't sufficiently deflate for price increases, and thus exaggerated output growth in real terms. Inaccuracies may also have been caused by considerably underestimated initial-level growth contributions of those services due to price distortions.

7. If official price statistics in China are deficient, can you use those weights for commodity groups in your alternative series?

While the prices that are implicit in the Input-Output (IO) tables, and which are used for weighting the commodity volume indexes by value added, have the same problematic characteristics as the implicit deflator for GDP, we are less concerned about their impact on the alternative growth estimates. Those prices are only used for weighting rather than for deflating nominal output. In other words, while we think the official price deflators cannot be used in time series, the biases in a cross-section are less of a concern.

A detailed analysis was also carried out to determine whether subsequent weights in the IO tables for 1997, 1992, 1997, 2002 and 2007 reflected substitution of more expensive items for cheaper items. This is what one would normally expect if at least some market forces are in play. This effect was confirmed by the analysis, and suggests that the use of multiple IO weights for commodity series is economically and statistically sensible to reduce the substitution bias. All in all, despite the limited use of prices, this weighting method is to be preferred over directly using prices for deflation.

8. Does the “commodity method” for industrial production pick up quality improvements?

The quality of many products in the commodity groups will certainly have improved over the years. If this were to create a systematic bias we may of course understate the real output growth in manufacturing due to those unmeasured quality improvements. On the other hand, as the implicit price deflator in the national accounts has grown very slowly, the official method seems to assume that all quality improvements are being reflected in real output rather than in price increases – an unlikely possibility given the lack of sophistication in price measurements in China.

While it is not possible to come up with adequate quality measures for individual commodity groups, we were able to test whether the use of the commodity method would cause a systematic bias at the

aggregate level. Assuming that the quality problem in our estimates would have increased over time, we would have had to find an increasing bias in our estimates relative to the official measures. However, correcting for external shocks and filtering out statistical noise, we didn't find such a systematic bias, leading us to conclude that, at least at aggregate level, quality issues are not a major concern in our index for industry.

9. Will TCB make further changes to the alternative China GDP series?

While we will continue to look for ways to improve the measures of China GDP, and hope to benefit from better data coming along in the future, we believe that the two important adjustments for the industrial sector and non-material services account for the lion's share of the upward bias in the real GDP series for China. There is, of course, room for further improvement of our series, such as a better measurement of quality improvements in industry and a more solid measurement of labor productivity in services. There may also be scope for improving the estimates of construction, for which we have adopted the official estimates so far. Professor Maddison's earlier work showed that agriculture only required level adjustment rather than price adjustment, but this may have to be revisited again. However, various tests suggest those adjustments cause relatively small revisions in the aggregate, and often in opposite directions between sectors, creating offsetting effects at the aggregate level.

The bigger issue is to come up with a better measure of nominal GDP, which essentially requires not only a re-estimating of volume growth (real GDP) but also of prices and the absolute level effect from underreporting on an annual basis. This will be a much more complex undertaking and is seriously constrained by the inability to reconstruct better price data historically.

How do TCB's new series compare to other alternative measures of economic performance?

10. Why not use the Li Keqiang index as an alternative?

The so-called Li Keqiang index, named after China's current premier, and which is based on electricity consumption, bank lending, and rail cargo volume, has also shown weaker growth performance in recent months.⁸ However, there are several reasons while we eschewed using this index. The three underlying indicators are much more sensitive to shocks in industrial and commodity sectors than aggregate economic activity. Moreover, the Li Keqiang Index fails to take the growing services sector into account while it overstates the contribution from bank lending to the overall economy. Our research indicates that the index does not move in tandem with current economic activity. For example, The Conference Board Coincident Economic Index® (CEI) for China, which measures current economic activity and is based on measures from a broader range of sectors: electricity production (capturing demand from both manufacturing and consumer sectors), passenger transport (a service-sector

⁸ This metric became a known entity after a leaked memo through WikiLeaks from U.S. Ambassador Randt in 2007, who reported that the Li Keqiang who was then head of Liaoning province had employing this index as an alternative to what he dubbed to the unreliable aggregate GDP numbers.

indicator), value added of industrial production (industrial sector), retail sales of consumer goods (a service-sector indicator), and manufacturing employment, is also showing a slowdown but not as intense and volatile as the Li Keqiang index.⁹ In fact, two of the three indicators in the Li Keqiang index, namely, bank loans and rail cargo volume, are more likely to lead the current state of the economy.

