Abstract

Over the last decade, the internal and external macroeconomic imbalances in China have risen to unprecedented levels. In 2008, China’s national savings rate soared to over 53 percent of GDP, whereas the current account surplus exceeded 9 percent of GDP. In view of these observations, the current paper presents a unified framework for understanding the structural causes of these imbalances. I argue that the imbalances are attributable to a set of policies and institutions embedded in the economy and that China’s accession to the World Trade Organization has dramatically amplified the effects of these structural distortions. I document major trends in aggregate savings, investment, trade, and net foreign asset positions in China, and explore options for policy reforms aimed at rebalancing the Chinese economy.

---

1The author would like to thank Chi Chur Chao, Han Jing and Yun Wing Sung for helpful discussions and the JEP editors for constructive suggestions. The author is also grateful to Chuantao Cui, Shaozhi Li and Jessie Pang for excellent research assistance. The financial support from the Research Grants Council of the Hong Kong Special Administrative Region, China (Project Number 453008) and the research support from the Hong Kong Institute of Asia-Pacific Studies are gratefully acknowledged.
Savings and External Imbalances in China

The integration of China into the global economy opened the linkages between its domestic activities and the international flow of goods and capital. The national savings rate and current account balance of China underscore such linkages, with both variables recently rising to extraordinarily high levels. In 2008, the aggregate savings rate of China soared above 53 percent of the gross domestic product (GDP), whereas the current account surplus exceeded 9 percent of GDP. With the accumulation of the current account surplus and net inflow of capital, the foreign exchange reserves of China climbed to an unprecedented level, topping USD 3 trillion in March 2011. This figure is nearly thrice the amount held by Japan, the second largest holder of foreign reserves in the world.

These imbalances are by no means a desirable outcome. China has concerns on the risk of potential capital loss in the face of the US dollar adjustment, the worsening trade relationships with other countries, and the ineffectiveness of boosting domestic consumption to sustain growth. Several major trading partners of China are also upset, and their politicians and analysts have blamed China for contributing to the failure of domestic firms and the loss of jobs, even for causing the recent financial crisis. Admittedly, identifying the causes of these imbalances is an arduous task because it not only involves domestic macroeconomic factors, but also the behavior of other economies. Despite a general awareness of the internal and external linkages, academic and policy research typically focus on the high savings in China or on the trade surplus and exchange rate policies.² No consensus exists on the causes of these imbalances and the

² Ma and Wang (2010) and Yang et al. (2011) conducted two recent surveys on the high savings rate in China. See Goldstein and Lardy (2009) and Corden (2009) for the analyses of the current account surplus and exchange rate policies of China.
right polices to resolve them.

In this paper, I propose a unified framework for understanding the joint causes of the internal and external imbalances in China. I argue that the extraordinarily high savings rate and trade surpluses are attributable to a set of policies, institutions, and structural distortions embedded in the Chinese economy. The analysis starts from the macroeconomic identity that the domestic savings-investment gap of a country is equal to its current account balance. Under this framework, exogenous policies and institutions that affect savings or investment affect exports and imports as well through either endogenous adjustments or direct effects, and vice versa. I will show that a wide variety of structural factors, such as income distributions across the corporate, government, and household sectors, incomplete social welfare reforms, and population control policies, systematically encourage savings. In addition, trade policies, such as export tax rebates, special economic zones, and exchange rate policies, strongly promote export. The accession of China to the World Trade Organization (WTO) in 2001 amplified the effects of these individual policies and jointly drove the internal and external imbalances of China to unprecedented levels.

I begin by documenting the trends in the balance of payments of China, including dramatic changes in the current account balance, net foreign asset positions, and the gigantic build-up of foreign exchange reserves. These trends highlight China as an important source of global imbalances since 2004. I then present the corresponding changes in national savings and investment. Based on these stylized facts, the major section of the paper focuses on the structural causes of the rising savings-investment gap and trade surpluses in China. The final section discusses areas for future research and
explores options of policy reforms for rebalancing the Chinese economy.

**Trends in Current and Capital Accounts**

The balance of payments (BOP) statistics report all cross-border flows of value between a country and the rest of the world over a period of time. To document the external imbalances of China, different categories of flows are classified as current account, foreign direct investment (FDI), capital-portfolio-other investment, official foreign exchange reserves, and statistical discrepancy. The sum of these components is zero by the principle of double-entry bookkeeping.

China has not always had a large external imbalance. Prior to China’s accession to the WTO, the net current account fluctuated during 1985 to 2000, never exceeding 4 percent of GDP (Figure 1). From 2001 onwards, the surplus rose along a steep trajectory, accelerating further in 2005 and reaching 10.1 percent of GDP in 2007. Although the surplus moderated during the financial crisis, it remained high at 5.2 percent of GDP in 2010. Because the trade of goods and services is a dominant component of China’s current account, we use these two terms interchangeably in the subsequent discussions.

The net capital and financial account exhibit similar patterns as the trade account. Although jumps in the surplus occurred in the mid-1990s, the account settled into a balanced level before China joined the WTO. In the past decade, however, there was a sharp rise in the surplus, which was followed by a sustained high level. China notably experienced continued net inflow of FDI since the mid-1990s, being the second largest FDI recipient after the US. In the aftermath of the financial crisis, the FDI balance and the capital-portfolio-other investment account both stood in positive territories, adding to
a surplus of 4 percent of GDP.

