LIBERALIZATION OF CHINA'S CAPITAL ACCOUNT

Yiping HUANG, Xun WANG, Qin GOU and Daili WANG
China Macroeconomic Research Center
National School of Development, Peking University

(yhuang@ccer.edu.cn)

[Abstract] China has been delaying the plan of achieving capital account convertibility since the Asian financial crisis, although restrictions on capital flows have been reduced steadily, evidenced by falling capital account control index constructed in this study. Current restrictions exist mainly for portfolio investment, debt financing and ODI. Effectiveness of these restrictions, however, has been weakening. Meanwhile, while such restrictions probably helped maintain domestic financial stability in the past, their potential costs are rising quickly, such as loss of monetary policy independence. China already possesses a range of favorable conditions, which might reserve in the coming years. Therefore, China should seize the golden period of the next 3-5 years to achieve basic convertibility of renminbi under the capital account. This requires, among others, market-based interest rates and free float exchange rates. The authorities could probably abandon restrictions on debt financing and ODI quickly. For the more volatile portfolio investment, they could retain the existing QFII and QDII schemes, with significantly increased quotas but substantially reduced restrictions during the transition period.

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Introduction

In December 1996, the Governor of the People's Bank of China (PBOC) wrote to the Managing Director of the International Monetary Fund (IMF) to confirm that China realized current account convertibility. At that time, the Chinese officials planned to achieve capital account convertibility within the following five to ten years. Liberalization of the capital account, however, was repeatedly delayed after the East Asian financial crisis.

Ten years later, the world was struck by the U.S. subprime crisis and global economic recession. The Chinese economy performed relatively better than most other countries, thanks to state influences on the economy. Restrictions on cross-border capital flows helped shield the Chinese economy from severe financial shocks, while the government's unusual capability of resource mobilization also provided strong support to economic growth.

These raise an important policy question: is capital account liberalization desirable or necessary? The extraordinary performance of the Chinese economy, sometimes described as the 'China miracle', benefited greatly from the market-oriented reforms or reduction of state intervention in economic activities (Huang 2010). But the Chinese experience during the global financial crisis appeared to suggest that certain degrees of state intervention might be useful. In particular, compared with the other East Asian economies, China achieved strong economic performance despite relatively tight capital account controls. So what's the point of liberalizing?

Findings of empirical studies on benefits of capital account liberalization are also inconclusive: some found positive impacts, some revealed no effect and yet others discovered mixed results (see, for instances, Quinn 1997; Klein and Olivei 2000; Rodrik 1998; Edison, Levine, Ricci and Slok 2002; Chanda 2001; Reisen and Soto 2001). Pooling of international data also showed no consistent correlation between a country's openness of the capital account and its growth performance (Kose, Prasad and Rogoff 2009).

These results contradict the conventional wisdom that capital account and financial liberalization should help increase investment returns, reduce financial risks and improve growth performance (McKinnon 1973; Shaw 1973). There are several possible factors explaining such mixed results. Inappropriate order of liberalization could also lead to economic and financial chaos. Meanwhile, closed capital account might actually be a better choice for some underdeveloped countries, which are unable to manage economic stability in an open market (Stiglitz 2000).

So should China continue to pursue the long-planned agenda of capital account liberalization? In this paper, we look into important issues in three related areas. First, what are the potential costs of not liberalizing the capital account for China? If such costs are small, then liberalization is at least not an urgent task. Second, what is the true situation of the capital account controls in China today? In particular, we will examine evolution of the controlling measures during the past decades and the effectiveness of

such restrictions. And third, what should be the right policy strategy for China to liberalize its capital account, if it turns out to be desirable and necessary? Proper liberalization involves necessary preconditions, order of liberalization and choice of timing.

This paper uncovers some interesting findings and reaches several important conclusions. First, while restrictions on cross-border capital flows probably helped China achieve financial stability, especially at times of external crisis, the costs of maintaining such restrictions are becoming greater. In particular, increasing opening of the economy makes it difficult to enforce the capital controls effectively. This, together with the rigid exchange rate regime, already started to erode independence of China's monetary policy. It has also become an important obstacle for other policy objectives, such as internationalizing renminbi, further improving domestic financial and fiscal systems, developing Shanghai into an international financial center by 2010 and including renminbi in the IMF's SDR basket.

Second, although its capital account remains relatively closed, China has been experiencing steady capital account liberalization for the past decades. Our index of capital account controls dropped from 0.9 percent in 1978 to 0.50 percent in 2010, broadly in line with the authorities' own assessment that about 75 percent of the capital control items have been liberalized, at least partially. Empirical analyses of this study also confirm that liberalization was an important contributor to strong economic growth. The study also indicates some degrees of effectiveness of the policies restricting short-term capital flows. This may have helped maintaining economic and financial stability, at least temporarily. But costs of not liberalizing are growing exponentially in China, evidenced most clearly by rapid accumulation of foreign exchange reserves and gradual loss of monetary policy independence.

And, finally, the 12th Five-Year Program period (2011-2015) provides a golden window for speedy liberalization of China's exchange rate and capital account. The macroeconomic and financial conditions in China today are already much better than those in India and Russia when they opened up their capital accounts. Importantly, some of the favorable conditions, such as healthy fiscal condition, external surplus and pressure for appreciation may disappear over time. Therefore, it is advisable that China achieves basic convertibility under the capital account within the next three to five years. Specifically, the government should first establish market-based interest rates and exchange rates and then lift most restrictions on cross-border capital flows, although special schemes for portfolio investment could remain in place for a while.