11. How does your analysis compare to the latest growth numbers as released by the NBS showing the growth of services is still proceeding well?

On October 19th 2015 the National Bureau of Statistics released its official third quarter real GDP growth number, which came in at 6.9 percent year over year for the three month period, only slightly below the 7 percent real GDP growth that was reported for the first two quarters of the year. Only four days after this GDP release, the People's Bank of China enacted the sixth benchmark interest rate cut of this easing cycle and the fourth cut to banks' reserve requirements. This seems to indicate that the slight reduction in officially reported real GDP growth does not reflect the true amount of downward pressure that the economy is facing.

The notion that the reported GDP growth rate is too high is further underscored by the component parts of output. In Q3 financial intermediation accounted for a full quarter of nominal GDP growth and 16 percent of real GDP growth – despite the fact that the sector accounts for only 8.7 percent of total GDP. This suggests that the economy seems to be “financializing” at an extraordinary pace. The second and third largest contributions to nominal growth in Q3 came from low-value-added service industries such as real estate services and wholesale and retail trade at 10 percent and 9.6 of GDP growth, respectively. These sectors are typically characterized by slow productivity growth. Hence the much-touted rebalancing of the economy towards high-value added services driven by innovation-driven activities with fast productivity growth seems unlikely. Instead it is quite natural to expect the growth slowdown to happen as a result of the rebalancing of the economy, as lower-productivity services are an important part of a more advanced economy.

12. As the Chinese economy is supposedly rebalancing towards more consumption, does your methodological adjustment to output-based estimates really matter that much?

Some scholars, both in China and abroad have been arguing that the biggest statistical problem in China is not overstated output measures, but understated expenditure measures, especially measures for consumption that are too low.¹⁰ The proponents of the understatement of household consumption argue that better surveys of consumption would significantly raise the share of consumption in GDP, which is indeed quite low by international standards. We do not disagree with the viewpoint that the growth rate of consumption has been quite strong in the past two decades, and that the true share of consumption in China's economy may be understated especially when taking into account higher prices

⁹ For an earlier review of the TCB Coincident Index for China, see Guo Feng, Ataman Ozyildirim, and Victor Zarnowitz, [“On the measurement and analysis of aggregate economic activity for China: the coincident economic indicators approach,”](#) *China Economic Journal* Vol. 2, No. 2, July 2009, 159–186. See also [here](#).

¹⁰ See, for example, Yukon Huang, [“China's Misleading Economic Indicators”](#), Carnegie Endowment, August 2014.

than previously assumed.¹¹ Indeed the upward adjustments in the output levels of services in the re-benchmarking of China's GDP would argue in favor of a larger share of consumption in the economy than the official statistics suggest. Unfortunately statistical surveys based on consumer spending are still very unreliable in China, and likely to remain so for a while. Even in the United States, which has one of the most well-established statistical systems in the world, consumer spending surveys are still quite problematic.

It is not clear, however, why a greater share of consumption should necessarily lead to a faster GDP growth rate than our new GDP measures suggest. While China's slower growth rate in recent years is largely the result of less efficient investment and slower productivity growth in the industrial sector, the transition to a services- and consumption-driven growth, also implies a larger role for sectors that have inherently slower productivity growth characteristics relative to industry. As indicated earlier, the implicit measures of productivity growth in the services sector, especially in "non-material services", in China's national accounts is arguably too high. This implies an increased bias if consumption advances more rapidly than in the past. For now, the output-based measures are the better way to go to gauge the growth performance of China's economy, provided the necessary adjustments are made as described in our alternative estimates.

Implications for China

13. How are your new series affected by the current gyrations in Chinese financial markets?

China's current financial market volatility is primarily the result of prolonged overinvestment, and the widespread underperformance of much of this investment. Bad investments are becoming distressed investments as growth slows. This dynamic is putting downward pressure on asset prices.

