ECONOMIC REFORM IN THE PEOPLES REPUBLIC OF CHINA: RESUSCITATION OR TRANSFORMATION

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ABSTRACT

In 1978 Deng Xiaoping brought economic reform to the People's Republic of China. Using modern growth theory to assess the success of the Chinese reforms and the likelihood of continuing economic progress, we find a transformation in total factor productivity (TFP) growth unparalleled in recorded economic history. Moreover established growth economics finds that TFP growth, once established tends to persist at the same rate over long periods of time. While the death of Deng left a vacuum in political leadership, his reforms, crafted with great ingenuity, combined with political change limited to the bare minimum necessary, appear to have established the groundwork for continued growth. Still, a number of policy issues will need to be addressed by the Chinese government if that growth is to be achieved.

Key Words: China, economic growth, state owned enterprises, Cobb-Douglas function, Total Factor Productivity (TFP)

INTRODUCTION

In 1974 Deng Xiaoping visited the United States and evidently came away with the impression that China's economy was in serious difficulty. In 1978, as architect of China's reform, he visited Japan and, after coming to power in late 1978, he again visited the United States in 1979. Thus began the recognition in the highest circles of Chinese leadership that during the nearly three decades of Mao Zedong's rule, China had not kept pace with Western economies and was missing entirely from the "East

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Asian Miracle." (Schell and Shambaugh, 1999). As Deng put it, "To get rich is glorious."

This lagging behind, clearly evident in the data, as we shall see, occurred in spite of the fact that the economic strategy of Mao's regime assigned top priority to achieving a high rate of capital accumulation. And significant capital accumulation was accomplished, but at the expense of consumption while the expansion of industry came at the expense of agriculture (Chow, 1993). Indeed after the catastrophic results of the Great Leap Forward and the Cultural Revolution, the Chinese economy was more in need of resuscitation and life support than at any time in the twentieth century.

Even now after two decades of reform, a visitor to Shanghai cannot miss the evidence in support of the Mayor of Shanghai's often-repeated boast that one-fifth of the world's construction cranes are at work in Shanghai. Most of us who participate in or closely observe the global business environment are conditioned to a certain pace of things, even when they are what we term frenetic. Yet there was nothing in our experience to prepare us for the pace of change we observed in Shanghai. This is a country in a dreadful hurry.

OVERVIEW OF CHINA'S APPROACH TO REFORM

The reform era in the People's Republic of China poses a number of fascinating puzzles. The result has been an extensive debate over the pace and sequence of reforms in the emerging economies (McMillan and Naughton 1996, Murrell 1995, Naughton 1995, Sachs and Woo 1994).

On the one hand China adopted a gradual approach to reform and privatization but achieved record rates of growth from the outset. Per capita income quadrupled between 1978 and 1995. While Russia and other East European emerging economies faced the loss of safety nets coupled with sharply lower living standards as a result of rapidly declining real GDP and high inflation, the inflationary pressures in China in the early years of reform were kept within single digits and GDP grew rapidly. Moreover the improvement in living standards was initially shared broadly across all regions and segments of the economy. There was a dramatic reduction in poverty in China from 270 million or 28 percent of the population in 1978 to about 97 million or less than 10 percent of the population by 1985 (Graham, 1994).

In China, reform brought rapid expansion in market-oriented business especially township and village enterprises but there was virtually no privatization of state-owned enterprises (SOE) until the mid 1990's. Even then most mid-sized and large SOEs were allowed to continue in business. This stands in stark contrast to the more radical reforms such as the voucher privatization approach of the Czech Republic.

Similarly the Chinese leadership avoided the overnight liberalization of prices in

favor of gradual liberalization during the mid 1980's. The two tier-pricing regime was implemented whereby output required by the Plan had to be sold and distributed at State controlled prices while all output above plan levels could be sold at market prices. Initially the bulk of output was distributed at controlled prices thereby avoiding inflation.

However supply and demand determined the prices of above-plan output revealing the relative scarcity of both inputs and outputs. These market signals allowed market-oriented adjustments in technology and relative outputs. One of the more dramatic consequences was a surge in farm output, doubling farm incomes in just over six years and ending centuries of food shortage in China (Naughton 1995).

Over time the plan levels of output were not increased or increased only marginally. As the economy expanded the proportion of output distributed at market prices gradually increased until most output was market priced. This process of gradually moving from total state control of prices to a regime of primarily market prices became known as "growing out of the plan." (Lardy, 1998).

On the other hand, in order to achieve the enormous growth in output and living standards, the Chinese leadership has made a Faustian bargain with the environment. While incomes doubled, environmental devastation was rampant. Air pollution is severe enough in some northern cities in the winter that the level of total suspended particulate may reach 10 times that of New York City (Hertsgaard 1999). The World Bank reports that the water table is so severely contaminated that in 1993 about 8 percent of agricultural lands received water so polluted that it was unfit for use – leading to an estimated loss of one million pounds of grain production. The effects of air and water pollution have been estimated by the World Bank to cost China between 3 and 8 percent of GDP growth per year (World Bank, 1997). New laws and regulations have been imposed, often modeled after equivalent Western regulations, but enforcement will require difficult choices (Hertsgaard 1999).

