China's High Savings Rates

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Abstract

Since the early 1980s China has witnessed a rapid increase in its national savings rate to one of the highest rates in the world. Unlike the socialist period when consumption was repressed in order to redirect resources to investment, most of these savings are voluntary. This paper addresses why China's savings rates are so high and the implications for China's economy.

1 Introduction

Following the sharp increase in income that followed Deng Xiaoping's economic reforms, household savings rates in China began to rise rapidly. They have continued to rise to the point that the national savings rate in China is now the highest in the world. That savings would grow in a country emerging from poverty is not necessarily surprising, but the magnitude of the rise in China is not easy to reconcile with economic theory. Theory predicts that people smooth out consumption over time by saving when their incomes are high and dissaving when their incomes are low. The direct implication is that consumers with rising incomes should start spending more immediately so as to enjoy the benefits of future income growth. Clearly this is not happening in China.

In fact, the pattern of rapid income growth leading to high savings rates has previously been observed in many high-growth economies, including Japan, Taiwan, South Korea, and Hong Kong. The recurrence of this pattern in China, now the world's second largest economy, heightens the challenge that it presents to economic theory. And the recurrence of this pattern has widespread effects on the Chinese economy that need to be understood.

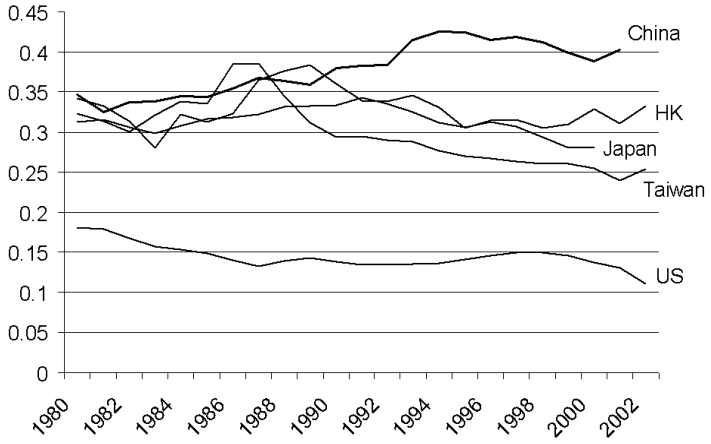

Figure 1: National Savings Rates (IFS, Taiwan Statistical Databook)

This paper first presents an overview of the different theories that might explain why savings rates are so high in China. We then consider the implications for these different explanations for how long high savings rates are likely to continue. Finally, we consider the impact of China's savings rates on the economy.

2 Theory

Savings are a way for consumers to allocate their consumption across time. They are also the source of capital for firms to invest. Therefore the amount of savings in an economy is a function of savings supply (primarily from consumers) and investment demand (primarily from firms), with the interest rate being the market price.

Regardind savings supply, the basic life-cycle hypothesis (Modigliani, 1954) and the equivalent permanent income hypothesis (Friedman, 1957) predict that consumers smooth out consumption over time by saving when their incomes are high and dissaving when their incomes are low. Most importantly, when consumers are young they borrow to finance education, housing, and other expensive goods, in middle-age they repay these loans and accumulate savings for retirement, and in old-age they spend down their savings. Therefore demographic patterns have a large impact on the net amount of savings supplied to capital markets by consumers.

Regarding investment demand, if world capital markets are relatively open then capital can

be obtained either domestically or internationally, so local investment demand should not have a significant impact on domestic savings, and variations in savings observed across countries should be due mostly to variations in savings supply. Therefore many standard savings models conclude that savings in a given country should be driven almost entirely by the predictions of the life-cycle and permanent income hypotheses, and be relatively independent of domestic investment and growth.

The data do not seem to support this prediction. Instead, there seems to be a strong correlation between national savings rates and domestic investment and growth. That there would be some connection between investment and savings is not surprising if the assumption of open world capital markets is relaxed. For instance, in the Solow model high savings rates lead to higher capital accumulation and higher growth. The surprising finding is that the causality appears to go the other way: once an economy starts to grow rapidly there is a delay before savings start to rise. This growth-savings paradox was identified by Carroll and Weil (1994) and much of the empirical evidence is summarized in Carroll, Overland, and Weil (2000).

