

**SPEAKING NOTES FOR ANGUS MADDISON'S KEY NOTE ADDRESS DELIVERED BY BART VAN ARK**

**Slide 1:**

First of all, I would like to thank the organizers of this conference for bringing this distinguished of scholars together at what looks to be a very interesting conference. Also I am grateful for having this opportunity to deliver Angus Maddison's keynote paper for this conference. Although I regret that Angus Maddison cannot be present here today to present his paper, it is my pleasure and honour to substitute for him to deliver his paper.

**Slide 2:**

Many of you will know that I have know Angus for a long time, in my capacity as his research assistant, graduate student and later on colleague at Dept. of Economics at University of Groningen. Hence I have closely worked for him and with him for more than 20 years.

So I hope I will be able to speak on his behalf. Angus and I have closely coordinated the preparation of the slides for this presentation and my speech will be largely based on his written work.

The nice thing of this setup for both Angus and me, is that he cannot be held responsible for what I say, and I cannot be held responsible for what he writes. But luckily Angus and I agree on most things being said here.

**Slide 3:**

The theme for this keynote speech derived from the title of this conference "Experiences and Challenges in Measuring National Income and Wealth in Transition Economies". Transition countries are former communist command economies which have moved towards capitalist modes of resource allocation, property ownership, international trade and capital movement of these countries have been quite different. In China the transition started in 1978. the goal was to move pragmatically to a system with greater market incentives and gradual attrition of the state sector in favour of more or less competitive capitalist enterprise. In Eastern Europe, where transition started after the Berlin Wall came down in 1989, the objective was to move quickly to a competitive capitalist economy. In Russia, the first phase involved a rapid handover of state assets at knock-down prices to oligarchs, which has now changed, with significant moves towards state capitalism.

The challenges to measure these large changes are huge, and this has not been made easier by the rapid changes in the statistical system itself, including the adoption of the System of National Accounts in these countries.

In this presentation, I will therefore concentrate on both issues. The first two topics, measurement of economic growth and levels of economic growth, are explicitly dealing with the changes in the statistical system. The third topic on the sources of economic growth is the transition to understanding and interpreting the differences in growth performance between the economies. And, finally, the growth projections will allow me to also speak about what the implications is for future growth trajectories of these transition economies.

**Slide 4:**

In this talk I will not only base myself on Angus' paper for this meeting but also on his other past and current work, notably [read slide]

**Slide 5:**

Before starting, however, it may be good to give you an idea of how Angus (and here I also may speak for myself) are approaching these issues through our research agenda. This approach may be called the comparativist approach.

Comparativists never take official measures for granted, as is nowadays (with data directly downloadable from the internet) so often done by researchers who quickly jump to the analysis, not recognizing that the measurement of economic performance itself is an art of science that economists and other social scientist need to take seriously.

Indeed when looking back at the origin of national accounts in western countries, it is clear that the quality of the accounts has benefited from independent work by scholars and institutions, such as the OEEC. Thus OEEC in order to judge needs for Marshall Plan aid, at the end of World War II, made major efforts to produce standardised measures of West European growth performance. That work had powerful leverage, as the outcome could affect aid eligibility.

This type of work was continued, for example by Angus Maddison, by making adjustments to official estimates of longer term growth by several European countries and the United States.

The Groningen Growth and Development Centre, of which I am the director nowadays, has continued this tradition of careful scrutiny, and where necessary, adjustment of official estimates on a world wide basis.

In fact most transition countries have not experienced this scrutiny directly, because they were obliged for many years to use the Material Product System. And even today, it is regrettable that except from technical expertise given by national and international statistical agencies, there is so little independent research and well-informed debate on the quality of the estimates of economic performance in transition economies.

**Slide 6:**

This need for more debate on the measurement of growth in transition economies is probably nowhere clearer than in China. And this is not because the quality of the statistical system in China is better or worse than anywhere else. It is because the rapid transformation of the Chinese economy has put a huge strain on tracking the rapid changes in the real world statistically, and to dispose of the legacy of those aspects of the old statistical system that has tended to systematically overstate growth.

**Slide 7:**

Indeed, the official measures of GDP that were used before the transition started had a clear upward bias. The Chinese State Statistical Bureau, now renamed as the National Bureau of Statistics, used the Soviet material product system until the late 1980s. The MPS took a narrower view of the scope of economic activity than the SNA. It

excluded many service activities which were considered 'non-productive' such as passenger transport, housing, health, education, entertainment, banking, insurance, personal services, government and party administration and the military. There were also serious deficiencies in the basic reporting system.