Even though official investment figures have slowed in recent years, much of the slowdown has been concentrated in the private sector rather than in state-owned enterprises which are the most over-invested. The collapse of the marginal productivity of capital – a proxy for return on investment – has not been adequately reflected in the official statistics.¹² Especially, estimates of total factor productivity growth (TFP), which measure the improvements in efficiency by which labor and capital are used in the economy, seem highly overstated. According to the official national accounts data, Chinese TFP averaged between 2 to 4 percent per year in the past decade. By contrast, alternative estimates by

¹¹ See also Louise Keely and Brian Anderson, [Sold in China. Transitioning to a Consumer-Led Economy](#), The Demand Institute, 2015.

¹² Harry X. Wu (2015), [Assessing "Returns on Capital" in the Chinese Economy](#), Special Briefing Paper, The Conference Board.

professor Wu show that Chinese TFP dropped off to zero in recent years and has now become negative.¹³

In our view, the current financial market turmoil therefore is a result of weak growth rather than its cause. It is not possible to continue the misalignment between the real performance of the Chinese economy and the valuations of its assets for much longer. We are now witnessing that tension in the form of financial market volatility.

14. Why was the slowdown in the new GDP series not felt more strongly in the past few years?

As a matter of fact, the slowdown was clearly felt as we learned from many of our member companies in China in recent years who felt that, following the big stimulus effects of 2008 to 2010, the returns on investment in China rapidly declined since 2011. A rapidly slowing demand from China for industrial metals since early 2011 suggested the severe overcapacity in China's manufacturing and heavy industrial sectors and the inefficiencies which the stimulus packages of previous years have created. Commodity exporters have also felt the pain of the China slowdown for several years.

However, the rather sharp slowdown especially in 2012 did not cause as much concern for China's future growth as it does now. There are several explanations for this. First, even if the government showed more reluctance at the time to admit it, the slowdown was much needed to reduce underlying inflationary pressures on the economy and absorb the inefficiencies created in previous years. Second, the slowdown in 2012 was in part imported from abroad, especially because of the economic crisis in Europe. Thirdly, sentiment matters a lot: while growth weakened in 2012, sentiment didn't – in contrast, sentiment today is much worse than the current growth slowdown merits.

15. How do the new GDP data impact China's growth projections over the next ten years?

At the center of the historical debate on China's growth performance has been whether growth during the reform period since 1978 can be primarily attributed to productivity growth or is mainly driven by factor accumulation. The new GDP series show that the growth contribution of capital to the economy has been much larger than the official estimates suggested, while the growth of total factor productivity (TFP) has been much weaker. This weakening in TFP growth is feeding into the underlying model for The Conference Board Global Economic Outlook, and puts China's economy on a slowing trend for the medium term to 2025.

However, we also find that China's current growth performance, at 3.7 percent in 2015, is somewhat below our five-year trend estimate of 4.5 percent. Hence it is possible that the economy may see some temporary recovery in the next few years. A stabilization of financial market volatility could help restore confidence and lead to more positive activity in the real estate sector. Some growth improvement could also come from new stimulus programs. However, we don't believe the effects of such programs would

¹³ Harry X. Wu (2014d), [“Re-Estimating Chinese Productivity. How strong has productivity growth really been?”](#) Special Briefing Paper, The Conference Board, August 2014.

be very large, or long-lasting, unless reforms are made that would drive higher productivity in investment projects and programs.

While the potential for a recovery in productivity is more likely beyond 2020, assuming overcapacity is substantively diminished by then and industrial restructuring and upgrading somewhat accomplished, it seems premature to bake such assumptions into our projections. The middle-income trap phenomenon that has impacted several other Asian economies, and precisely when they were at the point that China's economy now finds itself, is also leaving its mark on China's growth rate.

Finally, into the 2020s the impact of slowing labor supply, which already began a few years ago, will further impact the slowdown in overall growth to 3.7 percent on average – raising the urgency to deal with productivity issues to create an upside to our base scenario in the economic outlook.