The persistent “twin surpluses” in current and capital accounts in the past decade has resulted in an explosion in foreign exchange reserves. In 2000, China only had USD 10.9 billion of reserves, equivalent to 0.91 percent of GDP. The subsequent inexorable rise in currency reserves is astonishing. In 2004, the yearly accumulation rocketed to 10.7 percent of GDP. After reaching a peak of 13.2 percent, it hovered to around 8 percent of GDP in 2010. As a result, the foreign exchange reserves of China exceeded USD 1 trillion for the first time in 2006. In June 2011, the total topped USD 3.2 trillion, which was approximately thrice the amount held by Japan.

While the BOP statistics capture the cross-border flows of value in trade and capital during a period of time, the net foreign asset (NFA) provides the stock position of the economy in external financial assets and liabilities. Hence, a current account surplus (deficit) translates into an increase (decrease) in the NFA position. Adopting an approach similar to that of Lane and Milesi–Ferretti (2007), Ma and Zhou (2009) documented the emergence of China as a large and rising creditor in the world. In only 10 years, the NFA position of China swung from a net debtor of approximately 6.2 percent of GDP in 2000 to a net creditor of approximately 30.5 percent of GDP in 2010 (SAFE, 2011). On the asset side, foreign exchange reserves account for a lion’s share of China’s NFA, reaching 69 percent in 2010. Currently, the NFA holding of China is the second largest in the world after Japan.

The surge in the current account surplus and the resulting changes in the NFA positions in the past decade identify China as a major contributor to the global imbalances. Table 1 shows that the current account surplus of China equals a modest
USDUSD 20.5 billion in 2000. However, in the years prior to the financial crisis, China emerged as the largest net lender with a surplus of USD 436.1 billion in 2008, which is equivalent to 24.3 percent of the global total surplus. Germany followed a similar path by swinging from a current account deficit of USD 32.6 billion in 2000 to a large surplus of USD 245.7 billion in 2008. The sum of the surpluses of these two countries roughly equals the huge deficit of the US at USD 688.9 billion in that year. In the aftermath of the financial crisis, China continued to have the largest current account surplus among all countries as of 2010.

The initial rise and the subsequent explosion in the “twin surpluses” caught the Chinese government off guard. The policy target of the 11th Five-Year Plan was to achieve a balanced current account from 2006 to 2010, which differs drastically from reality. Tensions with trading partners increased, and so did the risk of capital loss in the face of the US dollar adjustment. China, as a fast-growing developing country, is in an unusual position because funds, which were to be used to finance domestic investment and stimulate growth, have actually flown out of the country. These reserve assets are mostly invested in low-return US government bond market.

Given that much is at stake, studies have attempted to understand the causes of these imbalances. A common view is that the intervention of the exchange rate conducted by the Chinese government is the culprit for the severe trade surplus. Economists have also identified several causal factors, including financial market imperfections, the migration of processing trade into China because of the global division of labor, and the pursuit of export-led development strategies (e.g., Yu, 2007; Goldstein and Lardy, 2009; Song et al. 2011). Federal Reserve Chairman Bernanke, in his saving glut hypothesis, emphasizes
that the changes in desired savings and investment in a region affect the external balances of this region and those of other countries around the world (Bernanke, 2005). Governor Zhou of the People’s Bank of China highlights the role of high savings rate in affecting the current account surplus in China (Zhou, 2009). He elaborates a clear policy intention to reduce the savings ratio. Although these studies recognize the relevance of savings to the current account balance, they do not investigate the reasons behind the high savings rates. An even more serious challenge is deciding whether the high savings rate is the cause or effect of the current account surplus in China.

**Domestic and International Linkages**

Aggregate savings connect to the external balance through the national income identity. National product (Y) can be represented by a country’s total spending for all purposes, including the private consumption of domestic plus foreign goods and services (C), government spending (G), private investment purchases of capital goods (I), and the difference between export (X) and import (M) of goods and services (including transfers). Since national savings (S) refers to the portion of the national product that is not consumed privately or spent by the government (S = Y − C − G), the following equation captures the relationship between national savings, domestic capital formation, and the current account balance:

\[
S - I = X - M. \tag{1}
\]

This identity has a straightforward interpretation: The national product not consumed or invested at home must be equal to the net purchase of the rest of the world, which is the current account balance. Therefore, the gap between savings and investment equals the
net flow of foreign investment over time, i.e., the national savings not invested at home is invested aboard. This equation can help clarify what forces cause the serious internal and external imbalances in China.

Figure 2 provides the trends in aggregate savings and investment in China from 1992 to 2008, complementing the balance of payments statistics presented in Figure 1. The Flow of Funds Accounts (FFA) data contain not only the composition of gross domestic savings and investment by household, business, and government, but also the information on income and expenditures within each of these sectors. An analysis of FFA data can help explain the domestic economic activities of China and hence, the underlying factors behind the evolution of trade balances and NFA positions.

FFA statistics reveal several dramatic structural changes in savings and investment in China. These changes closely relate to the BOP statistics. Panel A shows that the national savings of China moved in lockstep with the aggregate investment in the late 1990s. However, from 2000 onwards, when China began to experience the twin surpluses, the aggregate savings rate increased along a steep trajectory, moving above the rate of investment. Initially, the savings-investment gap is modest at approximately 2 to 3 percent of GDP. Since 2004, however, national savings exhibited a strong upsurge at approximately 2 percent of GDP per year for five consecutive years, whereas the investment rate stopped its uptrend and settled into a stable level. This uneven growth registered a huge gap between savings and investment from 2005 to 2008, as well as the corresponding large current account surplus, prior to the outbreak of the financial crisis.