The remaining of the paper is organized as the follows. The next section reviews the literature on experiences of capital account controls and liberalization. Second III reviews evolution of the Chinese policies governing the capital account and develops a quantitative measure for capital account control, with strict control set at 1 and free flow of capital at 0. Section IV examines two empirical questions: effectiveness of restrictions on short-term capital flows and impacts of such controls controls on economic growth. Section V discusses the policy strategies going forward, including preparation of the necessary conditions, designing of the proper order of liberalization

and careful choice of timing of the reform. The final section concludes the paper with some policy implications.

Literature Review

Capital account and financial liberalization has been a global trend since breakdown of the Bretton Woods System in the early 1970s, which is the subject of a large body of economic literature. Before examining the Chinese experience, we first review existing studies in three broad areas: quantitative measurement of capital account controls, effectiveness of such controls and effects of these restrictions on economic growth. These provide useful references for our analyses of the Chinese case.

There are two types of methods measuring capital account controls, the *de jure* and the *de facto* approaches. The *de jure* approach is based on legislative or policy restrictions. It often draws on data from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) and the OECD's Code of Liberalization of Capital Movement. The simplest method is to use a 0-1 dummy for each category or the proportion of categories without restriction (for instances, Epstein and Schor 1992; Klein and Oliver 1999; and Quinn and Toyota 2008). But some studies try to distinguish different degrees of controls (for instances, Quinn 1997; Montiel and Reinhardt 1999).

The *de jure* method provides good information about the policy framework. However, it may not be a good indicator of the actual controls, as the observed capital flows often exceed the legal limit (Edwards 2005). Therefore, some researchers prefer the *de facto* approach, which is literally 'outcome based'.

We may classify the existing *de facto* indicators into three groups. The first is called the quantity index, which measures the ratio of gross cross-border capital flows to GDP (Lane and Milesi-Ferretti 2001a, 2007). The problem is that actual flows of international capital are affected by other factors as well, such as expectations of investment returns and perceptions of sovereign risks. The second is called the price index, which is based on the one price theorem assuming the capital accounts are completely liberalized. Analysts often compare domestic and foreign equivalent asset prices, such as interest rates and stock prices (Dooley et al. 1997; Yeyati et al. 2009). And the third is a 'hybrid measure' in nature. A good example is the so-called Feldstein-Horioka puzzle, which assesses degree of capital controls by examining the correlation between domestic saving and investment rates across countries (Feldstein and Horioka 1980).

In this study, we construct a capital account control index, following the *de jure* approach, which focuses on legislation than on actual flows. Later, we also estimate short-term cross-border capital flows, following the *de facto* approach. Both indicators agree that actual restrictions on capital flows weakened, most clearly during the first decade of the 21st century.

Potential divergence between the *de jure* and the *de facto* indicators points to an important question of effectiveness of the capital account controls. The key idea behind most empirical analyses is interest rate parity, which assumes that, due to arbitrage, financial asset denominated in foreign currencies should reap equal returns (adjusting for exchange rate premium/discount) to those denominated in local currencies, on

condition of free capital flows and no transaction cost.

In a comprehensive review, Frankel (1992) ranked four types of tests. According to him, the weakest hypothesis is covered interest rate parity.[1] The second weakest is uncovered interest rate parity, which could hold with the presence of interest rate risk. The second strongest is real interest rate parity, which states international capital mobility could result in equal real interest rates across countries. And the strongest test is the Feldstein-Horioka condition, domestic saving uncorrelated with the domestic investment.

A few empirical studies examined effectiveness of capital account controls in China. Ma and McCauley (2004, 2007) found significant difference between the Libor rate, adjusted by exchange rate expectation, and domestic rates and concluded the capital account regulations still effective. Zhang (2003) examined the loan rate parity between China and US and reached a similar conclusion.

These analyses offered useful insights on this important subject. The methodology they applied, however, suffers from several drawbacks. Many of these studies neglect possible structural changes in parameters, such as changes in exchange rate regimes during the past decade. More importantly, these existing studies treated the variables as stationary by default. But most macro variables are actually unit root process (Nelson and Plosser 1982). Neglecting this would likely lead to spurious regression. Finally, the null hypothesis tested by the usual interest rate parity framework is that the controls are completely ineffective (but understandably capital controls are not completely ineffective in most developing countries).

In this study, we will examine the question of effectiveness of capital account control in two ways. The first is a simple time-series regression of short-term capital flows on capital account control index to see if the latter has significant impact on the former. And the second explores the long-run equilibrium relation between onshore and offshore asset prices, confirmation of which would mean ineffective capital account controls, at least in the long run.

Whether the capital account controls inhibit economic growth or not is a controversial subject. In theory, liberalization should provide more options for both domestic borrowers and lenders and should, in turn, help improve economic efficiency. At the same time, opening the capital account could mean greater volatility and lead to collapse of the economy in the worst case. This implies that whether or not capital account liberalization contributes to faster growth depends critically on the government's ability to maintain economic and financial stability after liberalization. The literature has produced a spectrum of results, some found positive contribution of liberalization to economic growth (Quinn 1997), others discovered no effect ((Rodrik 1998), and yet others concluded mixed impacts (Reisen and Soto 2001).

[1] Weak implies the hypothesis requires fewer conditions to hold, compared with the strong one.

Table 1. Selected Studies on Effects of Financial Integration on Economic Growth

Study	Number of Countries	Years Covered	Effect on Growth
Alesina, Grilli, and Milesi-Ferretti (1994)	20	1950-89	No effect
Grilli and Milesi-Ferretti (1995)	61	1966-89	No effect
Quinn (1997)	58	1975-89	Positive
Kraay (1998)	117	1985-97	No effect / mixed
Rodrik (1998)	95	1975-89	No effect
Klein and Olivei (2000)	Up to 92	1986-95	Positive
Chanda (2001)	116	1976-95	Mixed
Arteta, Eichengreen, and Wyplosz (2001)	51-59	1973-92	Mixed
Bekaert, Harvey, and Lundblad (2001)	30	1981-97	Positive
Edwards (2001)	62	1980s	No effect for poor countries
O'Donnell (2001)	94	1971-94	No effect, or at best mixed
Reisen and Soto (2001)	44	1986-97	Mixed
Edison, Klein, Ricci, and Sløk (2002)	Up to 89	1973-95	Mixed
Edison, Levine, Ricci, and Sløk (2002)	57	1980-2000	No effect

Source: Authors' compilation.