In fact the statistical office used to publish two measures of aggregate economic performance. The "total product of society" represented aggregate gross output of five sectors. It involved a good deal of double counting because each of the component sectors had significant inputs from the others. "Net material product" which the Chinese called "national income" was a somewhat better estimate as it deducted most inputs except "non-material services".

Growth was not generally measured by constructing western-style volume indices, but by deflating current values by price indices. As the price system and tax-structures were different from those in capitalist countries, these price indices were often not picking up the actual price changes, leading to an overstatement of real output. Hence the term "comparable prices" rather than "constant prices". Moreover measurement conventions gave incentives to exaggerate quality change when new products were introduced.

#### **Slide 8**

During the pre-transition period, Abram Bergson pioneered procedures for re-estimation of Soviet GDP on a basis corresponding approximately to Western conceptions. These corrective procedures were applied to Soviet statistics by a team of CIA Sovietologists in Washington.

Some idea of the extent of these CIA adjustments can be seen by comparing the official Soviet estimates of growth of net material product for 1950-1990 which was 6.1 percent a year, and the CIA measure of GDP growth of 3.5 percent a year for the same period.

The CIA attempted to apply similar measurement techniques for China, but the quality of their work was much worse than that for the Soviet Union and Eastern Europe.

#### **Slide 9**

In order to reconstruct the long term growth rate of the Chinese economy, Maddison therefore had to completely reconstruct China's growth rate from 1952 to the present. A detailed explanation of this remeasurement enterprise will be presented in detail in another session of this conference, by Angus' close collaborator on this, Harry Wu from Hong Kong Polytechnic University. So I will concentrate here on the most significant adjustments they made and their impact.

Most importantly, Maddison's reconstruction is done by industry of origin. Generally, for developing economies the industry approach is a more reliable reconstruction approach than the expenditure, as expenditure estimates, and in particular investment are more easily flawed than production estimates.

For agriculture, Maddison used 125 crop and livestock items from FAO sources, adjusted for farm and non-farm inputs. He found approximately the same rate of growth as the official estimates for 1952-1990. For this reason, he used the official estimates for 1991-2003.

For industry, Harry Wu's estimates of gross value added in industry were used. This is a volume index, with detailed time series on physical output and prices for 177 products from the China Industrial Economic Statistical Yearbook. Value added for 15 branches of manufacturing as well as mining and utilities was derived from the official input-output table.

For construction, transport, communications, retail trade, wholesale trade and restaurants Maddison accepted the official estimates, but a major adjustment was made for the growth of "non-material services". Since including these in the national accounts, NBS has assumed a productivity growth of 5.1 per cent a year from 1978 to 2003, which is even faster than labour productivity growth in the rest of the service sector.

Maddison assumed zero productivity in these non-material services, using employment as a proxy measure of output. In fact this is also the recommended procedure in the international standardised System of National Accounts. Moreover, it appears that average productivity growth in this sector is virtually zero in most OECD countries.

#### **Slide 10**

This table shows the effect of the adjustments by Maddison in terms of levels of GDP in 1987 constant prices. For 1952 and 1978 - in fact until 1990 - Maddison's level estimates come out higher than the official estimate, because of an understatement of output in most sectors but notably in non-material services.

Since 1990, Maddison's GDP estimates are significantly lower than the official estimates, in particular because of the presumed overstatement of industrial value added and, even more so, of value added in non-material services.

So in 2003 Maddison's value added in 1987 yuan falls 15% below the official measure of GDP, whereas in 1978 it was still 27% higher and in 1952 even 38% higher

#### **Slide 11**

The obvious implications of this is that GDP growth according to Maddison's estimates is significantly slower than the official estimates, in particular since 1978. Whereas from 1952-1978 Maddison's estimates show GDP growth slower by about 0.3% per year on average, it is as much as 1.7% per year on average slower since 1978. Again the difference is in part due to the industrial sector, which is 1.7% point lower, shaving about 0.8 percentage point of the official GDP growth measure. But the overstatement of growth in services by 5.4% points shaves off another 0.9 percentage points of the official GDP measure.

#### **Slide 12**

Summing up, the growth remeasurement by Maddison and Wu, produces growth estimates well below the official GDP measures.

