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Introduction to the International Monetary Institute (IMI)

Established on December 20, 2009, IMI is a non-profit academic institution affiliated to China Financial Policy Research Center and the School of Finance of Renmin University.

Following the "general theory of macro-finance", IMI aims to become a world-class think tank, focusing on the studies of international finance, in particular the international monetary system and RMB internationalization. Despite its relatively short history so far, IMI has established itself as a leading research institution and important forum, where industry leaders, policy makers and academic experts from home and abroad share their insights and expertise.

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Herbert Poenisch

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Mr. Herbert Poenisch's international banking and regulatory experience spans 40 years. In early 2010, he retired as the Senior Economist of the Bank for International Settlements (BIS) where he spent over 10 years. He became permanent staff member of the Bank for International Settlements in 1992 in a special unit for transition economies. His main responsibility in the early 1990s was to assist the integration of the transition economies into the international financial system together with corresponding EU and UN organisations. He organised workshops and seminars for officials from these countries to learn about the functioning of market economies, mainly at the Joint Vienna Institute. He also contributed to (unpublished) background notes for BIS meetings of Governors and senior officials from central banks. The contents of these notes focused on current monetary and financial developments as well as special regional features (such as central and eastern Europe, Asia, Africa and Latin America). He edited BIS publications such as chapters of the BIS Annual Report and Conference Proceedings.

In the course of the outreach of the BIS which started in the mid-1990s, Mr Poenisch disseminated the research and discussions, which took place at the Bank, to non-member central banks with the help of regional central bank organisations such as South-East Asian Central Banks (SEACEN) in Asia, Centre for Latin American Monetary Studies (CEMLA) in the Caribbean and Latin America, Gulf Cooperation Council (GCC) in the Gulf Region and various organisations in Africa such as the Southern African Development Community (SADC). He was in charge of organising and delivering such workshops and seminars.

Prior to the Bank for International Settlements, he worked in various capacities at the Austrian National Bank, including the analysis of commercial banks, research of global economic developments as well as foreign exchange control. He presented the Austrian National Bank in various international meetings at the IMF, the OECD and the BIS. He also became the special adviser to the People's Bank of China on financial reforms for the Asian Development Bank. Afterwards, he accompanied the IMF on first missions to the Soviet Union and worked as special adviser to the National Bank of Kazakhstan. Besides, he was once seconded to international organisations, notably the IMF, the OECD, the ADB (Asian Development Bank) and the BIS.

Mr Poenisch completed his undergraduate studies in Economics at Linz University, Austria where he also obtained a Doctorate in Economics in 1977. In 1989 he obtained a Master's degree in International Relations from Oxford University, UK. Since his retirement in 2010 he has worked as consultant for SEACEN. He is fluent not only in the four working languages of the BIS, such as German, English, French, Italian but also in Russian and Chinese.

This issue is proud to present

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INTERNATIONAL MONETARY INSTITUTE OF RUC
中国人民大学国际货币研究所

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In Brief

Editor's Note:

Up to October 2016, members of IMI advisory board and academic committee have been expressing their research opinions on finance and economics through published articles and public speeches. This column reviews their opinions.

Research Review by IMI Advisory Board

According to **STEVE H. HANKE** in the article of "***On the Oil-Gold Ratio Why Oil's Going Higher***", the future of the oil price is discussed by using the price of gold as a long-term benchmark for it. If the price of oil changes dramatically, the oil-gold price ratio will change and move away from its long-term value. Forces will then be set in motion to shift supply of and demand for oil. In consequence, the price of oil will change and the long-term oil-gold price ratio will be re-established. Via this process, the oil-gold ratio will revert, with changes in the price of oil doing most of the work.

By calculating the oil-gold price ratios for each month from 1973 to 2016, it is discovered that the recent oil price collapse was once extreme - the February 2016 oil-gold price ratio is way to the left of the distribution, with less than one percent of the distribution to its left. The second observation is that the ratio is slowly reverting to the mean, with a September 2016 ratio approaching 0.04.

Hanke indicates that a 50 percent reversion of the ratio will occur in 13.7 months via calculations. Oil prices have reverted to the long-run price of gold, rather than the price of gold reverting to that of oil. So, the oil-gold price ratio reverts to its mean via changes in the price of oil.A final projection of oil price is made based on the oil-gold price ratio model: oil prices are moving up.

As **LI YANG** pointed out onthe***"2016 International Monetary Forum and Press Conference of RMB Internationalization Report"*** that RMB played the role as a Safe Haven Currency last year. He emphasized on two major issues in RMB internationalization. Firstly, we should keep the currency value stable. After RMB being included in SDR, we should redefine the value basis for RMB floating. Secondly, interest rate deregulation is also an important aspect. The current exchange rate depends mostly on the interest rate. We should accelerate in interest

rate deregulation, establish an interest rate system that fully depends on the market, build up efficient interest rate structure and a fully market-regulated interest rate system. He believed that RMB would play a more important role in the international market only if domestic challenges were solved.

CHEN YUNXIAN suggested in the ***"2016 International Monetary Forum and Press Conference of RMB Internationalization Report"*** that onshore trade and settlement centers for RMB offshore business should be established in Guangdong and Shanghai Free Trade Zones. Regarding the framework of these centers, Chen believed that we should serve the real economy with financing, focus on reform, innovation and risk control, and separate the settlement of domestic and international currency trade. From the regional perspective, we should first begin with Guangdong and Shanghai Free Trade Zones and borrow experiences from the US and Japan in currency internationalization. He suggested that Bank of China should authorize these onshore trade and settlement centers to establish special accounts to facilitate the offshore RMB financing.

YASEEN ANWAR discussed financing challenges in Asian infrastructure development in ***"Regional Infrastructure Development and RMB Internationalization"***. He believed that RMB, as the IMF reserve currency, had a huge potential. Since the current currency policy around the world was unstable, the development of a better and more stable currency system had become an important topic. He pointed out that the Belt and Road Initiative played an important role in rebalancing the world economic structure. Infrastructure developing projects financed by RMB had create a lot of job opportunities in Pakistan, Lao, and Brazil, which helped the local economic growth.

Research Review by IMI Academic Committee

JUAN CARLOS MARTINEZ OLIVA introduced a new and original approach to the determination of equilibrium real exchange rates (ERER) across ASEAN+3. Existing literature usually computes a country's ERER as the real exchange rate that brings the balance of payments of that country in to equilibrium with respect to the rest of the world, following a partial equilibrium approach, which may lead to mutual inconsistencies for a set of countries belonging to a highly integrated area. Instead, Oliva's methodology in his paper achieves a simultaneous determination of the ERERs of all countries in the region, so that the trade balance of each of them is consistently in equilibrium with respect to the rest of the region.

Numerical simulations conducted for ASEAN+3 show that such a methodology produces consistent results and may therefore be a useful way of evaluating exchange rate deviations from equilibrium within the area. The method is applied to assess ERER deviations of single currencies of ASEAN+3 vis-à-vis the Chinese

yuan and the Japanese yen. The results provide a helpful insight into the relative suitability of these two currencies to play a benchmark role in an exchange rate system for the whole region. Model simulations provide useful hints on the relative position of the ASEAN+3 currencies and on the size and sign of their deviation from their ERERs. Sensitivity analysis shows that when the bilateral trade elasticities are set within reasonable limits the results are robust and stable. Using this method in assessing the relative suitability of the Chinese yuan or Japanese yen as a benchmark currency in the ASEAN+3 can provide helpful insights which may justify further research effort in this area. Our tentative and preliminary results suggest that the Chinese yuan may be a better candidate than the Japanese yen as a benchmark currency for the ASEAN+3.

Since income and trade elasticities play a central role in the implementation of this method for policy purposes, estimating the actual bilateral elasticities across ASEAN+3 could be helpful. Literature on the impact of the weaker yen on Asian economies lends support to the idea that yen depreciation in the period between 2012 and 2013 had an asymmetric effect on China and South Korea, which was influenced by the degree of complementarity among Japanese traded goods and those produced by trading partners. This empirical finding, and its implications for the bilateral elasticities between Japan, China, and South Korea, is relevant to the determination of ERERs among the three countries. Lastly, it is worth recalling the policy relevance of early detection of countries that have real exchange rates that are systematically misaligned, and the associated risks of persistent trade imbalances within a highly integrated area such as ASEAN+3. The case of the European Union may be telling in this respect.

CHEN YULU concluded four major achievements of the RMB internationalization in recent years onthe ***"2016 International Monetary Forum and Press Conference of RMB Internationalization Report".*** He mentioned that RMB internationalization is the result of the increasing overall national strength, fast development of financial market and market-based policies. In long term, the RMB market demand will continue to increase. We will keep the RMB exchange rate stable with other SDR currencies, and further optimize the existing policy structure for cross border payment. We will promote the opening of the capital market in both directions, and improve the infrastructure for RMB internationalization. We will use bilateral or multilateral mechanism to establish a beneficial international environment for RMB internationalization in long term.

ANOOP SINGH mainly discussed China capital account liberalization and its challenges on the ***"2016 International Monetary Forum and Press Conference of RMB Internationalization Report".*** He mentioned that RMB internationalization would influence the RMB exchange rate in the onshore and offshore market. Thus,

China should watch out for macro-financial risks. The capital account liberalization in China requires a stable capital market and healthy financial institutions to facilitate a stable macro economy. After RMB entering the SDR, the central bank in China should communicate with IMF members and widely take part in international affairs to enhance RMB's importance in SDR. In the end, he emphasized that RMB liberalization will stabilize the capital account, and build a better capital market.

CHOU A-DING delivered a speech on the topic of ***"Taiwan's Experience of Exchange Rate Reform and Risk Prevention"*** on the 2016 International Monetary Forum. He introduced the three stages of the TWD's exchange rate liberalization and how CBC (Taiwan) had regulated the foreign exchange market. He also gave a profound analysis on the potential risks of RMB's inclusion in the SDR. He believed that after the capital account was opened, massive short-term capital flows would have the biggest influence on the exchange rate's stability; the central parity of RMB against the U.S. dollar was not in line with the market situation and had caused anticipation; divergence in major countries' monetary policies had led to an unstable foreign exchange market. He reinforced that to reform RMB exchange rate and open the capital account required gradual and progressive approaches to reduce potential risks. He pointed out that the transactional function of SDR needed to be strengthened to advance its status as an international reserve asset and to deepen international monetary system reform.

DING ZHIJIE talked about ***"An Investigation into China's Practice of Cross-border Capital Flow Management with the Perspective of the Impossible Trinity"***. He held that RMB internationalization could help China's capital become more acceptable in international societies, and that was why we promoted it with great effort. He stressed that for more stability of the global financial market, future international capital flows should be adjusted to meet the need of capital exporting countries, which the need of the importing countries should be subordinate to. Meanwhile, SDR's role in the international monetary system should be enhanced so that it would become a real pricing currency.

HERBERT POENISCH lectured on the factors that had caused exchange rate fluctuations. He analyzed the status quo of the world's foreign exchange markets in respects of market scale, participants, tools, maturity and geographical distribution of foreign exchange market centers. He also envisioned the 2016 international foreign exchange market.

DING JIANPING delivered a speech on ***"Future Exchange Rate Formation Mechanism after RMB's Inclusion in the SDR"***. He pointed out that after the inclusion, the relations between RMB and the other four currencies were important, and fluctuations in exchange rates should require references of the SDR basket and reflect China's key economic indicators. He considered that China was in a

transitional period where the old regime still existed and the new regime was not mature; fluctuations in exchange rates, the monetary policies, and the exchange rate system are current issues waiting to be resolved. After the inclusion, we should take initiative in controlling the exchange rate and choose a proper reference frame to avoid problems caused by merely referring to the basket.

JAYA JOSIE mentioned in ***"The Influence of RMB Internationalization on South Africa"*** that South Africa had heavy reliance on trade with China. Moreover, South Africa had a large trade deficit with China. So RMB internationalization would have great influence on South Africa's current account. He thought that the international monetary order dominated by the U.S. dollar was changing, and RMB would play a more and more important role in international trade.

E ZHIHUAN indicated in ***"An Outlook on RMB Exchange Rate Reform after its Inclusion in the SDR"*** that RMB exchange rate had always been in the process of reform with progressive adjustments, and every reform was a step closer to a market-based exchange rate. Unlike the 2015 reform, this reform was aimed for RMB internationalization, which would be more coordinated with the choose of monetary policies; to choose an exchange rate formation mechanism and set an exchange rate would have profound influence on monetary policy space and RMB internationalization. So, this reform had more meaning and comprehensive impacts. She reinforced that the RMB exchange rate should be guided with references to both U.S. dollar and the basket. However, under particular circumstances, there should be preferences.

DAVID MARSH pointed out in.***"The Development of RMB as an International Reserve Currency and Transaction Currency"*** that RMB internationalization was different from the internationalization of the U.S. dollar and British pound in that it was mostly a government decision rather than a result of the market; RMB's inclusion in the SDR had both positive and negative influence, which meant that when designing future monetary policies, the Chinese government should also consider a policy's spillover effect on a global scale. He proposed that to ensure the stability of RMB internationalization, China needed to increase the transparency and credibility of its financial market, expand the scope, and improve relevant laws and regulations. He believed that on the positive side RMB becoming an international reserve currency would bring China more convenience in international financing and advantages in geopolitics. He agreed with China on some necessary controls over its capital account to ensure financial stability.

BEN SHENGLIN mentioned in ***"The World Need a New Approach to Infrastructure Financing"*** that digital technology can help establish or enhance connectivity between nations and regions; between public and private sectors;

between savers and investors/borrowers; and over the spans of time. The digitization of finance also provides the much needed efficiency, near-zero cost, lower barrier for investment, and broader participation of the general public, all of which are hallmarks of "inclusive finance" that we are aiming to achieve in today's "sharing economy".

These are not just imaginative technologies. The application of digital finance has already been widely seen in the name of FinTech, particularly in some emerging markets like China and India. FinTech will not only compete but also complement existent solutions including multilateral institutions, private sector banks and bond markets to plug the gap of infrastructure financing. More importantly the competitive pressure that FinTech has been unleashing will also help the existent system become more inclusive, participative, efficient and effective. This will help guide the financial sector to focus back on its roots and original purposes: serving real needs of the economy, infrastructure financing included.

DAVID MARSH stated in ***"How New Reserve Currency System Could Resemble a 'Cold War'"***that the world's multicurrency reserve system now shaping up is likely to be significantly more volatile than the de facto arrangement linking the dollar and Deutsche mark that existed until 1999, and the dollar-euro system that has existed since then.

It will be seen that radical multiple uncertainty caused by the oscillations of five major reserve currencies - the dollar, euro, yen, sterling and renminbi - each subject to the vagaries of their independent and uncoordinated financial and economic systems.

Some fundamental fears about the safety of the monetary system focus on China. Beijing has won a battle to bring the yuan into the International Monetary Fund's special drawing right from Oct. 1. But it presupposes that the Chinese government can continue liberalization, both internally and in external interactions, without unduly disrupting Communist Party control.

Chinese leaders have pressed ahead with technocratic reforms in areas like foreign-exchange trading and interest rates but have hesitated to interfere with more overtly politicized parts of the economy, such as state-owned enterprises, the disorderly unwinding of which could have currency repercussions.

The other big imponderable is the euro. Europe is home to some of the world's largest current-account surpluses. The euro is too weak for the German, Dutch and Swiss economies, but too strong for the southern members trying to recover from debts and unemployment-not a good signal for euro stability in coming years.

Research Report

RMB Internationalization Report 2016

(Press Release)

By International Monetary Institute

1. Introduction

2015 was an eventful year. After the Federal Reserve decided to raise interest rates, the US Dollar Index continuously rose, US dollar-denominated assets were chased after and international capital flow experienced profound adjustments. All these have exacerbated gravely the pressure of capital outflow in China. Recovery in Europe were hindered by the refugee crisis and faced further uncertainties with the possibility of Brexit. The ECB has adopted negative interest rates. As the EU is China's largest trading partner, the substantial depreciation of the euro hit China's export greatly. The sluggish international economy further burdens China's economy in its difficult transition. Onone hand, problems like overcapacity decreased private investment and increased banks' non-performing assets became more prominent; on the other hand, the domestic financial market suffered turbulence. In the first half of 2015, high leverage and margin trading led to the stock market crash where more than 20 trillion RMB in share value evaporated; in the second half, exchange rate overshooting erupted because of market panic and offshore RBM liquidity contracted acutely. Confidence from home and abroad for China's growth and financial stability was undermined.

RMB internationalization has still maintained its momentum. By the end of 2015, RII, a comprehensive quantitative indicator of RMB international acceptability, reached 3.6, an increase of more than ten times during only five years. The proportion of RMB settlement in China's foreign trade approached 30%, driving the proportion of RMB settlement in global trade to nearly 3.38%. RMB outward direct investment (ODI) reached 736.2 billion yuan, an increase of 294.53% over the previous year. Meanwhile, the share of RMB in global credit, bond and note transactions increased rapidly, driving the share of RMB in international financial transactions to 5.9%. The balance of currency swap agreements signed by the PBOC has reached 3.31 trillion yuan.

On 30th, November, 2015, the IMF announced to include RMB into the SDR basket (RMB's share being set at 10.92%) and the decision will come into force on 1st, October, 2016. The inclusion is a milestone in integrating China's economy into the global financial system and a win-win result for both China and the world. Although RMB is officially recognized as a "freely usable currency", the

recognition may not inevitably lead to the "market status" of RMB as an international currency. The inclusion of RMB in the SDR basket does not mean the completion of RMBinternationalization. To realize the ultimate goal of matching the status of RMB with China's economic and trade power, there's still a long way to go. Whether RMB canbecome a major international currency still depends on RMB usage and RMB reserve in the international market.

Generally speaking, issuing countries for major international currencies should meet the following conditions: strong economic power, prominent trading status, currency stability, free capital flow and competence in macro management. Seeing from the experiences of the past few years, China has achieved a lot concerning the five aspects but in the long run, macro management may become a deficiency. As macro management will influence other aspects including currency stability and capital flow, we should prioritize enhancing macro-management so as to win the confidence of the international community for RMB's long termprospect.

The RMB InternationalizationReport 2016 themes on "currency internationalization and macro risk management", focusing on macro management and discussing adjustments of macro financial policies at the new stage of RMB internationalization and possible macro financial risks in the internationalization process. The report points out that we should establish a macro-prudential policy framework based on China's national strategies and guard against systemic financial crises so as to lay a solid foundation for the steady growth of the real economy and the ultimate completion of RMB internationalization.

According to classical theories of international finance, monetary authorities of an open economy can only achieve two of the following three policy objectives: monetary policy independence, fixed exchange rate and free capital movement. As shown in the experiences of German and Japan, during currency internationalization, monetary authorities inevitably face profound changes in the cross-border capital flow and exchange rate regime and have to adjust their policy objectives accordingly. Germany and Japan were at similar starting points but chose different paths of policy adjustment, which exerted different influence on the domestic economy and finance of the two countries. Therefore, the result of currency internationalization in Germany and Japan differdramatically.

At the initial stage, Germany regarded exchange rate stability as its top priority. To maintain this stability, Germany even reintroduced capital control, suspended the expansion of the financial market and used its foreign reserves to intervene in the market. These measures have created favorable conditions for Germany to maintain foreign trade advantages, improve the competitiveness of

industrial production and boost real economy growth. Such measures have also offered staunch support for a stable Deutsche Mark over the long term. However, Japan took a radical approach and over-estimated its real economy's resistance to yen's appreciation. Therefore, Japan failed to maintain exchange rate stability. In addition, misguided macro-economic policies greatly damaged Japan's real economy. As a result, Japanese yen internationalization was only in blossom for a while but soon withered.

In recent years, RMB internationalization has progressed steadily and may enter a new stage after RMB's inclusion into the SDR currency basket. Against this backdrop, we are now at a critical period for policy adjustment. Germany and Japan have adopted different measures in policy adjustment and achieved different results: this offers us invaluable experience to draw upon. We must be patient in policy adjustment and can only liberalize the exchange rate and capital account when the real economy, the financial market and relevant authorities are fully prepared. Therefore, as we are changing the current macro policy mix of "independent monetary policy, managed floating exchange rate and limited capital flow" into one of "independent monetary policy, floating exchange rate and free capital flow", we have to tackle exchange rate fluctuations' impact on domestic economy and finance. We also need to adapt as soon as possible to the new mechanism where cross-border capital flow influences domestic financial markets, financial institutions and the real economy. In particular, we need to prioritize preventing and managing systemic financialrisks.

This report has discussed the above mentioned issues which have drawn close attention from the market and exerted substantial influence on RMB internationalization. Based on studies of historical facts, literatures, theories, empirical evidences and policies, the report maintains that to secure the ultimate completion of RMB internationalization, we should establish a macro-prudential policy framework to offer institutional support, step up our effort to manage macro financial risks with exchange rate management as the focus and capital flow management as the key entry point and vigorously prevent and resolve systemic financial risks.

Specifically, we conclude and suggest the following:

First, on RMB exchange rate and its management. The determinants of RMB exchange rate have changed a lot. The fundamentals determine long term rate while cross border capital flow and spill-over of other nations' policies cause short term fluctuations. However, arbitrages bring the rate back to the long term equilibrium. With more flexibility, exchange rate volatilities now exert a substantially increased influence on economic stability.

We should further liberalize the exchange rate and improve the RMB exchange rate system, transforming from a managed float regime to a floating

regime. We should mainly adopt indirect intervention instead of direct intervention in realizing the objectives of exchange rate policies. We should step up expectation management to maintain long term stability at the equilibrium rate. We also need to heed policy spill-over and strengthen policy communication and coordination between nations so as to pursue the objectives of exchange rate policies that are in keeping with the optimal monetary policies.

Second, on the relationship between cross border capital flow and the robustness of domestic financial markets and institutions and the real economy. We should liberalize the capital account in coordination with the reform of the exchange rate regime and take a "gradual, controllable and balanced approach". In this process, we should heed the needs for domestic economic and financial development and adapt to the changes in the global economy.

According to relevant studies, previously China enjoy continuous net capital inflow, driving the price and leverage ratio in the capital market; after the RMB depreciation on 11th August, 2015, the price, leverage ratio and cross border capital flow exert circular influence on each other and short term capital flow (both inward and outward) can impact the price and leverage ratio of the domestic capital market. The price co-movement among domestic financial markets and between the domestic and foreign market becomes more evident; so does the transmission of financial risks. Therefore, the market is even more sensitive to the impact of cross boarder capital flow. We should not be so anxious in opening up the capital account. Instead, we should better monitor cross border capital flow and obtain comprehensive information.

In capital account liberalization, Chinese banks can gain more space for development on the international arena; however, they also have to face domestic and international risks. It is more difficult to find the balance between market expansion and risk control. Systemically important banks should seize the opportunity to expand their international business; meanwhile, they should also improve risk management mechanisms to avoid becoming the magnifier of external shocks or the trigger of systemic risks.

The more complicated and frequent capital flow has exacerbated the volatility of the real economy. We should clarify the focus of the supply side reform and utilize both domestic and international resources to promote technological development. We should insist that the financial sector should support the real economy and should avoid economic bubbles and excessive reliance on the financial sector. Currently, the development model needs adjustment; the ability of innovation is weak; international trade boasts volume but not quality; private investment is shrinking. All these problems should be properly solved so as to reduce the risks for the real economy. In terms of direct

investment, technological advancement and international trade, RMB internationalization and the supply side reform can form a synergy which turns the risks into opportunities; they can jointly promote the structural adjustment and transition of China's economy.

Third, on the management of macro financial risks during RMB internationalization. Financial stability is the prerequisite for the completion of RMB internationalization. Therefore, in macro financial management, the core task of monetary authorities is to establish a macro-prudential policy framework that is more comprehensive and targeted.

External risks like cross border capital flow and internal risks of domestic financial markets, financial institutions and the real economy are intertwined and closely linked. As a result, the possibility is ever increasing that risks in a single market or sector can cause chain reactions and lead to systemic risks. We need to draw up China's index for systemic risks to better evaluate and monitor systemic risks. We should establish a macro-prudential policy framework that is in keeping with China's actual conditions, thus offering institutional arrangements to prevent and manage systemicrisks.

Currently, multiple authorities are bearing regulatory responsibilities; such responsibilities are not clear-cut and can be overlapping; rules and regulations issued by different authorities are inconsistent. To tackle these problems, we should draw upon international practices and clarify the principles of the current reform of financial regulation. We should establish a macro-prudential policy framework that is in keeping with China's actual conditions. By so doing, we offer institutional arrangements for stepping up the management of systemic risks. Specifically, we should incorporate "macro-prudential regulation" into the current financial regulation framework and determine the competent department to adopt macro-prudential policies. Apart from maintaining currency stability, the central bank should bear more responsibilities including securing financial stability and enhancing financial supervision. We should discern monetary policy, macro-prudential policy, micro-prudential policy and behavior regulation as they have different functions and implementing mechanisms; we should also enhance the coordination between the four aspects. We should improve the accessibility and accuracy of financial data so as to offer timely and comprehensive information for monitoring, analyzing and evaluating systemic risks. Meanwhile, we should establish an effective mechanism of crisis intervention and step up the protection of financialconsumers.

RMB internationalization bears the responsibility of both realizing China's interests and reforming the international monetary system; it is an important plan put forward by China as an emerging major country of the 21th century. To support RMB internationalization, we should bear in mind our national strategy,

better manage macro financial risks and improve the competence of monetary authorities in macro management.

It is a dynamic process for the international currency system to feature multiple major international currencies; changes in international trade pattern and turbulences in the global financial market may both contribute to adjustments in the international currency system. The more complicated the international finance becomes, the more we need to be calm and resolute in adjusting our policies and managing macro risks. We must keep the bottom line that no systemic financial crisis happens. Steady progress in RMB internationalization is the best response to any doubts.

2. RMB Internationalization Index

2.1 RMB Internationalization Index and Comparison of Major Currencies

When compiling the RMB Internationalization Index (RII), we base our calculationon the theoretical analysis of currency's functions as a measure of value, a medium of exchange and a store of value and take into account the share of RMB in the denomination of international trade and international finance and in the official foreign reserves. RII ranges from 0 to 100. If RMB were to be the world's only international currency, all RII indicators would be at 100% and the index would be at 100; if RMB is not at all internationalized, the index would be at 0. The rise of the index means that RMB is increasingly internationalized and takes more of an international currency's functions. By end 2015, RII has reached 3.60, a year-on-year increase of 42.9% and an increase of more than 10 times over the past five years (Figure1).