Most of the existing studies apply cross-section or panel data sets, of a large number of countries. In this study, however, we will approach this question by examining the Chinese experience as a case study, again applying time series analysis technique.

Evolution of Capital Account Controls

We intend to discuss China's capital account controls in two steps: the first is to depict the current restrictions on cross-border capital flows and the second is to construct an index describing changes in extent of the controls over time.

Capital account controls are reflected mainly in three areas. First, in opening the securities markets to foreign investors, the Chinese government pursued a strategy of "segmenting the markets with different investors", which meant that foreign investors are only allowed to buy foreign currency denominated shares and debt instruments, such as the B shares, H shares and red chips stocks. However, they are not allowed to buy renminbi-denominated A shares, bonds or other money market instruments, unless they have QFII quotas. Meanwhile, Chinese residents are largely prohibited from buying, selling or issuing capital or money market instruments in the overseas markets outside the QDII scheme.

Second, while foreign-funded enterprises are free from any restrictions on raising short- or long-term debts in the overseas market, other domestic entities need to obtain required qualifications as the main borrowers and to have the proposed borrowing quotas and terms certified or approved by the authorities. In addition, domestic financial institutions can only issue external loans in line with certain provisions set in the rules on foreign exchange liability/asset ratio management. Domestic non-financial enterprises are strictly prohibited from extending any external loans.

And, finally, for foreign investors, no restrictions, other than the industry policy, are imposed on their direct investment in China. However, outward direct investment by

domestic entities needs to be approved by the State Administration of Foreign Exchange, the Ministry of Finance and the National Development and Reform Commission. Government restrictions on the capital account mainly involve the following two types: controls imposed on cross-border capital transactions and controls imposed on certain phases of foreign exchange transactions related to cross-border capital transactions by the SAFE, including restrictions on cross-border fund remittance and repatriation and RMB/foreign currency exchange related to capital account transactions.

In order to quantify the capital account controls, especially changes over time, we construct a quantitative index. Following Jin (2004) and Xiao and Kimball (2006), we estimate degrees of restriction for all 11 categories of capital account transactions, applying classifications by OECD and China's State Administration of Foreign Exchange (SAFE). We first set each category to 3 for the years before 1978, meaning strict control. Likewise an index of 2 refers to strong control, 1 slight control, and 0 liberalized (the constructed index, however, is normalized to between 0 and 1).

To trace the historical evolution, we selected 73 out of 144 laws and regulations issued by SAFE between 1999 and 2010[2]. Each observation is deemed as an event. We update the index in response to every event so as to construct a monthly index. The responsive grading criterion is as follow: significant changes in laws and regulations result in 1 point; insignificant changes result in 0.5 point. We define the significant changes as changes in beneficiaries[3]. Insignificant changes are defined as quota limit adjustment, duration adjustment and provisional acts or pilot projects being normalized.[4] According to the definition of SAFE, the discrepancy between 'slightly controlled' and 'heavily controlled' is the range of transaction subjects. If an event changes the range of beneficiaries, such as developing from nothing or expanding from residents to all the transaction subjects, it should be deemed as a significant change. This is the rationale behind the criterion.

We assign equal weight to the seven major categories[5]. Following Jin (2004), we combine the commercial credit and financial credit into one category. We split FDI and

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[2] We refer to the review article published by China's State Administration of Foreign Exchange, http://www.safe.gov.cn/model_safe/laws/law_detail.jsp?ID=80100000000000000,59&id=4

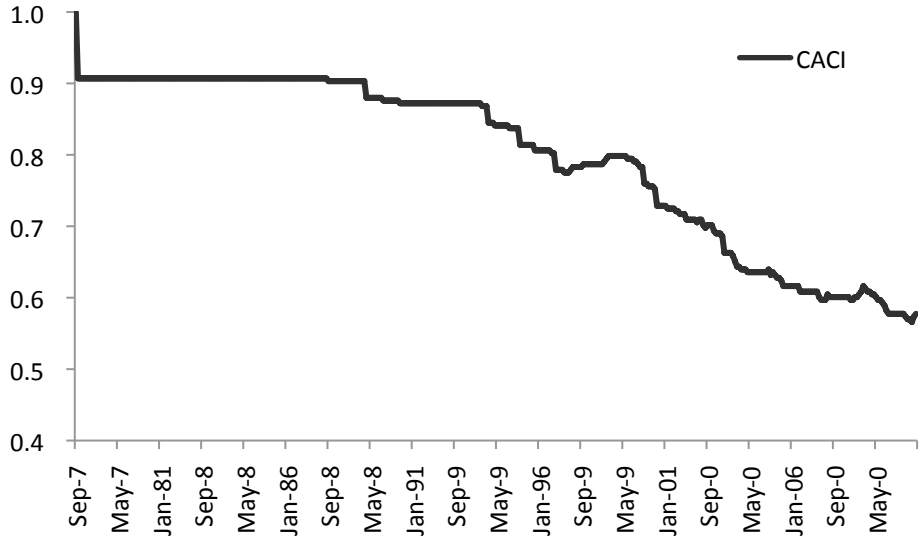
[3] For example, the act "China Securities Regulatory Commission [46]" issued on 18th June 2007, should be regarded as a significant change, since it involves the change in the range of beneficiaries (develop from nothing).

