Is the Chinese Economic Growth Sustainable?
A Macroeconomic Approach

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With an annual growth rate of more than 9.6 percent in real terms over three decades from 1979 to 2010, China has emerged as the second largest economy and largest exporter in the world. The so called China's economic miracle has attracted tremendous international attentions despite no consensus has been so far reached for its substitutability. In a basis of a brief review of the current literature on the sustainability of the China's economic miracle and with the help of a simple macro-econometric model (the Fair Model), several economic scenarios are examined and forecasted up to 2020. According to the result of the experiments, the slowing down of the export-led growth, materialized with appreciations of the RMB by 25 percent from 2008, along with a tight monetary policy could be disastrous. As a result, the past experience of rapid economic growth rate is very hard to maintain. Alternatively, a deepening in reforms in domestic economy, characterized as increases in government purchases in the domestic market, and encouraging both domestic consumption and exports could relieve some of the pressures in RMB appreciation. However, neither an expansionary fiscal policy itself nor a domestic consumption stimulus would be sufficient to sustain the past economic experience, unless the country can afford a relative high rate of inflation.

1. Introduction

After the implementation of the open door policies in the late 1970s, particularly after 1984, China have achieved a dramatic economic growth in GDP, GDP per capita, international trade and successfully hosting of foreign direct investment (FDI). In the past three decades, annual GDP growth rate have averaged more than 9.5 percent (Hofman and Kuijs 2008, p. 110) and about 7.5 percent in terms of GDP per capita. As a result of rapid growth in exports and trade surplus, China's foreign exchange reserves exceeded US$3.045 trillion by March 2011, remaining the largest holder of foreign exchange reserves in the world.

The sources of the China's economic miracle have been perceived as a result of rapid structural change, effective catching up and effective exploitation of comparative advantage by some (e.g. Holz 2008), and as a result of massive inward FDI and export-led growth by others (e.g. Whalley and Xin 2010). While the former school believes that China's growth

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pattern is sustainable at least for another two to three decades, the later school is suspicious on its sustainability when the demand for the Chinese exports shrinks during the current global economic crisis. The pessimistic view is getting popular with the appreciation of *renminbi* (RMB) accelerated since the second half of 2010.

Particularly, from 2008 when the worldwide economic recession spread over, the growth of China's exports fell below its long term average level. In the first quarter of 2009, China's exports continued to fall by 20 percent compared with the same period in 2008 (Chen 2009). This raises an issue on whether the export-led growth strategy is sustainable to support a healthy economic growth for China in the long run.

When a huge trade surplus hence foreign exchange reserves were built up in the last few years, the export-led growth strategy is challenged not only by politicians and trading unions in the advanced economies, but also by economists from both China and the western world. Some economists (e.g., Hofman and Kuijs 2008, p. 111, Prasad 2009) believe that the China growth pattern is unbalanced because it heavily relies on manufacturing, investment and external demand. While some economists (e.g., Holz 2008) argue that "China's potential for economic growth from relatively low labour costs will continue to exist for another 30 years", others (e.g., Hofman and Kuijs 2008, p. 111, Prasad 2009, Whalley and Xin 2010) question the sustainability of the China growth pattern.

As a result of a significant slowing down in the world demand, Chinese authorities have started to switch the development strategy from export-led growth toward emphasizing more on domestic market particularly on consumption. However, since it is well perceived that international trade is mutually beneficial where a net gain in the basis of comparative advantage is shared by all trading nations involved, the viability of switching toward domestic market has not been well justified. Furthermore, after 30 years' development, China's domestic economic structure is now very much outward oriented which may not be changed without tremendous economic costs. Given the fact that the relevant literature is still limited, the current paper attempts to shed some light on these issues.

Particularly, this paper attempts to clarify the policy implications for four different policy scenarios, namely, a significant revaluation of the RMB, a fiscal stimulus package aiming at boosting domestic demand, a tight anti-inflation monetary policy and a domestic market looking consumption expansion. Based on a brief review of the current literature and an experimental exercise on a simple multi-country macro-econometric model, this paper offers a variety of policy implications and discusses their consequences. As compared with previous studies, this paper argues that the strongly outward looking growth pattern of the last decade cannot be sustained in the coming decade, especially when the internal as well as external economic environments have all been changed. However, as the largest transitional economy in the world, there are still huge economic potential in China that needs to be exploited. Whether the past economic miracle will persist or not depends on how successfully the Chinese government is able to switch from relying on mainly the external market to focusing more on its domestic market.

