I. Introduction China is recent macro economic performance

China’s economic performance during two decades of reform, resulting in rapid GDP growth and a dramatic reduction in poverty, has been impressive. The period since 1978 has witnessed the emergence of a substantial non state sector and the opening up of the economy to the outside world. China’s prospective accession to the WTO will provide further impetus to these ongoing reforms. However, the long-term slowdown in economic activity is continuing, although the GDP growth rate, which is 7-8% per year, is still high.

1 GDP
Trend of real GDP growth rate in China

Real GDP has grown steadily at around 7-10% in these 5 years. Real GDP per capital has also grown almost at the same rate as Real GDP. Though both indicators show a trough in 1999 which can mainly be attributed to the effect of the Asian financial crisis in 1998, they turn upward in 2000.
2 Exchange Rate
The Chinese exchange system is in the middle, between fix and float. But, actually the exchange rate has been almost fixed to US dollars during this period at the level of 8.3 Yuan per US Dollar.

3 Inflation Rate
There was a dramatic change in the inflation rate in China during this period. It declined from 17.1% in 1995 to minus 1.4% in 1999. After experiencing two consecutive years of pure deflations, it narrowly emerged from this bad situation, with a 0.3% inflation rate in 2000.

The reason for the decrease in the inflation rate and even deflation in ’98 and ’99 is the gap between the GDP growth rate and the growth rate of money supply. While the growth rate of the money supply decreased from about 30% in 1995 to 12% in 2000, the GDP growth rate decreased only by 3% from 11% in ’95 to 8% in ’00.

4. Interest Rate
Although the nominal interest rate is continuously decreasing, the real interest rate is not constantly decreasing; even increased in the first three years of the observed period, due to the deflation.
5. Export and import
Net export is continuously expanding. Both import and export are also constantly increasing in the observed period.

![Net Export Graph](image)

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<tbody>
<tr>
<td>Unemployment rate</td>
<td>2.9</td>
<td>3.0</td>
<td>3.0</td>
<td>3.1</td>
</tr>
</tbody>
</table>

To be sure, this unemployment rate number is not so in reliable as other developed countries’ data. This number only counts unemployment in cities, especially unemployment among legally registered city workers, not including unregistered workers from rural areas. So true unemployment in the city must be higher than this official number. And if the latent unemployment workers in rural farming areas are taken into account, this number becomes much greater.

II. Analysis of Slowdown from Solow’s Perspective

The Solow growth model shows how saving and population growth determine the economy’s steady-state rate capital stock and its steady-state level of income per person. An increase in the saving rate $s$ implies that the amount of investment for any given capital stock is higher. It therefore shifts the saving function upward. At the initial steady state $k^*_1$, investment now exceeds depreciation. The capital stock rises until the economy reaches a new steady state $k^*_2$, with more capital and output(Figure A). An increase in the rate of population growth from $n_1$ to $n_2$ shifts the line representing population growth and depreciation upward. The new steady state $k^*_2$ has a lower level of capital per worker than the initial steady state $k^*_1$. Thus, the Solow model predicts that economies with higher rates of population growth will have lower levels of capital per worker and therefore lower incomes. (Figure B) We know the model offers no magic pill to ensure that an economy achieves rapid growth, but we also think it does offer much insight, and it provides the intellectual frame work for much of the debate over public policy. By using the model, we now analyze what causes the growth of Chinese economy.
Based on the Solow model, a high saving rate increases income per worker at the steady-state. On the other hand, a high population growth rate shrinks it. In the case of China, the saving rate, which is around 40%, is very high, considering that even Japan which is said to have the highest saving rate in developed countries is only about 20% (Table 1). And since 1982 when the saving rate was 32%, it has increased by about 25%. In addition, the Chinese population growth rate, which is almost 1% per year, is low, relative to the other developing countries, which are 4% per year on average. The population control policy since the 1970’s has promoted a decrease in the population growth rates. These facts are supposed to be factors that support the dramatically high growth rate of GDP per capita during 1990’s. (Figure C)

<table>
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<tr>
<th>Year</th>
<th>Real GDP/capita</th>
<th>Industrial product</th>
<th>Population</th>
<th>Saving rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>38</td>
</tr>
<tr>
<td>1995</td>
<td>297</td>
<td>384</td>
<td>106</td>
<td>42</td>
</tr>
<tr>
<td>1999</td>
<td>401</td>
<td>534</td>
<td>110</td>
<td>40</td>
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However, the model says that saving and population growth alone cannot explain persistent growth. When the economy reaches a steady-state, output per worker stops growing. The model explains that technological progress interacts in determining the level of and growth in a nation’s standard of living. Therefore, once the Chinese economy reaches steady-state, a high saving rate and low population growth rate alone cannot maintain a persistent high growth rate. Actually, the growth rates of GDP per capita and industrial production in late 1990’s are lower than in early 1990’s. Under the assumption that the saving rate and population growth rate is stable from now on, technological progress is the only tool for maintaining a high growth rate.