[4] For example, the act "SAFE [2005] No.60" requires the quota for purchasing foreign exchange for personal affairs changes from 3000 US.D to 5000 US.D. The quota limit adjustment does not involve with the range of beneficiaries, so it might be deemed as insignificant change.

[5] Admittedly, the equal weight grading method might result in inaccuracy. For instance, merely one event is recorded in the 'Derivative and Other Investment Tools' account during the observation period. In contrast, under the 'Individual Capital Transaction' accounts, more than 30 events occur. Nevertheless, we find no satisfactory criterion to grant the weight. In the appendix, we display another CACI by granting equal weight to forty-three minor subcategories. The discrepancy is subtle.

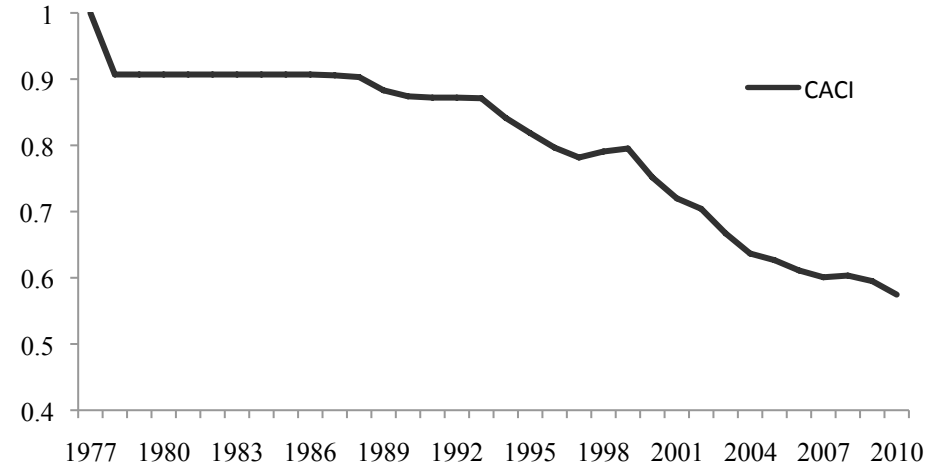
OFDI (Outward Foreign Direct Investment) into two categories, since the official management policies are different.

Chart 1. Capital Account Control Index of China (monthly data)



Source: SAFE; CEIC.

Chart 2. Capital Account Control Index of China (annual data)



Source: SAFE; CEIC.

We constructed two separate indices, one monthly and the other annual (see Figures 1 and 2). Both indices confirm China's steady trend of capital account liberalization during the reform period. For instance, reading of the annual index was 1 in 1977. It came down to 0.9 quickly when reform started, when the government loosened controls on commercial and financial credits, foreign direct investment and liquidation of direct investment. Exchange rate reform in 1994, realization of the current account convertibility in late 1996 and the WTO accession in late 2001 accelerated liberalization of the capital account. In 2010, the index was slightly above 0.5.

Impacts on Capital Flows and Economic Growth

So what are the impacts of capital account controls in China? We first estimate the short-term capital flows, which should provide some preliminary indication of the degree of capital account controls. We also run simple regressions to see if the control indicator affects the short-term capital flows. We then investigate the long-run effectiveness of capital account controls by assessing the stable equilibrium relations between onshore and offshore asset prices. And, finally, we analyze the impacts of capital account controls on income growth.

Short-term capital flows

The traditional interest parity analyses may be misleading if degrees of capital account controls change over time. More importantly, interest parity holds only if the controls are completely ineffective, which rarely happens. In this study we try to avoid the above problems by first estimating the short-term capital flows, application of the *de facto* approach. We use the indirect method, also known as the residual method to tentatively estimate the short-term capital flows. Taking into account the elements of non-trading changes in the incremental foreign exchange reserves, such as the evaluation effect of exchange rate changes and overseas investment gains, and the short-term capital inflows by false report in trade and services, the estimation is as follows:

> Short-term capital flows= changes in the Funds outstanding for foreign exchange foreign exchange - trade surplus - FDI net inflows - net incremental debt +false import and export quotation.

By definition, import and export mispricing is calculated by the amount registered with China Customs minus the actual amount. To obtain more precise estimates, we compare China's trade data with trading partners' imports (exports) data, and the difference is roughly regarded as mispricing of imports and exports. We take this mispricing as short-term capital flows disguised as current account items. Following Zhang (2010), the calculation method can be outlined as follows:

$$ST = ST_{ex} + ST_{im} \quad (4)$$

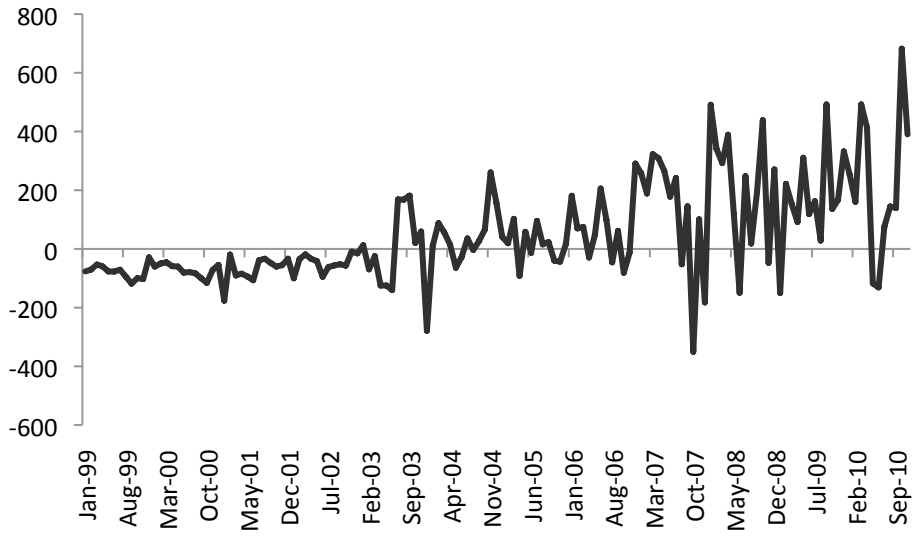
$$ST_{ex} = ED_d - \frac{FOB}{CIF} IM_f + TF * R1 \quad (5)$$