China also followed a unique plan with regard to state-owned enterprise. SOE employment continued to grow over most of the reform era, stabilizing after 1994. The bulk of state-owned enterprise has not achieved profitability and, since the late 1980s, SOE subsidies have been estimated to be about 10 percent of GDP per year (Lardy, 1998). Moreover, much of this industry is concentrated in sectors such as utilities, mining, chemicals, steel and transport machinery, a pattern not dissimilar to that of developed "mixed" economies.

In addition, the Chinese government has engaged in a number of efforts to improve the profitability of the SOEs, including exposing them to competition and requiring profit oriented accounting. As in other developing countries extensive use was also made of performance contracts (PC's). Unfortunately a study done at the World Bank revealed that performance contracts had little or no positive impact on the productivity of state-owned enterprise in China (Shirley and Xu, 1997). Pending

resolution of the unprofitable SOEs, Chinese banks continue to carry non-performing loans on their books, but over time these are apparently a decreasing share of total assets of the banking system as many new loans to profitable new market oriented enterprises were added to bank assets.

The logic of this plan seems to have paid off. Chinese banks did not collapse as predicted by some (Lardy, 1998), even under the pressure of the East Asian financial crisis in 1997. Moreover, the traditionally high Chinese savings rate continued and these funds were largely deposited in Chinese banks, further underscoring the fact that Chinese households believe that these banks are not in imminent danger of failure. In 1978, the state employed more than 90 percent of the workforce and by 1997 that figure plummeted to only 18 percent (Schell and Shambaugh 1999). Whenever the ultimate resolution of these unprofitable SOEs is implemented, the impact on that day's GDP will be significantly smaller than it would have been in 1978 (Naughton 1995).

METHODOLOGY FOR MEASUREMENT OF CHINA'S GAINS FROM REFORM

In his presidential address to the American Economic Association in 1998, Arnold Harberger (Harberger, 1998) reviewed modern growth theories, a summary that could have been titled "A Tale of the Residual." After laying out the theoretical foundations in 1956, Robert Solow provided actual measurements of the contribution of factor accumulations, labor and capital, to the growth of output for several countries and found a significant and persistent residual, that is, output growth beyond that which could be explained by accumulations of inputs (Solow, 1956,1957).

A lively debate ensued over the use of a model based on the existence of the aggregate production function and whether more flexible mathematical representations of that function than those used by Solow might improve the results. Throughout this evolution of empirical structure, the presence and significant magnitude of the Residual was continually reaffirmed. However comparatively little progress was made in understanding the source or nature of the Residual beyond Solow's original hypotheses that it consisted of technical progress and human capital.

Eventually the theoretical duality between the cost function and the production function was established (Diewert, 1971). Subsequent empirical work then confirmed that the Residual appeared without regard for whether the estimation was based on a production or a cost function. Conceptually the Residual can now be understood as the result of technical progress, real cost reduction, improvement in labor productivity and/or simply more efficient management, and is now referred to as Total Factor Productivity (TFP) (Harberger, 1998).

The basic model is the relationship that links the level of aggregate output, real GDP (Y), to the aggregate levels of capital (K) and labor (L) used to produce that output. A scale parameter (A) is included to allow for efficiency improvements,

technology improvements, cost reductions, etc. If we use lower case letters to represent percent rates of growth (time derivatives of logarithms of the levels) and assume the Cobb-Douglas form: constant returns to scale and a unitary elasticity of substitution among the factor inputs, the growth accounting framework based on the model follows:

$$(1) \qquad y = a + \beta(k) + (1 - \beta)(l)$$

where β is the share of the total value of output that is paid to owners of capital and (1-β) is the share of total output paid to labor. This equation states that the rate of growth of output is the sum of the rate of growth of TFP or 'a', plus the rate of capital accumulation (k) weighted by capital's share of output, plus the rate of growth of labor input (l) weighted by labor's share of output.

For many questions the equation is rearranged as follows: (Harberger 1998)

$$(2) \quad y - l = a + \beta(k - l)$$

In this form, *y-l* is the rate of growth of output *per worker* (labor productivity) which is in this form because (*y-l*) is the time derivative of the logarithm of output per worker. Similarly, the term (*k-l*) represents the growth rate of capital per worker.

Imagine a hypothetical economy with a growth rate of real GDP of 4.0 percent, a growth rate in employment of 2.0 percent, a rate of capital accumulation of 4.0 percent and that capital's share of national income is 40 percent. In this case we would calculate the value of TFP growth at 1.2 percent. If we focus simply on equation (1) above we would conclude that TFP growth represented 30 percent of the output growth in this country while capital accumulation accounted for 40 percent and employment growth the remaining 30 percent. However if instead we use the equation 2 framework, which concentrates on the growth of output per worker, we find that growth in total factor productivity accounts for fully 60 percent of the growth in output *per worker* while growth in capital per worker accounted for only 40 percent of the growth in output per worker.

Ideally this framework is applied to data disaggregated by company for each country. In these studies we are able to see that total factor productivity growth, or growth in the efficiency of use of productive inputs, varies significantly across firms and/or divisions, in other words some firms are more competitive than others (Harberger, 1998). In these detailed situations we find just what we would expect that there are many winners and many losers in the matter of productive efficiency and by extension, competitiveness.

However when examining developing economies, data on this level of detail are frequently either unavailable or subject to significant measurement errors. Therefore analysis of developing countries requires that we simplify our data requirements to accommodate the available information. For example, reliable measures of capital's

share are especially hard to come by in developing economies. In the absence of such data, the translog functional form is no longer useful. As a result, most studies of developing country growth empirics at the aggregate level still use the venerable Cobb-Douglas functional form.