In light of the current unsettled state of the theoretical literature, understanding China's high savings rates is far from straightforward. In the following we consider the different factors that have been proposed to understand high savings rates in rapid growth economies and particularly in China.

2.1 Cultural factors

Because so many high savings economies are in Asia, a tempting explanation for China's high savings rates is culture. Standard savings models include a preference parameter that reflects how rapidly consumers discount the future in their decision-making. This discount factor is known to vary substantially across individuals and to be affected by education. In particular, young people tend to have extremely high discount rates so teaching them to put more emphasis on the future relative to the present is a primary function of formal and informal education. If some societies are more successful at this than others, then discount factors might vary across societies. In particular the argument is that Asian cultures have a tradition of emphasizing the long-term and this tradition is successfully inculcated into youth. In addition to concern for one's own future, there may also be a bequest motive for savings and this motive might be

higher in Asia.

The problem with this argument is that it does not explain why savings rates across Asia, including Japan and Taiwan, were all quite low until growth rates took off. Nor does it explain why savings rates have fallen substantially in Japan and Taiwan since growth rates slowed down. Moreover, Horioka (2001) finds that the bequest motive in Japan appears to be less strong than in America. Kraay (2000) finds that, even after accounting for many (but not all) standard factors, a large part of China's savings rates remains unexplained, so there still may be some room for culture, but it is unlikely to be the dominant factor.

2.2 Undeveloped insurance markets

The basic life cycle model assumes that consumers can perfectly insure themselves against risk. In fact many risks are uninsurable or only imperfectly insurable due to market failures such as information asymmetries. As a result, when incomes are uncertain, consumers are interested in saving to smooth their consumption not just over predictable variations in income, but over unpredictable variations as well. For instance, a consumer who fears unemployment might save even if her income is expected to rise on average. Precautionary savings of this form can begin to offer some insight into why savings do not fall more rapidly as incomes rise. And because growth is likely to be higher in less developed countries where insurance markets are also less developed, the cross-country correlation in savings and growth is also more understandable.

However, parameterizations of the model are unable to explain the intertemporal relation between growth and savings in countries where good data is available (Carroll, Overland, and Weil, 2000). In particular it seems that precautionary savings are most important when a person is poor and any loss in income can lead to substantial injury. As incomes rise, and as savings rise, the need for such savings should diminish. But the data shows that savings rates remain high as long as income growth remains high.

Regarding China, social insurance and private insurance remain very undeveloped so the motivation for precautionary savings is clearly strong. This is particularly true for rural residents. However, other economies in the region also used to suffer from undeveloped insurance markets so there is little reason to expect that precautionary savings should be a better explanation in China than in other Asian countries. Moreover, in economies that have developed insurance markets, such as Hong Kong and Singapore, savings rates have remained high as

long as growth rated remain high.

2.3 Liquidity constraints

If credit markets are undeveloped, then the life-cycle pattern of dissaving in youth, saving in middle-age, and dissaving in retirement might not be realized. In particular, younger consumers might not be able to go into debt for education, housing and other expensive goods, but rather have to accumulate the necessary funds first. As a result even young people might be substantial savers. Precautionary savings also become more important since unexpected expenses cannot be met by temporary indebtedness.

The lack of developed credit markets in many Asian countries is often taken as evidence that consumers are liquidity constrained and savings are therefore artificially high. However, it is not clear that the comparatively undeveloped nature of credit markets in Asia is a supply rather than demand problem. As long as demand for savings is so high, the demand for credit is low. Moreover, since most people are not in the market for credit, the adverse selection problem for those who are is likely to be even higher. In the case of China, difficulty in obtaining mortgages and other forms of consumer credit are clearly a factor in promoting high savings, but it is unlikely that the factor is as large as often believed. As seen again from the cases of Hong Kong and Singapore, developed capital markets need not lead to substantially reduced savings.

2.4 Historical experiences

Precautionary savings has some additional power in explaining China's high savings rate when one considers that different people have had different personal experiences of poverty that affect their estimates of how much precaution is appropriate. The fact that savings rates are highest in Asia where the 20th century was most chaotic, intermediate for Europe, and lowest for the Americas where the 20th century was most stable, is supportive of this factor. For China, the 19th and 20th centuries were a particulary chaotic period.