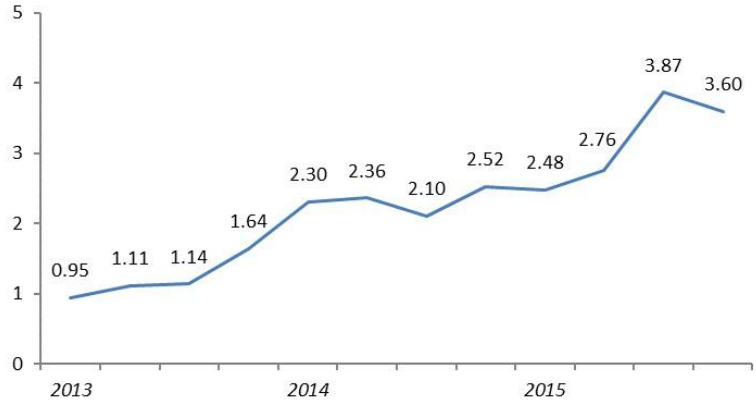

Figure 1 RMB Internationalization Index (RII)

Note: RII has made the following adjustments: (1) Due to the rapid development of offshore markets in recent years, statistics concerning RMB assets becomes more complete. The RII indicator of international credit incorporates not only previous statistics from the mainland and Hong Kong but also information of relevant markets such as Macau (China), Taiwan (China), Singapore and London (Britain). (2) In 2015, China started to adopt BPM6 in calculating its international balance of payments. Therefore, RII indicator of direct investment now refer to BPM6 instead of BPM5. (3) RII is adjusted due to raw data adjustments.

Seen from the description above, changes in global trade and financial denomination and in the share of RMB in official foreign exchange reserves will all influence RIIresults. At the initial stage of RMB internationalization, the increased use of RMB in international trade denomination drove the RII up. As the internationalization progresses, the increased use of RMB denomination in both international trade and international finance jointly drive up the index. In 2015, the use of RMB in direct investment and overseas loans increased substantially, becoming the most important factor in keeping the rapid rise of RII. Meanwhile, the proportion of RMB assets in other countries' official reserves continuously increase. According to the IMF, RMB now takes up 1.1% of official foreign exchange reserves. On 30th, November 2015, the IMF announced to include RMB into the SDR currency basket (RMB's share being set at 10.92%) and the decision will come into force on 1st, October 2016. This is an important milestone in integrating China's economy into the world financialsystem and a

win-win result for both China and the world. RII has kept a rising trend despite occasional fluctuations. Globally, although the overall internationalization index of major international currencies (US dollar, euro, British pound Japanese yen) registered a year-on-year growth of 5%, the performance for respective international currencies remained divergent (Table1). In the US, the recovery remained strong and the Federal Reserve started to raise the interest rate. The ensuing strong performance of US dollar drove the dollar internationalization index up from 54.17 of the previous year to 54.97 of 2015. The status of US dollar as an international currency experienced a rebound. In the euro zone, the recovery was mild while the performance of member states remained divergent. Difficulties in Greece and the refugee crisis posed daunting challenges for the prospect of the Europe. The euro continued to depreciate, harming the world's confidence in the currency. The euro index dropped from 24.69 of the previous year to 23.71 of 2015. Euro was less used in the world. In Japan, weak global economy and insufficient demand led to weak economic performance. However, Japanese yen were increasingly regarded as a safe haven currency. The yen index stabilized at 4.29. In Britain, the economic performance surpassed expectations and trade and investment increased rapidly. However, as the Brexit referendum approached, the political and economic prospect became increasingly unclear, driving the pound low. The pound index dropped from4.79 at the beginning of 2015 to 4.53.

Table 1 Internationalization Index of Major International Currencies

	201	201	201	201	201	201	201	201
D	53	53.	54.	54.	55.	55.	54.	54.
E	26	25.	24.	24.	24.	22.	24.	23.
Y	4.	4.4	4.1	4.3	4.1	4.0	4.1	4.2
P	5.	4.5	4.5	4.2	4.7	4.7	4.8	4.5
Tot	90.1	87.4	87.7	87.4	87.1	88.1	87.4	

2.2 Impetuses for RII

China's economy maintained a steady performance and the financial reform advanced in an orderly manner. In 2015, despite mounting downward pressure,

China's economy was still the most stable in the world, laying a solid foundation for RMB internationalization. As a flagship in the emerging markets, China saw its GDP grow by 6.9% in 2015, an increase that led the world. China has continued its supply side reform and maintained the prudential monetary policy. China's financial system showed its resistance in risk prevention efforts. All these have provided continued driving forces for RMB internationalization. China's current account surplus reached USD 293.2 billion, a year-on-year growth of 33.5%. China's outward direct investment (ODI) registered a year-on-year growth of 14.7%. China has maintained the balance of international payments and the cross border capital outflow has returned to the level consistent with the economic fundamentals. In terms of financial reform, 2015 represented a critical period. In 2015, we removed the cap on the deposit rates of commercial banks and rural cooperative financial institutions and basically removed interest rate control. We improved the formation mechanism of RMB central parity rate and further liberalized the exchange rate regime. We effectively adjusted the market rate and offshore rate in reference to the central parity rate and onshore rate. We released RMB exchange rate index in reference to CFETS (China Foreign Exchange Trade System) basket currencies, improved PBOC's management of the foreign exchange market and fought against overseas bids to short RMB. All these efforts helped to lead the market expectation back to a reasonable level. We undertook pilot programs to facilitate innovation and then introduced successful practices all around the country, gradually promoting RMB convertibility under the current account.

We further improved policies on cross border RMB businesses under the capital account. Despite the exacerbated fluctuations in domestic and foreign financial markets and the mounting pressure of capital outflow, we still made breakthroughs in improving policies on cross border RMB use, which helped to expand RMB back flow channels, optimize the allocation of enterprises' funds and boost real economy development. In 2015, we further relaxed the control on enterprises to issue bonds in overseas markets and on the two-way cross border RMB cash pooling so as to allow enterprises more independence and offer them more assistance in overseas fundraising. We allowed overseas central banks (monetary authorities) and other official reserve management entities, international financial organizations and sovereign wealth funds to participate in China's inter-bank foreign exchange market according to relevant laws and regulations. These institutions can undertake foreign exchange transactions including spots, forwards, swaps and options. By opening the inter-bank FX market, we tried to make RMB more representative and enhance its function as an international reserve currency. The Shenzhen QDIE (Qualified Domestic Investment Enterprise) pilot program were officially launched and the

Shanghai-Hong Kong Stock Connect were operating smoothly. Therefore, China's asset allocation has become more diversified.

We have improved the RMB infrastructure and aligned supporting mechanisms with international standards. China's financial infrastructure and supporting mechanisms have been enhanced, offering both physical and institutional support for RMB internationalization. We have established clearing banks and optimized their layout, forming an international network of RMB clearing and ensuring sufficient liquidity in offshore RMB markets. In October, 2015, China has launched the first phase of the RMB Cross-border Interbank Payment System (CIPS) which offered clearing and settlement service to domestic and foreign financial institutions in their cross-border and offshore RMB businesses. The system covered all major financial centres apart from the US and represented a major step forward in the development of RMB payment system. Meanwhile, we have vigorously introduced international standards in terms of data collection and dissemination. We adopted IMF's Special Data Dissemination Standard (SDDS) and participated in BIS's International Banking Statistics (IBS) and survey on currency composition of official foreign exchange reserves. We have fully introduced the BPM6 (Balance of Payments and International Investment Position Manual, Sixth Edition). Therefore, we have improved our data collection, declaration and review and made financial and economic statistics more standardized and transparent. In addition, the index system for the financial market has become more diversified. Multiple indexes have been launched including the CFETS RMB Index, Bank of China's CIFED Index (Credits Investment & Financing Environment. Difference), the UBS Index on International Banks' Demand and the DBS RMB Index for Winning Enterprises (DRIVE), which offered reference to global investors in understanding and using RMB.

As the One Belt and One Road Initiative steadily progresses, the economic and financial cooperation between China and Europe is experiencing a burgeoning wave. Since the initiative was launched, China has signed agreements and memorandums of understanding with 31 countries and regions and many key projects have been implemented. All these have helped deepen regional economic and trade exchanges. The AIIB has started operation, offering a solid platform for capital market connectivity through RMB in areas along the One Belt and One Road. In 2015, the China-Australia and China-South Korea Free Trade Agreement have officially started their implementation. China has signed agreements on production capacity cooperation with 10 plus countries and on currency swap agreements with Suriname, Armenia, South Africa, Chile and Tajikistan. China has also accelerated the development of free trade zones and financial pilot zones, further enhancing RMB's status in international payment,settlement,investment

and fundraising. Sino-European financial cooperation has made a great step forward and this isespecially worth noting. The EU has become China's largest trading partner, largest sourceof technology importation and key investment partner. In 2015, China-Europe business cooperation amounted to USD 169.2 billion. Leaders of China and European countries have maintained frequent exchanges of visit and dialogues on the economy and finance. All these have further boosted the offshore RMB markets in the Europe and deepened bilateral cooperation in terms of market access, cross border supervision, investment platform and supporting facility. RMB has also been accepted by Central European countries. The Fourth Meeting between China and leaders from Central and Eastern European (CEE) Countries held in November 2015 proposed to establish finance corporations for 16+1 capacity cooperation and explored the possibility of establishing a RMB fund in support of 16+1 cooperation. The meeting supported CEE countries to establish RMB clearing arrangements, thus offering a favorable policy environment for RMB offshore markets in CEE countries.

Against the backdrop of financial turbulences and a strong US dollar, RMB denomination has increased in commodity trade. Although international oil price remained low and petrodollar kept contracting, the RMB usage actually increased in the Middle East. In 2015, the Qatar RMB Centre was established and China signed a memorandum of understanding with the central bank of UAE. Therefore, RMB became the currency of choice in UAE's and Qatar's payments to Mainland China and Hong Kong. In 2015, the UAE's use of the RMB accounted for 74% of payments by value to the mainland and Hong Kong, an increase of 52% compared to 2014. In Qatar, the RMB was used for 60% of such payments, a huge rise of 247% compared to 2014. Serbia has initiated RMB settlement programs. In Russia, RMB has been increasingly accepted and become the most welcomed currency only next to the US dollar and euro. Moscow Exchange has also launched RMB-Rubble futures trading. London Metal Exchange has accepted RMB as collateral. In July, an international market for commodities' spot trading was launched at China (Shanghai) Pilot Free Trade Zone. As a result, RMB-denominated commodities took a substantially enhanced position in global trading.

3. Current Situation of RMB Internationalization

3.1 RMB Settlement of Cross Border Trade

RMB settlement has increased in volume and seen its proportion fluctuate. In 2015, RMB settlement of cross border trade has continued to increase in volume.

The whole year aggregate reached RMB 7.23 trillion, a year-on-year growth of 10.38%. (Figure 2). RMB settlement accounts for 29.36% of China's foreign trade, an increase of 4.6% over 2014. The share of RMB settlement of cross border trade in the world's total increased from 3.04% of Q4 2014 to 3.38% ofQ4 2015.

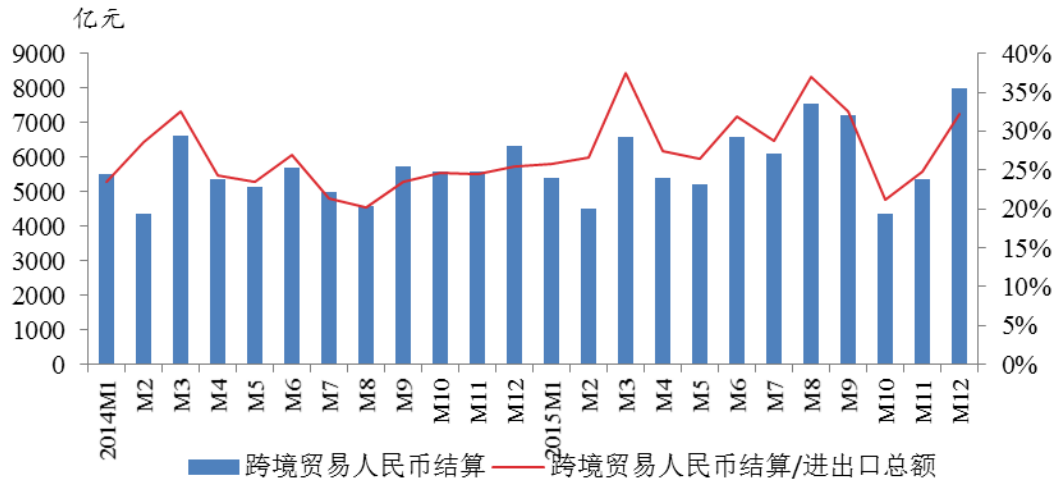

Figure 2: Volume of RMB Settlement of Cross Border Trade

Source: People's Bank of China, Ministry of Commerce

(Unit: RMB 100 million. Blue for RMB settlement of cross border trade and red for the share of RMB settlement of cross border trade in foreigntrade)

RMB settlement of trade in goods took the dominant position while RMB settlement of trade in services witnessed small-scale growth. In 2015, the accumulated RMB settlement of cross border trade in goods reached RMB 6.39 trillion, accounting for 88.34% of RMB settlement of cross border trade. The accumulated amount of RMB settlement of trade in services and other items under the current account reached RMB 843.2 billion, accounting for 11.66% of RMB settlement of cross border trade. Against the backdrop of global economic sluggishness, China's foreign trade dropped dramatically in October and November 2015, dragging down the settlement of cross border trade. As the drop of trade in goods far exceeded the drop of trade in services, the proportion ofRMB settlement of trade in services increased on a small-scale

(Figure3,4).

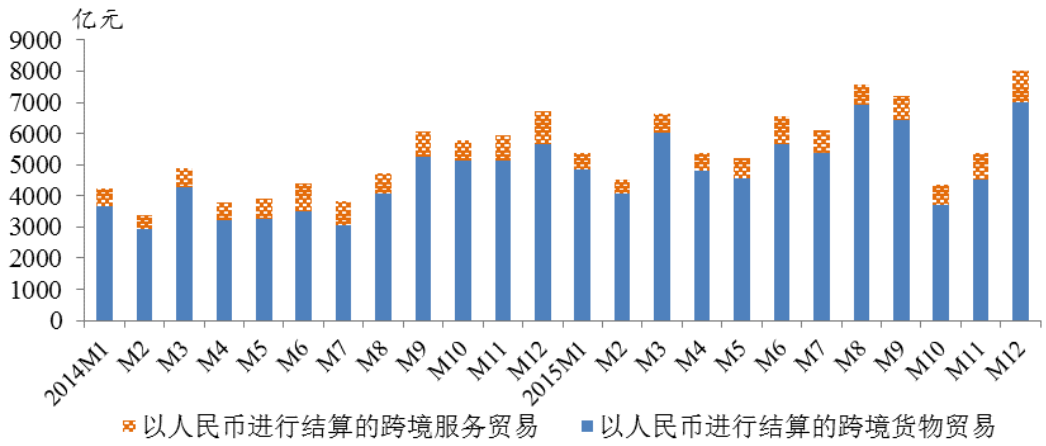

Figure 3 Cross border trade in goods and services settled in RMB

Source: People's Bank of China, Ministry of Commerce(Unit: RMB 100 million. Blue for cross border trade in services settled in RMB, orange for cross border trade in goods settled in RMB)

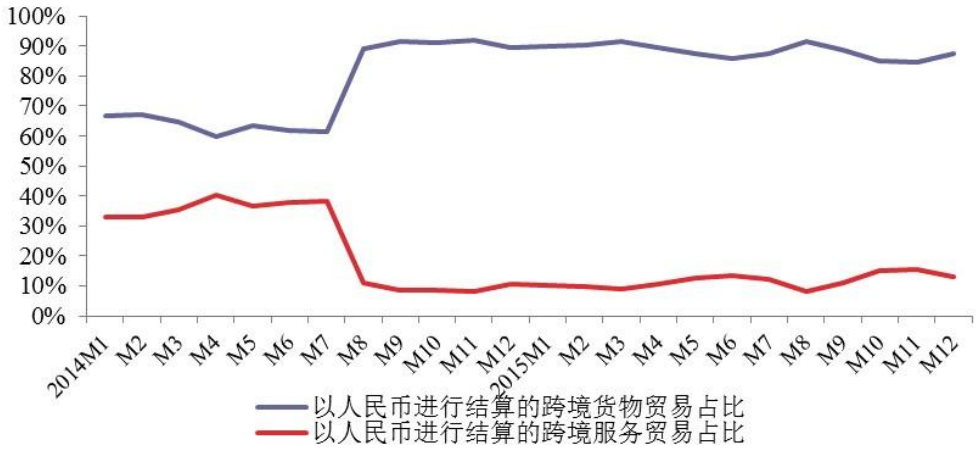

Figure 4: Share of trade in goods and services settled in RMB

Source: People's Bank of China, Ministry of Commerce

(Blue for the share of trade in goods settled in RMB, red for the share of trade in services settled in RMB)

The balance between receipt and payment first reversed and RMB settlement of exports surged. By the end of 2015, the actual receipt of cross border RMB settlement reached RMB 6.19 trillion, a year-on-year growth of

126.74%; the actual payment reached RMB 5.91 trillion, a year-on-year growth of 54.71%. The receipt/payment ratio dropped substantially from 1:1.40 in 2014 to 1:0.96 in 2015. For the first time since the initiation of RMB internationalization, the actual payment of cross border RMB settlement exceeded the actual receipt, which showed a decrease of arbitrage capital inflow. RMB receipt and payment has become more balanced (Figure 5).

Figure 5: Receipt/Payment ratio of RMB settlement in cross border trade

Source: People's Bank of China

(Unit: RMB 100 million. Blue for actual receipt in RMB settlement, orange for actual payment in RMB settlementand green for receipt/payment ratio)

3.2 RIB-denominated Financial Transactions

In 2015, RMB's usage in international financial denomination and settlement has been greatly expanded. RMB has been more widely used in international credit, direct investment and transactions of bonds and notes and this expansion has been substantial. By end 2015, the comprehensive indicator of RMB usage in international financial denomination and settlement as defined by the above mentioned three aspects reached 5.9%, a year-on-year growth of 107.3% (Figure 6).

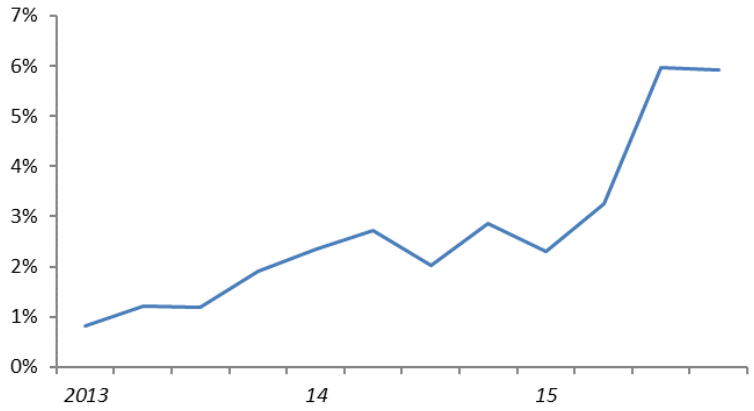

Figure 6: the comprehensive indicator of RMB usage in international financialdenomination and settlement[1]

3.2.1 RMB DirectInvestment ODI (Overseas Direct Investment) settled in RMB

China's total ODI and ODI settled in RMB have both increased substantially. According to the Ministry of Commerce, China's domestic investors have invested directly in 6532 overseas enterprises in 155 countries and regions, achieving a non-financial direct investment of RMB 735.08 billion and a year-on-year growth of 16.3%. The ODI settled in RMB reached RMB 736.2 billion, an increase of 294.53% over the previous year (Figure 7). In August 2015, China reformed the formation mechanism for RMB central parity rate. Under this reform, multiple enterprises accelerated their effort to allocate their assets on a global scale. Therefore, the volume and proportion of ODI settled in RMB showed an inverted V-shape trend. Particularly in August and September, RMB ODI surged from RMB 85.1 billion to RMB 207.8 billion, hitting the peak since RMB internationalization was initiated.

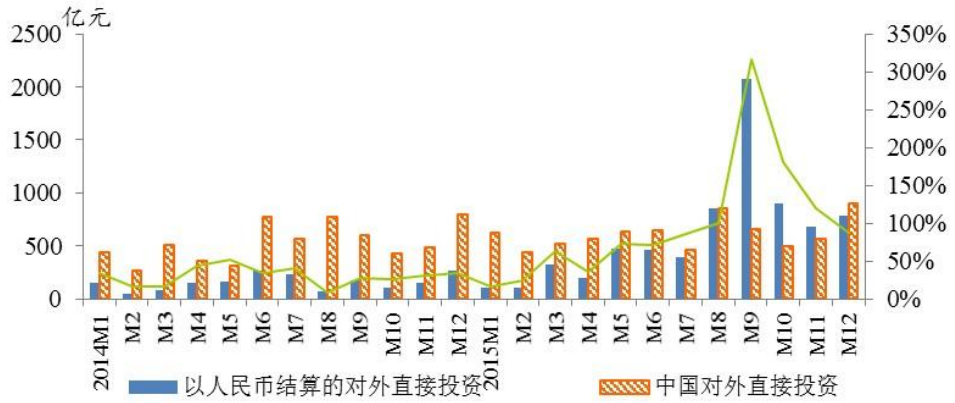

Figure 7: the share of ODI settled in RMB in China's total ODI

Source: People's Bank of China, Ministry of Commerce

(Unit: RMB 100 million. Blue for ODI settled in RMB and orange for China's total ODI)

Foreign Direct Investment (FDI) settled in RMB

In 2015, China actually used USD 126.25 billion of FDI among which the FDI settled in RMB increased substantially. The FDI settled in RMB has accumulated to RMB 1587.1 billion, an increase of RMB 725.1 billion and of 84.12% over 2014 (Figure 8). As China reformed the formation mechanism of RMB exchange rate in August, foreign investors turned to RMB settlement in making FDI so as to avoid exchange rate risks. Therefore, the FDI settled in RMB peaked in September.

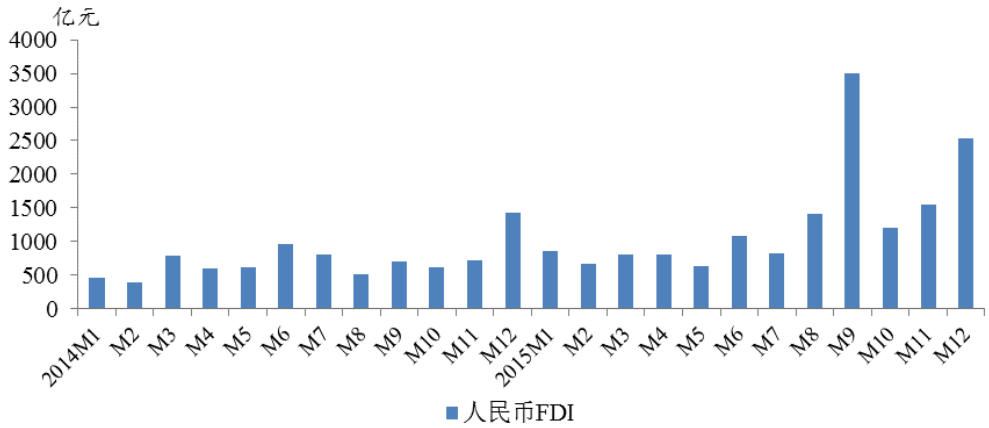

Figure 8: RMB settlement

Source: People's Bank of China, Ministry ofCommerce(Unit: RMB 100 million. Blue for RMB FDI)

[1] The comprehensive indicator incorporates RMB's share in international credit, in the issuance of international bonds and commercial papers and in international direct investment

3.2.2 RMB SecuritiesInvestmentInternational markets of bonds and notes

As RMB became more internationalized and China's capital market became more liberalized, the Panda bond market saw its first peak of issuance in its ten years' history. In 2015, 6 domestic and foreign financial institutions issued Panda bonds in China's interbank bond market. The aggregate issuance reached a record high of RMB 15.5 billion. The stock of international bonds and notes in RMB increased steadily. According to BIS, the stock reached USD 124.792 billion, an increase of USD 29.409 billion over end 2014 and a year-on-year growth of 30.8%. The share of RMB stock in the overall stock of international bonds and notes reached 0.59% (Figure 9). In international bond and note markets, RMB still lagged far behind major international currencies. By end 2015, US dollar accounted for 43.73% of the overall stock of international bonds and notes; the euro, 38.48%; British pound, 9.55%; and Japanese yen,1.91%.