Some of these studies found a remarkable similarity and stability of the share of capital across many countries (Bosworth and Collins 1996). They determined that a range of values for β, capital's share of output lies between 0.3 and 0.4. In their analysis they use the value 0.35 for all developing countries. Sarel (1997) and Klenow and Rodriguez-Claire (1997) used similar values. These empirical studies continue to find evidence of the Residual and further that the Residual appeared to be the most significant determinant of differences in growth rates across countries (Easterly and Levine, 2000). If TFP growth is the main difference between countries that are successful in rising out of poverty and those that are not, and if TFP growth is truly exogenous, the unsettling conclusion is that countries may lack the ability to improve their growth rates.

The search for a growth model in which the Residual is endogenous, that is to say, a part of a country's basic economic processes is an integral part of the renewed interest in growth research (Romer 1986,1990, Young 1995). The methodology used was to propose a factor or set of factors and test statistically whether they appear to account for differences in growth rates. A survey of the endogenous growth literature (Grossman and Helpman 1991) discloses a long list of possible determinants of long run growth including physical investment, human capital investment, export shares and several aspects of government policy. Statistical tests of these variables against long run growth for a number of advanced OECD countries found no support for these models (Jones 1995). However this study failed to separate growth of capital per worker from TFP growth. It is entirely plausible that TFP growth was generated by policy actions to offset the effect of diminishing returns from growth in capital per worker, a hypothesis that was unfortunately not tested.

Along the way, endogenous growth research found other evidence to challenge some of the widely used assumptions in growth studies. For example, studies by Young (1995) and others found only a nominal Residual in Korea and a small negative in Singapore, that is, no Residual. This is rather surprising given the success of these economies. A parallel result of the endogenous growth research is that studies which found little or no growth in the residual also found that the share of capital was typically estimated to be within the range of 0.55 to 0.6 (Romer 1990, Young 1995). In contrast, studies which assumed that all countries were on the same production function typically measured capital share values of 0.3 to 0.4 (Bosworth and Collins 1996). This suggests a flaw in the use of cross-country regressions with constrained coefficients as a method of measuring the growth model (Fey 2001).

In the absence of an exogenous Residual, diminishing returns following rapid growth of capital accumulation would eventually cause lower rates of return and

slower growth. This Malthusian prediction stands in stark contrast to the very large accumulation of empirical evidence in support of the long-term stability of the measured Residual, or TFP. Moreover subsequent studies have failed to confirm Young's results (Easterly and Levine, 2000).

ACCOUNTING FOR THE GAINS FROM REFORM

An alternate approach to the search for endogenous growth is to look at countries that appear to have experienced a significant change in their growth path and search for the policy issues that contributed to that change (Fey 2001). A study of China using primarily data from the pre-reform era, before 1978, found TFP growth to be virtually zero (Chow 1993). Moreover this study found estimated values of capital's share in the range of 0.6, consistent with other studies which found no growth in TFP (Romer 1990, Young 1995) but again quite different from the values of 0.3 to 0.4 found in the exogenous growth studies (Chow 1993). It also suggests that to properly understand the growth process in China, we should use a model specifically fitted to Chinese data.

A current study of China estimated Chinese capital stock using combined data from both the pre-reform and the post-reform eras, estimated Chinese aggregate production functions for real GDP per worker and found significant evidence in support of endogenous growth (Fey 2001). The reported value of capital's share for the pre-reform era in China, 1952-1978, was 0.625, consistent with Chow's results for essentially the same period and similar to Romer's results for Korea and Singapore. For the post- reform era in China, 1978-1998, the figure was essentially unchanged at 0.637. More important however the models included a statistically significant trend for each era to test the hypothesis that the Residual may have changed, a central tenet of endogenous growth. In the pre-reform era, the estimated TFP growth was actually slightly negative while the post-reform era boasted TFP growth that accounted for nearly 40% of the output per worker growth. When we use the results of this combined analysis for Chinese growth accounting, the results are shown in Table1.

Table 1: Chinese output per worker growth accounting pre-reform versus reform eras

	Real output per worker growth rate	Capital per worker growth rate	Total factor productivity growth rate	Percent growth from capital per worker	Percent growth from TFP Growth
1960-1975	1.6%	2.6%	(0.0%)	101.5%	(1.5%)
1980-1999	7.9%	7.8%	3.1%	61.5%	38.5%

Sources: China Statistical Yearbook (1998); World Development Indicators, The World Bank; Chow (1993); Fey (2001); Nehru and Dhareshwa (1992)

The pre-reform era shows a growth rate of real output per worker of only 1.6 percent per year with virtually no contribution to growth from total factor productivity. Further, to avoid skewing the results downward, these measurements were made only after excluding the years during which the Great Leap Forward and the Cultural Revolution took place - a time of unmitigated economic disaster. These results support the conclusion that virtually all economic growth during the pre-reform era resulted from increases in capital per worker.

In the post-reform era the growth rate in real output per worker soared to 7.9 percent per year and total factor productivity growth was transformed from essentially zero to 3.1 percent annually. Moreover, in keeping with the predictions of growth theory, this new higher level has been maintained for more than twenty years, a period that included intervals of economic and financial crisis. At this level TFP growth accounted for nearly 40 percent of the annual growth in total output per worker. We also note that a significant component of the increased growth in the post-reform era resulted from an increase in the growth of capital per worker. A transformation in TFP growth of this magnitude virtually overnight is unparalleled in recorded economic history.