---

3In 1995, the National Bureau of Statistics (NBS) of China began to publish the Flow of Funds Accounts based on the physical transactions of national income accounting, covering the government, corporate, and household sectors. With a three-year lag policy, the most recent data available for analysis cover 1992 to 2008.
Panels B and C present more disaggregate information on savings and investment by corporate, household, and government sectors. From 2000 to 2008, on the investment side, the corporate sector contributed 6.15 percent out of 8.93 percent of the total increase in domestic investment as a percentage of GDP. On the savings side, all three sectors contributed significantly, and rather evenly, to the 15.9 percent total increase in the national savings during this period. The emergence of the large gap between savings and investment reflects the fact that after 2004, although the investment rate plateaued from 42 percent to 44 percent of GDP, the savings rate climbed continuously to new heights, reaching 53.2 percent in 2008.

The identity regarding the internal and external imbalances helps in the understanding of how domestic macroeconomic variables link with trade variables. The determination of each variable involves complicated decisions by individuals and firms in the domestic and international channels. Endogenous mechanisms exist, through which the actions of individual agents that affect the trade balance also affect the savings and investment gap and vice versa. Presumably, changing economic circumstances may result in an imbalance on either side of the equation, but countervailing forces may start to develop, creating a tendency to reinstall the equality. What are the systematic factors that have pushed up the imbalances so sharply in China?

**Structural Causes of China’s Imbalances**

The emergence of large internal and external imbalances in the past decade is attributable to a set of structural distortions in the Chinese economy. On one hand, policies and institutions facilitated an upsurge in aggregate savings and restrained overinvestment in
productive capacity, resulting in an excess of savings over investment. On the other hand, various policies in pursuit of export-led growth further exacerbated the current account surplus. These structural factors are either historical legacies that were inherited from the central planning system or government policies and regulations exogenously imposed on the household and corporate sectors. A number of policies directly affect savings, investment, and trade. Other policies may appear to be unrelated to key macroeconomic variables. However, these policies eventually result in imbalances through the rational behavior of households, enterprises, and local governments. The entry of China into the WTO, along with a confluence of favorable developments in the past decade, amplified the effects of these policies, pushing the imbalances up to extraordinary scales.

**Policies and Institutions behind the Rising Savings**

Before analyzing specific policy distortions, it is important to document the primary sources of the rising aggregate savings across the corporate, household, and government sectors. The national savings rate can be written as a weighted average of the savings rates of the three sectors: 

$$ s = s_c \pi_c + s_h \pi_h + s_g \pi_g, $$

where the weights (\( \pi \)) are the shares of disposable income of each sector in the GDP. To analyze the source of savings change, the equation can be differentiated with respect to time, and the following expression is obtained:

$$ \dot{s} = (s'_c \pi_c + s'_h \pi_h + s'_g \pi_g) + (s_c \pi'_c + s_h \pi'_h + s_g \pi'_g). $$

This equality implies that a change in the aggregate savings rate over time can be decomposed into either the changes in the savings rates of the sectors or the changes in their income shares.

FFA data are used to analyze the sources of savings increase from 2000 to 2008. According to the FFA, enterprise savings equals the value added for both financial and
non-financial companies minus labor compensation, production taxes, net asset payments, and net transfer payments.\footnote{More specifically, asset payments include interest payments, dividends, and land rentals, whereas transfers include corporate income tax, social insurance fees, social subsidies, and social welfare payments.} Therefore, by definition, the corporate sector has a unitary propensity to save because total corporate savings is equivalent to the “total disposable income” of the business sector, where final consumption does not take place.\footnote{See Ma and Wang (2010) and Yang et al. (2011) for additional explanation.} In contrast, the average propensity to save for households during this period is 32.8 percent, high by its own standard, but significantly lower than the corporate propensity to save.

A decomposition using FFA data helps identify three major sources of savings increase from 2000 to 2008. These sources are (a) a sharp rise in the share of the disposable income of the enterprise in the GDP, (b) an increase in the rate of household savings, and (c) a rise in the rate of government savings. During this period, the share of corporate income in GDP rose by 5.5 percentage points, absorbing almost all the 5.7 percentage point decline in the share of household income in GDP. The corporate sector has a unity propensity to save; thus, the increase in corporate income share alone drove up the aggregate savings by 5.5 percentage points. In addition, the increases in the savings rates of the government and households contributed 4.1 and 7.6 percentage points, respectively, to the rise to the aggregate savings rate. The three remaining components of the decomposition, the change in the savings rate of the corporate sector and the changes in government and household income shares, played a limited or no role in the change in aggregate savings.

Several structural reasons contributed to the soaring profitability of the enterprises since China joined the WTO. By the late 1990s, China completed a series of reforms, including the use of labor-incentive schemes and the relaxation of worker mobility.
restrictions. Moreover, China implemented the massive privatization of state-owned enterprises (SOEs) in the late 1990s with the objectives of improving corporate governance and maintaining the competitiveness of the state sector in the national economy. As a result, the employment share of the state sector fell, its labor productivity rose, and the competitive pressure also spread to increase the efficiency of non-state firms. However, the costs of production did not rise in a manner that is sufficiently fast to erode productivity improvements. To a significant extent, the incomplete institutional reforms maintained the legacy of the high-accumulation strategy from the central planning era. The suppression of wages, low interest payments on loans, and low land rentals all increased the disposable income of the enterprises, thus giving them more opportunities to save. These forces of economic planning continued into the reform era, despite a gradual reduction in distortions over time. The segmentation of rural-urban markets implies that massive amounts of unskilled labor can readily migrate into cities to meet industrial demand, thus decelerating urban wage growth. In addition, SOEs financed their loans and paid their debts at interest rates significantly lower than the prevailing market rates. If SOEs actually paid at market interest rates, their existing profits, and thus their savings, would have been greatly reduced (Ferri and Liu, 2010).