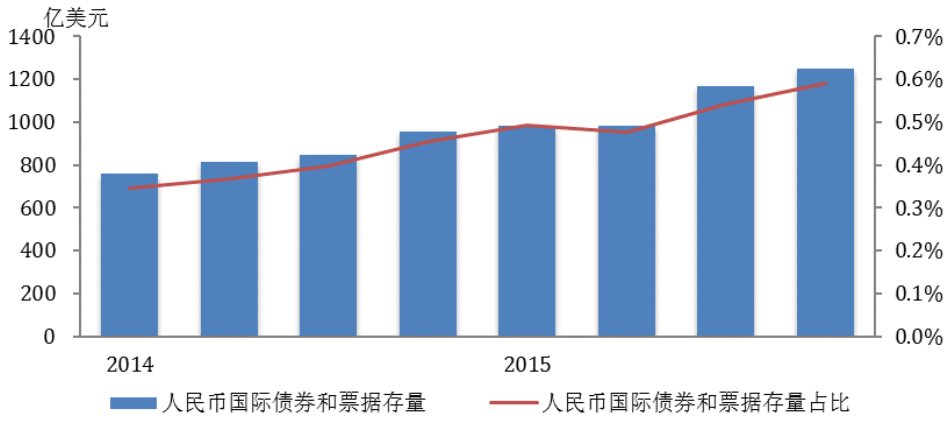

Figure 9: the stock of international bonds and notes in RMB and its share in the overall stock

Source: IBS

(Unit: USD 100 million. Blue for the stock of RMB international bonds and notes and red for its share in the overall stock)

Offshore markets are the major place for the issuance of RMB international bonds. In 2015, multiple international financial centers started offshore RMB businesses and the deposit volume of offshore RMB expanded rapidly. All these have laid favorable conditions for the issuance of RMB international bonds. In addition to Hong Kong, RMB offshore markets including Singapore, London, Taiwan, Seoul, Frankfurt and Luxembourg have expanded substantially, market players and investment products becoming more diversified. However, Hong Kong remained the largest RMB offshore market. In 2015, the stock of RMB bonds in Hong Kong increased from RMB386.087 billion at the end of 2014 to RMB 397.116 billion, an increase of 2.85%. The stock of RMB financial institutions bonds witnessed the most obvious increase from RMB 111.227 billion of 2014 to RMB 120.324 billion in 2015. Financial institution bonds' market shares also increased by 5 percentage points (Table 2)

Table 2 the scale and structure of RMB bonds in Hong Kong in 2015

Category	Stock (RMB 100 million)	Share %	Bonds number	Share %
Corporate Bond	1,761.22	44.35	154.0000	43.87
Government Bond	934.00	23.52	37.0000	10.54
Financial Institution Bond	1,203.24	30.30	152.0000	43.30
Convertible Bond	72.70	1.83	8.0000	2.28
Total	3,971.16	100.00	351.0000	100.00

Source: WIND Information

Stock Market

China's financial structure has been adjusted in line with the overall structural adjustment. Indirect fundraising has been gradually transformed to direct fundraising and fundraising in the capital market has been enhanced. At the end of 2015, the aggregate market capitalization of A shares and B shares totaled RMB 53.1 trillion. The circulation value totaled RMB 41.8 trillion, an increase of RMB 10.2 trillion and of 32.41% compared to the end of 2014. Trading in

China's stock markets was burgeoning due to higher stock prices and the turnover continuously set new records. In 2015, the accumulated turnover in Shanghai and Shenzhen stock markets reached RMB 255.1 trillion, an increase of RMB 180.7 trillion and of 242.85% over 2014. Average daily turnover reached RMB 1045.303 billion, a year-on-year growth of 244.26% (Figure 10), In 2005, China's stock market saw large-scale, irrational fluctuations. Margin trading and securities lending led to high leverage and wide-spread optimism drove the stock market up. On 12th, June 2015, the SSE Composite Index hit 5178.19 point, the highest point of the year. After the CSRC regulated OTC margin trading and securities lending, China's stock market plunged. On 26th, August 2015, the SSE Composite Index hit 2850.71 point, the bottom of the year. Within only two months, the index dropped 44.9% and the turnover contracted substantially.

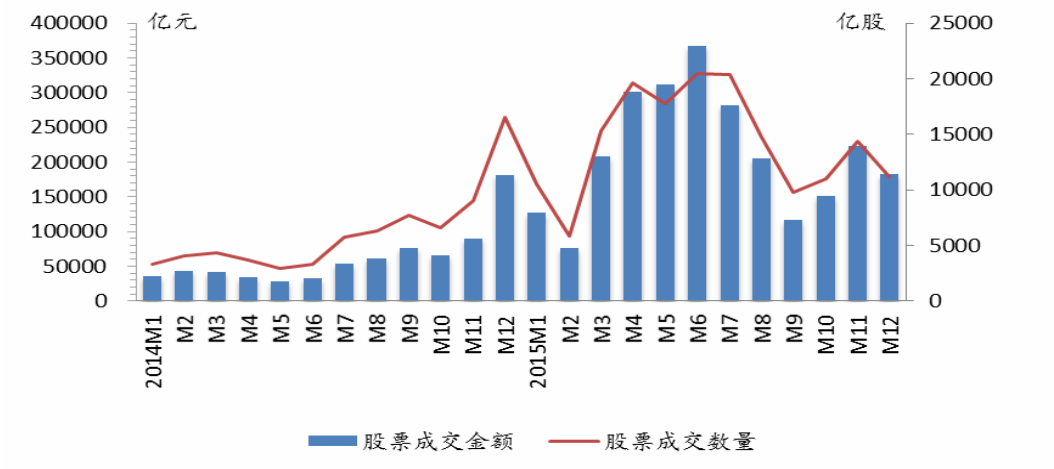

Figure 10: Transactions in China's stock market

Source: China Securities Regulatory Commission

(Unit: RMB 100 million/ 100 million shares. Blue for the turnover volume and red for the quantity of transactions)

Capital market and direct fundraising played a more important role in corporate financing. In 2015, among the 224 newly-listed companies, 90 were listed in SSE major board, 45 in CZSE (Shenzhen Stock Exchange) SME board, and 86 in HKEx Growth Enterprise Market (GEM). Newly listed companies raised RMB 176.691 billion in the stock market. Private placement of existing listed companies also increased greatly and reached RMB 670.948 billion, an increase of 66.43% over 2014 (Table 3)

Table 3: Fundraising in China's stock market

Year	Initial Offering			Subsequent offering					
				A shares				Bshares	Hshares
	Ashares	Bshares	Hshares	Public offering	Private placement	Allotment	Exercise ofwarrants		
2013	0	0	113.17	80.42	2246.59	475.75	0	0	59.51
2014	668.89	0	128.72	18.26	4031.3	137.98	0	0	212.90
2015	1766.91	0	236.19	0	6709.48	42.33	0	0	227.12

Source: China Securities Regulatory Commission

Derivatives Market

By Q4 2015, the outstanding balance on the international OTC market of interest rate derivatives reached USD 384 trillion among which derivatives in US dollar, euro, Japanese yen and British pound accounted for 36.19%, 30.69%, 10.05% and 9.93% respectively and in other currencies combined accounted for around 10%. China'sderivative market with its small scale lagged far behind developed countries'. Therefore, the BIS has not yet accounted RMB derivatives separately.

To satisfy the market's need to avoid RMB exchange rate and interest rate risks, innovative derivatives in RMB offshore markets abound. On 17th, March, 2015, Moscow Exchange launched RMB-Rubble futures trading. On 20th, July, Taiwan Futures Exchange launched two RMB FX futures, the USD/CNT FX futures and the USD/CNH FX futures with contract sizes of USD 20,000 and USD 100,000 respectively. Currently two RMB derivatives are traded in Hong Kong, the USD/CNH Futures and CES China 120 Index Futures. In 2015, the former's turnover reached 262433 hands, an increase of 67384 hands and of 34.55% over 2014; the latter' reached 27427 hands with a consecutive decrease for each season (Table 4).

Table4 TransactionsofUSD/CNHFuturesandCESChina120IndexFutures

Unit:hand

	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
USD/CNH Futures	75498	33359	42843	53349	58303	34390	86580	83160
CES China 120 Index Futures	9824	8678	10935	10756	14375	9403	3363	286

Source: HKEx

In 2015, the asset market saw a burgeoning performance of RMB interest rate swaps and an ever increasing market enthusiasm. The trading volume of RMB interest rate swaps reached RMB 8.22 trillion, an increase of RMB 4.18 trillion and of 104% over 2014 (Table 5).

Table 5 Interest rate swap on interbank markets Unit: RMB 100million

	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Interest rate swap	8044.5	8908.53	9577.68	13786.59	16597.79	19319.37	22519.47	23721.98

Source: China Foreign Exchange Trading Center

In 2015, the turnover of CSI 300 Index futures increased rapidly, reaching RMB439.67 trillion, an increase of RMB 276.54 trillion and of 170% over 2014. The positive correlation between the CSI 300 Index futures and their turnover remained strong, which showed that such futures played a positive role in hedging against risks. Government bonds were the major choice for overseas institutional investors. In 2015, the turnover of government bond futures reached RMB 4.36 trillion, an increase of 396% over the previous year (Table 6).

Table 6: 2014-2015 transactions in stock index and governmentbondfutures

Unit: RMB 100million

	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
CSI 300 Stock Index futures	272821	275356	348607	734601	882766	1546583	977621	989717
Government bond futures	1083.95	1078.99	1322.63	5299.58	6778.97	7167.55	4334.30	25314.17

Source: China Financial Futures Exchange

RMB Financial Assets with Foreign Investments

As China's financial market becomes increasingly open, non-resident investors are more enthusiastic to invest in China's stocks and bonds, leading to an ever growing investment scale. Currently, non-resident investors can invest in RMB stocks through three channels: QFII (Qualified Foreign Institutional Investor program), RQFII (RMB Qualified Foreign Institutional Investor program) and the Shanghai-Hong Kong Stock Connect. QFII and RQFII are reserved for institutional investors and the Stock Connect are open to individual investors.

In 2015, the QFII and RQFII program grew rapidly. 20 new QFIIs were registered, an increase of 7.27% over 2014. Total QFIIs reached 295 institutions. 68 new RQFIIs were registered, an increase of 57.63% over 2014. Total RQFIIs reached 186 institutions.

By the end of 2015, 40 QFIIs, 131 RQFIIs, 84 overseas banks and 16 overseas insurance companies have been granted access to China's interbank bond markets. In 2015, spot transactions in China's interbank bond markets participated in by foreign institutions reached 177625 hands, with a total volume of RMB 15931.655 billion (Figure 11).

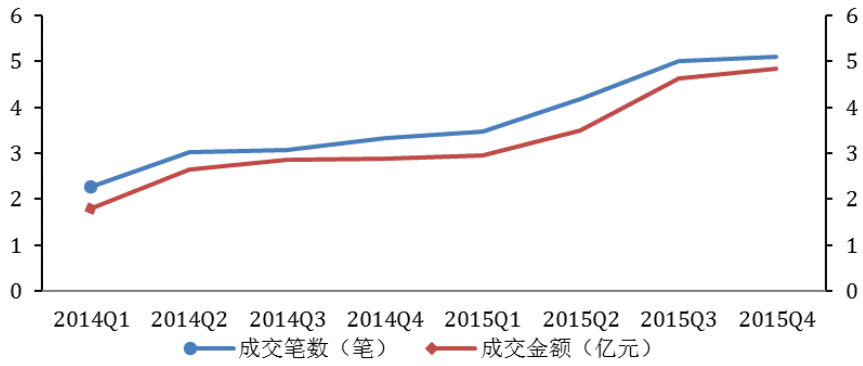

Figure 11: Spot transactions participated in by foreign institutions in the interbank bond market

Source: China Foreign Exchange Trade Center

(Blue for the quantity of transactions and red for the value of transactions)

Due to the 2015 stock market turbulence and the expectation of RMB depreciation, non-resident investments in China's stock market dropped sharply and resident investments in overseas markets surged. According to HKEx statistics on the Shanghai-Hong Kong Stock Connect, in December, 2015, the Northbound turnover was RMB 62.527 billion, a decrease of 46% over December, 2014 while the Southbound turnover was HKD 45.235 billion, an increase of 145% over December 2014.

Generally speaking, RMB assets became increasingly attractive to international investors. Domestic stocks, bonds and loans held by overseas institutional and individual investors all increased (Table 7).

Table 7 RMB assets held by overseas institutional andindividualinvestors

Unit: RMB 100million

Category	2014Q1	2014Q2	2014Q3	2014Q4	2015Q1	2015Q2	2015Q3	2015Q4
Stock	9790.76	10426.99	13332.98	15313.38	20121.46	24325.43	16782.28	16513.76
Bond	4003.20	16295.90	17979.59	19600.92	21345.98	22478.36	23402.83	22718.63
Loan	21299.51	24945.63	26129.73	24900.87	26174.44	26899.73	28661.28	26942.65
Deposit	55576.06	60215.43	65126.38	70538.32	63386.11	63844.34	54574.54	46635.06

Note: the stock value balance was adjusted as the stock value balance of non-residents' Northboundholdings was included

3.2.3 RMB Overseas Credit Market

By the end of 2015, the balance of RMB overseas loans for domestic financial institutions reached RMB 315.347 billion, a year-on-year growth of 58.49%. The share of RMB overseas loans in financial institutions' total loans reached 0.34%, a rapid growth over end 2014 (Figure 12). Due to the low interest rate for overseas RMB and the expectation of RMB depreciation, enterprises now demand more overseas RMB loans to reduce financing cost. Enterprises in pilot areas including Tianjin, Guangxi and Yunnan had already been granted access to cross border RMB loans in Southeast Asia and other RMB offshore markets. In 2015, the PBOC also authorized the Nansha New Area in Guangdong and the Hengqin Sub-district in Zhuhai to start pilot programs of overseas RMB loans. Enterprises in this two areas have been allowed to borrow RMB fund from banks in Hong Kong and Macau and the fund can only be used within these two authorized areas or in overseas markets. The fund should be used in line with macro-control policies and industrial adjustment policies. All these were policy measures to further liberalize credit and an important reason for the substantial increase of RMB overseas loans in 2015.

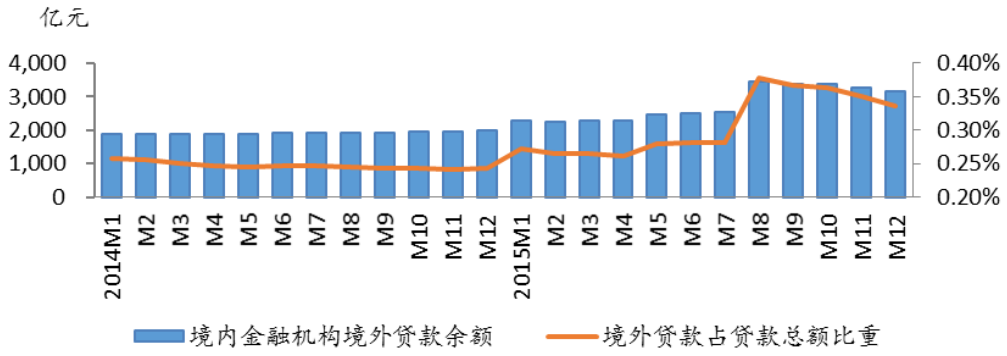

Figure 12 Balance and share of overseas RMB loans for domestic financial institutions

Source: The People's Bank of China

(Unit: RMB 100 million. Blue for the balance of overseas RMB loans and orange for the share of such loans)

3.2.4 RMB Foreign Exchange Market

In 2015, the PBOC reformed the formation mechanism for RMB central parity rate. As of 11th, August 2015, when quoting price to the China FX Trade Center, market makers should mainly refer to the previous day's closing rate at the interbank FX market; they should also make minor adjustments considering the previous day's FXchanges of major international currencies and the FX supply and demand. As the exchange rate fluctuated at a wider range and the Federal Reserve was expected to raise interest rates, the market expectation of RMB exchange rate became divergent. As a result, the trading volume of RMB against different currencies differed in 2015(Table 8). Spot RMB transactions reached RMB 4.86 trillion, a year-on-year increase of 18.23%.

Table 8 2015 trading volume of RMB against various currencies in the interbank spot FX market

Unit: RMB 100 million

Currency	USD	EUR	JPY	HKD	GBP	AUD	NZD	SGD	CAD	MYR	RUB	CHF
Trading volume	46131	678	37	278.97	1245	60	27	605	20	2	35	23
Year-on-year increase	19%	33%	-27%	-15%	-44%	-34%	-39%	345%	818%	23%	-11%	-44%

Source: WIND Data

Derivatives are attracting more and more attention in FX risk management. Among China's FX derivatives, swap takes the largest share and transactions are undertaken mainly against the US dollar. In 2015, RMB/USD swap transactions reached USD8.34 trillion, a year-on-year growth of USD 3.88 trillion and of 86.8%. RMB/USD forwards reached USD 37.199 billion, a year-on-year decrease of USD 15.646 billion and of 29.6%. In 2015, transactions of foreign currency pairs reached USD 191.518 billion, a year-on-year increase of USD 26.762 billion and of 16.24%. Among such transactions, USD/EUR transactions enjoyed the largest volume and reached as much as USD 84.141 billion, accounting for 43.93% of transactions of foreign currency pairs (Figure 13).

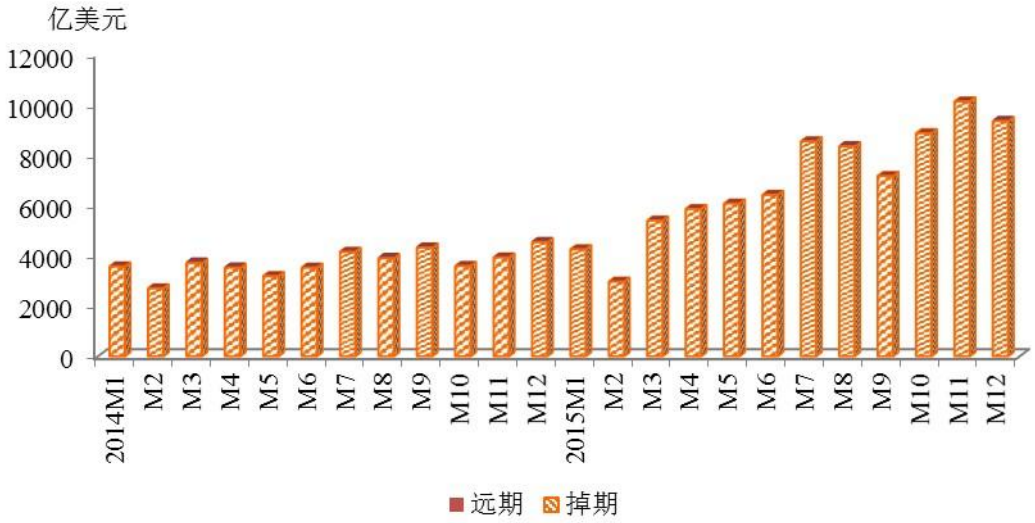

Figure13 2014-2015 RMB FX derivative market

Source: China Foreign Exchange Trade Center

(Unit: USD 100 million. Red for forwards and Orange for swaps)

3.3 RMB in Global Foreign Reserves

3.3.1Enhancing Monetary and Financial Cooperation

By the end of 2015, the People's Bank of China has signed the bilateral local currency swap contracts with monetary authorities from 33 countries and regions, with a total amount of RMB 3.31 trillion yuan (Figure 14). Among which, it was the second time the People's Bank of China sign the agreement with Belarus, the United Arab Emirates, Turkey, Australia, Ukraine and the UK, and the third time with Malaysia. These agreements are different from those signed among developed economies in that they aim to maintain regional financial stability and promote bilateral trade and investment as well.

Besides the currency swap contracts at the central banks' level, the RMB settlement bank system has also provided guarantee for liquidity of RMB. In 2015, the People's Bank of China authorized to establish RMB settlement banks in Kuala Lumpur, Bangkok, Sydney, Qatar, Chile and South Africa to facilitate the use of RMB in local markets. On November 30th, 2015, several US financial and business leaders announced to set up an RMB trade and settlement work group for exploring the possibility of establishing an RMB trade and settlement mechanism

in the US to enable US institutions to use RMB, reduce transaction cost and improve efficiency.

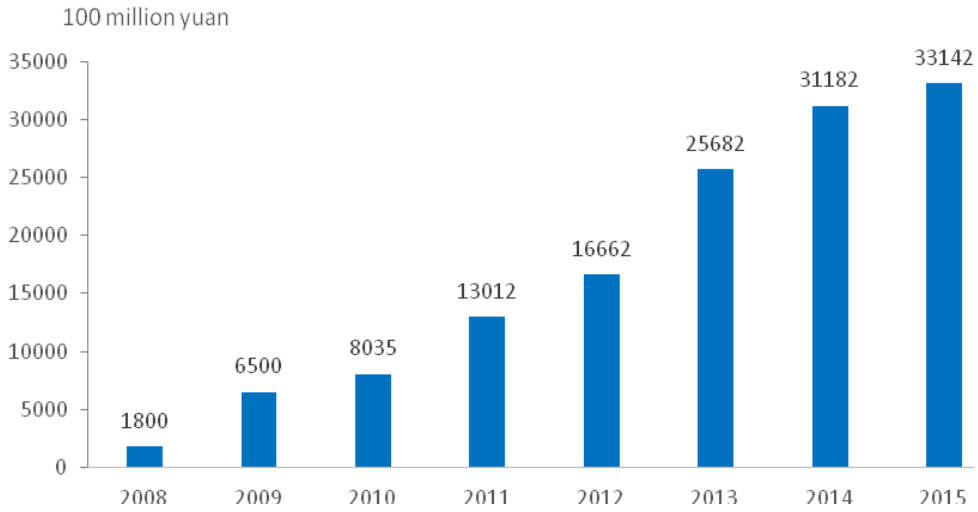

Figure 14: Amount of currency swap between PBC and other monetary authorities

Source: The People's Bank of China

3.3.2 Diversification of International Reserve Currencies

By the end of 2015, among the allocated reserves of IMF, dollar reserve was USD4.36trillion, accounting for 64.06%; euro was USD1.35 trillion, accounting for 19.91%; pound was USD0.33 trillion, accounting for 4.88%; yen USD0.28 trillion, accounting for 4.08%; Swiss francs was USD21.034 billion, accounting for 0.31%; Canadian dollar was USD0.13 trillion, accounting for 1.88%; Australian dollar was USD0.13 trillion accounting for 1.90% (Table 3-10). Compared with 2014, the share of US dollar and that of the pound are on a sharp increase of over 1%, while the share of the euro suffers a drastic decline of over 2.3%. The shares of other currencies remain stable.

3. RMB Internationalization and Macro Financial Risk Management

4.1 RMB Internationalization Needs the Protection from Macro Financial Risk Management

The classical theories and the history of Germany and Japan prove that with the internationalization of RMB, the monetary authority will inevitably face the challenges from macro financial policy adjustment and the macro financial risks caused by it. We should use the macro-prudential policy framework as an institutional guarantee, take exchange management as the main tool for macro financial risk management and focus on the management of capital flow as the key entry point, so as to prevent and settle disruptive systemic financial crises and ensure RMB internationalization.

With the advances of RMB internationalization, issuing countries have to make a new choice among three macro financial policy goals: opening the capital account, maintaining stable exchange rates and keeping monetary policies independent. History told us that Germany and Japan chose different policy paths, which exerted rather different influences on their economic and financial operation and created a huge gap between their currency internationalization.

Germany internationalized the Deutsche Mark before it wholly opened up its capital account. During this period, Germany was almost obsessed with stable exchange rates and monetary policies, and took a prudential attitude to opening and adjusting the capital account. Such a strategy not only earned Germany a golden era to sharpen core industrial competitiveness, but also created sufficient technical means and policy tools for financial market fluctuation after the internationalization of the Deutsche Mark; it won the Deutsche Mark and Germany the position in the global financial market. Japan, on the other hand, took a more radical approach. From the 1960s on, it tried adrastic liberalization of the capital account and overestimated the capacity of its real economy against the impact of exchange rate appreciation, and thus failed to maintain the stability of the yen. The excessively rapid appreciation of the yen caused industrial transfer and hollowed out the real economy. Though Japan tries to stimulate its economy through loose monetary policies and opening up the financial market in the 1980s, it could not stop the recession of the real economy. In the end, the internationalization of the yen ended in smoke, and the development of Tokyo's financial market was dragged down.

After a currency becomes a main international currency, the monetary authority usually has to adopt a macro financial policy portfolio consisting of free capital flow, floating exchange rates and independent monetary policies. This principle also applies to China. However, liberalizing the capital account and RMB exchange rates without consideration is likely to cause systemic financial crises, which would jeopardize the development of the real economy and finance, and bring RMB internationalization to a halt. Therefore, instead of adjusting

policy in a hurry, we should wait to liberalize exchange rates and the capital account after the economy, financial market and regulatory institutions of China are fully prepared for the shock of global capital.

At present, the core task of the monetary authority in macro financial management is to establish a more comprehensive and targeted macro-prudential, pursue financial stability and create all necessary conditions for RMB internationalization. On one hand, we should coordinate exchange rate policies with monetary policies and financial policies and keep prices, exchange rates and macro economic growth steady for the ultimate goal of financial stability. On the other, we need to continue to improve micro-prudential regulatory policies, attach importance to risk control and management of financial institutions, protect the rights and interests of financial consumers, explore macro-prudential regulatory policies, focus on sound operation of the financial system, strengthen synergetic development of finance and the real economy and prevent systemic financial risks to support financial stability.

4.2 Exchange Rate Management Should Be a Major Tool for Macro Financial Risk Management

For an issuing country, the first challenge it encounters in currency internationalization is exchange rate fluctuation. Excessive exchange rate fluctuation will have a negative impact on the financial market, and hinder sound growth of the real economy. At the initial stage of RMB internationalization, we should draw a lesson from Germany, and take exchange rate stability as a priority.

As the RMB exchange rate formation mechanism improves and the capital account opens, the determinants of RMB exchange rate will change markedly. Internationalexperience proves that the macro-economic fundamentals can explain long-term exchange rate changes, but have a weak influence on short-term exchange rate fluctuation. Short-term exchange rate fluctuation is mainly affected by cross-border capital flow and the spillover effects of other countries' policies, but market arbitrage can bring exchange rates to a long-term equilibrium. Exchange rate volatility has a little impact on short-term capital flow, but a big one on the stability of economic growth, especially on FDI.

As RMB continue to serve as an international currency, its exchange rate will not only influence domestic economic and financial activities, but have a considerable spillover effect on the exchange rates of neighboring countries, regional trade and investment, or even the global financial market. Therefore, it is essential to strengthen the management of RMB exchange rate expectations. On December 11th, 2015, China Foreign Exchange Trade System published the

CFETS RMB Exchange Rate Index, which transforms the reference frame of RMB exchange rate from RMB's rate against the dollar to an effective rate based on a basket of currencies, and helps the market to understand and accept the new exchange rate formation mechanism.

We should further promote the market-based reform of the exchange rate market, optimize the RMB exchange rate system, enhance management of market expectations, maintain long-term exchange rates stable above the equilibrium level and pursue exchange rate policy goals suited to the best monetary policy goals.

First, we should optimize the exchange rate formation system, further liberalize RMB exchange rate and allow the exchange rate to fluctuate more flexibly in two directions within a wide range, develop enterprises' awareness to enhance exchange rate risk management and use RMB in international transactions, and facilitate financial institutions' innovation of exchange rate risk management tools and RMB capital management business on a global scale.

Second, the RMB exchange rate system should transform from a managed floating system to a free floating one, and the exchange rate policy goals should be realized through indirect interference rather than direct one. Market arbitrage can bring exchange rates to a long-term equilibrium, and the central bank should quit normalized direct interferences, with measures to prevent the negative impact of excessive exchange rate fluctuation to the financial market and the real economy. We must optimize China's managed floating exchange rate system and win time and space for the transformation and development of China's real economy. In the future, after the capital account is opened in order, we will mainly use a portfolio of monetary policies, financial policies and income policies to maintain the stability of the long-term exchange rate above the equilibrium level. At the same time, in cases of speculative shocks or crises in the exchange market, we will maintain necessary foreign exchange intervention and capital control, strengthen the use of technical management tools and take decisive and effective measures to keep the RMB stable.