Some analysts report expenditure based GDP growth for China, which is even higher than the official production-based growth measure. But as mentioned before, expenditure based measures are often more suspect and

prone to error. In the case of China, the current expenditure series lack volume series and there is an inadequate breakdown of investment.

The production estimate seems more reliable, and even if one could argue that some of Maddison's assumptions are on the conservative side, any adjustment is still likely to show lower growth than official series.

Indeed the overestimation of official GDP growth series is still largely due to remnants of pre-transitional statistical system and reporting habits, which lead to inadequate measurement of price change.

It is striking to see that official estimates are mostly used by international agencies, the press and in political discourse without any cautionary note. Since 1978 the Chinese national accounts have become more transparent, and the coverage and classification more or less conform to Western concepts. But the reporting system and deflation procedures are still influenced by previous practice. This is why it is most likely that official statistics still exaggerate GDP growth.

In view of these problems most observers simply use Chinese official statistics, as the task of adjusting them appears so complicated. However, it is possible to adjust the national accounts to improve the international and inter-temporal comparability of the GDP estimates.

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The issue of measurement becomes even more critical when looking at measure of levels of GDP rather than growth rates only.

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By merging time series for economic growth with cross-country estimates of GDP levels, we can make a coherent set of time-space comparisons. Exchange rates are the simplest option for cross-country comparisons, but they are misleading as they do not reflect relative differences in price levels between countries. They are mainly a reflection of the purchasing power of traded items, and in the case of China, undervaluation is official policy.

The second option is to use the purchasing power parity converters (PPPs) which have been developed by cooperative research of national statistical offices and international agencies in the past few decades. The expenditure approach, pioneered by OEEC in the 1950s on a bilateral basis, was developed by Kravis, Heston and Summers on a multilateral basis in their International Comparisons Project. We now have reasonably comparable estimates of this kind for 70 countries for the benchmark year 1990, and shortcut measures for another 84 countries available from the Penn World Tables.

Unfortunately, China did not participate in the 1990 ICP exercise, but in the late 1990s Ren Ruoen from Beihang University produced an ICP-type estimate of comparative Chinese/US real expenditure levels for 1986. Maddison has updated Ren's PPP to 1990 and made an adjustment of 19% to move it from a binary PPP down to a multilateral one. Incidentally China has participated in the current round of the ICP project for 2005, but only for 11 urban areas, rather than for a nationwide estimate

As a result the 1990 exchange rates from Maddison for China was more than 5 times higher than the PPP

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PPPs in low income and transition economies are in most cases lower than the exchange rates, because of lower relative price levels in services. But compared to, for example, India and Russia, the gap is between the PPP and the exchange rate is much bigger in China. This may of course be related to the undervaluation of the yuan, but whatever the cause ...

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... the result is that the level of GDP and GDP per capita in China is considerably higher than what the exchange rate comparisons which are often made suggest.

It is clear from this chart that from 1990-2003, China performed better than the other four big countries. The most striking contrast is with Russia which was also engaged in an effort to transform a command to a market economy. In 1990, China's GDP was less than twice as big as Russia's, but by 2003 it was more than six times as large. And GDP per capita in China was only a quarter of the Russian per capita income level in 1990 and more than three quarters in 2003.

Finally, despite accelerated growth in India, the per capita GDP gap widened from 1.4 to 2.2 between these two emerging economies.

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And there are more interesting observations from this chart, including the fact that Japan, which is frequently cited as the world's second biggest economy, in fact has a GDP which is less than half the Chinese.

Another example, which is often used in today's discussion about climate change, is the exaggeration of China's role in global warming: it is often suggested that China is especially delinquent as an emitter of greenhouse gases. In 2003, its carbon emissions were 0.63 tons per thousand dollars of GDP if the official exchange rate is used. This is very much higher than the 0.19 tons per thousand dollars of GDP in the USA. When PPP converters are used the Chinese ratio is slightly lower than that of the USA namely at 0.17 tons per thousand dollars of GDP.

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But what do all these measurement issues imply for the analysis of the sources of growth in transition economies?

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To do this, Maddison applied what may be called a well-proven empirical workhorse, called growth accounting. The growth accounting approach was pioneered in western countries by scholars like Abramovitz, Denison, Jorgenson and Griliches. Also Maddison himself contributed significantly to growth accounts studies in international comparative perspective.