Finally, we must not neglect the other important engine of Chinese economic growth. Each year of the reform era approximately 13 million people have shifted from primarily agricultural employment to non-agricultural employment. While the magnitude of that transformation may stagger the imagination, it represents only about one percent of China's nearly 1.3 billion people each year. And still China is better able to feed itself than at any time during the pre-reform era (Oksenberg, Swaine, and Lynch 1999)

While it remains for future research to sort out the specific contributions of various components of the reform programs, there can be no doubt that the economic reforms taken collectively, and the political accommodation necessary to make them possible, constitute the root cause of China's extraordinary economic growth. If the capital and TFP growth rates can be sustained, the opportunities for both investment and marketing of goods in China will remain among the most promising on the planet. But can they be sustained?

SOURCES OF THE GAINS FROM REFORM

China began the move to a market system with agricultural reform. Under the household responsibility system (*baochan daobu*) the large collective farms were broken up and individual farm households were able to lease specific plots of land to farm. A two tier pricing system was introduced in which farmers were allowed to sell any agricultural output they produced beyond that which was required by the plan, at market prices. The result was a dramatic increase in agricultural output and farm

household incomes in the early 1980s. The increased income enabled farm households to demand more meat and fish in their diet as well as more manufactured consumer goods and better housing. In addition farm household productivity increased dramatically, 53 percent growth in farm GDP between 1978 and 1984. In spite of this improvement, Chinese farm productivity remains extremely low, about 1.6 percent of U.S. farm productivity. Indeed China is so land poor, as measured by arable land per capita, that it is unlikely to ever achieve comparative advantage in agricultural products (Maddison 1998).

On the other hand, it is important to note that Chinese farm households lease the land that they cultivate and cannot buy or sell land. Indeed if the township or village leaders decide that a particular plot of land is needed for factory, the household cultivating that land will be moved and given a different plot of land to farm.

The dramatic productivity gains under the household responsibilities system produced a growing excess of rural labor, which had little chance for employment on household farms bent on profit. Under China's strict household registration system, rural families were not permitted to migrate to coastal cities without government permission. The consequence was the creation of a large number of workers with low opportunity costs and willing to work for low wages in almost every township and village across the country.

In addition to SOEs, the industrial wreckage left over from the planned economy era included some 1.5 million collectively owned township and village enterprises (TVE), relics of commune or brigade enterprises from the failed Great Leap Forward. Prior to reform these TVEs were funded solely by the savings of their employees and retained earnings, which meant there were virtually no growth opportunities for these enterprises. After the commune system was replaced by the household responsibility system, ownership of collective TVE's was transferred to the township or village and placed under the control of local government leaders (Chen 2000). The profits from these enterprises produced extra budgetary revenue for the township and created legitimate opportunities for local bureaucrats to greatly increase their income if they ran the enterprises successfully.

In 1980 the central government adopted a landmark fiscal reform by adopting a revenue-sharing system (Ma, 1997). In this system revenues were divided into three categories, those revenues that were always remitted to the center, those revenues that always remained with the locality and those revenues that were shared. To the captive pool of unemployed labor the reform now added some financial resources outside the control of the central government. In addition the central government in 1981 granted a three-year tax holiday as an incentive to all new rural enterprises. Further, the State Council issued Document. No. 4 in 1984 which among other things declared TVE's to be "legal persons" (Wong, Ma, and Yang 1995). This cleared the way for collective TVE's to seek bank loan financing. Finally, add to the mixture the fact that

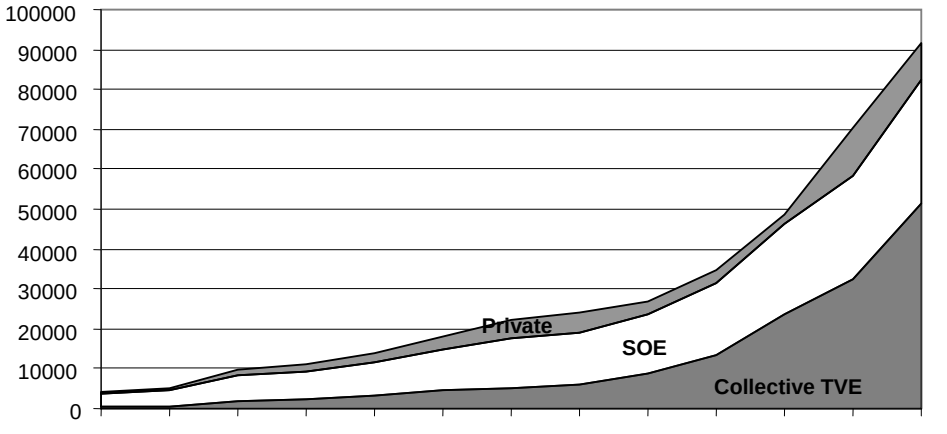
townships and villages typically had several TVEs under their control, which allowed for diversification. If one of the TVEs failed to meet its loan obligations, the town or village could either require other TVE's to pay of the loan or tax the profits of the others to make good on the loans. With the local community government serving as guarantor for the loans of collective TVE's, banks and rural credit cooperative (RCC) loans were readily available (Chen 2000).