These are necessary measures against financial crisis expansion and systemic financial risks.

Third, in implementing exchange rate policies, we must pay attention to policy exchange and coordination at the global level. We should keep an eye on the spillover effect of the US macro policies, intensify communication with the US government, push forward the establishment of a dollar-RMB exchange rate coordination mechanism to reduce the negative impact of excessive exchange rate fluctuation on the economy and finance of both countries. We should actively respond to the negative interest rate policies, callfor monetary policy coordination among founders of the SDR basket, avoid currency wars between major

currencies and minimize the beggar-thy-neighbor effect. At the same time, we must consider the spillover effect of China's monetary and exchange rate policies on other emerging market economies. We will give priority to domestic demands, and consider the interest demand of others through proper communication and coordination mechanisms, so as to reduce policy friction and achieve win-win results.

4.3 Capital Flow Management Should Be a Key Entry Point for Macro Financial Risk Management

As the capital account opens, China's foreign exchange market and capital market will be the main target of overseas hot money and venture capital. We should draw a lesson from the crisis of emerging market economies caused by the shocks of international capital flow, and stay highly vigilant against international capital flow, especially short-term capital flow. We must identify and monitor the chain reaction in the domestic financial market resulted from cross-border capital flow, and enhance macro-prudential financial regulation to avoid systemic financial crises.

A more flexible RMB exchange rate system has upgraded the connection between cross-border capital flow and the financial market, making price coupling effects stronger and risks more contagious between the foreign exchange market, the currency market and the capital market, and between the off-shore and on-shore financial markets. The domestic financial market thus has vulnerability that cannot be overlooked. Studies prove that after the exchange rate reform on August 11th, the relation between China's capital market price, leverage ratio and cross-border capital net inflow has transformed from a unidirectional one to a circular correlation, a significant positive correlation. The shock to a certain variable shows a trend of reflexivity and growth. There is an interaction between market yield rate and short-term capital flow, which indicate that the shocks of short-term capital flow can influence the prices and leverage level of the capital market. The price difference between CNH and CNY and the uncovered interest arbitrage rate in the exchange market which had a great influence on capital market yield rate, leverage ratio andcapital flow are becoming less prominent.

Therefore, the opening of the capital account should match with the exchange rate system reform, adhere to the principle of 'gradual progress, controllability and coordination' and meet the need of China's economic and financial development and global economic environment changes. In a time when domestic financial market is not mature, the financial regulatory system is incomplete and measures against cross-border capital flow shock are limited, we

should not open the capital account without full consideration. We should have a clear understanding of the net capital outflow in the short term and the influence of the 'two-way' fluctuation of cross-border capital flow on China's economy. We must maintain prudential regulation of the capital account and keep the risks of capital flow shocks within an acceptable range.

In the current new situation, we should attach great importance to the possible systemic financial risks caused by large-scale short-term capital flow. We should master and utilize the linkage between capital market yield rate and exchange rate, enhance the coordination between monetary policies and exchange rate policies and sharpen the government's ability to harness short-term capital flow. In managing capital flow, we should reduce its cost and expand its yield, and increase the cost of speculative capital flow. We must closely watch capital inflow and supervise all possible channels so that effective measures could be formulated in the case of capital outflow. Since the flow of QFII capital is a major leading indicator of the capital waiting to be invested, we must use big data technology to run high frequency data statistics and strengthen the regulation over and guidance for QFII.

We will make full use of the time window of rapid RMB internationalization to develop off-shore RMB market and provide more investment tools and channels to meet the rising demand for investment and trade. We will push forward the development of a self-circulation system of RMB to provide enough liquidity for off-shore market. We need to make special policy arrangements to coordinate between off-shore and in-shore markets and establish a mechanism with which in-shore prices can guide off-shore prices.

In developing the 'international circulation' mechanism of RMB, we should take Hong Kong as the center, develop the international capital market of RMB through the Shanghai-Hong Kong Stock Connect Program and establish the oversea RMB circulation mechanism under the capital account. From a broader perspective, we should make efforts to develop a Greater China Currency Region consisting mainland China, Taiwan, Hong Kong and Macau, and take peripheral use of RMB as a interim strategic choice.

We will enhance off-shore RMB market development in main international financial centers in Europe. We will facilitate the cooperation between domestic security andcommodity exchanges with Frankfurt Exchange, Luxembourg Exchange and London Exchange, provide international RMB bonds, stocks, funds and structured securities and RIB-denominated gold, oil and other commodity futures, make full use of local marketing channels to expand the transaction scale of RMB products, create RMB network effects and promote the development of off-shore RMB market in both scope and depth.

After RMB was included in the SDR basket, the international community has a higher expectation for China to play the role of a superpower, and the requirement for RMB as an international currency is rising. We will channel international capital to One Belt and One Road projects and facilitate the international use of RMB through the AIIB, the Silk Road Foundation and the practical and effective operation of the cross-border RMB payment system. China will take this opportunity to actively participate in international financial governance, play a bigger role in the policy-making and negotiations of the IMF, the World Bank, the Bank for International Settlements and other international financial institutions and add to its voice in international financial system reform.

The inclusion of RMB in the SDR basket will inspire the willing of more countries and regions to cooperate with Chinese financial institutions and bring great internationalization opportunities for Chinese banks to expand overseas business and widen income channel in terms of both customers and products. In this proves, Chinese banks will inevitably face more complicated market environment and regulatory requirements, which change the quantity and structure of banks' risk exposure. Since China's economy is at a stage of decapacity and deleveraging, banks will be challenged by the dual risks from home and abroad in internationalization, and problems such as asset deterioration, profit growth slowdown and liquidity risk increase may occur, which will reduce the banks' ability to resist risks. For systematically important banks, if risk control problems are left unsolved, these banks will lose their international competitiveness, miss the opportunity for internationalization and influence the stabilization of the domestic financial system. Risk control problems can even escalate into the amplifier of external shocks and the blasting fuse to systemic risks.

Chinese banks should grasp the opportunity to accelerate internationalization, provide all-round financial services for Chinese enterprises in the global market and help them establish their brand in this market. Chinese banks should formulate and adjust development strategies based on their characteristics and the external environment, add to relevant products and services, diversify the income structure, sharpen core competitiveness in the global financial market and improve the global influence of Chinese financial institutions. Since the overseas business environment is more complicated and risky, Chinese banks should improve awareness of risks, establish a right concept of performance and develop a complete risk management information system covering domestic and overseas business to regulate overseas operation andavoid operation risks. Political risks and compliance risks are prominent problems in cross-border operation; we should formulate laws and regulations related to cross-border operation of financial institutions and establish a complete overseas investment insurance

system. Regulatory departments should level up the regulatory standards for capital adequacy ratio and liquidity of banks and enhance cross-border financial supervision cooperation, so as to ensure Chinese banks' internationalization.

4.4 Laying the Real Economic Foundation for RMB Internationalization Through Supply-side Reform

Sustainable mid-to-high growth of the real economy is the solid foundation for RMB internationalization, and the real economy is the basis of the internationalization of a currency. Strong economic power, large international trade volume, stable currency value, free capital use and effective macro policies are all necessary preconditions for currency internationalization.

Since the global financial crisis in 2008, the international economic environment changes have brought China's traditional economic growth pattern, mainly driven by export and investment, a mire of structural obstacles and emerging risks. The problems include: 1. China has weak innovation abilities and cannot stay on the top or in the middle of the international industrial chain. 2. The economic structure is unbalanced, with an excessively high saving rate, consumption is not enough to prop up economic growth and some industries suffer from overcapacity. 3. Small and medium sized enterprises have difficulties financing, and private investment shrinks.

4. China lacks global trade organizers and pricing power, and its trade is large in volume but not strong in power. At the same time, China's main trade partners are also suffering from a sluggish economy and slow recovery; as a result, the driving force from export weakens. Advanced economies take measures to revitalize the manufacturing industry, deleverage and focus on the real economy, which piles great pressure on China in global competition.

At the same time, empirical study on cross-border capital flow of G20 countries proves that since RMB internationalization started, the shock from capital flow has become more complicated and frequent, and added to the volatility of the real economy. Besides, with a comparatively highly virtualized global economy, China must prevent capital flow from further virtualizing the domestic economy.

Supply-side structural reform is the only way to create new growth momentum and develop a new structure for sustainable development. We should identify three handles in the supply-side reform and make achievements. First, we need to increase R&D investment, strengthen overseas M&A and take measures both at home and abroad to promote technology. A core task of the supply-side reform is to make up forthe defects, which should be carried out both in and out of the country. Inside China, we will add to R&D investment, carry out institutional

reform, encourage enterprises to develop technology, improve innovation capacity, improve all factor productivity and increase the core competitiveness of China's manufacturing. On the global level, we will encourage enterprises to go global, enhance M&A of high-end manufacturing in advanced economies and add to high-tech supply. Second, we must attach importance to financial structural adjustment, expand financing channels, reduce capital cost and let the financial sector further serve the real economy, so as to prevent any virtualization, or even bubbles in this sector. We should vigorously develop the factor market, make more use of the interest rate leverage to adjust supply and demand of fund and improve the economic efficiency of resource allocation. We will promote financial liberalization and innovation, encourage enterprises to raise funds overseas while keeping the risks under control, take advantage of the low interest rates in overseas markets to aid heavily indebted enterprises to deleverage, reduce capital cost and improve the vitality and competitiveness of enterprises. We should also accelerate the internationalization of financial institutions to provide cross-border enterprises and enterprises in the global market with all-round financial service, help them expand overseas markets, elevate their status and influence in the international labor division, and entitle them higher power and a greater say in trade activities. Third, we will coordinate and combine financial instruments with fiscal measures, encourage private enterprises to make direct investment, and use both domestic and overseas markets to optimize production factor allocation. On one hand, we must enhance brand development and management to meet the domestic demand for high-quality daily goods and luxuries, and gradually replace imported goods with domestic goods. On the other, we will design a reasonable foreign aid model to expand the PPP model overseas, help enterprises with global capacity cooperation, extend the life cycle of traditional competitive products and increase the all factor economic efficiency.

China must stick to the guiding thinking that finance serves the real economy and RMB internationalization serves the real economy. The rapid progress made in RMB internationalization will add to the faith of the international community in China and the motivation to invest. At the same time, RMB internationalization will help Chinese enterprises make outbound RMB investment more conveniently and receive stable returns. In particular, it will change the tradition of commodities to use the dollar in settlement, and bring a more stable supply mode to China's economy. Since the One Belt and One Road countries are now more willing to use RMB, China can promote the use of RMB in valuation and settlement in bilateral crude oil transactions with Russia, the Middle East and Central Asia, develop the crude oil futures price of Shanghai International Energy Center into another benchmark price after WTI and Brent, and improve the crude oil pricing power of China and these countries.

In the long run, the supply-side reform can settle the accumulated risks in China's real economy. The establishment of a innovative industrial system will ensure sustainableeconomic growth and create a material basis for RMB internationalization; the steady progress of RMB internationalization has not only added to the global demand for and faith in China's economic growth, but also brought convenience to trade pricing and settlement and investment that can facilitate foreign trade and international cooperation, promote cross-border M&A and technological development, form new supply models of commodities and optimize resource allocation in the broader domestic and overseas markets. RMB's appreciation in the process of internationalization has impelled the trade structure to upgrade from the bottom of the industrial chain to the middle and top of the chain, and formed a mechanism to speed up the transformation of the driver of China's economic growth. Therefore, in a sense, RMB internationalization and supply-side reform are mutually reinforcing, and RMB internationalization itself is a major engine for the upgrading and transformation of China's real economy.

4.5 It Is Urgent to Build a Macro-prudential Policy Framework Suited to China's Reality

External shocks such as cross-border capital flow are intertwined with domestic financial market risks, institution risks and real economic risks, raising the possibility of systemic risks caused by the chain shocks from individual markets or partial risks. Therefore, it is urgent to build a macro-prudential policy framework suited to China's reality, so as to prevent and manage systemic risks at the institutional level.

There is a possibility for the whole financial system to suffer from fierce fluctuation, or even crises caused by the entanglement of external factor shocks and internal factors. With the progress in China's financial reform and RMB internationalization, cross-border capital flow has caused rising systemic financial risks inside China. Once impacted by these risks, not a single financial institution can avoid the suffering. In other words, systemic risks can influence several financial sectors or even the real economy at the same time. Whether a risk is a systemic one depends on whether several financial sectors witness abnormal trends at the same time.

Due to the diversified origin of systemic financial risks, we must have an overall control of the systemic risk assessment. We use the weighted average method to conduct a comprehensive assessment in terms of the financial policy environment, the financial market, financial institutions and foreign exchange market risks, so as to develop the integrated risk index of China and provide scientific reference for the precise and objective assessment of systemic risks. The result of the study shows that from July, 2005 to December, 2015, China went

through 7 periods with high systemic risks. In specific, on July 21st, 2005, China adopted a managed floating exchange rate system with market supply and demand as the basis and the currency basket as reference. With this system, RMB was no longer pegged against the dollar. Thisexchange rate system reform brought great shocks and gave rise to the systemic risks of the month. The two systemic risk rises in October of 2007 and December of 2008 were attributable to the outbreak and spread of the US subprime crisis. The rising systemic risks early in 2010 originated from high inflation. After a period of stability from mid-2010 to early 2013, liquidity risks emerged in June, 2013 and caused an increase in systemic risks. The latest two risk rises were caused by the violent fluctuation in the stock market in mid-2015 and RMB depreciation at the end of 2015.

Though there are several temporary systemic risk rises, the main risks were all from single markets, and they have not caused risks in several financial sectors at the same time or resulted in the outbreak or a continuous increase of systemic risks. But we must notice that in the second half of 2015 alone, two major systemic risk rises occurred twice. Such a high occurrence frequency is rarely seen in history, and we must pay great attention to it.

The international financial crisis gave a heavy blow to the financial regulatory concepts, and the global community has basically reached the consensus that monetary stability cannot guarantee financial stability and the soundness of individuals cannot guarantee the soundness of the whole system. The call for financial stability has caused a reform in macro-prudential regulation. China has also actively participated in the global macro-prudential regulation reform, and released a series of macro-prudential policy tools in the domestic practice, which, to some degree, prevented the accumulation of systemic risks. In view of the problems caused by multiple regulatory agencies, such as divided policies from various sources, power overlaps, unclear responsibility and differentiated standards, we should draw upon international experience, identify the principles for China's financial regulatory reform, establish a macro-prudential policy framework suited to China's reality and provide an institutional guarantee for strengthening systemic risk management.

We should add a 'macro-prudential' dimension to the existing financial regulatory framework and identify the departments responsible for the implementation of macro-prudential policies. Since the crisis, the regulatory reform in all countries have identified these departments by enhancing the macro-prudential dimension of the existing regulatory framework, strengthening systemic risk supervision, assessment and prevention and establishing specific committees or prudential regulation bureaus.

Besides maintaining currency stability, the central bank should be granted more functions to guarantee financial stability and enhance financial regulation. After the crisis, main economies have focused on preventing systemic risks and maintaining financial stability as the core tasks of regulatory system reform, strengthened the central bank's function to maintain stability and regulate the financial sector, and further facilitated the coordination between macro-prudent regulation reform and macro-economic policies.

Wemust identify therelationbetweenmonetarypolicies,macro-prudence, micro-prudence and behavior regulation in terms of both functions and mechanism, and strengthen the coordination and cooperation among them. This has become the main task of the financial regulatory system reform in all countries. In order to do this, we can incorporate monetary policies, macro-prudence and micro-prudence into a greater central bank model, establish a financial stability regulatory committee to strengthen the central bank's financial regulation and adopt a two-peak regulatory model consisting of prudential regulation and behavior regulation.

We must improve the accessibility and accuracy of financial data to provide comprehensive and timely information for the supervision, analysis and assessment of systemic risks. The Financial Stability Board, the International Monetary Fund, the Bank for International Settlement, the World Bank and other major economies are enhancing data accessibility and promoting the sharing and coordination of financial information by strengthening the central bank's functions, revising legal frameworks, improving the statistical system and expanding the statistical range.

We will also be dedicated to establishing effective crisis settlement mechanisms and enhance protection for financial consumers. From the perspective of the regulatory reform of major economies, the Federal Reserve and the Federal Deposit Insurance Corporation are jointly responsible for the treatment of systemic risks in the US; the Bank of England is responsible for dealing with financial crises and formulating financial institution treatment strategies in the UK; The EU established the European Banking Union to integrate banking regulation, treatment and the deposit insurance system. Besides, some countries have also set up specific institutions to further protect financial consumers. For example, the FED has established an independent consumer financial protection bureau to protect the interest of consumers.

5. Timeline of RMB Internationalization2015

Time	Event
January 5th, 2015	PBOC designated BOC as the RMB business settlement bank in Kuala Lumpur.
January 6th, 2015	PBOC designated ICBC as the RMB business settlement bank in Bangkok.
January 12th, 2015	Serbia began to use RMB in international settlement.
January 21st, 2015	HSBC launched free trade account service.
January 21st, 2015	PBOC signed the Memorandum of Understanding with the Swiss National Bank; Swiss was granted 50 billion yuan RQFII quota.
January 28th, 2015	The Qualified Domestic Investment Enterprise (QDIE) project was implemented.
February 9th, 2015	The RMB clearing bank in Sydney opened.
February 13th, 2015	Trust companies provided RMB international venture loan service for the first time.
February 16th, 2015	China Foreign Exchange Trade System (CFETS) provided standardized RMB-foreign exchange swap transactions in the interbank foreign exchangemarket.
February 19th, 2015	Hungarian National Bank launched RMB projects
March 4th, 2015	The CCB became the first Chinese institution to acquire a RQFII license in Europe.
March 6th, 2015	The first non-financial institution issued RMB bonds in Korea.
March 16th, 2015	Samsung participated in the direct RMB-won transactions.
March 17th, 2015	Moscow Exchange launched RMB/Rubble futures transactions.
March 18th, 2015	PBOC signed a bilateral currency swap agreement with the Central Bank of Suriname.
March 19th, 2015	BOC took the lead to release the Credits Investing & Financing Environment Difference Index (CIFED).
March 24th, 2015	The China-Myanmar currency exchange centre was established in Ruili,Yunnan.
March 25th, 2015	PBOC signed a bilateral currency swap agreement with the Central Bank of Armenia.

March 25th, 2015	ICBC signed the Memorandum of Understanding with Toronto Stock Exchange.
March 25th, 2015	The first RMB RQFII Exchange Traded Fund in Europe was listed.
March 28th, 2015	The One Belt and One Road Roadmap was officially disclosed.
March 30th, 2015	PBOC and the Reserve Bank of Australia renewed the currency swap agreement.
April 7th, 2015	China launched the China-Ukraine currency swap agreement to aid Ukraine out of poverty.
April 10th, 2015	PBOC and South African Reserve Bank signed the currency swap agreement.
April 14th, 2015	The first RMB settlement bank in the Middle East was launched.
April 14th, 2015	The RMB settlement bank in Kuala Lumpur was launched.
April 17th, 2015	The PBOC and Bank Negara Malaysia renewed the currency swap agreement.
April 21st, 2015	Guangdong Free Trade Zone opened.
April 22nd, 2015	The RMB settlement bank in Bangkok was launched.
April 29th, 2015	Luxembourg was granted 50 billion yuan RQFII quota.
May 1st, 2015	The Deposit Insurance Regulations were implemented.
May 10th, 2015	PBOC and the National Bank of Belarus renewed the currency swap agreement.
May 15th, 2015	PBOC and the National Bank of Ukraine renewed the currency swap agreement.
May 20th, 2015	London Metal Exchange accepted RMB as a pledge currency.
July 31st, 2015	Shanghai Free Trade Zone cross-border RMB commodity spot transactions were launched.
August 4th, 2015	ICBC Singapore branch launched 24-hour RMB clearing service.
August 9th, 2015	The Suifenhe Rouble Cash Use Pilot Project was launched.
August 11th, 2015	PBOC improved the quote of RMB-dollar central parity rate.
August 13th, 2015	The Mongolian cash swap and use service was officially launched within China.
September 3rd, 2015	PBOC and the Central Bank of Tajikistan signed the currency swap agreement.
September 7th, 2015	PBOC adjusted the cross-border two-way RMB capital pool business policies.

September 15th, 2015	The filing system of foreign bonds issued by corporations was introduced.
September 17th, 2015	The new currency basket of the ECB granted RMB a bigger weight.
September 17th, 2015	PBOC signed the Memorandum of Understanding on RMB settlement arrangements with the Central Bank of Argentina.
September 18th, 2015	ICBC launched the RMB settlement banking service in Argentina.
September 18th, 2015	The NDRC published the Notice on Promoting the Registration and Management System of Foreign Bonds Issued by Corporations.
September 19th, 2015	The RMB Exchange Traded Fund made new progress in Guangxi.
September 22nd, 2015	International commercial banks are authorized to issue RMB bonds in the interbank foreign exchange market.
September 23rd, 2015	BOC Xinjiang branch provided the quote of RMB-PKR cash exchange rate.
September 29th, 2015	Hong Kong and Shanghai Banking Corporation Limited and BOC (Hong Kong) issued "panda bonds" of international commercial banks.
September 29th, 2015	PBOC and the Central Bank of Zambia signed a Memorandum of Understanding on RMB settlement arrangements.
September 30th, 2015	PBOC allowed overseas central bank institutions to enter the interbank foreign exchange market.
October 6th, 2015	RMB surpassed Japanese yen to become the fourth largest payment currency.
October 6th, 2015	China released data on the basis of SDDS standards.
October 8th, 2015	The RMB cross-border payment system was officially launched.
October 20th, 2015	BOC disclosed the RMB stock exchange indices.
October 20th, 2015	PBOC and the Bank of England renewed the currency swap agreement.
October 20th, 2015	PBOC issued RMB-denominated central bank bills overseas for the first time.
October 22nd, 2015	The executive meeting of the State Council decided to launch the overseas QDII2 pilot programs.
October 23rd, 2015	The cross-border transportation channels of RMB cash to Russia was established.
October 23rd, 2015	The first non-financial off-shore corporate RMB bonds of mainland China was issued in Singapore.

October 24th, 2015	The deposit interest rate cap was liberalized.
October 29th, 2015	Shanghai Stock Exchange, Deutsche Börse and CFFEX jointly established the CEINEX.
October 30th, 2015	Shanghai Free Trade Zone released 40 regulations on the new financial reform.
November 2nd, 2015	Korea's RQFII quota was increased to 120 billion yuan.
November 2nd, 2015	Taiwan loosed the close position for RMB participating banks and RMB settlement banks.
November 9th, 2015	The interbank foreign exchange market carried out RMB-Swiss franc direct transactions.
November 16th, 2015	PBOC and the Central Bank of Turkey renewed the currency swap agreement.
November 17th, 2015	Singapore's RQFII quota was increased to 100 billion yuan.
November 18th, 2015	China Europe International Exchange opened.
November 23rd, 2015	Malaysia was granted 50 billion yuan RQFII quota.
November 25th, 2015	The first batch of overseas central bank institutions entered China's interbank foreign exchange market.
November 26th, 2015	PBOC and the ECB finished the bilateral currency swap test.
November 27th, 2015	British Columbia of Canada registered in China's interbank foreign exchange market and issued RMB bonds worth 6 billion yuan.
November 27th, 2015	The Ministry of Finance disclosed the 3-month and 6-month national debt treasury bonds return rates for the first time.
November 30th, 2015	The executive board of the IMF decided to incorporate RMB into the SDR currency basket.
November 30th, 2015	The US established an RMB trade and settlement work panel.
December 3rd, 2015	BOC released the first One Belt One Road RMB exchange rate index.
December 13th, 2015	The cross-border currency settlement between China and Tajikistan waslaunched.
December 14th, 2015	PBOC and the Central Bank of UAE signed the currency swap agreement. UAE was granted 50 billion yuan RQFII quota.
December 15th, 2015	Korea issued the first "panda bonds" of sovereign states.
December 17th, 2015	Thailand was granted 50 billion yuan RQFII quota.

December 18th, 2015	The US Congress approved the IMF's 2010 Quota and Governance Reform Plan.
December 21st, 2015	China exempted Zimbabwe from debts worth 260 million yuan.
December 25th, 2015	The AIIB was officially established.
January 4th, 2016	The trading period of China's interbank foreign exchange market will be prolonged.

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2016 Report on Chinese Banks' Internationalization -benchmarking global leaders

By Academy of Internet Finance (AIF), Zhejiang University,
in partnership with China International Finance Society &
Pricewaterhouse Coopers & International Monetary Institute (IMI), Renmin University of China

During 2015, with the complexity of international economy kept growing, the significance of new normal state of Chinese economy increasing, the achievement of RMB internationalization and the strategy of "the Belt and Road Initiatives" deepening, Chinese banks' footprints in internationalization continued to expand. Chinese bank's influence on international market is enhanced with their growing business presence and maturing branch network in foreign countries. However, the gap between Chinese banks and global top banks remains on business scale and exploitation degree of new markets. In the context of increasingly complex and diversified economic environment, Chinese banks must be fully aware of their own situation, actively seize market opportunities, constantly learn from their own experience during internationalization, reasonably plan their blueprints on overseas expansion and enhance their development strategies.

From CBII to BII

As Chinese economy has entered a new normal state of "implementing a more proactive and opening strategy" and RMB was added to SDR, our 2016 Report on Chinese Banks' Internationalization introduced Chinese Bank Internationalization Index ("CBII"). We expanded our Bank Internationalization Index (BII) by choosing two group of data including bank's number of overseas branches, overseas assets and revenue and etc. In addition to analyze top-tier Chinese banks' activeness in internationalization, 16 of the Global Systemically Important Banks (G-SIBs) were selected as benchmarks. So, in this report, we not only summarized Chinese banks' achievements in global markets but also compared the differences between Chinese and foreign. We also explored the future roadmap of internationalization and risks during the process, in order to provide a good reference for Chinese banks.