The rest of the paper is organized as follows. The next section provides a brief review of the debates on the sustainability of China's long term economic growth. This is followed by a

discussion on the impact of the four policy scenarios in Section 3. Conclusion and policy implications are generalized in the final section.

2. The Engine of China's Economic Growth

China's economic growth has been considered as standard export-oriented. China's trade on overall world trade was less than 1 percent in 1978, but this share has increased to 1.6 percent in 1990 and almost 9 percent at present. Between 1979 and 2008, China's international trade grew at an average rate of 19 percent per year, compared to an annual average growth rate of 8 percent between 1952 and 1978. The trade-dependence ratio, defined as the total trade value (imports plus exports) to gross national product, increased from 5.8 percent in 1978 to 34.4 percent in 1998, and to well over 60 percent in the 2000s. The growth of exports accelerates after China gained its WTO membership in 2001. As a result, China's total exports of goods and services quadrupled from $326 billion in 2002 to $1,428 billion in 2008. In 1978, China was placed as the world's thirty-second largest exporting country. It became the world's eleventh largest in 1992, the ninth largest in 1998, and the third largest in 2005. As of 2007, China's share of world merchandise exports had soared to 8.9 percent, less than Germany's 9.7 percent share but topping the United States (US) share of 8.5 percent as well as Japan's 5.2 percent. Three years later in 2010, China overtook Germany to become the largest exporter in the world. The contribution of net exports to China's GDP growth was on average about 20 per cent during 2005–2008 or roughly 2-3 percentage points to the growth rate.

China's export pattern has experienced a dramatic change since 1985. Primary exports declined sharply and manufacturing exports increased dramatically. Primary goods accounted for around 50 percent of all exports in mid-1980s, whereas manufactured goods accounted for over 90 percent of China's exports in the 2000s. Among the manufactured exports, textile and clothing as the largest export item in the early period, declined in importance in the 2000s. Along with rapid economic growth, China's export has been shifted from labour intensive textile and clothing to capital intensive machinery and heavy industry products in the 2000s. According to McKay and Song (2009, p. 280), machinery and transport equipment have contributed the most of the shift in the aggregate balance, moving from a *deficit* of 5.3 percent of GDP in 1994 to a *surplus* of 5.3 per cent of GDP in 2008. Thorbecks and Zhang (2009, p.399) also report that consumer electronics goods and labour intensive manufactures were the largest items in China's exports in 2006, accounting for 33 percent and 21 percent respectively.

The impact of the open-door policy is significant. First of all, the growth of exports has been more rapid than that in the other components of the economy, as trade playing a critical role as the 'engine of growth'. As a result, economic growth in China accelerated through the 1980s to the 2000s. The annual growth rate of GDP was about 10.2 percent during the 1980s and 11.9 percent between 1990 and 1997, and again in a double digit level in the 2000s. This growth exceeded the growth record of almost all other countries in the world during the same period.

Secondly, when the Chinese exports switched from primary good to manufactured good since the late of 1980s, the Chinese economy was industrialized. Table 1 shows a structural

change in terms of growth rate and the shares of the three sectors over the last three decades.