This combination of events unleashed an outpouring of entrepreneurial activity. Shared revenue from the central government combined with household savings from the more successful farm households provided the start-up capital to transform the collective TVEs into profitable market-driven businesses. These enterprises avoided some the problems associated with the absolute absence of any private ownership of land because the township controlled the use of all land within its borders and could thereby guarantee necessary land for collective TVE facilities. The success of collective TVE's resulted in a demand for financial capital far beyond local resources. One survey found that more than 50 percent of collective TVE financing came from bank and RCC loans (Chen 2000).

The number of collectively owned TVEs remained approximately constant while the number of privately owned individual TVEs surged from zero in 1978 to nearly 22 million by 1996. The situation was quite different for new private businesses. Their start-up capital came largely from personal savings and personal borrowings of owners and employees. However the possibilities for expansion were severely circumscribed by their lack of access to the financial system due to lack of collateral or reliable loan guarantors. A survey in 1989 found that the average size of loans to township, village and private enterprises was 299,649 yuan, 218,873 yuan and 58,996 yuan, respectively. In 1993, a sample of private TVEs found that two-thirds of the total investment in the firm came from personal funds (45%) and retained earnings (23%). As a result these private enterprises seldom reached efficient size, having an average of less than three persons per organization in 1996. Average labor productivity of private TVE's is less than half that in the collective TVEs and a decline in their share of industrial output from 13.3 percent in 1978 to 10.25 percent in 1995 (Ma, 1997).

In contrast the collectively owned TVEs were typically transformed into totally new areas of business, doubling their average employment per enterprise from 13 in 1978 to 26 in 1996 (Wong, Ma, and Yang 1997, Maddison, 1998). Far more important though, the productivity of these collective TVEs grew from an average gross value added per employee of 499 yuan in 1978 to 4761 yuan (constant 1987 yuan) by 1994. This represents a real growth rate in productivity from 1978 to 1994 of 15 percent per year (Maddison, 1998). Given the substantial growth in employment, the overall growth in collective TVE output was a stunning 24.5 percent per year from 1978 to 1995 (Ma, 1997).

Figure 1: Chinese industrial output (100 Million Yuan)



Source: Ma, 1997

The spectacular growth of these collective TVEs became the primary engine driving the 7.9 per cent per year real economic growth of the Chinese economy over two decades of the reform era as seen in Figure 1. Deng Xiaopeng said in a meeting with foreign visitors on June 12, 1987 that " the biggest achievement which we did not expect at all is the development of township enterprises, the new force suddenly coming to the fore." (Wong, Ma, and Yang 1995). However the fact that 20.5 million privately owned individual TVEs failed to achieve significant growth in productivity despite significant growth in volume is the salient fact of the Chinese development experience. Two groups of entrepreneurial enterprises, side by side, but one group must be judged as failing when compared to the enormous success of the other. And the reasons for this disparate performance constitute one of the most important lessons to be learned from the Chinese experience for the rest of the developing world.

As we compare the performance of these two groups of enterprises, it is important to note that they grew in exactly the same national and cultural environment, faced the same limited legal system, benefited from the same tax incentives and export opportunities, had access to the same pools of labor and management talent and could not own the land used in their facilities. The main difference between these two groups of enterprises was that one group, the collective TVEs, had ready access to a financial system that was strong enough and stable enough to provide a continuing supply of expansion capital and the other, the private TVEs, did not. This conclusion is further underscored by the decline in private TVE's during the early 1990's. At this time the Chinese government was struggling to contain

inflation with tight monetary policies. The weaker credit status of private TVE's meant that in times of monetary restraint, loans to private enterprises are the first to be cut. There is no better example of the power and critical nature of the availability of financing to the success of a transformation to higher growth and economic development.

SUSTAINABILITY ISSUES

The pre-reform regime of Mao Zedong placed a high-priority on accumulation of capital and an equally high-priority on self-sufficiency. In this autarkic world, only China's traditionally high savings rate enabled any economic progress at all. Still this era provides a kind of benchmark against which to measure the progress resulting from the institution of reforms.

As recently as 1978, China absorbed virtually no foreign direct investment (FDI) to speak of, but by 1997 China was absorbing more foreign direct investment than any other nation in the world except the United States. In 1978, China had no foreign debt, but by 1997 China was the largest borrower from the World Bank and had total foreign debt of about $130 billion U.S. (Schell and Shambaugh 1999). More important, by year-end 1997 cumulative foreign direct investment in place was about three-quarters more than the level of China's officially reported external debt. By way of comparison, cumulative FDI in Korea at year-end 1996 was only one-ninth of officially reported outstanding foreign borrowing and in Thailand cumulative FDI was only one-fifth of total external borrowing (Lardy 1998).

This distinction is important to the issue of sustainability of growth. Direct investors differ from financial investors in that they invest in relatively illiquid assets with little hope of reversibility and consequently have a longer time horizon and a greater commitment to the success of the project. Investment in financial assets and especially those of financial intermediaries and financial markets are frequently short term in nature and can be reversed quickly if investors fear the spreading impact of a crisis elsewhere and re-evaluate the risk of their lending in a particular country. Whether in Korea or Mexico, the extent to which foreign capital was invested in short term or highly liquid assets significantly increased the vulnerability to financial crises anywhere in the world.

The structure of China's cumulative foreign investment therefore provides significant insulation or protection against the spreading virus of fear following a significant financial crisis elsewhere in the world, whether it is the Southeast Asian crisis of 1997 or the Russian/Brazilian crisis of 1998. This issue provides significant support for continued extraordinary growth in China because the bulk of foreign investors, by virtue of their being direct investors, have a vested interest in the continued success of the Chinese economy.