The confluence of several favorable factors associated with the WTO accession, when combined with the above mentioned institutional factors, created a powerful force to increase firm productivity and profits. With falling trade barriers and tariffs, the dramatic expansion in external demand handed China an opportunity to realize its potential comparative advantage in trade. The continued FDI inflows, as well as the importing of sophisticated intermediate inputs, pushed Chinese exports up. Between 2000
and 2008, export growth reached an unprecedented 24.8 percent per annum (NBS, 2009). The saving capacity of enterprises reflects their profitability. The ratio of profits to industrial value added improved remarkably from an average rate of 22.8 percent from 1995 to 1999 to 34.4 percent in 2008. Corroborative evidence also exists that the share of enterprise income in the GDP rose from 14.2 percent in the second half of the 1990s to 22.9 percent in 2008.

The increase in corporate profits does not necessarily imply an increase in aggregate savings rate if the profits are distributed to the households that have a higher propensity to consume. In China, however, the corporate sector retained a significant amount of the increase in firm profits. Ge and Yang (2011), in their study on the long-term wage trends in China using a national representative sample of urban households, report that the average real wages increased by approximately 8 percent per annum from 2000 to 2007, which is approximately 2 percentage points below the real GDP growth. Although some stockholders earn dividends, the total dividend payments only account for a small proportion of the enterprise value added. Despite an upward trend in dividend payments, the ratio of dividend to value added was still less than 0.5 percent by 2007 (Yang et al., 2011). Part of the story is that the Chinese government did not ask the SOEs to pay dividends until 2008 although they enjoyed improved profits since the state-sector restructuring in the late 1990s. Moreover, private enterprises had extra incentives to save because of legal and financial market imperfections in China, where credit creations are mostly controlled by state banks. These state banks have an intrinsic bias in favor of the SOEs, and private enterprises have to finance themselves out of their internal savings.

6These aggregate statistics appear to be consistent with firm-level data reported by Zhang (2008) that for a large sample of Chinese firms in the period of 1999 to 2003, the average and median dividends to earnings ratios were 0.35 and 0.16, respectively.
(Song et al., 2011). Lower dividends and the motivation for investment translate directly to a high savings rate for the corporate sector.

Without factor market distortions and structural rigidities, increased corporate profits are likely to become the disposable income of households. With a significantly higher propensity to consume than firms, families spend part of the increased income on domestic consumption, thus lowering the aggregate savings rate. Moreover, the trade balance is indirectly affected because consumers are likely to increase their purchase of imported goods. Hence, the reallocation of income to the households works through both sides of Equation (1) to reduce internal and external imbalances.

The rise in government savings from 3.28 percent of GDP in 2000 to 8.35 percent in 2008 also contributed significantly to the rise in aggregate savings in China (Figure 2). The fiscal systems and the collection of social security fees significantly contributed to this outcome.

The government disposable income, which primarily comprises the value added from government production, income from properties, taxes on all production, income taxes, and social insurance revenue minus labor compensations, rose from 1891.6 billion Yuan in 2000 to 6797.7 billion Yuan in 2008 (NBS, 2011). The rise in tax revenues on production was the largest contributor to the growth in government income during this period. The net tax increased by 3036.0 billion Yuan, accounting for 62 percent of the increase in the disposable income of the government. The institutional foundation behind the rise in tax revenues can be traced back to the famous 1994 Fiscal Reform in China, which managed to reverse a declining trend in state revenues beginning in the mid-1980s. The reform aimed to boost revenue collections and reclaim the majority of the total
revenue by the central government (Wong and Bird, 2008). From having a low share of net revenue in the GDP in the early 1990s, the effective tax system, along with an average annual GDP growth of approximately 10.4 percent, increased government revenue from 2000 to 2008.

The second largest contributing factor to government disposable income is net current transfers. According to detailed FFA sources, the government collected 1489.8 billion Yuan of income taxes and 1369.6 billion Yuan of social insurance fees in 2008. However, the government only spent 1601.1 billion Yuan on social welfare payments, social insurance provisions, and other transfers. As a result, the government had a net gain of 1258.4 billion Yuan in net transfers in 2008, which is an increase of 1186.8 billion Yuan from the 1992 level, accounting for 19 percent of the growth in government disposable income during the same period. Overall, the combined increase in taxes on production and transfers added to approximately 81 percent of the growth in disposable income from 1992 to 2008. This finding can be interpreted as a rational behavior of the government in anticipation of the rise in elderly dependency looming in the next decades.

Compared with the sharp increase in state income, the total growth amounting to 3754.8 billion Yuan in consumption is still modest. As a result, government savings increased to 2504.0 billion Yuan, which translates to an 8.7 percentage-point increase in its share in GDP. This tally is consistent with the popular view of “Nation Rich, People Poor,” which is widely discussed in the public media in China. A piece of corroborative evidence is that the share of household income in the GDP declined from an average of 68 percent from 1995 to 1999 to 57.1 percent in 2008 (NBS, 2009). Although this view correctly describes the changes in the income position of the government in the past two
decades, the tax revenue as a percentage of GDP in China is still lower than that of major
developed economies, such as Japan, Germany, and the US.