Table 1: Gross Domestic Product by Sector, 1986–2009

Year	GDP growth				Sectoral shares in GDP (percent)		
	Total	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1986	13.8	8.7	16	15.2	24.53	41.79	33.69
1987	17.3	15.9	16.9	19	21.79	43.45	34.76
1988	24.8	19.7	25.5	28.5	19.71	46.57	33.72
1989	13.3	10.4	10.5	19.7	19.86	46.57	33.57
1990	9.7	18.7	6	7.6	19.96	47.18	32.86
1991	9.2	2.4	13.9	8.9	19.69	47.54	32.77
1992	14.2	4.7	21.1	12.4	18.29	47.54	34.17
1993	13.9	4.7	19.9	12.2	17.56	46.21	36.23
1994	13.1	4	18.4	11.1	16.47	45.76	37.77
1995	10.9	5	13.9	9.8	15.06	45.92	39.02
1996	10	5.1	12.1	9.4	14.39	45.15	40.46
1997	9.3	3.5	10.5	10.7	13.74	44.79	41.47
1998	7.8	3.5	8.9	8.4	12.80	45.97	41.23
1999	7.6	2.8	8.1	9.3	13.39	46.23	40.38
2000	8.4	2.4	9.4	9.7	12.12	47.37	40.51
2001	8.3	2.8	8.4	10.3	11.11	47.95	40.94
2002	9.1	2.9	9.8	10.4	10.77	47.34	41.89
2003	10	2.5	12.7	9.5	10.73	47.45	41.82
2004	10.1	6.3	11.1	10.1	10.35	46.30	43.36
2005	10.4	5.2	11.7	9.8	12.12	47.37	40.51
2006	10.7	5	12.5	11.1	11.11	47.95	40.94
2007	11.9	3.7	13.8	14.4	10.77	47.34	41.89
2008	9.6	5.4	9.9	9.9	10.73	47.45	41.82
2009	9.3	4.2	9.9	8.7	10.35	46.30	43.36

Source: National Statistical Bureau, many issues, and Pasad 2009.
        See http://www.stats.gov.cn/english/statisticaldata/yearlydata/)

Thirdly, when the augmented part in China's external economy were mainly foreign invested enterprises (FIEs), and *de facto* private firms such as the township and village enterprises, the sectoral structure of the Chinese economy was also changed (see Table 1).

A question raised from China's remarkable economic performance is that whether the export-led growth will persist in the future. Based on an income growth identity approach, Holz (2008, p.1683) projects that China's economic growth during 2005–2015 would be in the range of 7–9 percent, a rate which is high enough for China to catch up with the US, in purchasing power terms, within about five years.[1] Taking the growth experience of Japan, Korea and Taiwan as a reference, Holz (2008, p. 1673) also hypothesizes that

"If China were again at the beginning of a long-run trajectory, then the patterns of the other three Asian countries suggest that China's potential for economic growth from relatively low labour costs will continue to exist for another 30 years."

Whalley and Xin (2010) distinguish the foreign invested enterprises (FIEs) from domestic enterprises and discover that while the FIE sub-economy in China is still only 20 percent of the economy, it nonetheless accounts for over 40 percent of China's recent economic growth. They thus conclude that "without this inward FDI, China's overall GDP growth rate could have been around 3.4 percentage points lower". Using a conventional Cobb–Douglas production function, Tuan, Ng and Zhao (2009), also report that while total factor productivity (TFP) was found to be increasing overtime in the coastal cities in South China and facilitated economic growth in both Pearl River Delta and Yangtze River Delta where most of the FIEs are located, major technology-and knowledge-related factors including research and development (R&D) and human capital other than FDI also played critical roles in TFP enhancement and regional growth.

These findings seem to suggest that the sustainability of both China's GDP and export growth will depend on the performance of the FIE sub-economy. Existing FDI may also contribute more in the future to China's growth through accelerated technology transfer, and technological spill-over effects.

Despite of the critical role played by the export sector, the ever growing trade pressures remains a problem for China as the absorptive capacities of OECD markets become a constraint, and this casts further doubt on continued rapid export growth from FDI related activity. Seemingly more vigour in growth performance from the non-FIE sub-economy will be needed to compensate for further lagging growth performance from FIEs. The challenges for China may include the growing protectionist pressure from both the European Union (EU) and the US on rapid RMB appreciation, the continued contraction of absorptive capacities of the OECD countries for the export-oriented FDI when the developed world is in a deep recession, and the emerging inflation thereat (5.1 percent in November 2010 and 5.4 in April 2011) in China in recent years.

To cope with the challenge, the Chinese authorities have taken several measures. First, the appreciation of the RMB has been accelerated since the second half of 2010. Second, the government has made an announcement of switching the development strategy from an export oriented model to a one that focuses more on domestic market. Thirdly, a 4 trillion-

yuan ($586 billion) stimulus package was implemented in 2009 to boost the domestic economy. The fund was used mainly in financing extensive infrastructure construction, aiding poor farmers, and cutting export taxes. Finally, to fight with the emerging inflation, a tight monetary policy has been lunched since the second half of 2010.