Essentially the growth accounts framework provides a method to decompose the growth of GDP and per capita income into the contributions of labour input, in terms of employment or hours worked,

the quality of labour in terms of educational attainment of the labour force and the input of physical capital.

The residual growth after deducting the contribution of these factor inputs, is called total factor productivity. Growth theorists would equate this residual with technological progress. But empirically this measure includes various unmeasured growth factors, including better allocation of factor resources, structural change and ... technological progress, of course.

#### **Slide 20**

When first focusing on the contributions of the factor inputs, it is worthwhile to first raise a couple of additional important measurement issue in growth accounting related to the inputs.

First of all there appears a major problem in the creation of the measurement of labour input in China. Until 1997, NBS provided two employment estimates, one based on a sixteen branch breakdown and a more aggregative employment estimates for 3 sectors, primary, secondary and tertiary. Until 1990 the figure for total employment was the same for the two aggregations, but since then there has been a rising discrepancy between the two tables. For example, for 2002, the discrepancy had risen to 99.6 million.

It would seem that the 3 sector breakdown is derived from the sample population census and the sixteen sector breakdown from labour force statistics, but users of the employment figures are entitled to a detailed explanation or reconciliation of the two types of estimate, as this discrepancy seriously complicates a meaningful measurement of labour productivity.

In any case, when concentrating on the 16-sector employment, which Maddison accepted with some small adjustments, it appears that Chinese labour input rose faster than population until the early 1990s. After that the official one-child policy began to pay off by changing the age structure and moderately raising the proportion of working age. But the employment-population even decline somewhat after 1992, or remained stable when using the 3-sector employment.

#### **Slide 21**

China's long run record in human capital formation has been quite impressive although far from smooth. The main emphasis was on expansion at the primary and secondary level. Today about four-fifths of adults are literate. The record in higher education was disastrous in the 1960s and again during the cultural revolution. But in the reform period, higher education enrolment has risen very fast.

The primary education equivalent has increased to levels far beyond India, and has been faster than in Korea and Japan. The increase in the quality of the labour force contributed importantly to China's production potential, which was further strengthened by improvements in health.

#### **Slide 22**

Finally, capital stock measurement is probably the Achilles' heel of Chinese growth accounts. But it is also one of the main drivers of growth in China throughout the 1952-2003 period. Gross non-residential

fixed investment as a percentage of GDP rose from about 7 per cent of GDP in 1952 to close to 30 per cent today. This is a very respectable performance and is now substantially higher than in the advanced capitalist countries.

In order to construct estimates of the capital stock one has to cumulate assets of different vintages, and this requires a long run of investment data at constant prices. Such estimates are not available for China, so Maddison applied a proxy procedure using investment ratios in current prices in conjunction with estimates of GDP at constant prices. He then used the perpetual inventory method, accumulating the capital formation, assuming an average asset life of 25 years and adopting a rough capital/output ratio of 1.2 in 1952.

The capital stock rose much more quickly than output in the Maoist period with the capital/output ratio rising from 1.2 in 1952 to 2.7 in 1978. the great bulk of investment was made by the state, which squeezed consumption and kept wages low in order to finance accumulation.

Since then, capital productivity has improved substantially and the capital/output ratio in 2003 was 2.6. A rapidly growing proportion of investment was financed from household savings and foreign investment. Although the state continues to have a significant role in the allocation of investment funds, the overall impact of greater non-state participation was to direct investment into areas where the yield is higher.

#### **Slide 23**

The impact of better resource allocation since 1978 can be seen in the macroeconomic growth accounts. Indeed the bottom line in this tables shows large gains in total factor productivity, at 2.95% from 1978 to 2003, compared with the negative record of -1.37% for 1952-78.

Strikingly the TFP growth of the economy improved despite a slowdown in the growth of labour input and the education stock and with capital inputs increasing at the same pace - at least at the aggregate level - as before.

This chart compares the growth performance of China with that in Japan during the same period. The Japanese experience provides a striking contrast with that of China. Its period of super-growth took place in 1952-78 when GDP growth was virtually identical with that of China in the reform period. Since 1978, Japanese growth has slackened sharply and has been below that of China in the Maoist period. The inverse periodisation also holds good for the total factor productivity.

But one must beware of simple comparisons as the economic history of the two countries is very different. Japan's modernisation began in 1867 although it was directed for nearly eight decades to external aggression, particularly against China. But by 1952 Japan had been completely demilitarised and was able to use its highly skilled labour force and huge capacity to mobilise savings entirely for non-military ends. It then benefited from a relatively high education level more or less comparable with that in west European countries and more than five times the proportion in China at that time.