Household savings in China rose substantially in the past three decades, along with
economic reforms and fast income growth. In the late 1970s, household savings only
accounted for 6 to 7 percent of the GDP (Qian, 1988; Kraay, 2000), but grew to 22.87
percent in 2008 following persistent increases from 2000 to 2008. Given the importance
of the household sector, considerable research is devoted to understanding family saving
decisions. A number of early studies applied the classical models in understanding China.
These models include the Keynesian absolute-income hypothesis, the Modigliani–
Brumberg life-cycle theory, and the Friedman permanent-income hypothesis. More recent
studies also investigated the significance of habit formation and cultural-based
explanations to saving behavior, yielding inconclusive empirical evidence. Although
space limitations do not allow for a careful review of these analyses, the present study
focuses its discussions on major policy and institutional factors that helped drive up
household savings in the last decade.

A striking feature of the Chinese household saving behavior lies in the changes in the
age-saving profiles. In the early 1990s, the age-saving profile reveals a relatively flat
“hump shape,” resembling the typical life-cycle saving profiles observed in other
economies (Modigliani, 1970). However, Song and Yang (2010), using the national
sample of Urban Household Surveys, report that the saving profile for 2007 exhibits a
dramatic change. These changes are seen in (a) the substantial increase in savings rates
for households of all ages, and (b) the age-saving profile turning into a “U-shape” over
the life cycle, that is, the young and the old saved relatively more than the middle aged.
These patterns are consistent with the observations first made by Chamon and Prasad (2010) for selected Chinese provinces from 1995 to 2005. These two features present a challenge for understanding the determination of household savings in China.

Song and Yang (2010) present a household model and show quantitatively that the dramatic rise in household savings and the corresponding changes in age-saving profiles are outcomes of two structural changes in China. First, there are large upward shifts in the earnings of successive younger worker cohorts, whereas individual age-earning profiles flattened during the past two decades. These changes reflect labor market transitions from a centrally planned economy, where seniority was highly regarded, to a market system, where earnings reward the productive human capital of the younger generations. Second, due to incomplete social welfare reforms, the aggregate pension replacement rate, which is the ratio of average pension per retiree to average wages per worker in specific years, declined from approximately 80 percent in the early 1990s to a range of 52–58 percent in 2007. Incorporating these features of the Chinese economy into a dynamic optimization model of heterogeneous agents, the study shows that structural changes in the labor market and the decline in the pension provision account for the recent surge in household savings, as well as the U-shaped age-saving profiles over the life cycle.

The population control policies and the resulting demographic changes affect household savings through two channels. First, as the nonworking population consisting of the young and the old consumes without producing an income, a rise in their share in the population reduces national household savings. Second, in a developing country without a mature social security system, children provide old-age support to their parents. Hence, the children act as an effective substitute in the life-cycle savings. Motivated by
these factors, Modigliani and Cao (2004) use the ratio of the employed population to the number of minors up to the age 15 to approximate demographic change. They find that the decline in young population dependency for the period of 1953 to 2000 increased Chinese household savings through both effects of “less mouths to feed” and old-age security. Ge et al. (2011) provide corroborative evidence through a cohort-specific analysis based on data from the Census of Population and Urban Household Surveys. They find that household savings rates increase as a result of a reduction in the number of children born in older families because of the lack of old-age security from children. For younger households, savings rates increase because of the rise in the burden of parental support as a result of the reduced number of siblings.

Competitive saving motive is yet another demographic factor related to the imbalanced sex ratio in China (Wei and Zhang, 2011). As the two authors argue, the traditional preference for a son is widespread in China. With restrictive population control policies, many families use the inexpensive type-B ultrasonic technology to detect the gender of fetuses and engage in sex-selective abortion, resulting in a severe imbalance in the sex ratio. The intensified competition among men for potential wives stimulates households with a son to spend thriftily to accumulate wealth to gain a competitive edge in the marriage market. Building on this idea, Wei and Zhang use provincial panel data (1978 to 2006) to test the effect of sex ratio imbalance on household savings. They show that the imbalanced sex ratio significantly increases household savings, with approximately 68 percent of the increase in rural savings rate and 18 percent in the urban

---

7 However, this time series evidence is not confirmed by panel data studies. Neither aggregate dependency ratio (Kraay, 2000) nor separate accounts of the young and the old dependency ratios (Horioka and Wan, 2007) are found to have a significant effect on the household saving rates across Chinese provinces. Applying a cohort analysis to the data from the UHS, Chamon and Prasad (2010) reach a similar conclusion that demographic structural shifts do not go very far in explaining saving behavior in China.
rate being attributed to the rise in the sex ratio.

Finally, the incomplete transition from public to private provision of education, health care, and housing contribute to the rising household savings. Several authors argue that the backwardness of financial institutions in China fails to pool risks by providing adequate medical insurance and unemployment insurance or transforms savings into education, housing, and other investment loans (e.g., Woo, 2008; Chamon and Prasad, 2010). However, a number of these factors might not be of great significance once the economy moves into a new steady state. The heavy spending of other households in dealing with the adverse events offsets the precautionary savings of some households. However, these factors are still important during the transition period. Lin et al. (2010) also investigate the implications of the financial structure for household savings. They argue that Chinese institutions impose a dampening effect on wage growth because the labor-intensive small- and medium-sized enterprises cannot receive adequate loans from state-dominated banks. In addition, ordinary people are excluded from sharing the high profits of state-monopolized industries and the natural resource sectors. The resulting income disparity or the concentration of wealth to the rich, affects the rise of household savings.