Despite of the announcement of the strategic change, and an active implementation of the fiscal plan, so far no reliable feasibility study has been provided either in the academic world or in the circles of policy related researches. Furthermore, even if one believes that the direction of change is correct, whether the change will be successful also depends on how significant the switch will affect the domestic economy in a quantitatively sufficient way. Since there seems lack of empirical studies in the field, this paper attempts to fill the gap.

The analysis is based on several policy scenarios. First, continued RMB appreciation, along with a tight monetary policy, constrains the sustainability of China's export-led growth. Secondly, a domestic market focused policy, characterised with increasing domestic consumptions will help China to maintain some momentums of its growth trajectory. Thirdly, should this switch be successful, due to its expansionary nature, an unavoidable cost of it, namely inflation, could be a main challenge for the Chinese leaders.

In the following section, with the help of a simple macro-econometric model (the Fair Model), several economic scenarios are examined and forecasted up to 2020. Four policy scenarios are particularly designed, namely, a rapid appreciation of RMB from 2008 forward, an expansionary fiscal stimulus adapted in 2009, an anti-inflationary monetary policy initiated from the late 2010, and a consumption promotion based strategy. While the first scenario is based on some policy recommendations, the second and third scenarios are actual developing in China. The last scenario, however, is still a projection on a policy switch from export orientation to focusing on domestic markets.[2]

3. Model, Data, Policy Scenarios and their Implications

Although there is no consensus reached on how a RMB appreciation could correct the growing global trade imbalances, particularly in reducing the huge US trade deficit, some commentators (Cline and Williamson 2008, Goldstein and Lardy 2008, 2009, p. 51) have recommended that the RMB should appreciate for at least 25 percent from its current level to cut the share of its trade surplus on GDP (7%) by half, and for 45 percent to remove the surplus completely. Goldstein and Lardy (2008, 2009) maintain that a considerable once-for-all revaluation of another 25 percent for the RMB is urgently needed, before the currency becomes fully convertible.

However, instead of using currency appreciation, McKinnon (2008), McKinnon and Gunther (2009), Ogawa and Iwatsubo (2009) and Zhang (2011, 2012) prefer to have an alternative fiscal stimulus. Since the two notable proposals are conflicting with each other, the controversy cannot be solved without some quantitative assessment on the relevant policy scenarios. Given the fact that empirical study in this area is still limited, this paper attempts to tackle the issue through experimenting simulation exercises on a simple macro-econometric model.

The Model and Data

In order to tackle these issues, a multi-country econometric model (MC) of Fair (2004) is used. The MC model contains 13 estimated structural equations for 38 countries besides the US. The data for these countries begin in 1960. Some of the country models are based on annual rather than quarterly data. The estimation periods vary from country to country, and the forecast period ends in 2020. The estimation technique for all the countries is two stage least squares (2SLS) except when there are too few observations to make the technique practical, where ordinary least squares is used. The model is set in such a way that any changes of the exogenous variable will make a difference between the projected value for all its variables and its original value in its bunch mark data set which is based on the long term trajectory of historical statistics. One thus could compare the two datasets and generate some implications from the results to estimate the "net effect" of the proposed policy.

The Fair model has been widely used for multiple policies simulations including the analysis of economic policy in China (see, for instance, Fair 2010, and Zhang 2012). There are two parts in the MC model, namely the "US model," which is specified with a comprehensive 30 stochastic equations and 101 identities, and the rest of the world (ROW) model which consists of 38 countries including most countries in emerging Asia. There are up to 13 estimated equations and 16 identities per country, totalizing 274 estimated equations in the ROW model. The estimated equations explain total imports, consumption, fixed investment, inventory investment, domestic price level, the demand for money, a short term interest rate, a long term interest rate, the spot exchange rate, the forward exchange rate, the export price level, employment, and the labor force. The overall MC model is completely estimated by 2SLS from historical data and there is no calibration.

The most recent version of the MC model (MCG) was updated in July 2011. All the parameters are estimated and updated. In the model, China's growth rate is forecasted in a basis of the past trend which is derived from official historical statistical data between 1984 and 2010. The following table shows that the baseline forecast of the model is even more optimistic than those forecast of Holz (2008, p.1673) about China's economic growth in the next decade.