Historical factors may help explain China's relatively high savings rates, but they seem unable to explain the particular patterns. In particular, as seen in Figure 2, rural savings rates rose initially with the reforms, fell for a while, and then began rising again. Since rural residents have suffered disproportionately in China, being the primary victims of the Great

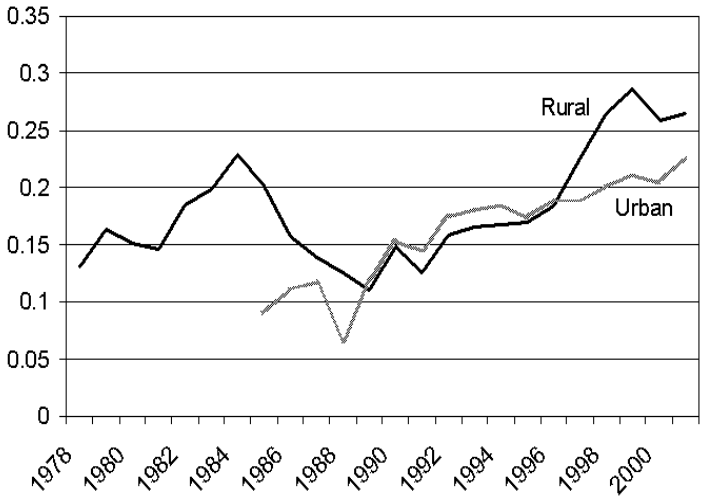

Figure 2: Household saving rates (CSYB)

Leap Forward famine for instance, it would seem that their savings should have been strongest while those memories were strongest. For urban residents savings rates have been rising steadily which is also inconsistent with a large role for historical experience.

2.5 Transition factors

While high savings rates are a general East Asian phenomenon, rates in China rose faster than elsewhere and, despite uncertainty due to measurement error, appear to have reached higher rates as well. It therefore seems reasonable that China's particular experience of transitioning from a planned economy to a market economy may be a factor. For instance, the rarity of private assets before reforms meant that consumers started the 1980s with very low wealth levels and strong incentives to accumulate a buffer of savings for precautionary reasons. Similarly the expectation of privatization in the future may have given consumers an incentive to accumulate savings in anticipation of the opportunity to purchase state assets. These factors may have been present, but the experience of other reforming economies has been a rapid decrease rather than increase in savings.

Another possibility is that continuing features of the planned economy, such as forced savings, are behind China's high savings rates. For instance, in the early reform period much

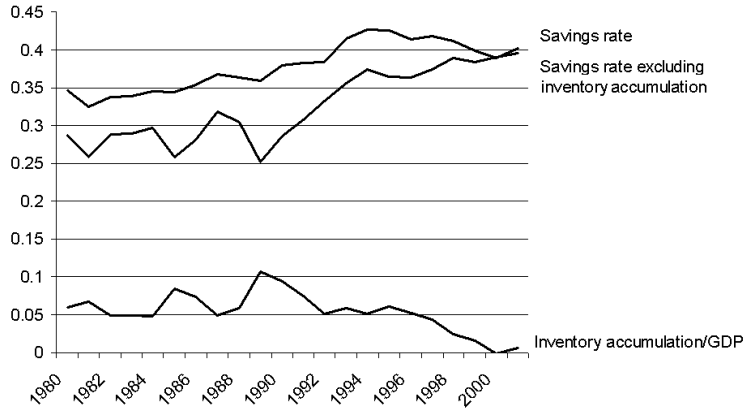

Figure 3: China's National Savings Rate Including and Excluding Inventory Accumulation (CSYB)

of China's savings were by the government or state-owned firms. Subsequently as the economic reforms progressed, savings rates might have been inflated by employees being forced to purchase company bonds. However, government savings and SOE savings are no longer as important in China's savings. While household savings are difficult to measure, by some estimates household savings have gone from less than 1% of total savings to over half (Kraay, 2000). Moreover, household savings continue to rise even as workers have more and more control over how to allocate their earnings.