**Constraints on Investment Growth**

In 2000, on the eve of the entry of China into the WTO, the aggregate investment rate was at a trough of 35 percent of GDP (Figure 2). This rate was the result of a significant moderation in investment in the late 1990s, when China experienced deflation and over capacity in production. However, between 2000 and 2005, the investment rate
began to climb rapidly along with the savings rate, before the investment rate settled into a narrow range of 42 to 44 percent from 2005 to 2008. The increase in the savings rate in excess of the plateaud investment rate resulted in the severe domestic imbalance.

Policies and structural rigidities play a role in creating a gap between savings and investment. Although the government can effectively control investment, it has less control over savings decisions, which is the underlying cause of the gap. Improvements in the investment climate, which resulted from joining WTO, induced a boom in both FDI and domestic investments in China. According to Anderson (2008), these domestic investments were mostly made by large-sized SOEs and concentrated on heavy industries, such as metals, materials, machinery, automobiles, and chemical products. These investments increased production capacity, displaced imports of related products, and subsequently began exports of surplus production.

In China, the government has effective measures to control investment. In 2005, when the central government felt the need to avoid the overheating of the economy, the National Development and Reform Commission issued a directive to control tightly the risk of overinvestment with a list of “prohibited industries” for further expansion. The heavy industries that underwent dramatic expansions in capacity topped that list. Since then, with a continued fear of the economy overheating, the Chinese government managed to control the aggregate investment rate at a steady level.

Rising savings presents a challenge to the economy to channel the excessive savings toward high-return projects. However, the Chinese economy does not have an efficient financial system to accomplish this task. As Song et al. (2011) explain, the state-owned banks are incapable of providing effective loans to the growing and more efficient private
firms because of various legal and political problems. The immaturity of the financial system hinders the channeling of the excess savings to education, housing, and other family-based investment loans (Woo, 2008). Chinese banks are awash with cash and eventually find their way to invest in low-yielding US government bonds.

The lack of attractive investment opportunities in China arises from government restrictions on foreign direct investment in certain strategic, high-tech, and frontier industries. Wholly foreign-owned companies were restricted or prohibited in China in the 1990s, whereas joint ventures were encouraged. The primary target of such a policy was to maximize the access to foreign advanced technologies because learning costs are perceived to be lower within firms. However, Sheng and Yang (2011) show that such policies ended with the opposite outcome. When the host country governments liberalize their ownership structures with concurrent improvements in contract enforcement, they attract the transfer of more advanced products by multinational companies. These technology transfers raise the productivity of domestic firms, thus increasing the return of investment. Although the relaxation of ownership restrictions occurred in the face of China's accession to the WTO in 2001, wholly-owned foreign enterprises are still prohibited from entering some industries. Therefore, these restrictions on FDI decelerate the process of industrial upgrading in China.

**Trade Policies**

China has vigorously pursued export promotion policies since the formulation of its open door reform policies in the late 1970s. In the years leading up to its accession into the
WTO, China practiced a combination of export promoting and import restricting policies through tariffs, quotas, and import licenses. In the early years of reforms, the primary concern of the government was the avoidance of BOP problems resulting from excessive borrowing and trade deficits. As a membership requirement, China phased out much of the import barriers by the late 1990s. The combination of export promoting strategies consists of a self-balancing regulation on the export content of foreign firms, special trade zones, liberalization of ownership restrictions on FDI, export tax rebate, and exchange rate policy. Although these policies were already in practice in the 1980s, they were not a significant concern because China never had a current account surplus exceeding 4 percent of GDP in the 1990s. I show that the entry of China into the WTO is a catalyst that amplified the effect of export promoting policies on trade surplus, pushing it to reach an extraordinarily high level.

The self-balancing regulation, which was passed into the law governing multinational companies, requires that the FDI be export-oriented (Yu, 2007). A 1990 version of the implementation guideline sets an explicit rule that exports must exceed 50 percent of the total annual output of foreign firms. Although this explicit restriction was relaxed in a 2001 revision of the law, it still encourages FDI with an export orientation. Under the effect of these regulations, the foreign-invested enterprise share of Chinese exports rose from approximately 20 percent in the early 1990s to 56 percent in 2009.

In the early 1980s, China established special economic zones for export in coastal cities. Owing to their initial success, special zones were expanded into inland cities. Multinational companies in these zones enjoy various advantages, including better protection of intellectual property rights, lower corporate tax rate of 15 percent, duty free
for imported inputs, no import quotas, low costs of land, and no property tax in the first five years. Additional benefits were also given to foreign firms if they export most of their products (Wang, 2010). Data reveal two booming periods of policy zones. The first period is from 1990 to 1993, when the cumulative number of zones jumped from 18 to 130. The second is from 1999 to 2003, when the number increased from 139 to 196 (Sheng and Yang, 2011). A total of 221 policy zones were established in China as of 2006. Wang (2010) finds that these special economic zones attract FDI primarily in the forms of foreign-invested and export-oriented industrial enterprises. The Chinese government also gradually lifted various ownership restrictions on FDI by expanding a list of encouraged industries while reducing the categories of the restricted or prohibited industries (Sheng and Yang 2011). Two major jumps in the encouraged industries are found in 2002, the year after China joined the WTO, and in 2007, the year after the Chinese government promised to remove most of the trade and investment protections. These nationwide initiatives on ownership liberalization raised the volume of processing export, as well as the product varieties of multinational firms.