Since the forecast is based on the past experience of China export promotion policy so it is assumed that the external trade is still the driving force of the economic growth. With export and import growing much faster than the growth of GDP, the forecast can be considered as a continuation of the export-led growth strategy. The following four experiments are policy choices that will divert from this forecast and thus are considered as the net impacts of the corresponding policies.

Table 2: The Baseline Forecast for the GDP Growth in China (2012-2020)

YEAR	GDP	Price Index	Consumption	Investment	Exports	Imports	Current Account as % of GDP
2012	9.68	1.29	8.38	10.43	16.96	16.32	6.20
2013	10.70	1.34	8.52	11.64	16.78	15.07	6.25
2014	10.69	1.40	8.61	12.15	15.41	14.58	6.29
2015	10.65	1.47	8.65	12.34	14.73	14.39	6.30
2016	10.61	1.54	8.66	12.39	14.37	14.33	6.31
2017	10.10	1.62	8.50	12.07	13.45	14.18	6.32
2018	10.07	1.70	8.40	11.91	13.44	14.04	6.32
2019	10.06	1.78	8.34	11.84	13.38	13.94	6.32
2020	10.05	1.86	8.29	11.80	13.32	13.89	6.33

Source: Fair (2011).
Note: except for price index and current account as a percent of GDP, all other figures are growth rate from the previous year.

The Scenarios

There are four scenarios running for simulations

Scenario 1: A unilateral RMB revaluation. The RMB rate is assumed to be revalued by 25 percent in 2008 and a new rate of 5.123 *yuan* per dollar would then be maintained for the whole period between 2010 and 2020. This is a policy recommendation raised by Goldstein and Lardy (2008, 2009), mong others.

Scenario 2: An expansionary fiscal stimulus: A 25 percent increase in government purchases between 2009 and 2012. This policy was implemented by the Chinese government since 2009 and was advocated by McKinnon and Gunther (2009), and Zhang (2011, 2012), among others.

Scenario 3: A tight monetary policy: an increase in the 3 month short term interest rate by 2 percent between 2011 and 2012. This policy has been adapted by the Chinese monetary authorities since 2011.

Scenario 4: A booming in consumption: a consumption promotion policy that will result in an increase of 20% in consumption from 2012. This is a projected direction for future change, as announced by the Chinese government. The actual change could be materialised through fiscal policies of changing income distribution, and / or through supply side policies such as encouraging labour mobility between rural sector and urban sector, and privatising the rural agricultural land ownership, etc.

The percentage change of seven major macroeconomic variables, namely GDP, price index (as a proxy for inflation), consumption, investment, exports, imports, and the current account balance as a share of GDP are reported in the following tables.

The Effect of Revaluation

When a country revalues its currency, the export price level in terms of foreign currency will rise and the price of its imports in terms of domestic currency will drop in international market. The revaluation is thus contractive and deflationary: the level of exports falls, the level of imports rises, and the domestic price level decreases. This in turn, through the trade and price links of the model, affects production and international trade for all countries in the rest of the world. [3]

The results of Scenario 1, namely a drastic unilateral revaluation of the RMB is showing in Table 3. For China, there are significant falls in GDP by 2.74 percent over the next decade, along with a fall in the price level by 12 percent, and a fall of both exports and imports by 4 percent and 3 percent respectively. Other things being equal, the revaluation will reduce China's annual GDP growth rate from above 10 percent to about 7 percent. Though still moderate, the output, price level and trade in the US also fall. While the current account surplus increases in China for more than 0.75 percent of GDP, the reduction in trade deficits in the US is limited for less than 0.5 percent of GDP. As a result, the past experience of high growth rate could be significantly reduced in China.

The Consequences of the Fiscal Stimulus Package

The result of Scenario 2, namely the impact of a fiscal stimulus in China is reported in Table 4. As clearly revealed in the table, with only a few exceptions, output increases not only in China, but also in the US for the four years after the fiscal stimulus was initiated in 2009. The stimulating effort diminishes after 2014 when both exports in China and imports in the US fall, and the imports in China and exports in the US increase. As a result of a decline in the Chinese net exports (around 2-3 percent of GDP between 2010 and 2012), trade imbalance between the two countries improves, particularly in the early years. The results seem to support the McKinnon and Gunther Contention that the fiscal stimulus would do a better job so long as an overall balance is concerned.