Also Japan's per capita income in the 1950s was considerably higher than that of China in 1978. It had a long experience of independent indigenous capitalist development, with a sophisticated system of banks, trading companies and managerial experience. It was well equipped to achieve rapid catch-up to the productivity levels of the most advanced countries.

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So what then is there to say about the China's trajectory for growth in the next 25 years or so? Here a combination of our past growth accounts, relatively conservative assumptions concerning China's growth prospects, and a qualitative assessment of the likely sources of growth can serve as a useful guide.

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This slide reproduces the estimates of GDP and GDP per capita for 1990 and 2003. With some assumptions this table can now be updated to 2030. These are obviously not forecasts but projections which look forward on the basis of past experiences in the country itself and elsewhere.

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It is likely that the catch-up process in China will continue in the next quarter century, but it would be unrealistic to assume that the future growth trajectory will be as fast as in 1978-2003. The pace of progress will slacken as China gets nearer to the technological frontier. One may assume that per capita income will grow at an average rate of 5.6 per cent a year to 2010, 4.6 per cent between 2010 and 2020, and a little more than 3.6 per cent a year from 2020 to 2030. By then, technical advance will have become more costly as imitation is replaced by innovation. However, by 2030 the technical frontier will have moved forward, so there will still be some scope for catch-up thereafter.

By 2030, it seems likely that population growth in China will decelerate significantly and the proportion of working age will fall somewhat. There will probably be some reduction in average working hours as wages rise and leisure activities become affordable. There will be slower proportionate improvement in the educational level of the labour force; it increased six-fold from 1952 to 2003, and is unlikely to rise by more than half by 2030.

Thus one might reasonably expect quality adjusted labour input to grow by half a per cent a year from 2003 to 2030, compared with 3.2 per cent in 1978-2003.

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The overall implications of these predictions are shown in this table showing the comparative level of GDP and GDP per capita for 2015 and 2030. The estimate show that in 2015 the size of the Chinese economy will have surpassed the U.S. and will be almost 10 times bigger than Russian GDP, 4 times bigger than Japanese GDP and over 2.5 times bigger than the Indian economy.

These gaps are even bigger in 2030. By that time average per capita income could be well the same as in Russia, about half the level in Japan, and one third the level in the U.S.

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With all this empirical evidence in hand, we may now begin to take a look at how to interpret China's fortunes against that of other countries, and to assess in more qualitative terms what may lay ahead.

One way to do this is to focus our attention on the striking contrast between China and Russia, which was also engaged in an effort to transform a command to a market economy. It is worth summarising the reasons for China's superior performance over the past decades.

1) First, Chinese reformers gave priority to agriculture, which was more or less ignored by Russian reformers. They offered individual peasant households the opportunity to raise their income by their own efforts. They also encouraged small-scale manufacturing production in township and village enterprises.

2) Second, China did not disintegrate as the soviet Union did. The proportion of ethnic minorities is much smaller in China, and in spite of its size, China is a nation state rather than an empire. By patient diplomacy and accepting capitalist enclaves it grew by reintegrating Hong Kong and Macao as special administrative regions.

3) Third, in the reform era, China benefited substantially from the great number of overseas Chinese. A large part of foreign investment and foreign entrepreneurship has come from Hong Kong, Singapore, Taiwan and Chinese in other parts of the world.

4) Fourth, China started from a very low level of productivity and income. In 1978, when the reform era began, per capita income was less than 15 per cent of that in the USSR and its degree of industrialisation was much smaller. If the right policies are pursued, backwardness is a favourable position for a nation which wants to achieve rapid catch-up by capturing the advantages of backwardness, and making big structural changes.

5) Fifth, Chinese family planning policy reduced the birth rate and changed the population structure in a way that promoted economic growth. In 1978-2003 the proportion of working age rose from 54 to 70 per cent. In China, life expectation has risen. In Russia it has fallen.

6) Sixth, the leadership was very sensitive to the dangers of hyper-inflation which China had experienced in the past. Instead of destroying private savings as in Russia, they were encouraged and have increased enormously. They are the main reason that it was possible to raise investment to such high levels. Russian shock therapy involved a period of hyper-inflation, large-scale capital flight, currency collapse and default on foreign debt.