Export tax rebates are yet another trade policy tool for promoting export. This program entails the refund of tariffs on imported inputs and value-added tax (VAT) already paid on exported goods. These policies discriminate against goods sold domestically, especially on goods using imported inputs; and, they created the incentive for firms to sell products abroad. Under conceivable circumstances, goods are sold to foreign buyers at cheaper prices. After the Asian financial crisis in 1997 and to raise the competitiveness of Chinese exports in the wake of WTO accession, China lifted the rebate rates several times, reaching an average of 15 percent in 1999. The total value of the
rebate payment increased substantially after China joined the WTO, rising from 115 billion Yuan in 2002 to 586.6 billion in 2008. The size of these tax rebates is highly significant. In 2006, the total tax rebates for exports received by exporting firms was equivalent to 10 percent of aggregate corporate savings and approximately 14 percent of government tax revenue in the same year (Yang et al., 2011). Empirical studies show that duty drawbacks and VAT tax rebates are important in promoting exports in China (Chao et al., 2006; Chen et al., 2006). Admittedly, export tax rebates are generally permitted under the WTO framework, but there are serious issues in its implementation. In a survey covering 55 developing countries, fewer than half of the countries had a legal framework or implementation regulations for their duty drawback schemes, thereby limiting its implementation (e.g., Ianchovichina, 2007). Therefore, the widespread and uniform implementation of tax rebates and duty drawbacks provides a competitive edge for Chinese exports.

The focus of discussion has been on Chinese trade policies so far. Regulations in foreign countries that restrict the export of high-tech and strategic products to China can also significantly affect its trade surplus. As a developing country in need of advanced technology and being the second largest economy and a trading partner of the US, Chinese imports in 15 categories of goods with the highest content of technology are far below the import of the same goods by countries such as Canada, Japan, and Holland. In fact, among the same categories of high-tech goods, the imports of China are below that of India and Mexico (Ju et al., 2011). The limited import results from the explicit export restrictions imposed by the US government or the complicated application and approval procedures. The removal of these restrictions can effectively reduce the trade surplus of
China.

Finally, the role of the exchange rate policy is controversial and frequently cited in public debates on the current account surplus of China. Some argue that the pegging of the renminbi to the dollar at a low value is the root cause behind the large trade surplus of China (Krugman, 2009; Ferguson and Schularick, 2009), but disagreements abound (Chinn and Wei, 2008; Song et al., 2011). The opponents argue that there is no robust relationship between exchange rate regime flexibility and the current account adjustment; and, what matters is the real exchange, which has stayed flat for a long time. Moreover, the renminbi has appreciated by about 25 percent since mid-2005, while the current account surplus of China surged at the same time. Given the analyses presented in the present paper, the exchange rate policy can hardly be the only factor, or even an important one, responsible for the imbalances in China.

Options for Policy Reforms

The Chinese economy is strongly affected by policy interventions and structural rigidities. The roots of the policies can be traced to the past institutions and the new growth strategies during globalization and economic transition. These factors emphasize export promotion and have distributional income effects in favor of the corporate and government sectors, as opposed to the households. Each of these policies appears to be rational and innocuous and hardly affect the macroeconomic performance significantly under normal circumstances. However, with the huge external shock of China joining the WTO, the effect of the individual policies was amplified, and the joint effects of policy interactions pushed the internal and external imbalances up to gigantic scales.
A simple explanation for the evolving macroeconomic imbalances in China emerges from the foregoing analysis. With falling trade barriers resulting from being a member of the WTO, the profits coming from Chinese exports and firms expanded dramatically. However, a high percentage of this windfall gain of WTO profits was retained in the corporate sector, which has a high propensity to save, and was collected by the government, who has not adjusted its social welfare spending upward. The result is an unprecedented upsurge in aggregate savings and weak demand for domestic consumption and imported goods. What aggravates the imbalance is a continued rise in household savings induced by structural shifts in the labor market, incomplete social welfare reforms, and demographic changes resulting from China’s population control policies.

When the ill-functioning financial system fails to channel the increased savings to high-return production investments or consumption loans, the excess savings end up as huge foreign exchange reserves invested in low-yielding US government bonds. These simple facts explain the coexistence of a large savings-investment gap, current account surpluses, and the growing net foreign asset position of China. Although these imbalances are clearly not intended or desirable for China and the rest of the world, the hands of the Chinese government are tied firmly by the entangled policies and institutions. Therefore, China is both the victim and the culprit of its own macroeconomic imbalances.

Mounting pressure exists for rebalancing the Chinese economy. With a framework for understanding the causes of the internal and external imbalances in China, many statements presented in the present paper are based on solid empirical findings. Other statements, however, are new hypotheses that should be scrutinized against data. Assessing quantitatively the relative importance of the contributing factors can help
deepen the understanding of the role of policies and institutions in the determination of savings, investment, and current account imbalances. The rich spatial variations across the Chinese provinces and potential international data with variations in policy intervention provide a basis for further empirical investigation. Exploring such variations remains a challenging topic for future research.

Several looming structural changes, such as a lower rate of economic growth and population aging, will likely help reduce the national savings rate in the future. However, the effects of these changes will likely be gradual and modest. Instead, more direct reforms aiming at correcting policy and structural distortions responsible for causing the imbalances are effective policy measures. Since the coordination and timing of the reforms are far more complicated than what this paper can deal with, I simply outline the following broad areas where I believe reforms are warranted.

- Adjustments are needed in income distributions across the corporate, government, and household sectors, as the consumption in China constitutes the lowest fraction of GDP ever recorded in any major economy.
- The removal of subsidies in capital financing and the restoration of land prices to market values can facilitate the determination of enterprise profitability based on sound economic principles.
- Strengthening corporate governance and dividend policies for both SOEs and private enterprises can lower aggregate savings with increased consumption of households and the government.
• The new Labor Contract Law, which lays out the general terms of protecting the basic rights of workers,\(^8\) should be effectively implemented.