Table 3: The Impact of 25% Revaluation of the RMB
(Percent Changes Compared with the Benchmark Database) [a]

	GDP	Price Index	Consumption	Investment	Exports	Imports	Current Account as % of GDP [c]
China							
2008	-1.50	-0.85	-0.48	-1.01	-2.76	-0.39	1.79
2009	-2.76	-8.64	-1.17	-2.28	-5.55	-1.15	0.89
2010	-3.55	-12.32	-1.85	-3.35	-5.85	-2.04	1.06
2011	-3.60	-13.92	-2.28	-3.83	-5.28	-2.78	1.80
2012	-3.44	-14.54	-2.48	-3.92	-4.80	-3.27	2.41
2013	-3.19	-14.68	-2.53	-3.79	-4.38	-3.53	2.85
2014	-2.95	-14.62	-2.48	-3.58	-4.06	-3.61	3.18
2015	-2.75	-14.48	-2.39	-3.35	-3.81	-3.57	3.46
2016	-2.58	-14.34	-2.28	-3.14	-3.61	-3.47	3.72
2017	-2.46	-14.21	-2.17	-2.97	-3.46	-3.35	3.97
2018	-2.36	-14.12	-2.08	-2.84	-3.33	-3.22	4.21
2019	-2.28	-14.04	-1.99	-2.73	-3.21	-3.11	4.44
2020	-2.21	-13.97	-1.92	-2.63	-3.09	-3.00	4.68
USA [d]							
2008	-0.18	0.46	-0.22	0.46	0.05	-0.81	-0.34
2009	-0.16	0.65	-0.30	0.65	0.02	-1.19	-0.08
2010	-0.11	0.75	-0.31	0.75	-0.14	-1.23	-0.02
2011	-0.12	0.83	-0.30	0.83	-0.27	-1.16	-0.02
2012	-0.12	0.88	-0.29	0.88	-0.34	-1.08	-0.04
2013	-0.11	0.93	-0.29	0.93	-0.39	-1.01	-0.06
2014	-0.11	0.98	-0.28	0.98	-0.41	-0.95	-0.07
2015	-0.10	1.01	-0.28	1.01	-0.42	-0.90	-0.08
2016	-0.10	1.03	-0.27	1.03	-0.43	-0.85	-0.10
2017	-0.10	1.04	-0.26	1.04	-0.43	-0.81	-0.10
2018	-0.09	1.04	-0.25	1.04	-0.44	-0.78	-0.11
2019	-0.09	1.04	-0.24	1.04	-0.44	-0.75	-0.12
2020	-0.08	1.03	-0.23	1.03	-0.43	-0.72	-0.13

Notes   (this applies to all tables hereafter)
a. The percentage change indicates the difference in values between the variables in the new dataset and their counterparts in the benchmark database. While data of China are shown annually, the fourth quarter data of the US are displayed.
b. Since China has trade surplus and the US has trade deficit, a positive figure in the current account indicates an increase in the surplus (deficit) of the corresponding country.
c. This column shows the absolute deviation from the benchmark database.
d. For the US, consumption is represented by its consumer expenditure for non-durable goods (CN), and investment is represented by gross investment (IGZ). The US current account is defined as the change in difference between export and import, i.e., net export.

Table 4: The Impact of a Fiscal Stimulus in China
(Percent Changes Compared with the Benchmark Database)