Another pillar of China's extraordinary economic performance is exports. During the most dramatic period of economic growth, from 1986 to 1997, China's GDP grew 11.2 percent annually while exports grew approximately 13.5 percent per year. And now exports account for almost 25 percent of China's GDP. Unlike most other nations in Southeast Asia, the mid- '90s China continued experiencing record trade surpluses, which both fueled its economic growth and immunized it from dependence on foreign capital inflows (mostly short-term) to finance trade deficits. Also, by 1997 China had accumulated foreign exchange reserves sufficient to finance a full year of imports (Lardy 1998).

Finally, China further insulates its economy from precipitous changes in sentiment on the part of international lenders, speculators and multinational businesses by avoiding what is called "capital account convertibility" of its currency. This means that there is no market where speculators or hedgers can buy or sell spot or futures contracts in Chinese currency and therefore it is impossible for a currency crisis in Chinese currency to trigger a financial crisis.

China has three major financial insulators: (1) the overwhelming dominance of foreign direct investment in the amount of foreign capital that has accumulated in China; (2) extraordinary success in building exports so that the resulting trade surpluses avoided an accumulation of short-term foreign debt and instead led to a large accumulation of foreign exchange reserves; and (3) a lack of capital account convertibility of Chinese currency. These three factors undoubtedly constitute the major reason why the financial devastation of the 1997 Southeast Asian financial crisis stopped at the Chinese border. Consequently it is unlikely that a financial crisis even in its own region will reduce the long-term growth in total factor productivity.

On the other side of the ledger there are several factors which may ultimately reduce the long-term rate of growth in total factor productivity. These include (1) the environment, (2) resolution of the SOE problem, (3) banking system vulnerability to a growing balance of non-performing loans to SOEs and (4) the reduction in trade barriers that will accompany WTO membership.

As noted above, the environmental issues are approaching crisis proportions, at least in the major cities where much of the new profitable market oriented business is located. Much has been written on the subject, ably summarized by the World Bank (1997), but as always there is a trade-off between the cost of cleanup and the rate at which the environment is cleaned. It remains to be seen specifically where along that trade-off the Chinese government will choose to be. But choose it must and sooner rather than later. In the short run this will undoubtedly slow the growth rate somewhat, but failing to address the environmental issues will almost certainly constrain long-term economic growth more severely (Schell and Shambaugh 1999).

As noted above, one of the strategies of Chinese planners was to postpone the transformation of much of state-owned enterprise into private enterprise. The bulk

of SOEs are apparently unprofitable (Lardy 1998). Of course economics tells us that it is the correct solution to continue operations of unprofitable business in the short run as long as revenue more than covers variable cost. Under such conditions the cost of liquidation exceeds the cost of subsidizing the unprofitable operation. In the long run of course opportunity costs should dictate liquidation decisions. It may be that the rush to privatization in Eastern Europe and the former Soviet Union was an inherently more costly choice.

During much of the reform era China attempted to transform the SOEs into profitable competitive businesses, largely without success. It appears that a number of SOEs may have to be liquidated and in all likelihood their bank loans will be written off (Lardy 1998). China's membership in WTO and reduction in trade barriers increases the likelihood that cheaper imports will seal the fate of many SOEs. With that the economic cost of liquidating these firms will finally have to be realized, providing another drag on GDP growth.

Lardy (1998) presents an extensive and complex case arguing that the apparent benefit to China from postponing the economic cost of SOE liquidation to a time when it was a much smaller proportion of GDP or real wealth, is offset by the creation of a parallel crisis in the banking system. Lardy claims that 22 percent of the loans of China's largest banks in 1995 were classified as nonperforming and that loan loss reserves were well under one percent of loans. Citing a World Bank finding that financial distress is likely to become systemic when nonperforming loans, net of provisions, reach 15 percent of total loans, Lardy concludes that a systemic financial crisis in China is simply waiting for a trigger event such as a major slowdown in foreign direct investment or in exports.

However we doubt that that was what the World Bank had in mind. The 15% figure is not so much a trigger of financial crisis but rather is an empirical regularity to be used as a warning signal when taken into account with all other data. It is extremely unlikely that the World Bank would have extended so much credit to China without some very stringent requirements concerning the banking sector if they agreed with Lardy's conclusion. It is equally unlikely that Chinese people would have continued to pour high levels of savings into Chinese banks if they agreed with Lardy's conclusion.

However we prefer a more pragmatic standard. A systemic financial crisis in the banking system does not occur until depositors lose confidence in the banks. Banks that are technically insolvent may continue in business indefinitely, if permitted by the regulators, so long as depositors are willing to place their funds in the bank. This was true of a number of savings and loan associations in the U.S., which came to be known as 'zombie S&Ls', during the banking crisis of the 1980s. Lardy's conclusions notwithstanding, there was no apparent effort by U.S. depositors to assess the proportion of loans that were nonperforming before deciding whether they would continue to leave their funds in the bank. Our point is simply that the extraordinarily

high savings rate in China remains *de facto* evidence of confidence in Chinese banks. In other words, in China they do not believe that a systemic banking crisis is about to take place. We concur.