Ranking & Major Findings

1. Growth rate of Chinese banks' BIIs declined and the gaps between Chinese Big 5 and listed banks narrowed.

On one hand, the consolidated BII of Chinese Big 5 Banks was 8.90 in 2015 with a growth rate of 4.1% compared to 8.54 in 2014. However, this growth rate in 2015 is still lower than their growth rate in 2014 (12.0%). Among them, Bank of China still achieved the highest BII as 21.57, then successively followed by Industrial and Commercial Bank of China Limited (8.94), Bank of Communications (7.15), China Construction Bank (4.33) and Agricultural Bank of China (3.41). On the other hand, the consolidated BII of five listed banks was only 2.7 with growth rate as 10.1% in 2015, which was much compared to the growth rate in 2014 (20.7%). China Everbright Bank and Shanghai Pudong Development Bank ranked 20 and 22 with their BIIs as 4.36 and 3.66 respectively, which is closely followed by China Construction Bank (ranked 21) and Agricultural Bank of China (ranked 23).

2. Chinese banks' global network has covered most countries but with focus on "the Belt and Road Initiatives".

Chinese banks continued to follow their strategies as "from near to far; from the developed countries to developing countries" when expanding their global networks in overseas countries. Big 5 Banks have established branches in nearly 50 major countries and the proportion of Asia branches accounted for 44.4%. And "the Belt and Road" countries became their first-priority target for overseas investment. In 2015, Bank of China set up five branches in Southeast Asia along the Silk Road and successfully issued the world's first "Belt and Road" bond of $4 billion. China Construction Bank also established five new branches in Europe each located in UK, France, Spain, Italy and Netherlands.

3. Chinese bank's international influence is well recognized but still behind foreign banks.

In 2015, China had four banks qualified as G-SIBS, which are Industrial and Commercial Bank of China Limited, Agricultural Bank of China, Bank of Communications and China Construction Bank. We have the same number of G-SIBs banks as France and UK (13% of the whole list), however, we're still behind US who has 8 G-SIBs banks in total. In our BII system, the average BII of 16 foreign banks was 53.65, which is six times higher than consolidated BII of Chinese Big 5 banks and 19.9 times higher than consolidated BII of Chinese listed banks. Bank of China, the bank with the highest BII in China, only ranked 16th among the 26 banks and its BII was only 1/4 of Standard Chartered Bank (88.84) who ranked first. The breadth and depth of Chinese banks' business activities in overseas

markets is still not competitive compared to foreign banks. In 2015, the number of countries where HSBC's branches are operating is 2.4 times higher than Chinese Big 5 Banks combined. Also, the contribution from their overseas branches to the whole HSBC group is 43.7 times higher. However, among all operational indicators, the gap between Chinese and foreign banks in overseas loans is narrowing. This implies that Chinese banks are still focus on traditional deposit and loan business in their overseas activities. Their current profit model centering on interest income must be changed.

4. Chinese banks' total overseas assets kept growing while foreign bankswere already at mature stage.

By the end of 2015, the total amount of Chinese Big 5Banks' overseas assets amounted to 9.87 trillion RMB with a significant growth rate of 14.2%. Their overseas assets accounted for 11.8% of their total assets and remain same as 2014. In contrast, signs of foreign banks have reached the mature stage for their globalization is prominent. Although the growth rate of foreign assets, deposits, loans and employment for selected 16 foreign banks was near to zero and even with a slight shrinkage in 2015, their business scale in domestic and overseas markets are almost same. 3/5 among top 5 banks in each BII index are foreign banks.

5. Chinese banks' overseas business has yielded promising outcomes, butthere still lied a long road ahead.

In 2015, total amount of China Big 5 Bank' overseas revenue topped 200 billion RMB yuan with overseas profit exceeded 100 billion RMB yuan for the first time, which was up to 17.0% and 6.7% respectively compared to 2014. However, except for the Bank of China, the overseas operating revenue and profits of Chinese banks only accounted for less than 10% in general, significantly dropped behind foreign banks. In 2015, the average overseas operating revenue to the total operating revenue ratio for Big 5 banks (8.0%) was 1/7 of the average level of selected foreign banks (59.4%); the average overseas profits to the total profits ratio for Big 5 Banks (8.3%) was only 1/8 of the average level of foreign banks(68.7%). We can see there still lies a long way ahead for Chinese banks to continuously develop their overseas business in the future.

6. **The country size and its economies of scale, internationalization of itscurrency, its positioning of banking business and etc. has affectedChinese banks' progression of internationalization.**

Based on our analysis of cases on banks' internationalization, we noticed that factors like smaller country size, greater economies of scale, more advanced economy, higher internationalization level of economy, currency and enterprises will benefit banks in that country for their business internationalization. Universal banks and wholesale banks from these countries in these countries was more active in foreign countries compared to retail banks. Nevertheless, the model of banks' internationalization required banks to be equipped with multiple features, which made it more difficult for other banks to replicate. Thus, most banks are more inclined to adopt traditional internationalization mode for their overseas business development.

7. Risk incidents continuously emerged, robust risk management iscritical for banks' success in internalization.

It was frequently reported in the media that financial institutions suffered great loss, lawsuit or penalties due to various types of risks incidents. According to statistics, from 2008 to 2014, number of lawsuit cases against JPMorgan chase, Citigroup, Goldman Sachs, Bank of America, and Wells Fargo reached to 150 and $95 billion in economic loss. Chinese banks were more exposed to potential risks during their international expansion, due to their lack of operational experience and resources in foreign countries. Since 2000, Chinese banks had more than 10 risk incidents, mainly caused by their reckless business expansion, lack of risk control and limited legal knowledge. Therefore, Chinese banks shall attach greater importance to risk prevention and control in their international operation as well as actively learn experience from foreign banks.

Suggestions for Chinese banks' Overseas Development Strategy

In the upcoming future, the world's economic situation remains challenging. The US election and the Federal Reserve' raising interest rate has brought uncertainties to the US economic recovery. Britain's exit from the EU made Europe economic prospects unclear. Emerging markets has become volatile with complexity of various risks. Among all, Chinese economy remains in the "new normal" state with the supply-side structural reform at its core.

In such context, Chinese banks shall be aware of their significant disparity with the world's international banks at the forefront. Chinese banks shall analyze both domestic and foreign environment, seize political development opportunities, adopt new means of development, and adjust the pace of their overseas development in order to achieve sustainable global expansion. When selecting a country or region to go abroad, Chinese banks should choose to strengthen their cooperation with

countries along “the belt and road”. In Southeast Asia, focus shall be put on the support of import and export trading projects. The cooperation mechanism with Mongolia, Russia, and other five countries in central Asia shall be improved by setting offices and branches in each other’s countries. Chinese banks shall strengthen the financial support of energy projects in West Asia and North Africa, and expand network through mergers and acquisitions in the South Asia. Chinese banks should also develop financial business though increasing institutions in the Central and Eastern Europe. When deciding the “going global” model, Chinese banks could utilize the emerging trend on internet financing and establish cross-border e-commerce industrial parks along “Belt and Road” countries. To effectively prevent risks in international operations, Chinese banks shall strive to improve their international vision and actively prevent risks through strategic planning, compliance management, and environmental studies.

In conclusion, there still lies a long road ahead for Chinese bank to go global. They must fully recognize the disparity and learn from foreign banks to avoid detours. While grasping opportunities from new policy and innovated technologies, Chinese bank must design their own roadmap of internationalization with steady expansion in overseas countries. With this strategy, Chinese shall be able to strengthen their positioning in overseas countries in long term.

IMI International Monetary Review

Special Column on RMB's Inclusion into the SDR

The Nexus between SDR Accounting and Use of RMB*

By Herbert Poenisch *

Looking at the basic functions of any currency, three have to be fulfilled in order to qualify as a currency. These are denomination, transaction and store of value.

At present the SDR fulfils all of them to a limited extent. While this implies a limited use of RMB as part of SDR for transactions and store of value, the potential demand for RMB by institutions accounting in SDR is subject of this contribution. However, even this (denomination) function is limited and the IMF calls the "uptake of the SDR as a unit of account has been low"[1].

The IMF clearly distinguishes the threefold role of SDR (i) the official SDR, "O-SDR", the composite reserve asset issued and administered by the IMF (for transactions and store of value), (ii) SDR-denominated financial market instruments, or "M-SDR", which could be issued and held by any parties (for transactions and store of value) and (iii) the SDR as unit of account[2].

The benefits of using SDR as a unit of account would be the smoothing out of valuation changes resulting from fluctuations among major currencies. For commodity prices, denomination in SDR results in a lower volatility than denomination in USD.

A number of international and regional institutions use the SDR as a unit of account for their balance sheets, and the lending of some multilateral development banks is denominated in SDR[3]. These institutions include the African Development Bank, the Arab Monetary Fund, the Asian Development Bank, the Bank for International Settlements, the Common Fund for Commodities, the East African Development Bank, the Economic Community of West African States, the

* RMB is used for general reference to renminbi whereas CNY is used as foreign exchange denomination

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1 IMF (2016): The role of the SDR-Initial considerations. Staff note for the G20, July www.imf.org/publications

2 IMF (2016): ibid, p 12

3 IMF (2016): ibid page 12

International Centre for Settlement of Investment Disputes, the International Monetary Fund, the International Fund for Agricultural Development, the Islamic Development Bank and the IDA arm of the World Bank[4].

As RMB assumed its share of 10.92% in the SDR basket on 1 October 2016 this will have implications for the treasuries of these institutions and might cause demand for RMB denominated assets to rise.

1. Keeping balance sheets SDR neutral

Borrowing and creditor (IMF) members may want to hedge their SDR-denominated exposures, and some members may be required by their internal regulations to keep their balance sheets SDR neutral....This would imply a need to have availability of hedging instruments, such as cross-currency swaps, with long durations, or at least have shorter hedges that can be rolled over at reasonable cost, in order to mitigate exchange rate and interest rate risks[5]. This would imply hedging the SDR as a whole or its components, now including the RMB.

China has taken a number of steps in recent years to improve the functioning of its foreign exchange trading system, the CFETS. The exchange rate mechanism was changed to a more market determined rate in August 2015. The Peoples' Bank of China (PBC)sets the opening rate in the morning, which is the same as the closing rate the previous day. Intra-day volatility is limited to a 2 percent trading band around the central parity.

The instruments traded in the spot market cover 13 currency pairs with the RMB, there are 499 financial and non-financial institutions approved as market members to trade on the spot foreign exchange market. For anonymous trading, institutions post the buy and sell rates on the middle rates set by the PBC every day, and the CEFTS centralised platform then matches the bids and provides clearing services as the central counterparty[6].

The daily CEFTS onshore RMB-USD fixing rate is recognised as principle exchange market rate and thus transmitted to the IMF for the SDR valuation (see box below).The CFETS has indicated that it will publish three exchange rate indices to widen the view of the direction of the RMB exchange rate. One of these has the SDR component currencies but the weights might differ. The SDR weights of

[4] Zoellner, Peter (2016): The renminbi in the SDR basket and its future role in the international financial system. In: BIS management speeches, June www.bis.org/speeches

[5] IMF (2015): Review of the method of valuation of the SDR-Initial consideration. July www.imf.org/publications

[6] Prasad, Eswar(2016): China's efforts to expand the international use of the RMB. Report prepared for the US-China Economic and Security Review Commission, Februarywww.brookings.edu

currencies will change, but the amounts of each currency were fixed on 30 September[7].

Currency	Final currency amounts CA	Currency weights by CA
USD	0.58252	41.73
EUR	0.38671	30.93
CNY	1.0174	10.92
JPY	11.900	8.33
GBP	0.085946	8.09

Source: IMF Valuation of the SDR-Amendment to rule O-1

Based on these values multiplied by the daily RMB-USD exchange rate the IMF continues to publish two SDR rates, the daily rate and the three months average rate.

Regarding the interest rate, the three month sovereign bond yield, which is published by the China Central Depository and Clearing Company (CCDC) will be used as SDR RMB reference interest rate. Given that the interest is higher in RMB than in other currencies, The IMF expects a modest rise in SDR rate.

Access to the interbank forex market for public investors is now possible through three channels, namely (i) using the PBC as agent, or (ii) by using interbank forex market members as their agents, or (iii) directly participating in the interbank forex market as foreign members[8].

Chinese authorities have been easing restrictions on access to onshore markets which should facilitate hedging and other operations by foreign central banks, sovereign wealth funds and international financial institutions. They should have adequate access to onshore money markets, fixed-income and foreign exchange markets.

Those international institutions using SDR for accounting need to hedge risks in two different ways, prudential balance sheet hedging and hedging of actual operations such as lending denominatedin SDR. Prudential hedging is adjusting the composition of assets and liabilities in such a way that they reflect the composition of the SDR basket.

2. Effect on demand for RMB

[7] IMF (2016): Valuation of the SDR-Amendment to rule O-1 as of 30 September 2016 www.imf.org

[8] Zoellner, Peter (2016): ibid

The scope of hedging the SDR assets and liabilities will be determined by the statutes and the accounting regulationsof each of the above mentioned institutions. They will seek to minimize the potential fluctuation in the value of their net worth/equity in SDR by matching to the extent possible, the currency composition of their net assets with the currency basket of the SDR[9].

For the purposes of prudential hedging, purchasing the corresponding share of RMB assets amounting to 10.92% of total assets will have already begun and take some time in the future. The sums, however could be substantial, running into billions of SDRs. In the case of the BIS some SDR 25bn out of a total balance sheet of SDR 230 bn will have to be held in RMB denominated assets. These will have to be matched by liabilities in RMB, such as the RMB investment fund which was launched in March 2014. The BIS is also providing foreign exchange services in RMB with sight accounts and deposits to follow[10].

The valuation of these assets and liabilities on a daily base should be straightforward as the reference RMB exchange rate is available. The institutions will then decide whether to buy or sell currencies, such as RMB to stay within their neutral weights[11]

The investment in RMB denominated assets will be mostly in the RMB bond market which amounted to USD 7.3tr at the end of 2015. Access is provided over China Interbank Bond Market (CIBM) Direct. The major issuers are the financials including policy banks(40% in 2014), among them the CDB featuring prominently, followed in second place by the Treasury(30% in 2014)issuing China Government Bonds and finally non-financials(17% in 2014)[12]. The latter have expanded domestic borrowing recently in an effort to reduce foreign borrowing.

The second hedging is for actual operations. One criteria for admitting the RMB to the SDR was that it should be “freely useable”. In the IMF terminology this means that the currency is easily available and free to transact for the purposes of IMF transactions[13]. The IMF has already made preparations for countries’ borrowing SDR including RMB as from 1 October 2016. These include opening onshore RMB accounts, establishing banking relationships with procedures that they would need to

[9] Hassanain, Khalifa (2015): SDR and Currency Risk Management. In: International Journal of Economics and Financial Issues, p 781 www.econjournals.com

[10] Zoellner, Peter (2016): ibid

[11] Hassanain, Khalifa (2015): ibid p 782

[12] Ma Guonan and Wang Yao (2015): Can the Chinese Bond Market facilitate a Globalising RMB? Fung Global Institute Working Paperwww.fgi.org

[13] Tseng, Wanda (2016): RMB in the SDR basket: Implications for China and the Global Financial System. In: IMI Review October, www.imi.ruc.edu.cn

transact RMB[14]. IMF member countries borrowing SDR will have free access to RMB, buying and selling RMB in the spot market. The same will have to be the case for lending operations of other international institutions mentioned above.

However, accounting for lending in SDR including RMB with a servicing and repayment schedule over a number of years will be more complicated. It requires forward RMB exchange rates and other hedging instruments which are not readily available at present. Taking the swap arrangements offered by the PBC with 34 countries amounting to USD 3 tr as an example, the Chinese authorities are ready to offer the necessary hedging instruments themselves or allow selected banks to offer exchange rate and interest rate hedging products before long. Thus the exchange rate and interest risks will be assumed by Chinese as well as selected foreign entities.

What is uncertain at the moment is the effect of the availability of a forward exchange rate curve as well as a longer CGB yield curve on market expectations of China's monetary and exchange rate policy. So far this has been kept at bay by confining these expectations to the NDF market with no links with the onshore RMB market. China has been studying derivative markets for a while and can be expected to gradually provide the necessary hedging instruments in order to allow users of SDR to produce an SDR neutral balance sheets.

[14] IMF (2016):Transcript of a conference call on the use of SDR basketwww.imf.org/news

IMI International Monetary Review

Renminbi in the SDR Basket: Implications for China and the Global Financial System

By Wanda Sung Hwa Tseng [*]

The addition of the Renminbi (RMB) to the IMF's SDR basket on October 1, 2016 marks an important milestone in China's reform and opening up which began nearly four decades ago. For China, it symbolizes recognition by the international community of the progress China has made in its economic transition, from a poor closed economy to an emerging market economy deeply integrated with the world economy. For the IMF and the global financial system, it is the first time in history that a currency is being added to the SDR basket, and that the currency of an emerging market economy is joining the currencies of advanced countries as an international reserve currency. At the same time, some observers have criticized the IMF's decision to add the RMB to the SDR basket. Some have argued that the decision was "political," taken to facilitate China's rise as an economic power, and that China has not delivered sufficiently on reforms, particularly regarding exchange rate management and capital account liberalization. This paper examines these issues.

This paper is organized as follows. Section I examines how the RMB measures against the criteria set by the IMF for including a currency in the SDR basket. Section II considers the implications of RMB in the SDR basket for China and the international financial system. Section III offers some concluding observations.

I. How Does the RMB measure against criteria for Inclusion in the SDR Basket?

The IMF created the SDR in 1969 as a supplementary international reserve asset. At the time, under the Bretton Woods system of fixed exchange rates, countries needed official reserves to maintain the fixity of their exchange rates. The supply of official reserves, namely gold and the U.S. dollar, was insufficient to support the expanding global trade and financial transactions; thus, the SDR was created to provide additional liquidity to the global financial system. However, the Bretton Woods system collapsed shortly thereafter, and by 1973 major currencies moved to a system of floating exchange rates. This, together with the development

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of international capital markets, diminished the need for the SDR as an international reserve asset. As of March 2016, $285 billion SDRs had been created, accounting for less than 3 percent of global official reserves.

The IMF's current criteria for including a currency in the SDR basket are twofold: the export criterion and the freely useable criterion:[1] The export criterion is a long-standing element of the selection criteria for the SDR basket and aims to ensure that currencies included in the SDR basket play an important role in international trade. The freely usable criterion was added in 2000 to recognize the increasing importance of capital flows and to ensure that the currencies in the SDR basket play an important role in the global financial system.

There is no debate about the RMB meeting the export criterion. As the world's third exporter, the RMB has met the export criterion for inclusion in the SDR basket since 2010 (Table 1).

The contentious question centers around the freely usable criterion. Some observers have argued that as the RMB exchange rate regime remains managed and as China continues to maintain some restrictions on capital account transactions, the RMB cannot be considered freely usable. However, the concept of freely usable is defined by the IMF's Articles of Agreement. The IMF defines freely usable to be a currency that is (i) widely used to make payments for international transactions and (ii) widely traded in the principal exchange markets.[2] This definition aims to ensure that currencies in the SDR basket can be easily used directly or indirectly to meet a country's balance of payments needs.

Table 1. Exports of Goods and Services
(Five-year averages; in percent of global total) 1/

2005–09			2010–14		
	SDR bn	%		SDR bn	%
Euro area	2,146	19.9	Euro area	2,662	18.3
United States	1,539	14.3	United States	1,985	13.6
China, Mainland	833	7.7	China, Mainland	1,533	10.5
United Kingdom	778	7.2	Japan	731	5.0
Japan	616	5.7	United Kingdom	707	4.8
Canada	341	3.2	Korea	465	3.2
Korea	296	2.8	Singapore	401	2.7
Singapore	269	2.5	Canada	395	2.7
Switzerland	269	2.5	Russia	388	2.7
Russia	268	2.5	Switzerland	388	2.7
Memo Item:					
China 2/	874	8.1	China 2/	1,618	11.1

Sources: IMF, World Economic Outlook; IMF, Direction of Trade Statistics; Census and Statistics Department, Hong Kong SAR; and IMF staff calculations.
1/ Includes income credits. Intra-euro area exports are excluded.
2/ Includes Mainland China (CH), Hong Kong SAR (HK), and Macao SAR (MO). Exports of goods between these three regions are excluded. Exports of services between CH and HK until 2013 are excluded. Income credits between CH and HK cannot be excluded for 2010-14 as no geographical breakdown is available after 2009. Exports of services and income credit between MO and other regions are not excluded due to lack of data.

According to the IMF, the concept of freely usable is different from whether a currency is freely floating or free of capital account restrictions (i.e., fully convertible). The IMF points out that a currency can be freely usable even if it has some capital account restrictions, and that in the past, currencies such as the pound sterling and Japanese yen were judged to be freely usable even when some capital account restrictions were in place. Conversely, a freely floating convertible currency might not be widely used or widely traded.

[1] http://www.imf.org/external/np/sec/pr/2015/pr15543.htm

[2] http://www.imf.org/en/About/Factsheets/Sheets/2016/08/02/19/35/Review-of-the-Special-Drawing-Right-SDR-Currency-Basket

To judge whether a currency is freely usable, the IMF relies on several quantitative indicators. For assessing wide use, the indicators include: the shares of currencies in reserve holdings, and the currency denomination of international debt securities and international banking liabilities. For wide trading, the indicators include the volume (turnover) of transaction in foreign exchange. In the 2015 Review of SDR valuation, more indicators were added, including official holdings of foreign currency assets, the issuance of international debt securities, cross- -border payments, and trade finance.

Data for the various indicators show that the RMB is not as widely used as the other SDR currencies (US dollar, euro, pound sterling, and Japanese yen), but the use of the RMB has risen impressively (Tables 2- -8). In 2014 or early 2015, the RMB ranked 7th among the currencies held in countries' official foreign currency reserves, behind the Canadian and Australian dollars. The RMB ranked 9th in the currency denomination of international debt securities outstanding. However, the RMB's ranking was higher according to other indicators: its ranking in international banking liabilities was at 5th place and its ranking in the currency denomination of new issuance of international debt securities was at 6th place.

What is remarkable is the rapid ascent of the RMB across the widely used indicators. While the shares of the other non- -SDR currencies have either remained largely unchanged or dropped, the international use of the RMB has increased quickly in just the past few years. SWIFT reports that the RMB is now the 5th most widely currency for cross border payments compared with 20th in 2012.[3] Similarly, the use of the RMB in trade finance has risen significantly, overtaking the Japanese yen and the pound sterling. The RMB accounted for 1.1 percent of official foreign currency assets in 2014, up from 0.7 percent a year ago. In the first half of 2015, 1 percent of international debt securities issued were denominated in RMB, compared with practically none 5 years ago.

[3]http://www.economist.com/news/finance---and---economics/21677994---imf---debates---whether---include---chinas---currency---its---reserves---feeling---special

Table 2. Official Reserves

(shares in percent of allocated reserves)

2010:Q2			2015:Q2		
	SDR bn	%		SDR bn	%
USD	2,026	62.5	USD	3,022	63.8
EUR	850	26.2	EUR	972	20.5
GBP	135	4.2	GBP	222	4.7
JPY	103	3.2	JPY	182	3.8
CHF	4	0.1	CAD	91	1.9
AUD 1/		n.a.	AUD	90	1.9
CAD 1/		n.a.	CHF	14	0.3
Other	122	3.8	Other	147	3.1
Unallocated	2,454	43.1	Unallocated	3,408	41.8

Source: IMF, Currency Composition of Official Foreign Exchange Reserves survey.
1/ The Australian dollar and the Canadian dollar were not separately identified in COFER surveys until June 2012.

Table 3. Official Foreign Currency Assets

(shares in percent of global total)

2013				2014			
	SDR bn	%	Reporting countries		SDR bn	%	Reporting countries
USD	2,701	61.3	127	USD	2,961	63.7	127
EUR	1,041	23.7	109	EUR	978	21.0	108
GBP	187	4.2	108	GBP	190	4.1	109
JPY	147	3.3	87	JPY	160	3.4	88
AUD	98	2.2	79	AUD	98	2.1	78
CAD	87	2.0	84	CAD	92	2.0	85
RMB	29	0.7	27	RMB	51	1.1	38
NZD	11	0.2	27	CHF	11	0.2	69
CHF	10	0.2	73	NZD	11	0.2	29
NOK	9	0.2	45	SEK	9	0.2	40
Other	66	1.9		Other	73	1.9	

Source: IMF staff survey of members.

Table 4. International Banking Liabilities

(shares in percent of global total) 1/

2010:Q2			2015:Q2		
	US$ bn	%		US$ bn	%
USD	13,064	48.7	USD	14,050	52.8
EUR	8,909	33.2	EUR	7,573	28.5
GBP	1,719	6.4	GBP	1,538	5.8
JPY	970	3.6	JPY	687	2.6
CHF	436	1.6	RMB	479	1.8
			CHF	474	1.8
Other	1,721	6.4	Other	1,814	6.8
			Memo item:		
			RMB 2/	1,139	

Sources: BIS Locational Banking Statistics; IMF staff calculations based on BIS data; Haver Analytics; and national sources.
1/ Hong Kong SAR, Macao SAR, and Taiwan Province of China are treated as domestic.
2/ Amount for RMB if Hong Kong SAR, Macao SAR, and Taiwan Province of China were treated as international.

Table 5. International Debt Securities Outstanding

(shares in percent of global total) 1/

	2010:Q2			2015:Q2		
		US$ bn	%		US$ bn	%
	EUR	9,038	46.4	USD	9,177	42.6
	USD	6,359	32.7	EUR	8,395	39.0
	GBP	2,002	10.3	GBP	2,144	9.9
	JPY	700	3.6	JPY	412	1.9
	CHF	359	1.8	CHF	299	1.4
	CAD	287	1.5	AUD	270	1.3
	AUD	248	1.3	CAD	183	0.8
	SEK	68	0.4	SEK	107	0.5
	HKD	67	0.3	RMB	76	0.4
	NOK	51	0.3	NOK	65	0.3
21st	RMB	8	0.0			
	Other	272	1.4	Other	422	2.0
	Memo item:					
	RMB 2/	12		RMB 2/	118	

Sources: BIS Quarterly Review; and IMF staff calculations based on BIS data.
1/ Hong Kong SAR, Macao SAR, and Taiwan Province of China are treated as domestic (based on residency of issuers).
2/ Amount for RMB if Hong Kong SAR, Macao SAR, and Taiwan Province of China were treated as international.