	GDP	Price Index	Consumption	Investment	Exports	Imports	Current Account as % of GDP
China							
2009	4.07	2.29	1.27	2.72	-0.25	3.13	-0.43
2010	3.80	3.19	1.98	3.71	-0.53	5.34	-0.99
2011	3.24	3.29	2.23	3.75	-0.66	6.65	-1.46
2012	2.66	3.02	2.20	3.37	-0.68	7.23	-1.74
2013	-1.11	0.75	0.98	0.65	-0.54	4.42	-1.26
2014	-1.13	-0.25	0.23	-0.49	-0.34	2.35	-0.77
2015	-0.88	-0.55	-0.14	-0.80	-0.19	1.02	-0.40
2016	-0.59	-0.52	-0.27	-0.73	-0.10	0.28	-0.16
2017	-0.34	-0.39	-0.27	-0.54	-0.05	-0.07	-0.03
2018	-0.18	-0.25	-0.22	-0.35	-0.04	-0.20	0.02
2019	-0.08	-0.14	-0.16	-0.20	-0.03	-0.21	0.04
2020	-0.03	-0.08	-0.11	-0.10	-0.03	-0.17	0.04
USA							0.00
2009	0.02	0.05	-0.02	0.05	0.20	-0.05	0.00
2010	0.05	0.11	-0.04	0.11	0.35	-0.10	0.02
2011	0.06	0.17	-0.06	0.17	0.47	-0.14	0.05
2012	0.07	0.23	-0.07	0.23	0.54	-0.16	0.07
2013	0.04	0.23	-0.07	0.23	0.38	-0.13	0.07
2014	0.03	0.21	-0.05	0.21	0.26	-0.11	0.06
2015	0.02	0.18	-0.03	0.18	0.16	-0.08	0.05
2016	0.01	0.15	-0.02	0.15	0.09	-0.06	0.04
2017	0.00	0.11	0.00	0.11	0.04	-0.03	0.03
2018	0.00	0.08	0.02	0.08	0.00	0.01	0.02
2019	0.00	0.04	0.03	0.04	-0.03	0.04	0.01
2020	0.00	0.02	0.04	0.02	-0.04	0.06	0.00

Contrast and Comparison

Interestingly, as one can see from the two tables, the two policy packages of a drastic unitary revaluation of the RMB and a fiscal stimulus in China create quite different sequences in almost every aspect. While the revaluation policy is contractive and deflationary, the fiscal stimulus is expansionary and inflationary. When the overall impact of RMB revaluation on production and trade in China and the rest of the world including the US is generally negative, though quite moderately, the impact of the fiscal stimulus policy is more constructive not only in terms of boosting domestic economic growth, but also in terms of improving the external trade imbalances between the two countries.

The explanation roots in the special characteristics of the Chinese economy. First, when there is large pool of unemployed labour force in China, expansionary fiscal policy can be

considered as a substitute for currency revaluation (Swan 1963, Corden 2009, Krugman and Obstfeld 2009, Zhang 2011, 2012). According to the famous Swan Diagram approach, currency appreciation alone cannot restore the over balance.

Second, the inelastic Chinese traded good and large import content of Chinese exports (30-35 percent of the export value) dampens the impact of RMB revaluation. Some of the impact of currency revaluation is offset by the large proportion of the import component of the exports (Bagna 2009).

Third, since the Chinese imports are overwhelmingly determined by domestic wealth or income effect (Fair 2009, Ogawa and Iwatsubo 2009, Zhang 2011, 2012), when China's economic growth falls from its potential level as a result the drastic revaluation of the RMB, its imports falls with a faster pace. This explains why there is no significant improvement in the trade balance in the first scenario of RMB revaluation but it has some effects in the second scenario of fiscal stimulus scheme.

Implications of the Tight Monetary Policy

The simulation result for the tight monetary policy is reported in Table 5. According to the result, a tight monetary policy seems effective in curbing the emerging inflation, yet at the expense of economic growth rate especially in the early years of the decade when the interest rate is increased. With the exception of exports, almost all other economic variables fall in magnitude.

The interest rate hike has larger adverse impact on investment than that of on consumption. As a result, the economic growth rate will be reduced by about one percentage point in the early years after the policy is implemented. Since the rate hike also has larger adverse impact on import, the surging trade surplus will be also reduced.