$$ST_{im} = ED_f - \frac{FOB}{CIF} IM_d + TC * R2 \quad (6)$$

The mispricing of imports and exports (ST) is usually composed of two parts: short-term inflows through under-invoiced imports and those through over-invoiced export. To calculate under-invoice of exports, we use the export data of China to minus the import data of the trading partners, adjusted with the FOB/CIF index to obtain the preliminary result. Taking into account the fact that several countries record trade with Hong Kong into the trade account with mainland China, we add the value of entrepot trade originated in China $TF \times R1$. Then we have the under-invoiced imports for China. Similarly, to calculate the under-reported import, we first use the trading partners'

export to minus China's imports, then adjust the result with the FOB/CIF index, and add to it the added value of entrepot trade whose destination is China $TC \times R2$ (see Figure 3).

Figure 3. Short-Term Capital Flows in China: 1999-2010 (US$bn)



Source: CEIC Data Company.

China used to have net short-term outflows around the late 1990s (see Figure 3). There was a turning point in 2003-2004 when net short-term outflows emerged. In fact, both volatility and volume of such short-term flows increased significantly during the past 6-7 years. These may be evidences of either loosening capital controls or declining effectiveness of the controls. Growing short-term flows probably made PBOC's monetary policymaking much more difficult recently.

We also try to look at the effectiveness of the controls on short-term flows by regressing the latter on the former. Significant statistical estimates suggest that the controls did have an important effect on the flows during the past decade (Gou and Wang 2011). Such estimation results, however, did not reveal whether the restrictions were completely effective or partially effective.

Covered interest parity

An appropriate approach for examining effectiveness of capita account controls is the method of covered interest parity. Under perfect capital movement, the onshore yield rate equates the offshore yield rate. In this case, there is no arbitrage. Existing relevant literatures try to examine the effectiveness by comparing the difference between onshore and offshore rates (Frankel, 1992). However, as we discussed before, such approach contains a number of very strong assumptions.

In this study, we instead look at the long-term relationship between domestic and foreign asset prices. As long as the capital controls are partially ineffective, the arbitrage mechanism would still work. If there exists a stable equilibrium in the long run between

the offshore rate and the onshore rate, then we could conclude the capital controls to be ineffective in the long run. And if changes in one yield rate lead to changes in the other, then we conclude that capital controls is at least partially ineffective in the short run.

We assembled daily data of Chibor, Shibor and PBOC bill rates as the proxies for domestic onshore yield rates. We use USD Libor and Treasury bond return to calculate the offshore yield rates that ensure the establishment of covered interest rate parity. Since all yields data are non stationary, we apply Vector Error Correction Mechanism (VECM) to explore the relationships between the onshore yield rate and offshore yield rate. Specifically, we use co-integration test to explore the long run equilibrium relationship between the onshore yield rate and offshore yield rate. Based on VECM model, we use Granger Causality test to explore the short run dynamics between the onshore yield rate and offshore yield rate. We summarize our main results in the following chart (Huang and Wang 2010a):

Table 2. Estimation Results From Covered Interest Parity

	Offshore	Onshore	Frequency	Long run	Short Run
1	Libor	Chibor	daily	Yes	No
2	Libor	Shibor	daily	Yes	Yes
3	Libor	Chibor	monthly	Yes	No
4	US Treasury	PBC Bill rate	monthly	Yes	Yes

Note: the offshore yield rates have been adjusted by exchange risk.
Source: Huang and Wang (2010).

We found that there exists co-integration relationship between onshore yield and offshore yield. This implies that arbitrage mechanism works in the long run, and the speculative capital movement makes capital controls at least partially ineffective. In the short run, we found that Shibor as the proxy of domestic onshore yield Grangerly causes the offshore yield.

Losing of capital account control effectiveness makes it difficult for China to continue its fixed exchange rate regime. Otherwise, it would be impossible for PBOC to independently manage its monetary policy.

Impact on economic growth

To examine the impact of capital control on economic growth, we employ the standard growth model using a panel data set of 25 provinces covering the reform period. Economic Literature has shown that capital accumulation, trade education, and government consumption are main determinants of per capita GDP growth (Dowrick and Nguyen 1989; Barro 1991; Roubini and Sala-i-Martin 1992).

Following Dowrick and Nguyen (1989) and Drysdale and Huang (1997), we apply the following regression model:

$$RGDPit=\beta 0+\beta 1CACIt+\beta 2Xit+\xi it \quad (1)$$

Where, RGDP is the growth of real GDP per capita, CACI is the capital account control index, Xit are other control variables that cause the growth of per capita GDP.[6] ξitis the error term. The Data Appendix at the end of the paper offers some descriptions of variable definitions and data sources.

Huang and Wang (2010b) applied a similar framework analyzing the impacts of financial repression on income growth in China using provincial panel data. We will use the same data set in this study, adding the CACI constructed here.

We conducted a number of regressions using different sets of explanatory variables and applying different estimation approach (see Table in the Appendix). In all these regressions, the coefficient estimates for capital accumulation, ownership structure, human capital and government spending are all significant and consistent with theoretical predictions. The coefficients for TRADE, however, are mostly insignificant. Most importantly, the negative sign of the coefficient for CACI clearly suggests that capital account control measures inhibit income growth. Even after controlling for time trend, the effect of capital account control is still significant and negative.