One area where the impact of the transition on savings is apparent is inventory accumulation. Standard accounting of national savings treats inventory accumulation as part of savings since the inventory will eventually be sold, but in the case of China much of the inventory accumulation by state owned firms reflected the low quality of products and the absence of a market for them. As seen in Figure 3, such accumulation constituted a substantial portion of savings up through the mid-1990s. However, since then the reforms of state owned enterprises and the general rise of the non-state sector have largely eliminated this problem. As seen in the figure, since the mid-1990s inventory accumulation has contributed negligibly to savings. In fact, by excluding inventory accumulation it is apparent that China's savings rates have been growing more rapidly than would otherwise be apparent. Therefore it seems that transition factors do little to explain China's high savings rates, and in fact add to the mystery of why

savings rates continue to grow.

2.6 Demographics

As incomes rise, birth rates initially rise but then begin to fall. When income growth is unusually rapid this process can be compressed into a few decades, resulting in a large baby boom generation. When this generation reaches its peak income years and its members save for retirement, savings can rise in accordance with the life cycle hypothesis. Since the economy is also likely to grow most rapidly while baby boomers are entering their most productive years, the result can be a correlation between savings and growth, and even the appearance of growth causing higher savings (Modigliani, 1986). The fact that baby boomers themselves have fewer children to support them in their old age gives an added incentive to save.

Rapid growth typically leads to higher savings among all demographic groups, not just baby boomers, so demographic factors cannot fully explain the relationship between growth and savings. Nevertheless, demographic factors can still intensify the relationship between growth and savings. In the case of China, the demographic patterns would seem to be even more acute. However, despite the one-child policy, China did not see a more rapid decline in fertility than neighboring countries. Therefore this explanation would not seem to fully explain why China's savings are particularly high, but it is clearly a factor. Kraay (2000) finds that China's relatively low old-age dependency ratio helps explain part of China's high savings rates.

2.7 High Savings Returns

So far we have only considered savings supply by households. But if investment demand by firms is particularly high, and capital markets are not open to foreign capital, then the return to savings can also be quite high, thereby leading to greater savings. In developing countries, the rate of return to capital is likely to be high because capital is relatively scarce. Therefore, one could see high savings rates in high growth economies simply because interest rates are high.

However, the very high savings rates in rapid growth economies seem to preclude this explanation. Because the supply of savings is so high, interest rates are often quite low. For instance, savings in Taiwan and Japan in the 1970s were extremely high even though real

interest rates were nearly zero. More evidence that savings supply are the key factor is seen from the speed with which Japan and Taiwan became capital exporters. Only South Korea has followed the predicted model of being a capital importer.

In the case of China, real interest rates on savings have varied widely but in many periods have been negative. So the pattern would seem to be similar to that of Taiwan and Japan. However, capital markets in China have been so restricted that is hard to rule out a role for high savings returns. For instance, households might save in the hope of later capital liberalization that will allow a higher rate of return. Arguing against this possibility is the fact that savings rates have remained high as capital markets have liberalized and as competitive pressures have forced down profit rates. Moreover, China is steadily moving toward to becoming a capital exporter. Foreign reserves of nearly $400 billion are now almost equal to the entire accumulated foreign direct investment in China of $450 billion. Even as portfolio investment rises in China, there is no indication that China is substantially increasing its net capital inflows. This is seen most readily from its continued trade surplus.

2.8 Subsistence Consumption

A simple reason for why savings initially increase in rapid growth economies is that poor people are too poor to save. Only when incomes rise above subsistence levels is there any surplus which can be stored for future consumption. Another way to see the failure of poor people to save is that consumption in food and shelter is itself investment in both survival and in better health and higher productivity. The investment in such consumption might very well have substantially higher returns than the returns from savings.

For East Asia, where much of the population was barely at subsistence before growth accelerated, this explanation is hard to deny in the early stages. But it is difficult to see why savings would continue to remain at such high rates, and even rise, after income levels are already well above subsistence level. Moreover the effect of growth in savings has been observed worldwide, even in higher income countries. For China, the initial post-reform increase in savings rates came largely from rural households and it is unclear why they would have been further above subsistence than urban households.