Table 5: The Economic Impact of a Tight Monetary Policy

Year	GDP	Price Index	Consumption	Investment	Exports	Imports
2011	-0.46	-0.32	-0.39	-1.28	0.02	-0.60
2012	-1.05	-0.87	-1.05	-3.20	0.07	-1.80
2013	-1.14	-1.19	-1.45	-4.15	0.12	-2.84
2014	-1.04	-1.27	-1.63	-4.54	0.15	-3.54
2015	-0.87	-1.21	-1.68	-4.62	0.16	-3.92
2016	-0.71	-1.09	-1.65	-4.56	0.14	-4.08
2017	-0.57	-0.95	-1.58	-4.46	0.12	-4.11
2018	-0.46	-0.81	-1.50	-4.34	0.10	-4.07
2019	-0.36	-0.69	-1.42	-4.22	0.07	-4.00
2020	-0.27	-0.56	-1.34	-4.11	0.05	-3.92

The result of a Consumption Expansion

The result of a consumption expansion strategy is displayed in Table 6. It is interesting to note that this policy change, if achievable, should be a quite promising objective for China. With an increase of consumption by 20 percent, not only the rapid double digit economic growth rate is able to maintain, it is also maintained with a favourable improvement in the imbalanced external trade. With exports fall slightly and imports increase dramatically, the current account surplus as a share of GDP would be reduced by half.[4] The only concern for this policy change is a consequential inflation because the reported rate of inflation of more than 5 percent could be worrisome. It is well beyond the level that a prudent government can tolerant, particularly in the early years of the 2010s.

Table 6: The Impact of A Consumption Promotion Policy

Year	GDP	Price Index	Consumption	Investment	Exports	Imports	Current Account as % of GDP
2012	7.01	3.92	20.00	4.66	-0.26	5.82	-1.18
2013	6.04	5.20	20.00	6.04	-0.54	9.59	-2.18
2014	4.94	5.17	20.00	5.88	-0.70	11.68	-2.86
2015	4.03	4.68	20.00	5.20	-0.73	12.62	-3.27
2016	3.37	4.11	20.00	4.46	-0.68	12.86	-3.50
2017	2.90	3.63	20.00	3.83	-0.60	12.74	-3.61
2018	2.56	3.24	20.00	3.34	-0.52	12.46	-3.66
2019	2.29	2.93	20.00	2.95	-0.44	12.12	-3.66
2020	2.07	2.67	20.00	2.64	-0.37	11.77	-3.65

4. Conclusion

This paper assesses the major impact of a possible switch of China's development strategy from export orientation to focusing more on domestic market particularly consumption. The switch is supposed to be materialized through several ways including a drastic RMB appreciation, an expansionary fiscal stimulus, a tight monetary policy and an adoption of domestic consumption promotion strategy.

Through running simulations on a simple macro-econometric model, the following results are derived. While RMB appreciation is contractive and deflationary, the fiscal stimulus is expansionary but inflationary. A tight monetary policy is deflationary in nature, so even if the goal of curbing inflation is achieved, it is achieved at an expense of economic growth. Economic growth rate will be slowed if a further interest rate hike is implemented between 2011 and 2012, particularly for the early period of the 2010s. The domestic consumption promotion policy, on the other hand, will maintain a healthy economic growth, but it may place inflation rate well above the target level of 3 to 4 percent.

These findings, though rejecting the policy recommendations of Goldstein and Lardy (2006, 2008, 2009), are consistent with those of Stiglitz (2005), McKinnon (2007), McKinnon and

Gunther (2009), among others. It is therefore suggested that domestic policy changes targeting at boosting domestic consumption and economic growth are preferred over merely currency revaluation and interest hikes. This is because that when the world economy is integrated and globalised, the income effects introduced by fiscal stimulus and changes from the supply side, through international repercussion and price links, could play an more active and critically important role in the restructuring of the world economy in the future.[5]

Endnotes

[1] This projection, however, is based on a constant production function of the past 30 years.

[2] The switch is most likely to be materialised by increases in the low income end of the rural famers, and an improvement in income distribution. A detailed discussion of it is beyond the scope of this paper.

[3] This paper uses the consequential changes in the US, when it is relevant, as a referent indicator for the impacts of policy changes in China on the rest of the world economy.

[4] This is a goal that was recommended by Goldstein and Lardy (2008, 2009) through 25 percent RMB appreciation.

[5] In spite of the strong policy implications of the simulation results, the projection generated from the experiments should not be fully accepted unless a certain degree of caution is given. This is because the simulation results are derived from a model where the Chinese economy is constructed in a rather simple way. As a result, some of the changes could have been exaggerated. The projection could be greatly improved if the model is modified to include more dynamic variables and more appropriate equations particularly in approximating the trade and investment variables particularly FDI and their changes. More research is therefore encouraged toward these directions.

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