7) Seventh, the state sector was not privatised, but waned by attrition. There are now many wealthy entrepreneurs in China and some have enjoyed official favours, but China did not create super-rich oligarchs by selling off state enterprises at knock-down prices as Russia did. In Forbes Magazine's listing of the world's 100 richest billionaires in 2007, 13 were in Russia, 3 in Hong Kong and none in China.

8) And finally, China has made massive strides to integrate into the world economy. It gave high priority to promotion of manufactured exports, setting up tax-free special enterprise zones near the coast. Exports were also facilitated by maintaining an undervalued currency. The rebound in the Russian economy since 1998 has been largely driven by the rise in the price of its exports of oil and natural gas.

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These successes of course do not mean that there are still large challenges ahead, and much of the political debate and economic discourses today are focused on whether China can maintain a sustainable growth rate.

The most important issues to be tackled are related to issues less directly related to economics but of high relevance for sustainable development and high quality growth.

First, the fiscal resources of central government need to be substantially enhanced to finance social expenditure on education and Health.

Second, the Chinese economy has expanded very fast and energy consumption has risen a good deal. The environmental impact of energy use in China is particularly adverse because its dependence on coal is unusually large, and carbon emissions are proportionately much bigger from coal than those from oil or gas. For example, in 2003, 60 per cent of energy consumption came from coal, compared to 23 per cent in the United States, 17 per cent in Russia and 5 per cent in France. Eighty per cent of its electricity is generated by coal powered plants.

China has negotiated deals with several oil-supply countries to invest in future oil supplies, and it has undertaken several other initiatives to reduce coal consumption. However, the results will not be available for several years, and it is not clear how cost-effective they will be. In the long run, there would be substantial benefits if China acquires pipeline access to Russian natural gas.

Third, regional inequality in China is extreme by international standards. In 2005 there was a ten-to-one range of per capita GDP in China's 31 administrative regions. The divergence in China could be narrowed by major investment in transport and other infrastructure, improved education opportunity in the low income areas, removal of barriers to migration between different areas and elimination of the tax enjoyed by special enterprise zones in eastern China. However, the mitigation of inter-regional income divergence is likely to be a slow process.

Much of the inequality is driven by the rural-urban divide in income, as will be discussed in various papers during this conference. It is reinforced by legislation to penalise immigrant workers who seek unregistered employment in urban areas. Despite some easing in the system, it is clear that the discriminatory registration system is a major source of social discontent which is in need of remedy.

Finally, although China has made giant strides in moving towards a market economy, and property rights have been strengthened, they are

still a good deal weaker and more ambiguous than they would be in a capitalist economy. In fact property rights are weaker for ordinary citizens than they are for domestic or foreign capitalists. The equity and efficiency of the economy would benefit if property rights were further strengthened.

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In conclusion, China fared considerably better than several other transition economies, is part because it started from a much lower initial level. But more importantly, it has followed the path of, what is called in the literature, conditional convergence, that has also been pursued by other East Asian economies.

Conditional convergence implies that catch-up in the poor economies is not automatic or generalised. They can exploit their catch-up potential only if they adopt policies propitious for growth, mount high rates of investment in physical and human capital, increase labour force participation, open their economies to foreign trade and specialisation, pursue macroeconomic policies which smooth the growth process, and microeconomic policies which promote increased efficiency of resource allocation.

China followed this path, while several other transition economies, notably the countries that grew out of the former Soviet Union failed to do this. It became subject of a shock due to the disintegration of the USSR, and the economic and political agenda for growth being captured by rent seeking institutions and individuals.

The comparativist approach laid out in this paper will help to understand success and failure in economies around the world. This conference will hopefully contribute to improve that understanding through the many interesting and important contributions on the agenda. Many of those bear the traces of the comparative approach. It is good to see that there are still so many scholars, looking at macroeconomic statistics as well income distribution and poverty statistics, who are willing and equipped to seriously attack the statistical issues.

The opportunity created by the partnership between the International Association for Research in Income and Wealth and the National Bureau of Statistics to organize this conference, will make it possible to focus our attention these days on transition economies in general, and China in particular. I hope, and speak on behalf of Angus Maddison too, it will give an impulse to this tradition of scholarship to flourish in China and other transition economies as it does in so many other countries that are represented through this Association.

I would like to thank the organizers for making this event possible and wish participants a fruitful exchange of thoughts and pleasant time in this great country and great city.