Table 6. Issuance of International Debt Securities
(shares in percent of global total) 1/

	2010: Jan-Jun			2015: Jan-Jun		
		US$ bn	%		US$ bn	%
	EUR	1,427	48.5	USD	1,331	45.3
	USD	973	33.1	EUR	1,039	35.4
	GBP	259	8.8	GBP	324	11.0
	JPY	57	1.9	JPY	54	1.8
	CHF	56	1.9	AUD	42	1.4
	AUD	54	1.8	RMB	28	1.0
	CAD	28	1.0	CHF	19	0.6
	SEK	15	0.5	SEK	18	0.6
	HKD	15	0.5	HKD	16	0.6
	NOK	12	0.4	CAD	11	0.4
22nd	RMB	0.7	0.0			
	Other	45	1.5	Other	52	1.8
	Memo item:					
	RMB 2/	0.7		RMB 2/	33	

Sources: BIS Quarterly Review; and IMF staff calculations based on BIS data.
1/ Hong Kong SAR, Macao SAR, and Taiwan Province of China are treated as domestic (based on residency of issuers).
2/ Amount for RMB if Hong Kong SAR, Macao SAR, and Taiwan Province of China were treated as international.

Table 7. Cross-Border Payments
(shares in percent of global total) 1/

2010:Q4–2011:Q3		2014:Q3–2015:Q2	
EUR	43.3	USD	42.7
USD	33.8	EUR	35.4
CAD	5.4	GBP	4.1
GBP	3.6	JPY	3.4
JPY	3.5	CHF	2.5
CHF	2.0	CAD	2.3
AUD	2.0	AUD	1.8
SEK	0.8	RMB	1.1
DKK	0.7	HKD	1.0
RMB	0.1	SEK	0.6
Other	4.8	Other	5.0
Memo item:			
RMB 2/	0.1	RMB 2/	1.3

Source: IMF staff calculations based on transaction values from SWIFT messages MT 103 and MT 202 excluding MT 202 COV.
1/ For RMB, Hong Kong SAR, Macao SAR, and Taiwan Province of China are treated as domestic.
2/ Share for RMB if Hong Kong SAR, Macao SAR, and Taiwan Province of China were treated as international.

Table 8. Trade Finance (Letters of Credit)
(shares in percent of global total) 1/

2010:Q4–2011:Q3		2014:Q3–2015:Q2	
USD	80.6	USD	86.0
EUR	8.8	EUR	7.1
AED	5.9	RMB	3.4
JPY	2.4	JPY	2.0
RMB	1.1	CHF	0.2
GBP	0.2	AED	0.2
CHF	0.2	GBP	0.2
KRW	0.2	INR	0.1
Other	0.7	Other	0.7
Memo item:			
RMB 2/	3.3	RMB 2/	8.1

Source: IMF staff calculations based on transaction values from SWIFT messages MT 700.
1/ Cross-border letters of credit are letters of credit between two different countries. For RMB, Hong Kong SAR, Macao SAR, and Taiwan Province of China are treated as domestic.
2/ Share for RMB if Hong Kong SAR, Macao SAR, and Taiwan Province of China were treated as international.

Tables 8 reproduced from http://www.imf.org/external/np/pp/eng/2015/111315.pdf

The RMB stills account for a small share of global foreign exchange trading, with the present SDR currencies continuing their domination (Table 9). Nevertheless, the RMB has made significant strides. According to the IMF, the RMB ranks 8th in foreign exchange trading in major regional markets, particularly in the Asian market; in Hong Kong and Singapore, RMB trading accounted for 12.1 percent and 6.7 percent of daily market turnover in April 2015. In a recent survey by the BIS, by April 2016, the RMB became the 8th most actively traded currency in global foreign exchange markets, accounting for 4 percent of total daily turnover, up from less than 1 percent in 2010; the RMB also became the most actively traded emerging market currency.

Table 9: Currency Distribution of OTC Foreign Exchange Turnover

Net basis, percent share of average daily turnover in April

Currency	2001		2004		2007		2010		2013		**2016**	
	Share	Rank	Share	Rank	Share	Rank	Share	Rank	Share	Rank	**Share**	**Rank**
USD	89.9	1	88.0	1	85.6	1	84.9	1	87.0	1	**87.6**	**1**
EUR	37.9	2	37.4	2	37.0	2	39.1	2	33.4	2	**31.3**	**2**
JPY	23.5	3	20.8	3	17.2	3	19.0	3	23.1	3	**21.6**	**3**
GBP	13.0	4	16.5	4	14.9	4	12.9	4	11.8	4	**12.8**	**4**
AUD	4.3	7	6.0	6	6.6	6	7.6	5	8.6	5	**6.9**	**5**
CAD	4.5	6	4.2	7	4.3	7	5.3	7	4.6	7	**5.1**	**6**
CHF	6.0	5	6.0	5	6.8	5	6.3	6	5.2	6	**4.8**	**7**
CNY[3]	0.0	35	0.1	29	0.5	20	0.9	17	2.2	9	**4.0**	**8**
SEK	2.5	8	2.2	8	2.7	9	2.2	9	1.8	11	**2.2**	**9**
MXN[3]	0.8	14	1.1	12	1.3	12	1.3	14	2.5	8	**2.2**	**10**

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II. Implications of The Inclusion of the RMB In the SDR Basket

The IMF's decision to add the RMB in the SDR basket necessarily involves judgment. This is because there no specific set of indicators with quantitative benchmarks that must be met for inclusion. Rather, the IMF has to examine the various indicators and make an assessment guided by the definition of "freely usable" under its Articles of Agreement. Observers might consider the judgmental aspect to be "political." However, the IMF must assure itself that the inclusion of the

RMB would not adversely affect its own financial operations. For example, member countries borrowing from the Fund must be able to use the RMB easily and freely to meet their balance of payments need. Accordingly, the IMF's decision to include the RMB in the SDR basket needs to take into account not only the quantitative indicators but also a qualitative assessment of macro and financial policies that are relevant to making the RMB freely usable.

Several key considerations persuaded the IMF to decide in the affirmative. First, the "freely usable" indicators show a rapid increase in the use and trading of the RMB. Second, the Chinese authorities took additional steps to promote the international use of the RMB, including granting full access to the onshore fixed-income and foreign exchange markets for official reserve managers. This allowed reserve managers of official institutions, such as central banks, international financial institutions, and sovereign wealth funds, to buy a widening array of RMB denominated assets to manage their reserves and hedge risks. China has also set up swap arrangements with 34 central banks around the world. Third, the Chinese authorities pushed ahead with broader macro policy reforms, notability the full liberalization of domestic interest rates, implementing a more flexible exchange rate regime, and further improving the transparency of data, including data on the currency composition of reserves and banking liabilities. When the new SDR basket becomes effective on October 1, 2016, the RMB will have a weight of 10.92 percent, ahead of the Japanese yen and the British pound, based on a new formula for calculating weights for the SDR basket.

As was the case when China joined the WTO in 2001, the inclusion of the RMB in the SDR basket will catalyze further reforms in China. This has already been evident in the major reforms China implemented to qualify the RMB for inclusion. China has been experiencing an economic slowdown in recent years associated with its efforts to transition to a more domestic demand and services based economy. Since the summer of 2014, China has encountered episodes of financial market volatility and surges in capital outflows as well as an emerging corporate debt overhang. The fact that the Chinese authorities have nevertheless continued to advance with financial sector reforms under challenging conditions, especially the exchange rate regime reform in August 2015 and the capital account liberalization measures, testifies to the commitment of the Chinese authorities to make the RMB freely usable.

Since the IMF's decision to add the RMB to the SDR basket last November, China has further advanced with capital account liberalization. Most notably, in February 2016, the Chinese authorities opened the China Interbank Bond Market to foreign investors, such as foreign banks and pension funds. In August 2016, the Chinese authorities announced the Shenzhen-Hong Kong Stock Connect scheme that expands the list of mainland-listed companies in which overseas investors can trade; it also widens the range of Hong Kong-listed stocks mainland investors can

trade. In August 2016, the World Bank became the first institution to issue SDR-denominated bonds in China.

Looking to the future, China's financial sector reforms remain an unfinished journey. Inclusion of the RMB in the SDR basket marks a milestone, but not the destination. Financial market reforms are critical for a better allocation of resources in China's ongoing economic transition. Much remains to be done to develop a robust financial system, with efficient, strong, and well-supervised and regulated banking system and capital markets. Further work remains to move the exchange rate regime to a fully flexible and market determined one, supported by a fully market-based monetary policy framework. In this regard, it is notable that the IMF has declared the exchange rate of the RBM to be in line with economic fundamentals at the conclusion of its most recent consultation with China in July 2016. Further capital account liberalization must be managed carefully and well sequenced with reforms in the financial system and the exchange rate system to minimize macroeconomic and financial stability risks.

With China's increasing integration with the rest of the world, what happens in China has important spillover effects on the global economy. China's economic growth and recent slowdown have affected many countries' growth, exports, and commodity prices. China's impact is not only through trade but also through financial linkages. A recent IMF study show that the correlation of China's stock market with Asian stock markets is now 0.3, on par with that of Japan and only somewhat less than the 0.4 correlation of the U.S. (Arslanalp, 2016). Thus, success with China's financial sector reforms and economic transition more generally, partly catalyzed by RMB's inclusion in the SDR basket, will contribute to a more stable and resilient world economy.

For the global economy, the addition of RMB as a reserve currency provides an additional source of liquidity and facilitates a diversification of risks in the global financial system. RMB inclusion also strengthens the attractiveness of the SDR as an international reserve asset by diversifying its basket and makes the SDR more representative of the actual currency use and trading in the international financial system.

III. Concluding Observations

October 1, 2016 marks an important occasion when the RMB will be added to the SDR basket. The date also marks the 67th anniversary of the founding of the People's Republic of China. The journey that China's economy has travelled during the 67 years is remarkable. With the implementation of the reforms and opening up

beginning in 1978, China has transformed from a poor and closed economy to a vibrant emerging market economy and its currency is now recognized as an international reserve currency.

The IMF's decision to include the RMB in the SDR basket is a judgmental one. It took into account objective indicators of the rapid increase in the use and trading of the RMB in international markets as well as policy reforms undertaken by the Chinese authorities to enhance the RMB's free usability. The membership of the IMF, comprising 189 countries, was satisfied that the RMB is widely used and traded, even though it is still subject to some capital account restrictions, and that the RMB will be freely usable by member countries to meet their balance of payments needs.

The inclusion of the RMB in the SDR basket is beneficial for both China and global economy. For China, as was the case with China joining the WTO, RMB in the SDR basket it is likely to spur further reforms necessary for China to transition to a fully market based economy. The success of China's transition will be beneficial to the global economy as well, given China's close linkages with the rest of the world. The SDR, with RMB in the basket, will also become a more attractive international reserve asset and more representative of changes in the global economy.

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IMI International Monetary Review

Working Paper

FDI and Economic Development:

Evidence from China's Regional Growth *

By Liu Xiangbo, Luo Yu, Qiu Zhigang and Zhang Ru*

By using China's provincial data through 1978 to 2011, this paper examines the exact channels through which FDI affects China's regional growth and inequality. We find that FDI can facilitate China's economic growth through its impact on physical and human capital accumulation. On the other hand, FDI can have a negative impact on output growth by crowding out domestic investment, reducing local government revenue and increasing opportunity cost of technology innovations. Regarding FDI's impact on regional inequality, we find that it can deliver both positive and negative effects. The imbalance of FDI inflows among regions can widen the interregional growth gap through its impact on physical capital accumulation and technology progress. While it narrows the growth gap between regions through its effects on level of higher education, industrial structure, government revenue, degree of openness and trade surplus.

JEL Classification: F21, F43, C23

Keywords: FDI, Emerging Economies, Economic Growth, China

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1. Introduction

China has witnessed a rapid growth since her economic reform taken place in 1978. To investigate the driving forces behind China's rapid growth, many theories and empirical research have shown that globalization and economic integration can significantly contribute to the rapid development and industrialization of the emerging markets (See, among others, Choi, 2004; Pomfret, 1997; Yao and Zhang, 2001; Greenaway, 1998; Fleisher and Chen, 1997). As a result of China's on-going attempts to integrate into the global economy, total inflows of Foreign Direct Investment (FDI) rise dramatically.[1]However, with the rapid growth in the coastal areas, the interior areas in China largely fall behind during these 30 years, resulting in a vast and increasingly widened growth gap. This is an important issue that China needs to face nowadays.

This paper attempts to explore the roles played by FDI in determining China's fast growth and regional inequality. The impact of FDI on economic growth in industrializing economies has been widely studied in recent years. Many empirical studies focus on the effects of FDI on output growth in the host country (See, for instance, Chuang and Hsu, 2004; Lardy, 1995). In these studies, FDI is typically considered as a significant promoter for economic growth in the emerging economies. This is because FDI may help facilitate physical capital stock accumulation, stimulate knowledge spillover, encourage the incorporation of new technologies (Borenszte*in et al*., 1998) and advance labor skill acquisition of the host economy through the introduction of management practices and organizational arrangements from the developed world (De Mello, 1997).

However, some studies point out that FDI may lead to negative impacts. For instance, Agosin and Mayer (2000) find the possible "crowding out" effect of FDI on domestic investment for capital formation and growth in the industrializing countries.Görg and Greenaway (2004) show that the positive knowledge spillovers in the developing economies are not significant; Hu and Jefferson (2002) even find a significant effect of productivity depression rather than improvement for the FDI recipient countries. Herzer*et al*., (2008) find no clear relationship between FDI and per capital income for the developing countries.

Although many existing studies have extensively studied the impact of FDI on economic growth for the emerging economies, the exact channels through which FDI affects output growth in these rapid growing countries have not been well examined. An exception is Yao and Wei (2007) who analyze how FDI affects the development of the newly industrializing economies from the perspective of improvement of production efficiency and shift of production frontier. However, they do not consider other possible channels beyond technology and efficiency

[1]In fact, China surpassed the United States as the largest recipient of FDI in 2003.

change through which FDI may affects output growth. The objective of our paper is to fill the gap by investigating the exact channels between the FDI inflows and regional economic growth for China from a broader perspective. China provides an ideal example for this empirical study as she has experienced a fast economic growth accompanied with institutional change and market liberalization since the implementation of her open door policy. We focus on analyzing two important questions. First, through what channels does FDI affect economic growth in China during the reform period? Second, through what mechanisms does FDI affect interregional growth gaps and income inequality in China?

2. Interregional Growth Gap and FDI Inflows in China

During the past 30 years, China has maintained a rapid rate of its economic growth. The average annual growth rate of real GDP is 9.4%,and the average annual growth rate of real GDP per capita is 8.2%.[2]However, along with fast economic growth,the widened interregional growth gap and income inequality become an important issue. The east and coast areas have always been growing faster. Their geographical advantages allow them to attract much of the foreign and domestic investment, highly skilled labor as well as the policy priority. Figure 1 shows the changes in provincial real GDP per capita (in natural logarithm) distribution from 1978 to 2011.

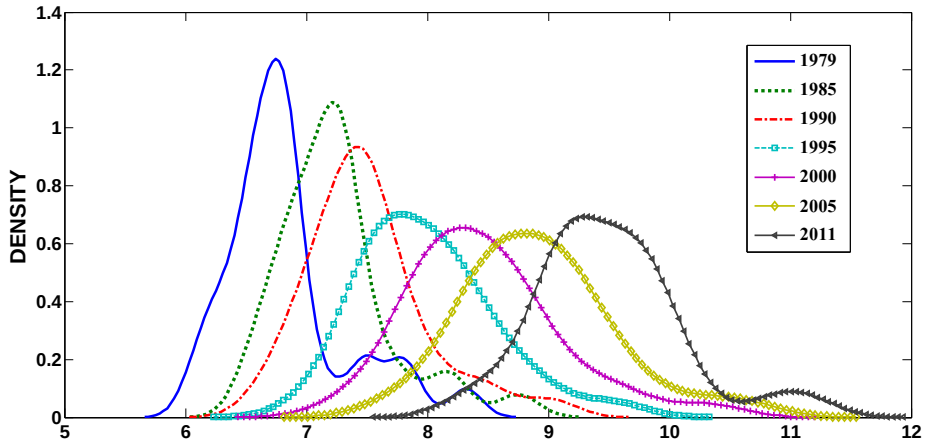

Figure1: Dynamics of Regional Real GDP Per Capita Distribution

[2]These two growth rates are calculated based on 1978 constant price level.

Figure 1 shows the change in kernel density of regional real GDP per capita from 1978 to 2011. Data are taken from the annual *China Statistical Year Books*.

As shown in Figure 1, the distribution of per capita GDP is significantly skewed to the right in 1978 and then changes into a bell shape in 1995. In 2011, the curve has significantly long tails on both hand side,and the kurtosis of the curve is smaller, indicating that the range of the extreme values of real GDP per capita is significantly larger than ever before.These changes imply thatthe output distribution has become significantly decentralized during the past 34 years, implying that the gap between the poorer and richer areas in China has become increasingly larger over time.

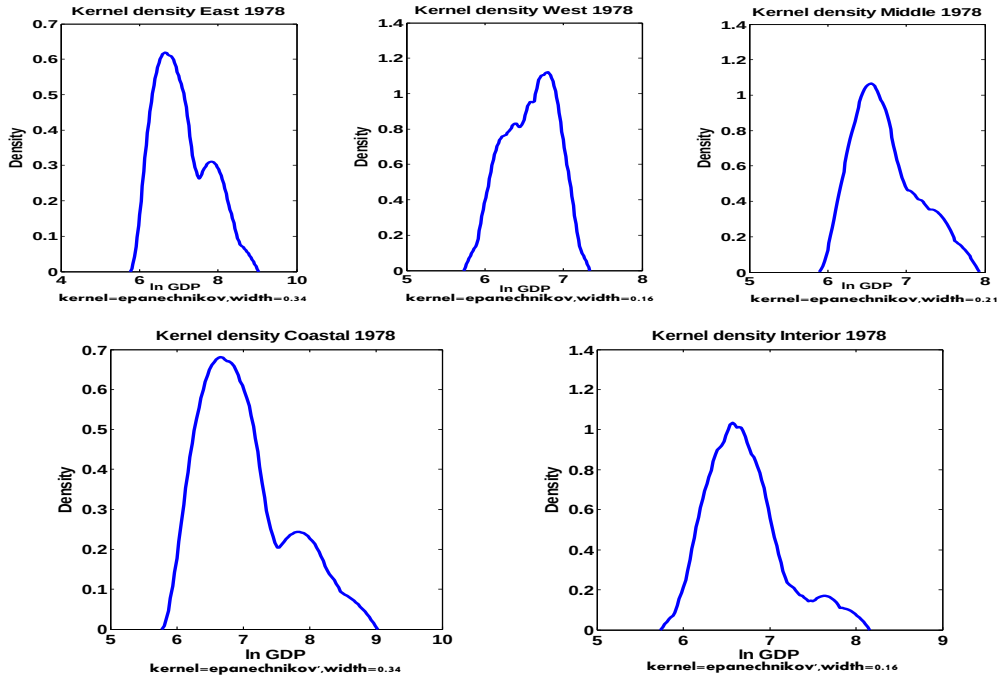

Figure 2: Distribution of Real GDP by Region in 1978

Figure 2 shows the Kernel density of real GDP per capita by region in 1978. Data are taken from the *China Statistical Year Book*.

Figure 2 and 3 compare the Kernel density of real GDP per capita by regions in the year 1978 and 2011.[3] In 1978, most provinces in the east, middle and west have a similar level of the per capita GDP. However, after 34 years' development, the real per capita GDP in the east areas becomes the highest among all three regions. The middle areas have the second highest per capita GDP, whereas that of the west areas is the lowest. Similar results are found in the coastal and interior areas.

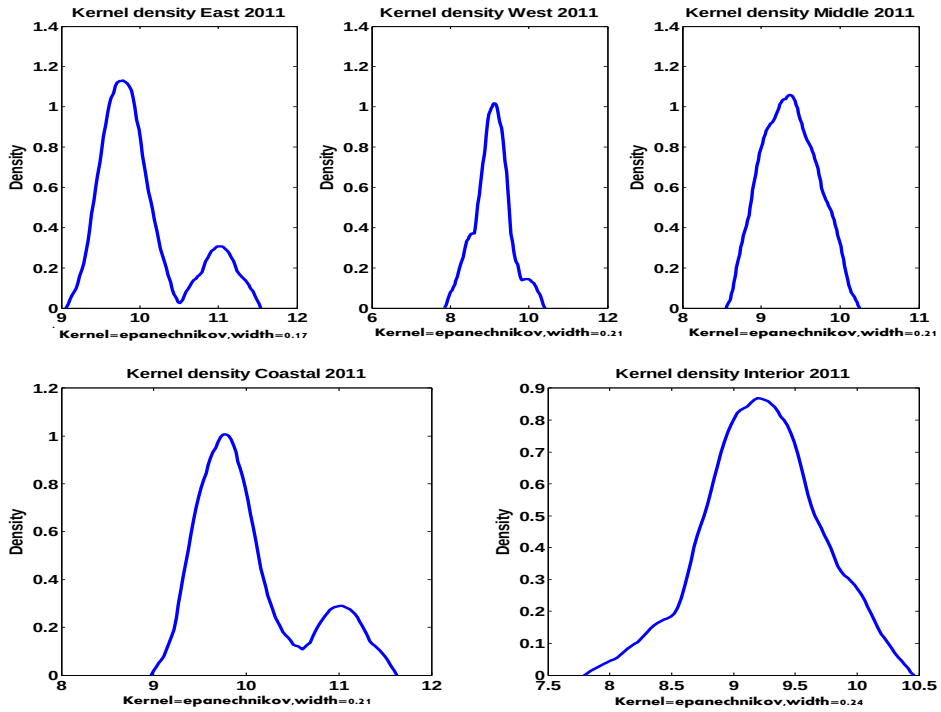

Figure 3: Distribution of Real GDP by Region in 2011

Figure 3 shows the Kernel density of real GDP per capita by region in 2011. Data are taken from the *China Statistical Year Book*.

Figure 4 links between the growth rate of real per capita GDP and FDI inflows from 1984 to 2011 by region. Clearly, we observe a pattern between the growth rate of FDI and the growth rate of GDP: when the inflows of FDI increase (decrease), the real per capita GDP increases (decreases). Therefore, we conjecture that FDI might

[3]We divide the data from 31 provinces and municipalities into three regions as east, middle and west according to their geographical location and China's western-development policy. We also classify the data into coastal and interior areas because the opening up policy starts from the coastal areas.

potentially play an important role in promoting China's economic growth and contributing to the regional disparity. In the rest of the paper, we investigate the channels though which the FDI affects China's economic growth and inequality.

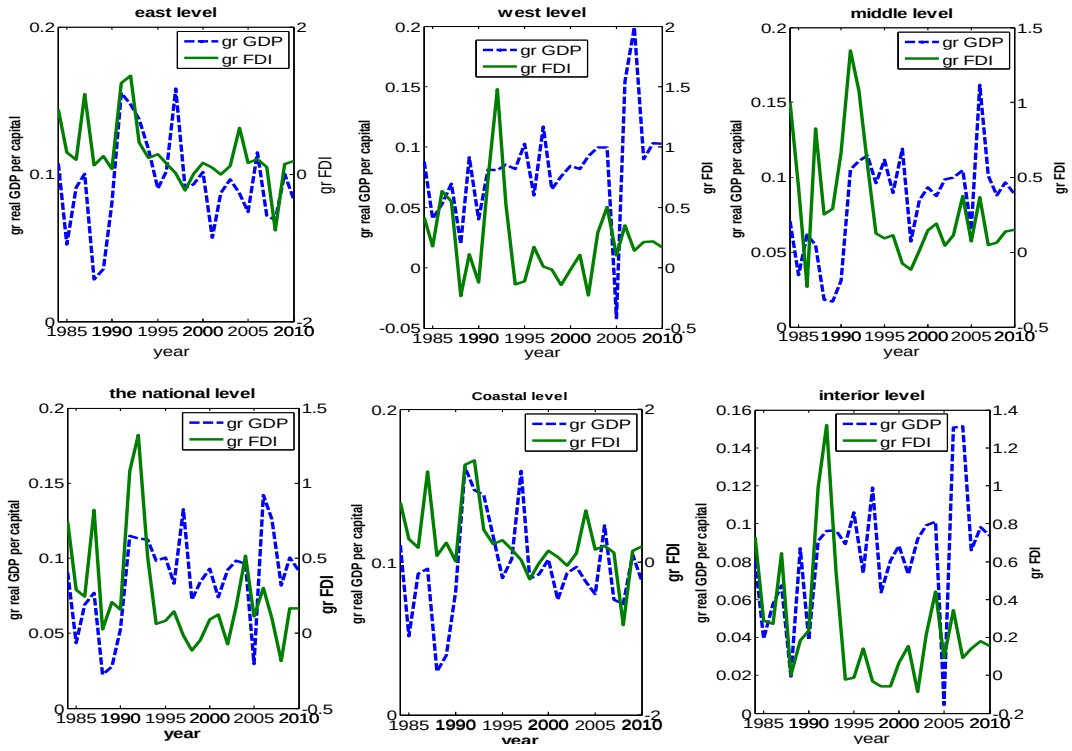

Figure 4: Growth Rate of Real GDP per capita and FDI through 1984 to 2011

Figure 4 describes the relationship between the growth rate of real GDP per capita and FDI from 1984 to 2011. Data are taken from the *China Statistical Year Books*.

3. Methodology

3.1 Hypothesis

FDI may play multiple roles in affecting the economic growth and development of China's regional markets. First, as a source of physical capital accumulation in the production process, FDI has a similar impact on output growth as domestic investment (DI). However, the competition between foreign-invested enterprises and domestic ones may make FDI a substitute of DI since FDI would preempt the investment opportunities in the domestic market. In this case, FDI would have a "Crowding Out" effect on DI. On the other hand, FDI may also stimulate more domestic investment in the recipient country through the trade of intermediate goods or forward and backward industrial linkages. This is the "Crowding In" effect of FDI on DI, which could prompt the phase of industrialization and economic growth of the emerging markets. Agosin and Mayer (2000) study the "Crowding Out" and "Crowding In" effects of FDI on DI in the developing countries and find that FDI can strongly crowds in DI in Asian countries.