These empirical exercises reveal several important findings. First, the rapid increases in volume and volatility of short-term capital flows across border during the past decade were probably evidences of either loosening controls or weakening of those controls' effectiveness. Second, while in the short run, the controls still have some impacts, in the long run these restrictions have become largely ineffective. And, finally, the capital account controls do have negative effects on income growth, despite China's extraordinary growth performance.

Liberalizing the Capital Account

In retrospect, restrictions on cross-border capital flows probably helped China maintain macroeconomic and financial stability in the past (Stiglitz 2001; Li Daokui 2000). For instance, the average non-performing loan ratio of the commercial banks reached 44 percent in 1999 (Zeng 2011). Opening of the capital account at that time would clearly lead to massive capital flows and result in banking and balance of payment crises. More importantly, however, as we have discovered that China has been steadily liberalizing the capital account, focusing on long-term investment and capital inflows. Such measures enabled China to benefit from limited capital flows but at the same time ensured economic and financial stability, which was an important factor contributing to rapid growth of the Chinese economy during its reform period.

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[6] We use investment ratio (INV) to be a proxy of capital input. Other determinants are specified as: trade openness as proxied by the amount of import and export over GDP (TRADE); human capital as proxied by the share of university students in province's total population (EDU); the amount of "non-productive" government spending as proxied by the ratio of government consumption to GDP (GOV). Since distorted industrial policy in China leads to imbalanced economic structure, which is increasingly growing as a threat to sustainable growth. Like Lu and Yao (2004) and Lin (2008), we use the ratio of SOE's total industrial output to the total industrial output (SOE) reflecting the distorted economic structure.

However, potential costs of controls have been growing significantly. One important problem is that it is increasingly difficult to effectively enforce the controlling measures. Our empirical test in this study only confirms that the controlling measures are at least partially effective in restricting short-term capital flows. It is not an evidence of complete effectiveness. In an earlier study, we discovered cointegration relations between onshore and offshore interest rates. This implied that in the long run the capital account controls were ineffective. The short-term capital flows estimated by this study also point to steady inflows, possibly a result of expectations for currency appreciation.

This is already causing troubles for domestic policymaking. According to the so-called Mundell Trilemma, a country can only achieve two of the following three policy objectives: free flow of capital, stable exchange rate and independent monetary policy. Our current policy regime indicates that we choose the latter two and give up the first. However, since it is increasingly difficult to control capital flows, the central bank is gradually losing monetary policy autonomy. This is evidenced by massive liquidity in the market and growing pressures on inflation. In other words, macroeconomic stability may be at great risk if China does not change its current policy regime. A logical move would be for the Chinese government to make exchange rate flexible, remove restrictions on the capital account and achieve monetary policy independence.

Continuation of capital account controls would also contradict the other policy objectives that the government is trying to achieve, most importantly, internationalization of renminbi, inclusion of renminbi in the IMF's special drawing right (SDR) basket and establishment of Shanghai as the international financial center by 2020. The government has been promoting the use of renminbi in international economic transactions. Currently renminbi is already used for trade settlement with some neighboring countries. China also started to issue renminbi-denominated assets in Hong Kong. Several central banks around the world already hold some renminbi in their foreign exchange reserves. But internationalization of the currency cannot go very far if it is not freely convertible. Importance of free capital flow for an international financial center is even more obvious.

Perhaps there are some other reasons why China should consider capital account liberalization now. The general arguments supporting an open capital account are higher investment returns and diversified financial risks. As our empirical analyses confirm, the remaining capital account controls were a constraining factor lowering China's economic growth. Therefore, opening up the capital account is not only important for China to play a greater role in the international economy. It may also help sustain China's rapid economic growth through further improvement of economic efficiency. It may also provide further trigger for reforms of domestic financial institutions and markets.

For instance, during the first decade of the 21st century, China completed ownership reform of most domestic commercial banks. But operation of some of these banks still show clear features of state-owned banks. During the recent global financial crisis, the commercial banks all accelerated their lending. In 2009 alone, the commercial banks

extended close to 10 trillion yuan new loans, roughly double that of the authorities' original plan. While it was important to support economic growth from the point of the view of the government, it is deeply worrying from investors' perspective because the commercial banks' risk controlling mechanisms were obviously not operating effectively. Liberalization of the capital account would expose these to international capital markets and could accelerate changes in the actual governance structure.

But is China ready? Open capital account promotes efficiency of capital allocation. But it could also bring about volatility. In some developing countries, liberalization was sometimes followed by financial crisis. It is, therefore, important to emphasize on the necessary conditions for liberalizations and the proper orders of reform.

During the past thirty years, China's macroeconomic and financial conditions improved significantly, including unusual macroeconomic stability, healthy fiscal positions, good financial asset quality, large current account surplus and gigantic foreign reserves and improved financial regulations. These conditions are probably much better than those of the other developing countries when they liberalized their capital accounts. More importantly, if the Chinese government does not implement reforms of the capital account quickly, some of the above favorable conditions may deteriorate or even disappear. Therefore, the next three-to-five years will be a golden window period for capital account liberalization.

First, China maintained an average of 10 percent GDP growth during the reform period. In the meantime, inflation rates were kept low, generally around 3 percent, with exceptions of 1988, 1994 and 2004. Strong growth and low inflation provide a favorable environment for capital account liberalization. Unfortunately, however, such environment may not last forever. For instance, strong growth and low inflation during the past decades was at least in part contributed by low factor costs, including labor cost. But these costs are already rising, which is likely to lead to somewhat slower growth but higher inflation pressure in the coming years (Huang and Jiang 2010).