Finally, as part of its WTO negotiations with Europe and United States, China reduced its trade barriers from an average tariff of 40 percent to 28 percent. Significant additional reductions will be necessary as part of its entry into WTO. While these reductions will certainly result in an increase of imports, improved access to foreign markets will also stimulate exports. It is impossible to assess the direction of impact on the Chinese economy without significant additional research. In short, this is one of many imponderables in China's future.

On balance, China's financial strength combined with a continuing flow of large amounts of FDI and a continuation of TFP growth are likely to generate growth more than sufficient to offset a measured pace of environmental progress and SOE resolution. It is likely that China will still maintain one of the highest growth rates on the planet.

POLITICAL ISSUES IN TRANSFORMATION

Many analysts conclude at this juncture that the key to China's future lies in its politics rather than its economics. They present compelling arguments that as Deng Xiaoping's legacy fades into history, the inevitable juggling for position by factions wishing to challenge the leadership of Jiang Zemin will increase in intensity as we approach each important Party Congress.

The Dengist reforms embraced the likelihood of increased income gaps as a part of the development of a market economy with the motto "to be rich is glorious." As a practical matter, a market economy invariably rewards winners and punishes losers. The transition to a market economy contains the same consequences. When a worker in a SOE, who could once have looked forward to his employer providing lifetime employment and a pension as well, suddenly finds himself unemployed as a result of the closing of an unprofitable facility, a certain amount of political unrest results. Add to that the worker's observation that in the major coastal cities, workers whose incomes were already much larger than his are both employed and receiving large increases in wages, but the central government will not let him go there and work (Demerger 2000).

This situation is all the more serious because it mirrors a fundamental political conflict within the central government itself. As the Chinese Communist Party (CCP) abandoned class struggle for the sake of economic transformation, the party became dependent on the technocrats and entrepreneurs who understood how to make the economy grow. Former class enemies and counter revolutionaries were not only released from prison; they were actively recruited into the CCP itself because they had

the skills needed by party leaders to accomplish the new agenda. (Dickson 2000). After a decade of active recruitment, a 1989 survey of private entrepreneurs in Wenzhou found that 31.7 percent were party members (Parris 1993). Following the imposition of martial law in 1989, the CCP banned all recruitment of entrepreneurs, a ban which was repeated in 1995 and remains to this day. The loss of this skill set from the circles responsible for economic policy would normally be expected to have a significant negative impact on the future growth of China's economy were it not for decentralization again rescuing the situation.

As we have seen, the major source of China's economic growth has come from collective TVE's. This allowed local government leaders to recruit proven entrepreneurs running these organizations while remaining in technical compliance with the center (Dickson 2000). For their part the entrepreneurs were motivated to join the party for the valuable connections that came with membership. The central government has neither removed the ban nor enforced it so strictly as to preclude local circumvention. In a triumph of the "market economy with Chinese characteristics," the party leaders managed to satisfy those members who oppose "capitalist exploiters of the working class" as party members while at the same time enabling the critical sector of the economy to progress unfettered. As one private entrepreneur we interviewed put it, "in China 'no' often doesn't mean no, it means find another way."

There remains one other issue, which could potentially hinder future economic progress. The primary fuel for the engine of industrialization in China is labor, clearly available in abundance. Through strict enforcement of the household registration system the center has retained tight control on the migration of rural workers to urban industries, located primarily in the coastal provinces. Urban per capita income was 2.4 times rural per capita income at the beginning of reform in 1978 (Yang and Zhou 1999). Given the growing income disparity between the coastal provinces and the Central Provinces and the even greater disparity with the western provinces, workers are highly motivated to move to the coastal regions. Absent government controls the volume of migration would overwhelm coastal infrastructure and bring the economy grinding to a halt. On the other hand, by restricting migration, the center is seen as supporting these income differentials and thereby favoring capitalists over workers, a relatively unpopular position for party leaders. Even worse, by trying to plan the labor force for coastal industrialization they would be falling back on policies clearly doomed to failure.

In order to have migration decisions driven by market forces, the central government relaxed enforcement of the household registration system just enough to create a migrant labor force that is currently estimated at around 40 million workers or about three percent of the population (Yang and Zhou 1999). These workers are at the bottom of the food chain of urban employment, taking those jobs not wanted by

urban residents, which tend to be the lowest wage, lowest skill and least pleasant jobs. Lacking official resident status they can be exploited by employers. Nonetheless one survey found that migrant workers earned an average of 25 percent more than their peers who stayed at home and that they were away from home an average of nearly seven months (Knight, Song, and Huaibin 1999). Officially, migrant workers generated 18 percent of total rural income in 1994, which significantly reduced the wage disparity.

CONCLUSIONS

The record of the reform era, it seems to us, reveals a set of economic reforms crafted with great ingenuity, care and insight combined with political changes limited to the bare minimum necessary to implement the reforms effectively.

The economy has clearly been transformed rather than simply resuscitated with the result that Deng's revolution of rising expectations has already taken place. There is no turning back. Popular pressure for continuing the economic gains begun under Deng's leadership appears throughout the country. Continued improvements in incomes and living standards must be the *sine qua non* of the new leadership. Whoever will hold the reins of power in China may do so only with a convincing program for continuing the economic revolution of the reform era while maintaining the political *status quo* in so far as possible. To be rich is glorious but the CCP is still in control. China is still poised to offer some of the most attractive business prospects on the globe.

And so we end as we began. Wherever it is that China is going, you can be absolutely certain that they will be going there in a dreadful hurry.