16. Could China's ambitious public investment plans lead to a quick return of investment-driven growth?

If any of the large-scale, government-driven investment plans are ultimately implemented – such as the One Belt One Road and other infrastructure projects – they are likely to raise the contribution of investment to growth somewhat. However, the size of such investments would have to be astonishingly huge to impact the macroeconomic estimates in any significant way. In addition, investment in infrastructure projects yields low productivity growth, and returns on such investment normally take years to materialize. Beyond the construction sector itself, the returns on such large-scale infrastructure projects will be limited unless they resolve immediate bottlenecks in transport and logistics sectors (as was the case, for example, with the Interstate Highway Systems in the United States in the 1950s, as well as the expressway network in China which was built during the 1990s and 2000s). At this point, however, large government investments in China's infrastructure may raise the opportunity cost of investment in other, more intangible assets, including human capital and R&D in the services sector, potentially slowing the rebalancing of the economy towards consumption and services.

17. What are the implications of your adjustments for China's current GDP level?

The current revision is based on re-estimating the growth of *real* GDP (i.e. GDP keeping prices constant) by reconstructing industry output series on the basis of the commodity method, and downward adjustments of productivity growth assumptions in services. At this point, we have not reconstructed *nominal* GDP (i.e. GDP including the effect of inflation). To adjust nominal GDP we need precise estimates of the misreporting effect and the price effect (referred to earlier) not just on growth but also on levels, year-by-year. Such data are currently not available to make that adjustment.

There is good reason to believe, however, that the reported level of GDP in China is overstated, even after taking higher inflation into account. Most importantly, the misreporting effect has been the biggest source of overstatement in GDP (see FAQ #3). Moreover, during the past few decades, the size of China's GDP has been revised upwards several times. In its latest revision, in 2014, the size of China's GDP was increased by 3.4 percent mainly due to incorporation of a greater amount of services sector activity. Similar upward adjustments, but of a larger size, were made in 1993 (10 percent), 2004 (16.8 percent) and 2008 (4.4 percent). While those upward adjustments are in part justified as measurement

frameworks need to be re-benchmarked to reflect new economic activity, it also captured a significant part of economic activity that already existed but was unmeasured before.

Broader implications for the global economic outlook

18. What do the new series mean for China's share in the global economy?

The slower historical growth performance of China's economy also suggests that the emergence of China's economy as a leading global economic power has been slower than previously thought. When using the latest estimates of comparative price levels by the World Bank, which takes account of the relatively strong purchasing power of an equivalent dollar amount for consumers in emerging markets versus mature economies, China's economy was the second largest economy in the world in 2015 after the United States, producing 16.6 percent of total global GDP. This is lower than our previous estimate, which was closer to 20 percent. In 2005, the size of China's economy was already at around 12 percent of global output. Over the next 10 years its share in the global economy will advance more slowly and reach 18.4 percent of global GDP in 2025, by which time it will be larger than that of the United States or Europe.

While the overall impact of our adjustments on China's growth performance is downward, the new series seem much more acceptable from an international perspective, especially in comparison with its East Asian neighbors. Starting from the same US\$ level of per capita income in different beginning years, it appears that China quadrupled its income from 1994-2015, which compares with income gains in Japan from 1950-68, South Korea from 1969-89, and Taiwan from 1966-87. During these comparable growth periods, China's GDP grew by 7.6 percent per annum, compared with Japan's (9.2 percent), South Korea's (8.7 percent) and Taiwan's (9.1 percent). China does therefore not appear to be an exceptional outlier in this league, and in fact even experienced somewhat slower growth than the other three countries. However, China experienced significant shocks during the 1995-2015 period, including the Asian financial crisis in 1998 and the global financial and economic crisis in 2008 and its aftermath. Without those two shocks, China's annual growth would be 8.8 percent (replacing our estimates by official estimates for the years of the shocks), which is more in line with the performance of other countries. Given heavier government intervention and central planning legacy, we find that it is reasonable to accept that the pace of China's growth is similar to or slightly slower than the East Asian economies.

19. What do the GDP adjustments mean for China's interaction with the global economy?

First and foremost we believe that a more realistic assessment of China's current growth performance helps business to assess the real risks and opportunities they are currently facing. For a few years now, several of our member companies have been arguing that the hot growth of the economy during the first decade of the century was abating, and that there was a strong need for a reset of aligning private (domestic and foreign) businesses with the state-owned sector of the economy. This includes access to investment, market entry, procurement, etc.. The instability in the financial sector has more clearly

exposed the larger problems China's economy is facing bringing it more in line with a significant slowdown in growth in recent years.