2.9 Habit Persistence

Another simple but powerful explanation for the connection between growth and savings has been one of the slowest to be recognized by economists. As incomes rise consumers have a choice of whether or not to adjust their consumption upwards, and they might be reluctant to do so if they fear having to readjust their consumption downwards later on. That is, it might be more difficult for consumers to reduce their consumption after they have already adopted expensive habits. Anticipating this, if income is uncertain consumers will be reluctant to increase their consumption even as incomes rise. This habit persistence argument can explain the continuing failure of incomes to adjust downward even after incomes are much higher than subsistence. Even though consumers are not afraid of falling below subsistence, they are still afraid of not being able to maintain the lifestyle that they have become accustomed to. Therefore precautionary savings are much higher than they would be otherwise.

Carroll and Weil (1994) provide a wide range of evidence supporting the idea that increases in income growth lead to subsequent increases in savings, both in developed and developing countries, and argue that habit persistence is a likely source of the relationship. Further evidence is provided in Carroll, Overland and Weil (2000) in which they show that the observed patterns can be generated with reasonable parameters for habit persistence. Regarding China, this explanation captures the intuition that consumers were wary of how permanent the gains in income would be, so were reluctant to increase consumption rapidly.

2.10 Relative Consumption - Falling Behind the Joneses

A final explanation for high savings in rapid growth economies arises from the desire of consumers to maintain their consumption level relative to other consumers. Rising incomes would appear to induce excessive consumption via a "demonstration effect" (Duesenberry, 1949) as consumers attempt to "keep up with the Joneses". However, Harbaugh (1996) and Toche (2003) argue that rising incomes have the opposite effect when consumers are concerned with status both in the present and in the future. Rather than increasing consumption, concern for relative consumption can induce a fear of falling behind which raises precautionary savings. As societal income growth increases this fear of falling behind intensifies, allowing for a positive effect of growth on savings rates and potentially explaining the growth-savings paradox.

In particular, as income growth increases each consumer desires to consume more in each pe-

riod, taking the behavior of other consumers as given. Since income is stochastic this increased consumption is weighted towards the future if consumers are not too impatient. Therefore, since consumers are expected to consume more in the future, each consumer saves more for the future so as not to fall behind. The uncertain nature of future income makes each consumer even more afraid of falling behind, leading to even more savings. In equilibrium the savings rate can rise dramatically as expected income growth rises.

For instance, Japanese and Taiwanese in the 1950s had little reason to believe that a large-scale wedding banquet, a fully-equipped new home, a new car, and many other "luxury" goods would be the consumption norm of the 1980s and 1990s. However, by the 1960s and 1970s sustained rapid growth had made it clear that extreme resources would be required to maintain status in the coming decades. The relative consumption model suggests that savings then soared as consumers accumulated wealth to protect against any fall in relative consumption due to a decline in relative income. This same process would seem to be occurring in China. By the early 1990s the rapid growth in earnings had made it clear to many Chinese consumers that the consumption norms of the future would continue to rise rapidly. Rather than reacting to this good news by increasing consumption immediately, consumers became anxious that might fall behind the rising consumption norms of the future. As a result, they increased their savings to protect against any decline in relative consumption that might arise if their own income failed to grow as rapidly as that of other consumers.

The relative consumption model is able to explain the growth savings paradox without appealing to cultural factors, but it does not preclude a role for them. For instance, consumers in the United States with its cultural emphasis on individualism might be less afraid of "falling behind the Joneses" than consumers in China. As a result savings in America would respond less to an increase in the growth rate. Also, the role of patience in the relative consumption model is even more important than in a standard model. The more patient that consumers are, the more anxious they are of falling behind societal consumption standards in the future, and the more they save as incomes grow. Therefore, if consumers in China are more patient than other countries, there is a strong interaction with relative consumption that leads to even higher savings rates.