Another aspect that FDI differs from DI is that the former is possible to enable the host country to take advantage of the advanced technologies in the developed countries. By technology diffusion, import of intermediate goods and "learning by doing", the recipient countries are possibly able to adopt advanced technologies and hence achieve a higher level of productivity. Moreover, the intense competition between foreign and domestic invested firms can lead to an improved allocation of resources so as to reduce the inefficiency in production. Therefore, FDI may affect economic growth through promoting the advancement of technologies in the developing countries. On the other hand, the possibility to adopt foreign technology will increase the opportunity cost of domestic firm to invest in research and development of their own technology, which may prevent the host country from further technology progress.

FDI might help produce and export manufacturing goods, as most FDI in the developing economies intends to take advantage of cheap unskilled labor. Due to this, FDI can result in an increase in job creations in the emerging markets and theimproved job opportunitieswill then affect people's decision of higher education and human capital investment. On one hand, human capital will accumulate through working in foreign-invested enterprises, yet on the other hand, the attractiveness of higher education such as college and graduate degree is reduced and this will impede the human capital accumulation in the long run. This is another channel through which FDI may affect output growth.

Finally, it is also important to notice how FDI may spur institutional changes and market liberalization and thus influence output growth. Many large emerging markets have recently implemented economic reforms in order to increase international trade and foreign investments, their attempts to integrate into the global

economy have made the institutional structures in those countries change significantly.

As classic growth theories suggest that economic growth could be accounted as the contributions of factor inputs, productivity and other institutional factors, FDI may affect economic growth in the emerging markets through several channels as shown in Figure 5. We will follow a two-step approach described in Figure 5to examine the determinants of output growth and then test the specific impact of FDI on those determinants. To this end, we impose the following seven hypotheses.

Hypothesis 1: FDI can affect total amount of investment by either stimulating more domestic investment through a "Crowding In" effect or as a substitute to "Crowd Out" domestic investment, thus affect physical capital accumulation.

Hypothesis 2: As FDI in the labor intensive industries can change the opportunity cost for higher education, it can therefore affect people's education decisions and hence human capital accumulation.

Hypothesis 3: The imbalance of FDI inflows into different industries can directly have an impact on the industrial structure as well as the phase of industrialization.

Hypothesis 4: The preferential policy for FDI adopted bylocal governments can affect government revenue, which in turn will affect the strength of government intervention to the economy and economic growth.

Hypothesis 5: Foreign invested enterprises affect the degree of openness of the economy by either stimulating more international trade or as analternative of trade between the home country and the host country. Therefore, degree of integration into the global market and role in international specialization will affect domestic output growth for the recipient country.

Hypothesis 6: As FDI may affect degree of openness, it will also impact balance of trade, which directly affects level of domestic output and economic growth.

Hypothesis 7: FDI may also have a spillover effect on technology progress or increasing the opportunity costof R&D activities and innovations in the domestic invested enterprises, which may help or prevent the recipient country to improve its productivity and efficiency and thus level of growth.

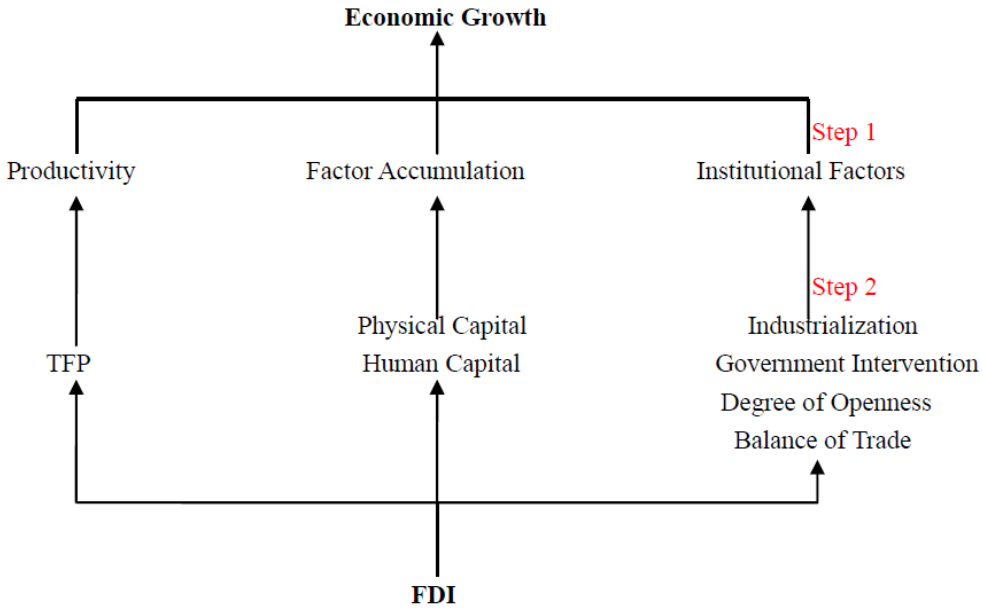

Figure 5: Possible Channels between FDI and Economic Growth

3.2 Empirical Models

Following the steps described in Figure 5, we employ the following equations (1) and (2) to test the general effects of FDI on output level and its growth rate of the host country.

$$\ln GDP_{i,t} = \alpha_0 + \alpha_1 FDI_{i,t} + \alpha_2 FDI_{i,t-1} + \alpha_3 FDI_{i,t-2} + \alpha_4 \ln GDP_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

$$d\ln GDP_{i,t} = \beta_0 + \beta_1 FDI_{i,t} + \beta_2 FDI_{i,t-1} + \beta_3 FDI_{i,t-2} + \beta_4 \ln GDP_{i,t-1} + \beta_5 d\ln GDP_{i,t-1} + \mu_{i,t} \quad (2)$$

where i and t denote province and time, respectively. We then use equation (3) to examine the important factor inputs that determine a province's economic growth.

$$\ln GDP_{i,t} = \gamma_0 + \gamma_1 \ln k_{i,t} + \gamma_2 edu_{i,t} + \gamma_3 ind_{i,t} + \gamma_4 gov_{i,t} + \gamma_5 open_{i,t} + \gamma_6 netex_{i,t} + \nu_{i,t} \quad (3)$$

Finally, we test the specific impact of FDI on those determinant factors in (3) to see how FDI affects growth through those channels.

4. Data and Variables

Panel data from 1978 to 2011 of 30provinces in China are used for empirical analysis.[4]To study the regional growth disparity, we divide 30 provinces into three regions, the east, the middle and the west. We also consider a second way of division, i.e., the coastal and the interior areas.[5] The variables are described in Table 1.

Table 1: Description of Variables

Variables	Descriptions
FDI	inflow of FDI, the proportion of FDI (in RMB Yuan) to GDP
LnGDP	level of real Gross Domestic Product (GDP) per capita, real GDP per capita taken in natural logarithm, calculated in 1978 constant prices
dlnGDP	growth rate of real GDP per capita, the first difference of real GDP per capita taken in natural logarithm
lnk	physical capital accumulation, real physical capital stock taken in natural logarithm, calculated in 1978 constant prices
edu	level of education, number of total enrollment of students in institutions of higher education in every 100 employed employees
ind	industrial structure, proportion of added value of the tertiary industry to GDP
gov	degree of government intervention, proportion of government revenue relative to GDP
open	degree of openness or dependence on foreign trade, proportion of the value of exports and imports relative to GDP
netex	balance of trade, difference of the value of net exports relative to GDP
inv	level of investment, ratio of total investment of fixed assets to GDP
TFP	Total Factor Productivity, estimated from the residual term of growth decomposition
patent	number of patents, natural log of the number of patents granted
R&D	R&D expenditure, proportion of expenditure on R&D to GDP

[4]We collect data from annual *China Statistical Year Books*, *Comprehensive Statistical Data and Materialson 50 Years of New China*, *CCER database and database of National Bureau ofStatistics of China*.

[5]See Table 1 in Appendix for more detailed information.

5. Empirical Results

In order to specify the regional difference for the effects of FDI on output growth, we first consider regressions using the whole data sample covering 30 provinces in 34 years, and then consider regressions that use a sub-sample covering the provinces in a certain region. The regression method is the dynamic panel estimation. We apply the system GMM method introduced by Arellano and Bover (1995), Blundell and Bond (1998) and Roodman (2006). When choosing the suitable number of lags for each model, we consider the Sargan test and Arellano-Bond test results, as well as the purpose of making models comparable between regions and among channels. The purpose of this paper is to study the possible channels between FDI and growth, and whether such effect will widen or narrow the growth gap between regions are the concerns of the paper. The magnitude of the effect is not our main concern.

5.1 Effects of FDI on Growth

Table 2 in the appendix shows the regression results of equation (1). The effect of FDI on economic growth is ambiguous. On the national level, one and two period lags of FDI have significant impacts on output growth, but their effects are opposite. The current FDI has the positive effect on the output growth in the next year, but has negative effect of a similar magnitude on real GDP growth in one year after. This implies that the positive effect of FDI on growth is reversed one year later. These interesting results leads us to discover further for the question that through what channels FDI could affect growth.

For the regional disparity effect, current FDI has significant affect on all regions, one period lag of FDI has a stronger positive impact on the growth in the west and the interior areas than in the east and coastal areas. However, the two period's lag of FDI has a stronger negative effect on growth in the west and interior regions. Table 3 in the appendix shows the estimated results of the effect of FDI on output growth rate in equation 2. The lagged FDI values affect real per worker GDP growth rate on the national level but in opposite direction. The effects are more significant in the west area than in the east. This implies the effect of FDI on economic growth will reverse after one year as well.

The purpose of this paper is to find out the exact channel through which FDI would affect economic growth and inequality in China, we consider the direction of each channel as well as whether such channel would widen or narrow the growth gap between regions, yet the magnitude of the effect is not our concern.

5.2 Growth Decomposition

Table 4 in the appendix reports the empirical results of growth decomposition in equation (3). On the national level, factors except the openness and balance of trade all have significant positive impacts on the growth of real GDP. Level of education has a negative effect on the growth of real GDP. Intuitively, the expected benefit of education will be realized in the future, yet it is regarded as a cost for production at current period. Since if the number of people went to college is increasing, the number of labor force in the production will be decreased, which contributes to the negative effect.

In the east areas, both the level of education and industrial structure have negative effects on growth, which indicates that output growth in the east does not directly come from the development of the tertiary industry. Instead, it is the development of manufacturing industry that contributes to the fast growth of the east areas. In west areas, the level of education and government interventions are both negatively related to the output growth, indicating a higher level of government revenue leads to a lower level of output growth. In the middle areas, the government intervention and balance of trade have negative impact on growth. It means that a higher level of government revenue, the increase of the foreign trade and the trade surplus has a negative effect on the output growth in the middle areas.

In the coastal areas, all the coefficients are positive, and the signs of the coefficients for the interior areas are similar to those in the west areas. Moreover, we calculate the correlation of the level of TFP[6] with the level of growth. We can see from the table that the correlation between TFP and growth is highest for the west and lowest for the east, which implies that the growth of west areas depended more on technology progress than the east areas. Based on the results from the growth decomposition, we can identify the determinant factors of economic growth. If FDI does affect the economic growth; we should expect that such effect must pass through one or several of those channels. Thus, we test how FDI affects economic growth through those channels in the following subsection.

5.3 Channels between FDI and Growth

Channel 1: "Crowd In" or "Crowd Out" Effects on DI?

Equation (4) is applied to test hypothesis 1. In this model, the explained variable is the level of investment, including both domestic investment (DI) and foreign direct investment (FDI). The explanatory variables in the model include

[6]We use the residual term in the models which stands for the level of total factor productivity (TFP) indicated by Solow residual.

level of FDI, output growth, lags of the explained variable as well as the control variables of the institutional factors.

$$inv_{i,t} = a_0 + a_1 FDI_{i,t} + a_2 FDI_{i,t-1} + a_3 FDI_{i,t-2} + a_4 \ln GDP_{i,t} + a_5 \ln GDP_{i,t-1} + a_6 edu_{i,t} + a_7 open_{i,t} + a_8 gov_{i,t} + a_9 ind_{i,t} + a_{10} netex_{i,t} + a_{11} inv_{i,t-1} + a_{12} inv_{i,t-2} + \upsilon_{i,t} \quad (4)$$

In order to specify the effects of FDI on DI, for each model, a β indicator in equation 5is used according to Agosinand Mayer (2000). This indicator shows the elasticity of total investment with respect to FDI. If $\beta = 1$, then FDI is expected to have no significant effect on DI, so one percent increase of FDI will lead to an equal amount increase of total investment. If $\beta < 1$, then FDI is expected to have a "Crowd Out" effect on DI, which means that one percent increase of FDI will lead to a decrease of DI, so the level of total investment will be increased by less than one percent. On the contrary, if $\beta > 1$, then FDI is expected to have a "Crowd In" effect on DI, indicating that one percent increase of FDI will also promote level of DI so that the total investment will increase more than one percent.

$$\hat{\beta}_i = \frac{\sum_{i=1}^{3} a_i}{1 - \sum_{j=1\ 1}^{1\ 2} a_j} \quad (5)$$

Table 5 in the appendix shows the estimated results of equation (5). On the national level, in the last 34 years, foreign investment in China facilitates domestic investment in the current year, however, it is a substitute to the domestic investment rather than a promoter after the first year. FDI has significant "Crowd In" effect in the current year where local industry build facilities to accommodate foreign investment, however, in the following years, when the foreign investment begins to produce, it will crowd out domestic effect as a substitute.

The implied β for five of the models are all far less than 1, which implies that on the national level and regions other than the middle area, FDI has crowd out effect on DI. On the national level, one percent increase of FDI will lead to the level of total fixed asset investment increase about 0.09 percent, in other words, 0.91 percent of domestic investment has been crowded out by FDI. So in the last 34 years, the role of foreign investment in China is a substitute to the domestic investment rather than a promoter in general.

Moreover, the magnitude of the crowd out effects is diverse among regions. For the east area, the crowd out effect is about 0.6, indicating one percent increase of FDI will lead to 0.6percent decrease of DI. For the middle area, the first "Crowd In" and then "Crowd Out" effect is similar to the national level. However, the total effect is crowd in since β is bigger than one, which means that one percent increase of FDI can crowd in about 3.5 percent of DI and lead to a increase of the total level of investments. For the west area, the implied β is even negative, which means that increase of FDI will crowd out an even bigger amount of domestic investment and thus lead to a decrease in the total level of investment. While such effects are not significant for the west areas, which may be due to the fact that the ability for the west areas to build facilities accommodation is limited, so the effect of FDI to DI is not significant. The "Crowd Out"effect is bigger in the coastal areas than the interior areas. So taken into account of the "Crowd Out" effect FDI has on DI as its substitute, its expected effect on output growth is significantly weakened. For the middle and western areas, increase of FDI discouraged physical capital accumulation and thus was harmful for output growth.

To sum up, FDI in China have significant first "Crowd In" and then "Crowd Out" effects during the reform period through 1978 to 2011 on the national level, but in total, the crowd out effect is bigger than crowd in. When FDI increases, it first attracts more DI through creating a promising environment, then in later years, the effect is reverse that it "Crowd Out" DI as a substitute, its expected effect on output growth is significantly weakened. This may explain why FDI in general has reverse effects on growth for different lags as well.

Channel 2: Human Capital Accumulation

Equation (6) is applied to test the impact of FDI on the education level and human capital accumulation in the recipient country.

$$\begin{aligned} edu_{i,t} &= b_0 + b_1 FDI_{i,t} + b_2 FDI_{i,t-1} + b_3 FDI_{i,t-2} + b_4 \ln GDP_{i,t} + b_5 \ln GDP_{i,t-1} \\ &+ b_6 inv_{i,t} + b_7 open_{i,t} + b_8 gov_{i,t} + b_9 ind_{i,t} + b_{10} netex_{i,t} + b_{11} edu_{i,t-1} + \omega_{i,t} \end{aligned} \quad (6)$$

Table 6 in the appendix shows the estimated results. The effect of FDI on education level is complicated. Five of the models except the west area indicate a strong negative relationship between FDI and the education level. Generally speaking, the negative effect about the similar level for the east and middle areas, as well as coastal and interior areas.

Similar to (5), we can also calculate a β-coefficient which indicates the exact effect of FDI on level of education. On the national level, for every 100 employers, there is a decrease of around 3 students enrolled into higher education institutions

with one percent increase of FDI. For the east and middle, the number is 5. For the west area, with one percent increase of FDI, around 1 more student will be enrolled into higher education.

Intuitively, FDI to the labor-intensive manufacturing industries increases the demand for low-skilled workers in the labor market, and increases the number of total employed workers and attract people from higher education. If the increase of FDI causes more low-cost unskilled labor agglomerating to the coast from the interior and leads to a lower proportion of enrollment to higher education, we should find a higher negative impact on the education level by FDI in the interior areas, since people could otherwise agglomerate to the coast for higher education since the coast has more educational resources. This is the case comparing the implied β for the coastal and interior areas. Moreover, as FDI brings more working opportunities to the coastal areas, the opportunity cost for higher education increases. As a result, more graduates from the secondary or primary school join the industry directly. Through the changes of opportunity cost for further education decisions, FDI significantly affects education level in the host country. Because the level of education plays a negative role in GDP growth national-wide, FDI improves the output growth in the short-run. However, in the long-run, the increase in FDI is harmful for human capital stock and intellectual asset accumulation,and thus slows the output growth. In the east and middle areas, the increase of FDI leads to a short-run growth of GDP, and in the west areas, even the short-run effect on GDP is negative. A proper explanation for the positive β value for the west areas maybe that FDI companies in the west is not enough to absorb all the people who graduated from secondary school, so the choose to enroll in higher education in expecting that they would get better jobs later.

Channel 3: Industrial Structure Change

To test hypothesis 3, we apply equation (7) to examine the effects of FDI on the industrial structure change of the emerging economy.

$$\begin{aligned} ind_{i,t} &= c_0 + c_1 FDI_{i,t} + c_2 FDI_{i,t-1} + c_3 FDI_{i,t-2} + c_4 \ln GDP_{i,t} + c_5 \ln GDP_{i,t-1} \\ &+ c_6 inv_{i,t} + c_7 open_{i,t} + c_8 gov_{i,t} + c_9 edu_{i,t} + c_{10} netex_{i,t} + c_{11} ind_{i,t-1} + \xi_{i,t} \end{aligned} \quad (7)$$

Table 7 in the appendix reports the effects of FDI on the changes of China's industrial structure on the national level. There is no significant relationship between FDI and industrial structure change on the aggregate level. In the east area, one percent increase of FDI leads to 0.45 percent increase of the proportion of tertiary industry. In the other two areas, however, the effects are negative: 2.2 percent decrease in the west and 0.09 percent decrease in the middle. More FDI inflow

stimulates the development of tertiary industry in the east, while impair its development in the middle and west.

FDI to the emerging economies such as China aims at labor intensive manufacturing industries rather than the tertiary industries especially in the interior areas. Its performance improves the prosperity of tertiary industry such as financial markets and producer service industry in the east. From the results in Table 4 in the appendix, we can conclude that FDI does not have a significant effect on output growth through the channel of industrial structure change on the national level, however, it will slower down the growth of the east and coastal areas.

Channel 4: Government Intervention

In order to attract more FDI, the Chinese government (also at local level) initiates various preferential policies such as lower income tax rate, tax reduction and exemption, free land usage. We test the effects of FDI on government revenue by applying equation (8).

$$gov_{i,t} = d_0 + d_1 FDI_{i,t} + d_2 FDI_{i,t-1} + d_3 FDI_{i,t-2} + d_4 \ln GDP_{i,t} + d_5 \ln GDP_{i,t-1} + d_6 inv_{i,t} + d_7 open_{i,t} + d_8 ind_{i,t} + d_9 edu_{i,t} + d_{10} netex_{i,t} + d_{11} gov_{i,t-1} + \kappa_{i,t} \quad (8)$$

The results are reported in Table 8 in the appendix. The value of implied β shows that on the national level, FDI has a negative effect on the growth of local government revenue, and one percent increase of FDI leads to 0.26 percent decrease of the government revenue in proportion to GDP.

For the east areas, the effect is not significant. The negative effect of FDI on local government revenue is more significant in the middle than the west, interior than the coastal. One percentage increase of FDI to the west leads to 0.37 percent decrease of government revenue and for the middle area 0.44 percent, and interior areas 0.87 percent, coastal areas 0.12 percent. This is intuitive, in order to attract more FDI, governments in the middle, west and interior areas has to give more incentive policies for foreign investments otherwise, they will flow to the coastal and east areas. Although the preferential policies encourage more FDI inflows, the government revenue is also reduced significantly. Since government revenue and thus intervention is helpful for the economic growth, incentive policies for FDI will hurt long-run growth.

Channel 5: Degree of Openness

On the one hand, FDI acts as an alternative of trade between the host country and the home country. On the other hand, because foreign invested enterprises may take advantage of the low-cost unskilled labor and land in the recipient country, and import intermediate goods and export finished goods through forward and backward industrial linkages, FDI may also have either a "Crowd In" effect or a "Crowd Out" effect on international trade in the emerging economies.

Equation (9) specifies the effect of FDI on degree of openness.

$$\begin{aligned} open_{i,t} &= e_0 + e_1 FDI_{i,t} + e_2 FDI_{i,t-1} + e_3 FDI_{i,t-2} + e_4 \ln GDP_{i,t} + e_5 \ln GDP_{i,t-1} \\ &+ e_6 inv_{i,t} + e_7 gov_{i,t} + e_8 ind_{i,t} + e_9 edu_{i,t} + e_{10} netex_{i,t} + e_{11} open_{i,t-1} + \psi_{i,t} \end{aligned} \quad (9)$$

The appendix Table 9 shows the results. On the national level, one percent increase of FDI increases the proportion of international trade to GDP by 1.4 percent, which means that foreign invested enterprises have a positive effect on China's international trade in the global markets. The positive effect of FDI on trade is 1.29 percent for the east area, and only 0.78 percent in for the west. However, in the middle, one percent increase of FDI leads to a decrease of international trade by 1.2 percent, which means FDI is a substitute for foreign trade. Intuitively, participation in international trade facilitates in-depth specialization and the division of labor in the areas with comparative advantages, so the allocation of resources is more effective and the production frontier is shifted. For the interior areas, more FDI will facilitate the degree of openness while such effect is smaller for the coastal areas.

Channel 6: Balance of Trade

Equation (10) is applied to examine the exact effect of FDI on net export as one channel between FDI and output growth.

$$\begin{aligned} netex_{i,t} &= e_0 + e_1 FDI_{i,t} + e_2 FDI_{i,t-1} + e_3 FDI_{i,t-2} + e_4 \ln GDP_{i,t} + e_5 \ln GDP_{i,t-1} \\ &+ e_6 inv_{i,t} + e_7 gov_{i,t} + e_8 ind_{i,t} + e_9 edu_{i,t} + e_{10} open_{i,t} + e_{11} netex_{i,t-1} + \vartheta_{i,t} \end{aligned} \quad (10)$$

Table 10 in the appendix shows the results. On the national level, one percent increase of FDI leads the proportion of trade surplus to GDP to increase by 0.9 percent. The effect in the east area is not significant, 0.68 percent in the west. For the middle, one percent increase of FDI leads to a trade deficit at 0.55 percent in proportion to GDP.Comparing the effect of FDI on balance of trade and its effect on the degree of openness, we can find that regions with a higher level of openness have a higher level of trade surplus. For the middle area, FDI not only causes a decrease in international trade, but also leads to a trade deficit. Combining the results in Table 10 and Table 4 in the appendix, FDI promotes Chinese national income and economic growth through a trade surplus effect for the west areas, and

hence enhances the output growth in west areas in China, while such effect is not significant for the east areas, thus increase of FDI narrows the gap between east and west.

Channel 7: Technology Spillover Effect

Equation (11) examines the spillover effect of FDI on level of TFP change in the recipient country.

$$TFP_{i,t} = f_0 + f_1 FDI_{i,t} + f_2 FDI_{i,t-1} + f_3 FDI_{i,t-2} + f_4 \ln GDP_{i,t} + f_5 \ln GDP_{i,t-1} + f_6 inv_{i,t} + f_7 gov_{i,t} + f_8 ind_{i,t} + f_9 edu_{i,t} + f_{10} open_{i,t} + f_{11} netex_{i,t-1} + f_{12} TFP_{i,t-1} + \delta_{i,t} \quad (11)$$

The effects of FDI on TFP are reported in Table 11 in the appendix. In general, FDI is has negative effect on productivity growth on the national level. Yet its effect to the middle areas is not significant. For the east areas, such effect is positive, while for the west areas, one percent increase of FDI will lead to 9 percent decrease of TFP level. For the interior areas, the effect is also negative and coastal areas has effects positive. This implies that on the national level, increase of FDI will impede the technology innovations, and such negative effects especially larger for the interior areas, middle and west areas. For the coastal and east areas, increase of FDI has some positive effect on TFP level, yet the effect is very small. As TFP is a significant determinant of output growth and has positive effect both on the national level and by region, so FDI is expected to decrease China's output growth through the channel of TFP progress, especially for the west and the interior areas.

One explanation for this negative spillover effect is that FDI may impede technology progress through discouraging R&D activities in the domestic-invested enterprises and since most FDI companies are labor intensive, the core technology belongs to is original country rather than transferred to domestic firms. It leads to a lower level of innovations and inventions in the host country, and the slower technology progress shift the production frontier to a lower level. The effect for the west is similar to the national level. However, for the east and coastal areas, such spillover effects are positive, which implies there is positive technology spillover or technology transfer between FDI companies and domestic companies. We also test whether FDI could impede R&D activities and number of patents granted as expected by applying equations (12) and (13).

$$patent_{i,t} = g_0 + g_1 FDI_{i,t} + g_2 FDI_{i,t-1} + g_3 FDI_{i,t-2} + g_4 \ln GDP_{i,t} + g_5 \ln GDP_{i,t-1} + g_6 inv_{i,t} + g_7 gov_{i,t} + g_8 ind_{i,t} + g_9 edu_{i,t} + g_{10} open_{i,t} + g_{11} netex_{i,t-1} + g_{12} patent_{i,t-1} + \varphi_{i,t} \quad (12)$$

$$R\&D_{i,t} = h_0 + h_1 FDI_{i,t} + h_2 FDI_{i,t-1} + h_3 FDI_{i,t-2} + h_4 \ln GDP_{i,t} + h_5 \ln GDP_{i,t-1} + h_6 inv_{i,t} + h_7 gov_{i,t} + h_8 ind_{i,t} + h_9 edu_{i,t} + h_{10} open_{i,t} + h_{11} netex_{i,t-1} + h_{12} R\&D_{i,t-1} + \sigma_{i,t} \quad (13)$$

The results are shown in Table 12 in the appendix. We can see that FDI has a significant negative effect on the number of patents granted on a national level. The effects to the middle areas are also negative. Yet the effect for the east and west areas are positive. Table 13 in the appendix reports the estimated effects of FDI on expenditure in R&D activities. The results show that FDI has a negative effect on R&D investment on the national level. In general, FDI has negative externalities on technology growth and the level of TFP progress in China, which leads to slower down growth of GDP per worker.