REFERENCES

Bosworth, B. and S. Collins. 1996. Economic growth in east asia: accumulation vs assimilation. *Brookings Papers on Economic Activity* 2: 135-203.

Chen, Hongyi. 2000. *The institutional transition of china's township and village enterprises*. Brookfield, Vermont: Ashgate Publishing.

Chow,Gregory C. 1993. Capital formation and economic growth in china. *Quarterly Journal of Economics* 108: 809-842.

Clear water, blue skies: China's environment in the new century. 1997. Washington: The World Bank.

Cull, Robert and Lixin Colin Xu. 1999. Bureaucrats, state banks, and the efficiency of credit allocation: the experience of chinese state-owned enterprises. Working Paper, The World Bank.

Demurger, Sylvie. 2000. *Economic opening and growth in china.* Paris: OECD.

Dickson, Bruce J. 2000. Cooptation and corporatism in china: the logic of party adaptation. *Political Science Quarterly* 115 (4): 517-540.

Diewert, W. Erwin. 1971. An application of the shephard duality theorem: a generalized linear production function. *Journal of Political Economy* 79 (3): 482-507.

Easterly, William and Ross Levine. 2000. It's not factor accumulation: stylized facts and growth models. Working paper, The World Bank.

Fey, Richard, 2001, Endogenous Growth and the Gains From Reform in China, Unpublished paper.

Graham,Carol. 1994. *Safety nets, politics, and the poor: transitions to market economies.* Washington: Brookings.

Grossman, G. and E. Helpman. 1991. *Innovation and growth in the global economy.* Cambridge: MIT Press.

Harberger, Arnold C. 1998. A vision of the growth process. *American Economic Review* 88:1, 1-32.

Hertsgaard, Mark, 1999, Our Real China Problem, reprinted in Schell, Orville and David Shambaugh, eds., *The china reader: the reform era.* New York: Vintage.

Jefferson, Gary H., Thomas G. Rawski and Yuxin Zheng. 1996. Chinese industrial productivity: trends, measurement issues, and recent developments. *Journal of Comparative Economics*, 23.

Jones, Charles I. 1995. Time series tests of endogenous growth models. *Quarterly Journal of Economics* 110 (May): 495-525.

Klenow, P.J. and A. Rodriguez-Clare. 1997. The neoclassical revival in growth economics: has it gone too far? Graduate School of Business, University of Chicago.

Knight, John, Lina Song, and Jia Huaibin. 1999. Chinese rural migrants in urban enterprises: three perspectives, in Cook, Sarah, and Margaret Maurer-Fazio, editors*, The workers state meets the market.* London: Frank Cass & Co. Ltd.

Lardy, Nicholas R. 1998. *China's unfinished economic revolution.* Washington: Brookings Institution Press.

Ma, Jun. 1997. *China's economic reform in the 1990's.* Washington: The World Bank.

Maddison, Angus. 1998. *Chinese Economic Performance in the Long Run.* Paris: OECD.

McMillan, John and Barry Naughton. 1996. How to reform a planned economy: lessons from china. *Oxford Review of Economic Policy*, 8: 130-143.

Murrell, Peter. 1995. The transition according to cambridge, mass. *The Journal of Economic Literature.* 33: 164-178.

Naughton, Barry. 1995. *Growing out of the plan: chinese economic reform* 1978-1993. Cambridge: Cambridge University Press.

Nehru, Vikram and Ashok Dhareshwar. 1992. A new database on physical capital

stock: sources, methodology and results. *Revista de Analisis Economico* 8(1): 37-59.

Oksenberg, Michael C., Michael Swaine, and David Lynch. 1999. The chinese future, reprinted in Schell, Orville and David Shambaugh, eds., *The china reader: the reform era*. New York: Vintage.

Parris, Kristen. 1993. Local initiative and national reform: the wenzhou model of development. *China Quarterly* 134 (June 1993):259, 261.

Romer, Paul M. 1986. Increasing returns and long-run growth. *Journal of Political Economy* 94: 500-21.

Romer, Paul M. 1990. Endogenous technical change. *Journal of Political Economy* 97: S71-S103.

Sachs, Jeffrey D. and Wing Thye Woo. 1994. Structural factors in the economic reforms of china, eastern europe, and the former soviet union. *Economic Policy* 18: 102-145.

Sarel, M. 1997. Growth and productivity in ASEAN countries. IMF Working Paper No 97/97.

Schell, Orville and David Shambaugh, eds., 1999, *The china reader: The reform era*, New York: Vintage.

Shirley, Mary and Lixin Colin Xu. 1997. Empirical effects of performance contracts: evidence from china. Working Paper, The World Bank.

Solow, Robert. 1956. A contribution to the theory of economic growth. *Quarterly Journal of Economics* 70: 65-94.

Solow, Robert. 1957. Technical change and the aggregate production function. *Review of Economics and Statistics* 39: 312-20.

World Development Indicators 2001. Washington: The World Bank.

Yang, Dennis Tao, and Hao Zhou. 1999. Rural-urban disparity and sectoral labor allocation in china, in Cook, Sarah, and Margaret Maurer-Fazio, editors, *The workers state meets the market*. London: Frank Cass & Co. Ltd.

Young, Alwyn. 1995. The tyranny of numbers: confronting the statistical realities of the east asian growth experience. *Quarterly Journal of Economics* 110: 641-80.