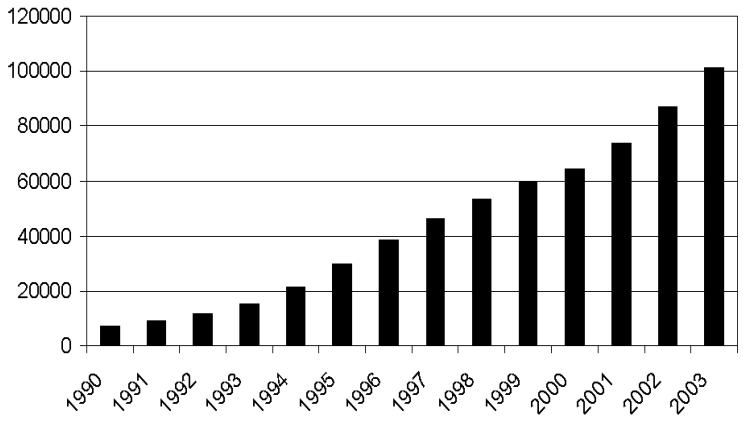

Figure 4: Household bank deposits (CSYB, PBC)

3 When will China's Savings Rates Fall?

As seen if Figures 1, 2, and 3, China's savings rates showed no sign of decreasing through 2001, and in fact appeared to be rising. Data on bank deposits from 2002 and 2003 (through October) in Figure 4 indicate that there is no indication yet of a change in this pattern. In the previous section the possible factors behind China's high savings rates were examined. Determining the ongoing role of these different factors can give some insight into how long China's savings rates will remain high.

Of the different explanations, the undeveloped insurance markets, liquidity constraints, and highs savings returns explanations predict a steady fall in savings rates. As insurance markets develop, the need for precautionary savings will fall. For instance, improved medical insurance will reduce the need to save for potential medical expenses. But while some consumption uncertainty can be reduced through insurance, most income uncertainty is uninsurable because of moral hazard and adverse selection problems. As a result the decline in savings is not likely to be rapid. In Hong Kong and Singapore, where insurance markets are well developed, savings rates have remained high so any decline in savings due to better insurance markets is not likely to be rapid.

Regarding liquidity constraints, as credit markets develop younger consumers will be more readily able to go into debt for education, housing and other expensive goods and then pay back

the loans as they get older. Availability of credit would also reduce the need for precautionary savings since unexpected expenses could be met by temporary indebtedness. For these reasons it is often argued that a "credit card drop" on China could significantly expand consumption and lower savings. However, it is not clear that the comparatively undeveloped nature of credit markets in Asia is a supply rather than demand problem. As long as demand for savings is so high, the demand for credit is low, so there is no assurance that credit markets will develop to anything approaching their level in the United States.

Regarding high savings returns, as long as capital per worker remains lower in a country than elsewhere, returns on capital should be higher. As more capital is accumulated, returns should fall, and the incentive to save should fall as well. However, given that capital takes time to be absorbed, and that savings rates in China are so high, this prediction need not hold. With such a high supply of capital the returns need not be abnormally high, and need not fall steadily over time. Returns to capital in many areas of the economy have already fallen to international rates because of increased competition, and savings rates have remained high or risen. So it seems unlikely that savings will fall appreciably because of this factor alone.

The two explanations which predict a sharp decline in savings are the subsistence consumption explanation and the transition explanation. The subsistence consumption model predicts that the sharp rise in savings in China was due to the emergence of consumers from subsistence levels, and that savings will fall once consumers are no longer afraid of falling below subsistence levels again. However, as indicated, recent increases in urban savings suggest that subsistence consumption is no longer an issue in determining China's savings rates. Similarly, some aspects of the effect of the transition on savings, such as the accumulation of inventories, are already past. The fact that savings are still rising 25 years after the beginning of the transition, also suggests that further market reforms are unlikely to have a significant effect.

The only explanation which predicts continuing increases in savings rates over the near-term is the demographic explanation. However, in the long-term it predicts a sharp decline in savings once baby boomers start to move into retirement. The United Nations predicts that the number of working age people will undergo a dramatic decline as baby boomers pass into old age and baby busters are of insufficient numbers to replace them. Recent declines in savings in Japan may be related to the decline in the working aging population there.

Explanations which predict continuing high savings rates are the cultural explanation, the

habit persistence explanation, and the relative consumption explanation. As indicated it seems unlikely that cultural differences are the primary factor in China's high savings rates. But the possibility of some role for culture is hard to eliminate, in which case China's savings rates may drop less rapidly than they otherwise would. The habit persistence and relative consumption explanations indicate that China's savings rates should continue to stay high as long as growth does. This pattern should only stop once growth decreases as China approaches the frontier of developed countries, or once other factors, such as the demographic collapse, become dominant.