III. Fiscal and Monetary Policy: Analysis with the IS-LM Model

In the second half of the 1990s, following the investment-led boom of the early 1990s, the Chinese economy experienced a slowdown, which was accentuated by the Asian crisis. Also, after 1998, the pressures of deflation emerged. Therefore, all the macroeconomic policies that were adopted during this time in China aimed at overcoming the economic slowdown and the threat of deflation. The major measures that the government employed were fiscal spending on infrastructure, interest rate lowering, export by tax rebate encouragement, and increasing money supply.

In April 1998, the government announced a huge investment program, involving annual expenditure of RMB (Chinese money) 2 trillion ($ 240 billion), amounting to 2.5 percent of GDP, during 1998-2000. The focus of spending was transport and telecommunications, water conservation, environmental protection and residential housing. In addition to increased lending by Chinese banks, funding was provided through the capital market, increased investment, and low-interest overseas loans and bond issues. Each year from 1998 to 2001, government deficit increased by a large extent.

Meanwhile, money supply increased year by year. The amount of M2 in 2000 was almost 15,000 billion, compared with 5,000 billion in 1995. Monetary conditions were progressively eased via cuts in interest rates and a reduction in reserve requirements.
The Effectiveness of Fiscal and Monetary Policy: an Analysis with the IS-LM Model

According to the IS-LM Model, when the government increases its expenditure, the IS curve shifts to the right, which leads to income and interest rate increasing. When the government increases its money supply, the LM curve shifts to the right, which leads to income increasing, but interest rate decreasing. This model seems to fit the Chinese economy very well. Because of the fiscal expansion and increasing money supply, the Chinese real GDP annual growth rate was more than 7%, despite the unpleasant international business environment. This growth rate is largely due to fiscal expansion. Therefore the real interest rate was raised slightly, although the nominal interest rate was cut several times. This higher real interest rate seemed to be harmful to private investment because of its “crowd out” effects. In reality private investment in China has stayed at low level in the past five years. The effect of monetary policy in China seems far less than that of fiscal policy. In reality, the government took the fiscal policy, rather than monetary policy, as the major method to stimulate economic growth. (Figure D)
Why the Mundell-Fleming Model is Limited in its Application to the Chinese Economy

Overall the Chinese economy is an open economy. International trade is very important to China. Foreign trade and investment accounts for more than 40% of its GDP. But why do not we use the Mundell-Fleming Model to conduct our analysis? Our answer is that China has control of short-term capital, despite having opened itself up to long-term capital flows, and especially foreign direct investment, which brings with it human capital and technology. Therefore, to a large extent, its exchange rate is not settled by the foreign exchange market. Thus, China does not have to adjust its money supply to fix its exchange rate. At this point, China is more like a closed economy, for which the Modell-Fleming model is not appropriate. Even if we use the general IS-LM model, we have to pay lots of attention to many aspects because the Chinese economy is not a typical market economy.

IV. Recommendation and Its Limitation

In the past few years, China seemed to rely overly on fiscal policy. Indeed, in the last four years, the fiscal stimulus program was the main engine of GDP expansion in the Chinese economy. Although fiscal and monetary policies are effective policy instruments to deal with fluctuation in the short run, in the long run, the income level of a country is settled by capital and labor, among which human capital and technology progress are the most important. Eventually the effects of fiscal or monetary policy will be offset by the adjustment of price level. Therefore, we recommend that China have a view to the future and pay attention to education and technology progress, in which it has not invested much.

From the aspect of short-run economic policies, we recommend that China reduce its use of fiscal policy. Although official figures show domestic debt at only 15 per cent of GDP, many economists believe that if contingent liabilities in the form of bad debts in state banks, unfunded state pension and social welfare liabilities are counted, domestic debt levels quickly climb to near 100 per cent of GDP. That is very dangerous. On the other hand, as we mentioned above, fiscal expansion tends to crowd out private investment, which is harmful for China ability to get out of the current downturn.
China may increase the use of monetary policy. Generally, the increasing of money supply tends to cause higher inflation, which governments try their best to avoid. But as for the case in current China, inflation is not the first enemy since its CPI has been going down for a couple of years and its unemployment rate has been high. So appropriate increase of its money supply will not cause much pressure of inflation, but will be helpful to lower its high employment, as predicted by the Phillips curve. (Figure E)

Figure E (Phillips curve: $\pi = \pi^e - \beta(u-u^0) + \nu$)

We recommend that China adjust its exchange rate in two aspects. First, consider a devaluation of RMB. Export is very significant in the Chinese economy. But last year, its export slowed down again after the 1997-1998 East Asia crisis because of the world economy downturn. Devaluation will increase the competitiveness of its products. Moreover, because of its fixed exchange rate, the cost of devaluation such as capital outflow should be smaller than expected in the countries that do not have capital controls. Second, consider a basket peg policy rather than a dollar-only peg policy. A currency basket would offer China an alternative to devaluing to mitigate other currencies, for example the yen's significant fall and its impact on China-Japan trade and investment flows.
References

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7. Japan-China economic association, China’s fundamental economic data [http://jc-web.or.jp/data/e_data/guide/cindex.htm](http://jc-web.or.jp/data/e_data/guide/cindex.htm)