• The population control policies should be reviewed in the context of the anticipated rise in the elderly dependency ratio in the next four decades, which will have serious implications in savings and economic growth.

• The government should shift the composition of spending from investment to education, health and selective social programs, and accelerate social welfare reforms. The public expenditure on education as a share of GDP in China is still below the average of developing countries.

• The state-dominated credit systems need to be reformed to channel more of the growing domestic savings toward high-return private investments and consumption-oriented loans.

• Reduction in import duty drawbacks and export tax rebates must be planned. This initiative can help reinstall the right incentives in domestic versus international trade and helps reallocate income across corporate, household, and government sectors.

• The removal of favorable provisions of lowered tax rates, subsidized land prices, and other privileges in special economic zones should be considered to set all firms in the market on an equal competitive footing.

• The appreciation of the renminbi should continue.

---

\(^8\) This law took effect on January 1, 2008. The main objective of the law is to deal with the mistreatment of workers arising from asymmetric information and uneven bargaining power between employers and low skilled workers.
The reforms aimed at removing policy and institutional distortions generally have an effect of killing two birds with one stone. The reforms can reduce the imbalances while improving the efficiency of resource allocation. Moreover, a reform that targets the savings-investment gap will naturally mitigate the current account surplus and vice versa. It has become apparent that the solutions to the macroeconomic imbalances in China require a more sophisticated approach than the conventional method of addressing currency appreciation and expenditure expansion.

References


Ma, Guonian and Yi Wang. 2010. “China’s High Saving Rate: Myth and Reality,”


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced economies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>29.8</td>
<td>-270.6</td>
<td>-411.2</td>
<td>-471.8</td>
<td>-95.5</td>
</tr>
<tr>
<td>United States</td>
<td>-113.6</td>
<td>-416.4</td>
<td>-747.6</td>
<td>-668.9</td>
<td>-470.2</td>
</tr>
<tr>
<td>Japan</td>
<td>111.4</td>
<td>119.6</td>
<td>165.7</td>
<td>157.1</td>
<td>194.8</td>
</tr>
<tr>
<td>United States</td>
<td>-113.6</td>
<td>-416.4</td>
<td>-747.6</td>
<td>-668.9</td>
<td>-470.2</td>
</tr>
<tr>
<td>Euro area</td>
<td>70.5</td>
<td>111.4</td>
<td>119.6</td>
<td>165.7</td>
<td>157.1</td>
</tr>
<tr>
<td>Germany</td>
<td>-29.6</td>
<td>-32.6</td>
<td>142.8</td>
<td>245.7</td>
<td>176.1</td>
</tr>
<tr>
<td>Spain</td>
<td>-1.8</td>
<td>-23.1</td>
<td>-83.3</td>
<td>-156.0</td>
<td>-63.3</td>
</tr>
<tr>
<td>Other</td>
<td>-38.5</td>
<td>65.6</td>
<td>129.7</td>
<td>126.7</td>
<td>168.4</td>
</tr>
<tr>
<td>Norway</td>
<td>5.3</td>
<td>25.3</td>
<td>49.1</td>
<td>79.9</td>
<td>53.3</td>
</tr>
<tr>
<td>Australia</td>
<td>-18.4</td>
<td>-15.3</td>
<td>-41.7</td>
<td>-47.2</td>
<td>-31.7</td>
</tr>
<tr>
<td>Emerging and developing economies</td>
<td>-92.2</td>
<td>95.2</td>
<td>443.0</td>
<td>704.2</td>
<td>378.1</td>
</tr>
<tr>
<td>Asia</td>
<td>-36.9</td>
<td>41.7</td>
<td>167.5</td>
<td>435.9</td>
<td>308.1</td>
</tr>
<tr>
<td>China</td>
<td>1.6</td>
<td>20.5</td>
<td>160.8</td>
<td>436.1</td>
<td>306.2</td>
</tr>
<tr>
<td>India</td>
<td>-5.6</td>
<td>-4.6</td>
<td>-10.3</td>
<td>-24.9</td>
<td>-49.0</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>-1.2</td>
<td>80.4</td>
<td>212.7</td>
<td>343.1</td>
<td>152.8</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>-9.9</td>
<td>2.1</td>
<td>-3.4</td>
<td>0.0</td>
<td>-24.9</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>-37.9</td>
<td>-48.4</td>
<td>36.3</td>
<td>-31.2</td>
<td>-56.9</td>
</tr>
<tr>
<td>Central and Eastern Europe</td>
<td>-10.2</td>
<td>-28.9</td>
<td>-57.7</td>
<td>-151.3</td>
<td>-76.0</td>
</tr>
<tr>
<td>Former Soviet Union</td>
<td>3.8</td>
<td>48.3</td>
<td>87.6</td>
<td>107.7</td>
<td>75.0</td>
</tr>
<tr>
<td>Statistical discrepancy</td>
<td>-62.4</td>
<td>-175.4</td>
<td>31.8</td>
<td>232.4</td>
<td>282.6</td>
</tr>
</tbody>
</table>

Source: International Monetary Fund, World Economic Outlook Database, April 2011.
Figure 1. International Balance of Payments of China: 1985-2010

Source: State Administration of Foreign Exchange of China (ASFE, 2011).
Figure 2. Saving and Investment in China: 1992-2008

A. Aggregate saving and investment rate

B. Investment rate by sector

C. Saving rate by sector