4 Implications for China's Economy

China's high savings rates are widely recognized as one of the determining factors in China's successful transition from a planned, low-income economy to a market-based, middle-income economy. First, they appear to have played an early role in China's successful transition by allowing China to maintain rapid investment growth throughout the reform period, even in the early period when foreign capital was difficult to attain. While much of this investment was inefficient in the early period, and the savings were not all voluntary, China was able to avoid the collapse in investment witnessed by Eastern Europe and Russia.

Second, since rapid growth is itself a generator of high savings, China has been able to enjoy a virtuous cycle of high savings leading to high growth, and then even higher savings leading to even higher growth. By maintaining high investment rates in the early reform years, government policies encouraged rapid growth which then helped induce high savings rates, and high investment has subsequently been maintained even as public savings have become dramatically less important. Even in the basic life-cycle model this virtuous cycle can arise due to the interaction of demographic factors and growth. In the habit persistence and falling behind the Joneses models, this cycle is even more powerful

Third, China's high savings rates have promoted exports by inducing a trade surplus in accordance with standard theories. Rather than being a large importer as is common in developing countries, China has typically run a trade surplus. The promotion of exports has allowed China to rapidly move into new industries that might not otherwise have developed, to enjoy the learning-by-doing that results, and move into more technologically advanced industries.

Fourth, high savings rates have helped China maintain stability in its external accounts by

inducing a trade surplus. This surplus has allowed China to keep the exchange rate stable over a long period, making investment by domestic and foreign companies less risky, and reducing pressure on domestic prices. It has also allowed China to reduce the need for international debt and accumulate large foreign exchange reserves, thereby reducing the risk of financial crises such as the 1997 Asian crisis. Similarly, the surplus has allowed China to follow its own strategy of slowly moving toward capital account convertibility, thereby further reducing the risk of such a crisis.

Fifth, China's high savings rates have helped domestic financial stability. Because of clear inefficiencies in the state-run banking sector, it has long been predicted that China will face a severe Banking crisis (Lardy, 1998). Despite the high rates of non-performing loans, banks have been able to avoid a crisis in part because of the increasing inflows of new savings. While it can be argued that high savings rates have encouraged tolerance of bad banking practices, reforming a socialist banking system cannot be done rapidly and high savings rates have given China the opportunity to gradually reduce the non-performing loan problem.

In considering the impact of high savings rates on the economy, it must be recognized that savings can be manifested in other ways that are not included in official saving statistics but can be equally important as putting money in the bank or investing in a company. Most importantly, acquiring human capital through education is one of the most important ways to postpone consumption now so as to consume more later. In fact, the two pillars of the East Asian miracle have been high rates of capital accumulation and remarkable rates of human capital accumulation (Young, 1994). In China the development of human capital has been more uneven than in Japan, Taiwan, or elsewhere in East Asia, but the education system is now clearly on a growth path that is likely to lead to the same high rates of human capital in the region. For instance, from 1998 to 2001 the number of undergraduate students and graduate students in China both doubled (China Statistical Yearbook, 2002).

5 Conclusion

China's savings rates are likely to remain high in the near-term with continuing effects on the Chinese and world economies. High savings are often credited with being the main source of China's rapid growth, and are also often "blamed" for being the driving force behind China's continuing trade surpluses. Both of these attributions are probably correct, but it is

important to recognize that China's trade surpluses have occurred even as imports have grown dramatically. For instance, in the first three quarters of this year, imports grew by 40.5% due to the rapid growth of China's economy. In this light China's high savings rates should also be seen as a major, though indirect contributor, to increases in world trade. Since, unlike previous world recoveries, the current recovery is not being driven by U.S. demand but to a greater extent by demand from China, this contribution should not be overlooked.

China's continuing ability to finance most of its own growth due to high savings should also be recognized as a factor that reduces any crowding out of investment from other countries. While the amount of FDI flowing into China is often emphasized in the press, it remains a fraction of China's huge capital demands. Going forward it is quite possible that China will follow the route of Taiwan and Japan in becoming a capital exporter once the demand for capital in China decelerates. Given the size of China's economy, the contribution to economic development in other countries could be substantial.

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