Second, China's fiscal system experienced profound transformation during the reform period. In the late 1970s, fiscal revenues accounted for above 30 percent of GDP. This share dropped to around 11 percent in early the 1990s as a result of market-oriented reform and fiscal decentralization. After that, the government gradually raised the fiscal revenues, through improved tax collection, to 21 percent of GDP currently. Public debt is only about 18 percent of GDP. Even if we include all the contingent liabilities, including nonperforming financial assets, deficits of the pension fund and local government liabilities, total debt burden is still only around 50 percent of GDP. The fiscal condition is very healthy. But this may also evolve over time. For instance, the borrowing by some local financing platforms and aggressive lending by the state-owned commercial banks could add significant amount of potential liabilities, which could weaken the fiscal position.

Third, from the 1990s, the Chinese government began to focus on the banking reforms, including reducing nonperforming loans, adopting modern risk controlling mechanisms, injecting state capital, introducing foreign strategic investors and listing the banks in

domestic and foreign stock markets. Over the years, the banking sector's quality improved significantly. For instance, the average nonperforming loan ratio declined from 44 percent in 1999 to close to 1 percent in 2010. The banks are also adequately capitalized and highly liquid. Some of these features may change in the coming years, although the magnitudes are likely to be limited. For instance, the massive lending during the global financial crisis and possible correction of housing prices might generate some nonperforming loans.

Fourth, a country should only liberalize the capital account if there is pressure for appreciation, not pressure for depreciation. At the moment, China is running large current account surplus. And the market expects renminbi to appreciate significantly in the coming years. Therefore, in the near term, we are not likely to see massive capital outflows even if all restrictions are removed. More importantly, China holds more than US$3 trillion foreign exchange reserves, which are likely sufficient to stabilize the financial markets even if uncertainty arises. Over time, however, current account surplus may narrow as China and the other countries work on global rebalancing. Pressures for currency appreciation may also disappear eventually.

And, finally, China has already established a comprehensive financial regulatory framework, with one central bank and three specialized regulators, China Securities Regulatory Commission (CSRC), China Insurance Regulatory Commission (CIRC) and China Banking Regulatory Commission (CBRC). So far, this system has worked well in ensuring financial stabilities and reducing financial risks, even at times of external crises.

All these factors suggest that China already has the necessary conditions for capital account liberalization. Of course, not all the conditions are perfect. Some of them, such as regulation capability, have to be developed in the process of liberalization. More importantly, an open capital account may also enforce market disciplines on domestic institutions and reduce future risks. In an open capital market, for instance, the commercial banks will probably be more constrained in following the government directives on credit extension. An international market could also help discipline the (local) government's spending behavior.

So what key steps should China take in liberalizing its capital account? McKinnon once proposed the following order of reform for developing countries: (1) fiscal reform; (2) financial and trade liberalization; (3) exchange rate reform; and (4) capital account liberalization. China should probably follow the same order, although some steps could take place simultaneously.

Fiscal reform should be relatively straightforward for China since its fiscal position is reasonably strong. It is critical, however, for the government to enforce disciplines on activities that could generate future liabilities. One area is bank lending. Although the banks are already commercialized, if the state continues to send instructions to the banks, then inevitably it has to absorb the resultant nonperforming loans later. Another area is operation of the state sector. The government still intervenes in prices of key inputs such as energy. Therefore, it has to subsidize these companies for operating

losses. And, finally, it is important to discipline the local governments' spending and limit their deficits.

Financial sector is an area where substantial further reforms are required. These include reduction of state intervention in operation of major financial institutions, including appointment of their top managers, implementation of deposit insurance scheme, entry of more non state-owned institutions into the financial industry, introduction of market-based interest rates and improvement in central bank's monetary policy-making. Market-based interest rates are a critical condition for capita account liberalization and require formation of a full government bond yield, further development of the interbank market and removal of the benchmark interest rates for commercial banks. Whether or not the central bank should become an independent institution could also be explored.

One most important task is to achieve conditional free float of the exchange rate. China adopted the managed float for renminbi exchange rate in early 1994. After disruptions during the East Asian and global financial crises, the government reintroduced the managed float system in June 2010. The exchange rate, however, remains rigid. The strategy of letting the currency to appreciate gradually caused some serious consequences, such as encouraged expectation of further appreciation, hot money inflows, large current account surplus, massive liquidity, high inflation pressures and rapid accumulation of foreign exchange reserves.

It is, therefore, advisable that the authorities achieve free float of the exchange rate by quickly reducing the central bank's intervention in foreign exchange market. Two-way fluctuation of the exchange rate, based on changing demand and supply relations, may be possible after a period of rapid currency appreciation. The government may wish to intervene in the market to avoid excessive volatility, such as through a stabilization fund. But such intervention should be two-directional and different from PBOC's current intervention in order to hold down the value of renminbi.

Capital account liberalization can then take place alongside floating of the exchange rate. Capital account convertibility, however, does not necessarily mean absolutely no restriction on capital flows. Given China's current financial situation and regulatory capability, it is probably better for the country to first aim at basic convertibility. In particular, China should probably retain restrictions on certain types of volatile short-term capital flows, at least initially. This should help avoid excessive shocks to the financial system. It is also consistent with the IMF's recent decision to allow temporary use of restriction measures on cross-border short-term capital flows.

Our capital account control index suggests that China has been liberalizing the capital account, especially since the East Asian financial crisis. The State Administration for Foreign Exchange (SAFE) also estimates that about 75 percent of the 40 items of the control measures monitored by the IMF has been partially, basically or completely liberalized. Current restrictions exist mainly in the following areas: portfolio investment in bond markets, stock markets, derivatives and money markets, mutual fund investment, real estate transactions, debt financing and outward direct investment (ODI).