The effects of slower growth on the global economy can essentially be divided into trade and financial sector effects. There is no doubt that the effects from the ongoing slowdown in China on global trade have been substantial. Some of those effects already began to emerge earlier, especially for commodity exporters to China and private companies in the industrial sector. More recently, the weakness has been more strongly evidenced by the collapse in a broad range of commodity prices – most notably for oil and industrial metals. For economies that rely heavily on commodity exports to China, a continually weakening Chinese growth rate offers a dire outlook for external demand – underscoring the urgency that those economies face in needing to diversify and restructure.

However, outside of a few select industries, such as luxury products and machinery and equipment, a slowdown in Chinese demand does not materially affect the growth performance of most countries. Even the luxury sector has arguably been hit more by China's recent corruption crackdown than the country's slower economic growth.

On the positive side, cheaper commodity prices can provide tailwinds to the economies that are net commodity importers. Moreover, with the looming risk that China may fall into a middle-income trap over the coming years, some developing economies such as Thailand, Indonesia, Vietnam and even Mexico may stand to gain export share from a less competitive Chinese manufacturing base that is being undermined by rising wages.

Because of the limited financial linkages between China and the rest of the world, financial volatility in China represents only a small risk for systemic global financial contagion. That being said, as this summer's events around China's equities and foreign exchange markets showed, the rest of the world is beginning to more fully comprehend the extent of China's challenges.

Region and country-specific risks to China's slowdown through financial and trade channels may vary largely. While Latin American and Africa countries are mostly exposed to China's slowing demand for industrial raw materials, China's neighboring economies in Asia, (Hong Kong SAR and Singapore top the list), are more vulnerable to deflating asset prices and rising non-performing bank loans. For companies doing business in China and globally, coming to a full understanding of the economy's currently subdued-but-not-collapsing state will prove critical to weathering this more difficult period in China's growth.

Finally, a slower historical growth rate should not be perceived only as a negative. Rather, it shows that China's potential for sustainable modest growth at 3-4 percent is better than might be expected—a positive for business compared to the strategic distortions and distrust that come from reliance on unrealistically rapid growth rates that have been the norm until today.

Resources

Maddison, Angus (1998), [*Chinese Economic Performance in the Long Run*](#), OECD Development Centre, Paris

Maddison, Angus and Harry X. Wu (2008), [*“Measuring China’s Economic Performance”*](#), *World Economics*, Vol. 9 (2), April-June.

Hoffman, David and Andrew Polk (2014), *The Long Soft Fall in Chinese Growth: Business Realities, Risks, and Opportunities*, The Conference Board, October, see <https://www.conference-board.org/china-growth/>

Van Ark, B et al. (2015), *The global economy in a holding pattern*, *The Conference Board Global Economic Outlook 2016*, see <https://www.conference-board.org/economic-outlook2016/>

Wu, Harry X. (2013), [*“How fast has Chinese industry grown? – The upward bias hypothesis revisited”*](#), *China Economic Journal*, Vol. 6 (2-3): 80-102.

Wu, Harry X. (2014a) [*Re-Estimating Chinese Growth: How fast has China’s economy really grown?*](#) Special Briefing Paper, The Conference Board China Center for Economics and Business, June.

Wu, Harry X. (2014b), [*China’s Growth and Productivity Performance Debate Revisited*](#), The Conference Board Economics Working Papers, February.

Wu, Harry X. (2014c), [*“The growth of “non-material services” in China – Maddison’s “zero-labor-productivity-growth” hypothesis revisited”*](#), *The Economic Review*, Institute of Economic Research, Hitotsubashi University, Vol. 65 (3).

Wu, Harry X. (2014d), [*“Re-Estimating Chinese Productivity. How strong has productivity growth really been?”*](#) Special Briefing Paper, The Conference Board, August.

Wu, Harry X. (2015), [*Assessing “Returns on Capital” in the Chinese Economy*](#), Special Briefing Paper, The Conference Board, May.