It should be relative ease to lift restrictions on debt financing and ODI. Cross-border bond issuance can be monitored through debt-equity ratios of individual institutions and short-term debt proportions. Currently ODI projects need to acquire approvals from the SAFE, National Development and Reform Commission and Ministry of Commerce. The approval procedures have become simpler lately as the government encourages capital outflows through direct investment. Therefore, liberalization in these two areas can be implemented quickly.

Should China also remove restrictions on cross-border portfolio investment immediately? Experiences of India, Indonesia and Korea during the global financial crisis suggest that volatile portfolio flows could become an important source of financial market instability. Therefore, it might be useful to retain some restrictions to avoid excessive volatility. Fortunately, China has already introduced the qualified foreign institutional investor (QFII) and qualified domestic institutional investor (QDII) schemes to allow cross-border portfolio flows. One option is to significantly increase the quotas under these two schemes and at the same time substantially weaken the terms, such as number of days required for fund repatriation. This approach opens cross-border investment channels but at the same time minimizes volatility. The government may eventually abandon the QFII and QDII systems when it feels confident about capital flows.

Concluding Remarks

Despite some remaining restrictions on capital flows, China has been liberalizing the capital account since the end of 1996 when it realized current account convertibility. Our index of capital account controls declined from about 0.9 in 1978 to 0.44 in 2010. Liberalization of the capital account followed the following orders: inflows before outflows; long-term before short-term; and direct investment before portfolio investment. Current restrictions remain in three main areas of cross-border capital flows: portfolio investment, debt financing and ODI.

Empirical analyses in this study confirm that capital account controls are at least partially effective in affecting short-term capital flows. The test, however, does not indicate if the controls are completely effective. Our earlier empirical tests discover cointegration relations between domestic and external interest rates, suggesting ineffectiveness of capital controls in the long run. Recent discussions of short-term capital flows, especially the hot money flows, also point to increasingly open capital account. This itself is consistent with the government's steady liberalization of the controls.

The relatively closed capital account in the past probably helped China withstand the shocks of the Asian and global financial crises and maintain domestic economic and financial stability. It, therefore, should be useful for China to achieve relatively rapid economic growth. But the restrictions are probably also costly as they reduce efficiency of capital allocation. This is again confirmed by our empirical analyses in this study, which reveal that, currently, the capital account controls do lower GDP growth in China.

Weakening effectiveness of capital account controls is already affecting monetary policy

independence, highlighted by massive liquidities and high inflation pressure. In the meantime, restrictions on the capital account have also become obstacles of other policy objectives, such as internationalization of renminbi and developing Shanghai into an international financial center by 2020. For all these reasons, it is important now for China to move forward in liberalizing the capital account.

Sound macroeconomic conditions, healthy quality of financial assets, strong fiscal positions, well-developed financial regulatory system, large current account surplus and gigantic foreign reserves all suggest that China already has the necessary conditions for capital account liberalization. Several factors, such as financial regulation and macroeconomic policymaking, may be further strengthened in the process of liberalization. More importantly, some of the conditions may change over time, including possibly rise of contingent liabilities of the government and reduction of current account surplus. It is, therefore, critical for China to grasp the golden window period during the 12th Five-Year Program period to liberalize the capital account.

Reform of the capital account should follow the following order: fiscal reform, financial and trade liberalization, exchange rate reform and capital account liberalization. The rigid exchange rate regime has become a source of many macroeconomic problems in China, including large current account surplus, abundant liquidity, high inflation and large foreign reserves. As an important step, China should realize free float of the exchange rate as quickly as possible by reducing interventions in the foreign exchange market. Interventions should occur only for the purpose of stabilization, not for holding the currency value away from the equilibrium.

At the same time, the government can quickly lift restrictions on cross-border debt financing and ODI. It is probably sensible to retain the QFII and QDII schemes for cross-border portfolio flows, investment in bond, stock, derivatives and money markets. The purpose, however, should be to avoid frequent reversal of investment and excessive volatility, not to limit investment. Therefore, the quotas should be increased significantly and the restriction terms, such as number of days required for repatriating funds, should be reduced substantially. Following this approach, China should be able to realize basic convertibility of the capital account within a brief period 3-5 years.

Appendix Table. Growth Equation: The impact of CACI

Dependent Variable	OLS		FE		RE	
LnRGDP	1	2	3	4	5	6
CACI	-0.056**	-0.218***	-0.015	-0.135***	-0.055**	-0.217***
	(0.027)	(0.060)	(0.037)	(0.063)	(0.027)	(0.059)
INV	0.064***	0.091***	0.109***	0.137***	0.065***	0.091***
	(0.017)	(0.019)	(0.094)	(0.025)	(0.017)	(0.019)
TRADE	0.007	0.010*	0.004	0.009	0.006	0.009*
	(0.006)	(0.006)	(0.008)	(0.008)	(0.006)	(0.005)
EDU	0.385***	0.756*	2.059***	1.802**	0.345	0.710*
	(0.405)	(0.421)	(0.024)	(0.652)	(0.401)	(0.427)
GOV	-0.070**	-0.109***	-0.158***	-0.226***	-0.072**	-0.112***
	(0.033)	(0.035)	(0.048)	(0.053)	(0.033)	(0.036)
SOE	-0.047***	-0.042***	-0.022	-0.015	-0.047***	-0.041***
	(0.012)	(0.012)	(0.021)	(0.021)	(0.012)	(0.012)
Time Trend		-0.002***		-0.002***		-0.002***
		(0.0005)		(0.0006)		(0.0005)
Year-Specific Effect	NO	NO	YES	YES	YES	YES
Province-specific effect	No	NO	YES	YES	YES	YES
Hausman Statistic					31.02***	30.11***
Observations	750	750	750	750	750	750
R^2	0.164	0.166	0.129	0.139	0.174	0.164

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