5.4 FDI and China's Interregional Income Inequity

The impacts of FDI on regional output growth are different for different regions so that FDI is expected to influence interregional growth gap and income inequity in China. We summarize the effects from our empirical results in Table 2.

As FDI increase total level of investments in the east, middle areas while decrease the total level of investments in the west areas, an increase of FDI is expected to widen the growth gap between the east and the west through the channel of physical capital accumulation. By examining hypothesis 2, we find that FDI enhances output growth in the west and interior,but no significant effects in the east and middle as well as coastal areas. So through the channel of education level or human capital accumulation, increased FDI will narrow the growth gap between east and west, as well as coastal and interior.

FDI narrows the growth gap between the west and other two areas through the channel of industrial structure change, and the gap between the east and interior through the channel of reduced government intervention. Although an increased level of FDI leads to growth in the west areas in China through promoting a higher level of international trade and gaining more trade surplus, the effects are not significant for other regions, so the growth gap between the east and the interior is narrowed.

The negativeeffect of FDI to TFP is significant for the west areas, while for the east areas, such effects is positive. In this perspective, FDI widens the gap between the west and east through shifting its production possibility frontier, that impede technology innovations for the west yet has positive spillover effects for the east. Generally speaking, through the channel of technology spillover and innovation effect, FDI widens the gap between the east and the interior areas.

Table 2: Channels between FDI and Economic Growth in China

Hypothesis	Channel	National	East	West	Middle	Coastal	Interior
H1	*FDI➔inv*	+	+	+	+	+	+
	K➔GDP	+	+	+	+	+	+
Widen	Total Effect	+	+	+	+	+	+
H2	*FDI➔edu*	-	-	+	no	-	-
	edu➔GDP	-	no	-	no	+	-
Widen	Total Effect	+	no	-	no	-	+
H3	*FDI➔ind*	no	+	no	-	+	no
	ind➔GDP	+	-	+	+	+	+
Narrow	Total Effect	no	-	no	-	+	no
H4	*FDI➔gov*	-	no	-	-	-	-
	gov➔GDP	+	+	-	-	+	no
Narrow	Total Effect	-	no	+	+	-	no
H5	*FDI➔open*	+	no	+	-	no	+
	open➔GDP	no	+	+	no	no	no
Narrow	Total Effect	no	no	+	no	no	no
H6	*FDI➔netex*	+	no	+	-	no	+
	netex➔GDP	no	+	+	-	no	+
Narrow	Total Effect	no	no	+	+	no	+
H7	*FDI➔TFP*	-	+	-	no	+	-

	TFP➔ *GDP*	+	+	+	+	+	+
	Total Effect	-	+	-	no	+	-
	FDI➔ *patent*	-	+	+	no	no	+
Widen	*FDI*➔ *R&D*	-	no	no	+	-	no

6. Conclusion

This paper examines the exact channels between FDI and China's economic growth, and its effect on regional inequality. We show that higher level of FDI facilitates China's output growth on the national level through the channel of inspiring more physical capital accumulation, reducing the proportion students pursuing higher education. The channel through enhancing dependence of trade and trade surplus, as well as the industrial structure is not significant on a national level. On the other hand,FDI slows down economic growth in China through reducing government income as well as discouraging technology progress. We also find that through the channels of physical capital accumulation and TFP, FDI widens the income gap between the coastal east and the interior area, and through the channels of industrial structure change, government intervention and human capital accumulation, degree of openness and balance of trade, FDI narrows the interregional growth gap during the past 34 years.

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Appendix

Table 1: Location of Mainland Provinces

Mainland Province	Location	Location	Mainland Province	Location	Location
Beijing	East	Interior	Henan	Middle	Interior
Tianjin	East	Coastal	Hubei	Middle	Interior
Hebei	East	Coastal	Hunan	Middle	Interior
Shanxi	Middle	Interior	Guangdong	East	Coastal
Inner Mongolia	West	Interior	Guangxi	West	Interior
Liaoning	East	Coastal	Hainan	East	Coastal
Jilin	Middle	Interior	Sichuan	West	Interior
Heilongjiang	Middle	Interior	Guizhou	West	Interior
Shanghai	East	Coastal	Yunnan	West	Interior
Jiangsu	East	Coastal	Tibet	West	Interior
Zhejiang	East	Coastal	Shannxi	West	Interior
Anhui	Middle	Interior	Gansu	West	Interior
Fujian	East	Coastal	Qinghai	West	Interior
Jiangxi	Middle	Interior	Ningxia	West	Interior
Shandong	East	Coastal	Xinjiang	West	Interior

Table 2: Effects of FDI on Output Growth Level

	(1) Total	(2) East	(3) West	(4) Middle	(5) Coastal	(6) Interior
	lnGDP	lnGDP	lnGDP	lnGDP	lnGDP	lnGDP
FDI	0.152	0.470***	5.164***	1.441**	0.425***	3.670***
	(0.448)	(0.151)	(1.479)	(0.628)	(0.158)	(0.925)
FDI_1	3.491***	0.0122	9.905***	0.212	0.0434	7.533***
	(0.636)	(0.230)	(1.595)	(0.884)	(0.244)	(1.053)
FDI_2	-3.257***	-0.116	-11.67***	-0.517	-0.126	-8.949***
	(0.473)	(0.161)	(1.578)	(0.657)	(0.168)	(0.967)
lnGDP_1	0.985***	0.995***	0.944***	1.004***	0.996***	0.967***
	(0.00855)	(0.00365)	(0.0235)	(0.00577)	(0.00369)	(0.0140)
_cons	0.189***	0.115***	0.481***	0.0357	0.107***	0.305***
	(0.0668)	(0.0297)	(0.175)	(0.0423)	(0.0299)	(0.105)
N	920	341	331	248	310	610
adj. R^2	0.949	0.997	0.877	0.997	0.997	0.926
F_stat	4304.4206	25646.7310	594.3122	19357.1183	25001.6657	1917.9397
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Standard errors in parentheses, $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$

Table 3: Effects of FDI on Output Growth Rate

	(1) Total	(2) East	(3) West	(4) Middle	(5) Coastal	(6) Interior
	dlnGDP	dlnGDP	dlnGDP	dlnGDP	dlnGDP	dlnGDP
FDI	0.0809	0.438***	4.938***	1.506**	0.397**	3.452***
	(0.443)	(0.151)	(1.465)	(0.623)	(0.157)	(0.916)
FDI_1	3.621***	-0.0218	10.23***	-0.170	0.00989	7.773***
	(0.629)	(0.229)	(1.581)	(0.891)	(0.243)	(1.043)
FDI_2	-3.302***	-0.0991	-11.50***	-0.345	-0.110	-8.896***
	(0.468)	(0.161)	(1.562)	(0.655)	(0.168)	(0.955)
lnGDP_1	-0.0115	-0.00501	-0.0506**	0.00139	-0.00384	-0.0283**
	(0.00848)	(0.00363)	(0.0233)	(0.00581)	(0.00367)	(0.0139)
dlnGDP_1	-0.0877***	0.120**	-0.0798***	0.148**	0.120**	-0.0838***
	(0.0190)	(0.0538)	(0.0282)	(0.0628)	(0.0563)	(0.0216)
_cons	0.169**	0.107***	0.441**	0.0445	0.100***	0.276***
	(0.0662)	(0.0298)	(0.173)	(0.0420)	(0.0299)	(0.104)
N	920	341	331	248	310	610
adj. R^2	0.061	0.067	0.246	0.090	0.064	0.185
F_stat	18.6602	7.9212	24.5892	7.2637	7.0408	32.3613
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Standard errors in parentheses, $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$

Table 4: Results of Growth Decomposition

	(1) Total	(2) East	(3) West	(4) Middle	(5) Coastal	(6) Interior
	lnGDP	lnGDP	lnGDP	lnGDP	lnGDP	lnGDP
lnk	0.840***	0.845***	0.827***	0.750***	0.801***	0.849***
	(0.0118)	(0.0181)	(0.0182)	(0.0266)	(0.0161)	(0.0153)
edu	-0.0448***	-0.00900	-0.117***	0.0441	0.0581***	-0.0944***
	(0.0161)	(0.0206)	(0.0361)	(0.0306)	(0.0187)	(0.0229)
ind	0.561***	-0.402*	1.302***	0.841***	0.501**	0.830***
	(0.123)	(0.214)	(0.182)	(0.198)	(0.213)	(0.145)
gov	0.391***	0.354**	-0.826***	-0.914***	0.439***	0.0406
	(0.111)	(0.145)	(0.232)	(0.255)	(0.124)	(0.178)
open	0.00609	0.0613**	0.561***	-0.0223	0.0226	-0.0360
	(0.0254)	(0.0283)	(0.145)	(0.228)	(0.0231)	(0.0858)
netex	0.0253	0.0718**	0.460***	-0.818**	0.0160	0.469***
	(0.0288)	(0.0312)	(0.175)	(0.342)	(0.0253)	(0.144)
_cons	0.603***	0.964***	0.277**	1.531***	1.063***	0.411***
	(0.0825)	(0.124)	(0.135)	(0.189)	(0.0982)	(0.112)
N	859	319	308	232	290	569
adj. R^2	0.964	0.973	0.961	0.980	0.985	0.957
F_stat	3862.9899	1921.7078	1271.6382	1880.1179	3161.3733	2090.7207
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
corr(lnGDP,TFP)	0.1495	0.0007	0.4092	0.2569	0.0989	0.1922

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 5: Crowd In or Crowd Out Effects of FDI on Domestic Investment

	(1) Total inv	(2) East inv	(3) West inv	(4) Middle inv	(5) Coastal inv	(6) Interior inv
FDI	0.640***	0.642***	-0.148	2.584***	0.591***	0.647***
	(0.110)	(0.126)	(0.258)	(0.594)	(0.133)	(0.209)
FDI_1	-0.461***	-0.473**	0.305	-3.182***	-0.423**	-0.474*
	(0.160)	(0.188)	(0.360)	(0.839)	(0.200)	(0.269)
FDI_2	-0.165	-0.0780	-0.464	1.878***	-0.0696	-0.0262
	(0.121)	(0.139)	(0.305)	(0.650)	(0.144)	(0.235)
lnGDP	0.0127	0.181***	0.0155	0.0817	0.166***	0.0135
	(0.00832)	(0.0474)	(0.00989)	(0.0613)	(0.0499)	(0.00937)
lnGDP_1	0.0108	-0.165***	0.0226**	-0.0637	-0.154***	0.0181*
	(0.00868)	(0.0472)	(0.0108)	(0.0635)	(0.0498)	(0.00979)
edu	0.0168***	0.0187***	0.0564***	0.0459***	0.0245***	0.0226***
	(0.00484)	(0.00620)	(0.0131)	(0.0122)	(0.00727)	(0.00699)
ind	-0.00632	-0.116**	0.146**	0.0246	-0.0454	-0.0107
	(0.0351)	(0.0513)	(0.0601)	(0.0829)	(0.0773)	(0.0422)
gov	0.0759*	0.00497	0.0643	0.436***	0.0412	0.105
	(0.0416)	(0.0505)	(0.0924)	(0.144)	(0.0548)	(0.0703)
open	-0.0388***	-0.0189**	-0.131***	-0.153	-0.0272***	-0.00993
	(0.00814)	(0.00823)	(0.0491)	(0.0967)	(0.00873)	(0.0257)
netex	-0.0364***	-0.0174*	-0.120**	-0.0237	-0.0262***	0.0437
	(0.00901)	(0.00901)	(0.0522)	(0.134)	(0.00946)	(0.0392)
inv_1	1.037***	1.040***	0.824***	1.071***	1.040***	0.991***
	(0.0359)	(0.0553)	(0.0593)	(0.0764)	(0.0588)	(0.0452)
inv_2	-0.200***	-0.252***	-0.130**	-0.357***	-0.262***	-0.187***
	(0.0380)	(0.0579)	(0.0605)	(0.0804)	(0.0610)	(0.0482)
_cons	-0.126***	-0.0403	-0.221***	-0.117	-0.0263	-0.183***
	(0.0316)	(0.0462)	(0.0557)	(0.100)	(0.0500)	(0.0439)
N	910	340	325	245	309	601
adj. R^2	0.912	0.879	0.926	0.946	0.886	0.923
F_stat	786.3183	206.8788	339.7441	357.0227	200.9884	602.5590
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	0.0859	0.4292	-1.003	4.4755	0.4432	0.7490
Effects	Crowd out	Crowd out	Crowd out	Crowd In	Crowd out	Crowd out

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 6: Effects of FDI on Education Level

	(1) Total edu	(2) East edu	(3) West edu	(4) Middle edu	(5) Coastal edu	(6) Interior edu
FDI	2.103***	0.347	2.835***	-3.062	0.385	2.659***
	(0.465)	(0.752)	(0.656)	(2.083)	(0.667)	(0.783)
FDI_1	-5.978***	-2.258**	-12.59***	3.752	-1.851*	-10.74***
	(0.659)	(1.086)	(0.862)	(2.839)	(0.980)	(0.973)
FDI_2	3.256***	0.615	9.887***	-1.838	0.448	7.029***
	(0.504)	(0.792)	(0.824)	(2.150)	(0.699)	(0.872)
lnGDP	-0.0826**	0.455	-0.0256	0.106	0.168	-0.0156
	(0.0353)	(0.280)	(0.0259)	(0.211)	(0.248)	(0.0352)
lnGDP_1	0.223***	-0.256	0.0713**	0.128	0.0499	0.143***
	(0.0359)	(0.278)	(0.0279)	(0.218)	(0.247)	(0.0362)
inv	0.330***	0.283	0.519***	0.0643	0.324**	0.357***
	(0.0711)	(0.175)	(0.0956)	(0.133)	(0.156)	(0.0850)
ind	-0.325**	-0.394	-0.255	-0.393	-1.130***	-0.199
	(0.147)	(0.306)	(0.155)	(0.284)	(0.373)	(0.157)
gov	0.114	0.287	0.0518	0.981*	-0.0754	0.102
	(0.174)	(0.292)	(0.238)	(0.503)	(0.269)	(0.260)
open	0.150***	0.168***	0.0804	0.368	0.184***	0.0527
	(0.0343)	(0.0475)	(0.128)	(0.335)	(0.0425)	(0.0956)
netex	0.148***	0.162***	0.106	-0.540	0.190***	-0.160
	(0.0379)	(0.0521)	(0.136)	(0.463)	(0.0460)	(0.146)
edu_1	0.788***	0.756***	0.810***	0.778***	0.754***	0.782***
	(0.0201)	(0.0365)	(0.0336)	(0.0444)	(0.0351)	(0.0259)
_cons	-1.006***	-1.517***	-0.379***	-1.671***	-1.419***	-0.913***
	(0.129)	(0.260)	(0.143)	(0.332)	(0.235)	(0.158)
N	919	341	330	248	310	609

adj. R^2	0.905	0.889	0.934	0.951	0.915	0.909
F_stat	802.5075	249.2974	427.6058	441.3267	305.7187	556.5279
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	-2.9198	-5.3114	0.6947	-5.1712	-4.1382	-4.8257

Standard errors in parentheses, $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$

Table 7: Effects of FDI on Industrial Structure

	(1) Total ind	(2) East ind	(3) West ind	(4) Middle ind	(5) Coastal ind	(6) Interior ind
FDI	0.0833	0.163**	-0.159	0.348	0.185***	-0.134
	(0.0597)	(0.0787)	(0.144)	(0.286)	(0.0662)	(0.119)
FDI_1	-0.129	-0.235**	0.0386	-1.329***	-0.275***	-0.150
	(0.0857)	(0.115)	(0.199)	(0.383)	(0.0983)	(0.150)
FDI_2	0.0484	0.146*	-0.271	0.962***	0.122*	-0.0426
	(0.0641)	(0.0823)	(0.169)	(0.293)	(0.0697)	(0.130)
lnGDP	0.0112**	0.0496*	0.00922*	-0.0513*	0.00756	0.0134**
	(0.00448)	(0.0292)	(0.00547)	(0.0287)	(0.0249)	(0.00523)
lnGDP_1	-0.00619	-0.0511*	0.00106	0.0752**	0.00216	-0.00486
	(0.00473)	(0.0289)	(0.00607)	(0.0293)	(0.0247)	(0.00557)
inv	-0.0115	-0.0273	0.0220	-0.0122	-0.00563	-0.0207
	(0.00924)	(0.0184)	(0.0214)	(0.0178)	(0.0159)	(0.0129)
edu	0.00260	0.0133***	-0.0111	-0.0180***	-0.00200	0.00394
	(0.00261)	(0.00381)	(0.00716)	(0.00580)	(0.00369)	(0.00390)
gov	-0.0457**	-0.0597*	0.0260	-0.0126	-0.0768***	-0.0352
	(0.0222)	(0.0306)	(0.0506)	(0.0690)	(0.0269)	(0.0388)
open	0.00656	0.00306	-0.0140	0.0411	0.00540	0.0358**
	(0.00444)	(0.00508)	(0.0277)	(0.0460)	(0.00438)	(0.0143)
netex	0.00510	0.00182	0.00717	0.0882	0.00561	0.0154
	(0.00490)	(0.00554)	(0.0293)	(0.0630)	(0.00473)	(0.0219)
ind_1	0.846***	0.839***	0.823***	0.808***	0.780***	0.836***

	(0.0191)	(0.0321)	(0.0338)	(0.0388)	(0.0387)	(0.0238)
_cons	0.0209	0.0733**	-0.0187	-0.111**	0.00571	-0.000977
	(0.0171)	(0.0289)	(0.0307)	(0.0467)	(0.0255)	(0.0245)
N	919	341	330	248	310	609
adj. R^2	0.880	0.905	0.819	0.914	0.920	0.862
F_stat	618.2746	295.3792	137.5973	241.3745	323.1519	348.5131
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	0.0175	0.4596	-2.2112	-0.0990	0.1455	-1.9915

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 8: Effects of FDI on Government Revenue

	(1) Total gov	(2) East gov	(3) West gov	(4) Middle gov	(5) Coastal gov	(6) Interior gov
FDI	0.0873	0.0469	0.0967	1.160***	0.118	-0.0519
	(0.0539)	(0.0693)	(0.134)	(0.224)	(0.0739)	(0.0965)
FDI_1	-0.305***	-0.161	-0.537***	-1.762***	-0.259**	-0.402***
	(0.0773)	(0.100)	(0.183)	(0.299)	(0.109)	(0.121)
FDI_2	0.155***	0.0905	0.267*	0.428*	0.121	0.123
	(0.0582)	(0.0725)	(0.160)	(0.227)	(0.0773)	(0.106)
lnGDP	-0.0189***	-0.0463*	-0.0153***	-0.0708***	-0.0504*	-0.0168***
	(0.00402)	(0.0255)	(0.00511)	(0.0213)	(0.0273)	(0.00424)
lnGDP_1	0.00804*	0.0397	-0.00458	0.0579***	0.0445	0.00143
	(0.00422)	(0.0253)	(0.00565)	(0.0223)	(0.0271)	(0.00449)
inv	0.0211**	0.00726	0.0420**	0.0367***	0.00345	0.0419***
	(0.00829)	(0.0162)	(0.0200)	(0.0134)	(0.0175)	(0.0104)
edu	0.00955***	0.00772**	0.0141**	0.0103**	0.00754*	0.00939***
	(0.00233)	(0.00335)	(0.00670)	(0.00446)	(0.00405)	(0.00314)
ind	0.0261	0.0429	0.0377	-0.0167	0.0418	0.0280
	(0.0173)	(0.0287)	(0.0314)	(0.0293)	(0.0440)	(0.0193)

open	0.00287	0.00171	0.0643**	-0.0296	0.00167	0.00260
	(0.00400)	(0.00446)	(0.0255)	(0.0352)	(0.00485)	(0.0117)
netex	0.00255	0.00177	0.0231	0.0790*	0.00158	-0.000505
	(0.00442)	(0.00487)	(0.0274)	(0.0474)	(0.00524)	(0.0179)
gov_1	0.761***	0.837***	0.536***	0.611***	0.838***	0.621***
	(0.0189)	(0.0256)	(0.0454)	(0.0514)	(0.0289)	(0.0299)
_cons	0.0878***	0.0507**	0.153***	0.127***	0.0474*	0.127***
	(0.0149)	(0.0248)	(0.0274)	(0.0375)	(0.0273)	(0.0191)
N	919	341	330	248	310	609
adj. R^2	0.750	0.860	0.402	0.773	0.857	0.590
F_stat	254.4786	191.5433	22.0054	77.9456	170.0495	82.2950
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	-0.2623	-0.1448	-0.3735	-0.4473	-0.1235	-0.8731

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 9: Effects of FDI on Degree of Openness

	(1) Total open	(2) East open	(3) West open	(4) Middle open	(5) Coastal open	(6) Interior open
FDI	0.294	1.137	-0.656**	0.0776	0.673	1.107***
	(0.432)	(0.834)	(0.276)	(0.246)	(0.865)	(0.313)
FDI_1	1.858***	0.567	3.561***	0.866***	0.913	3.067***
	(0.617)	(1.211)	(0.337)	(0.331)	(1.272)	(0.379)
FDI_2	-0.917**	-0.554	-2.315***	-1.258***	-0.379	-2.396***
	(0.465)	(0.874)	(0.323)	(0.244)	(0.900)	(0.353)
lnGDP	0.0297	-0.0863	0.00686	0.00348	-0.0832	-0.0191
	(0.0324)	(0.309)	(0.0107)	(0.0248)	(0.320)	(0.0140)
lnGDP_1	0.0305	0.193	0.0372***	0.00751	0.0990	0.0284*
	(0.0338)	(0.306)	(0.0116)	(0.0256)	(0.318)	(0.0146)
inv	-0.538***	-0.673***	-0.184***	-0.0128	-0.910***	-0.00177
	(0.0643)	(0.191)	(0.0401)	(0.0152)	(0.196)	(0.0345)

edu	0.113***	0.122***	0.0186	0.00523	0.214***	-0.0107
	(0.0185)	(0.0402)	(0.0139)	(0.00506)	(0.0456)	(0.0104)
ind	0.315**	0.280	0.131**	0.0300	1.413***	0.130**
	(0.135)	(0.335)	(0.0645)	(0.0334)	(0.482)	(0.0631)
gov	-0.155	-0.439	0.347***	0.0985*	0.0901	0.1000
	(0.160)	(0.323)	(0.0961)	(0.0590)	(0.347)	(0.103)
netex	-1.002***	-1.004***	-0.683***	0.230***	-1.004***	-1.069***
	(0.0151)	(0.0237)	(0.0412)	(0.0525)	(0.0235)	(0.0377)
open_1	0.131***	0.114***	0.250***	0.744***	0.105***	0.253***
	(0.0137)	(0.0216)	(0.0382)	(0.0366)	(0.0216)	(0.0248)
_cons	-0.235*	-0.371	-0.270***	-0.0818**	-0.00147	-0.0422
	(0.122)	(0.300)	(0.0575)	(0.0402)	(0.320)	(0.0647)
N	919	341	330	248	310	609
adj. R^2	0.853	0.868	0.652	0.824	0.875	0.855
F_stat	489.3713	204.3293	57.8374	106.8879	198.4013	328.3302
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	1.4212	1.2980	0.7867	-1.2281	1.3486	2.3802

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 10: Effects of FDI on Balance of Payments

	(1) Total netex	(2) East netex	(3) West netex	(4) Middle netex	(5) Coastal netex	(6) Interior netex
FDI	0.286	0.992	-0.479*	-0.573***	0.631	-0.0143
	(0.411)	(0.797)	(0.258)	(0.218)	(0.832)	(0.207)
FDI_1	1.455**	0.405	2.259***	1.053***	0.714	1.530***
	(0.588)	(1.156)	(0.336)	(0.298)	(1.224)	(0.255)
FDI_2	-0.754*	-0.553	-1.283***	-0.645***	-0.421	-0.610***
	(0.442)	(0.834)	(0.299)	(0.226)	(0.866)	(0.225)
lnGDP	0.0279	-0.0294	0.00567	-0.0418*	-0.0477	-0.0000186

	(0.0309)	(0.295)	(0.00996)	(0.0221)	(0.308)	(0.00911)
lnGDP_1	0.0379	0.147	0.0299***	0.0372	0.0700	0.0125
	(0.0322)	(0.292)	(0.0108)	(0.0228)	(0.306)	(0.00958)
inv	-0.504***	-0.618***	-0.127***	-0.0100	-0.845***	0.0217
	(0.0612)	(0.183)	(0.0383)	(0.0136)	(0.189)	(0.0225)
edu	0.100***	0.103***	0.0120	0.00383	0.199***	-0.0203***
	(0.0176)	(0.0385)	(0.0131)	(0.00455)	(0.0440)	(0.00677)
ind	0.266**	0.219	0.108*	-0.0000606	1.382***	0.0451
	(0.129)	(0.319)	(0.0610)	(0.0299)	(0.463)	(0.0410)
gov	-0.100	-0.329	0.139	-0.00786	0.155	0.113*
	(0.153)	(0.309)	(0.0919)	(0.0534)	(0.334)	(0.0672)
open	-0.820***	-0.837***	-0.649***	0.0404	-0.855***	-0.469***
	(0.0131)	(0.0207)	(0.0353)	(0.0359)	(0.0209)	(0.0156)
netex_1	-0.0124	-0.0140	0.272***	0.704***	-0.0199	0.258***
	(0.0144)	(0.0226)	(0.0388)	(0.0503)	(0.0225)	(0.0239)
_cons	-0.282**	-0.481*	-0.208***	0.0462	-0.0799	-0.0722*
	(0.116)	(0.286)	(0.0544)	(0.0361)	(0.308)	(0.0422)
N	919	341	330	248	310	609
adj. R^2	0.817	0.834	0.563	0.586	0.849	0.834
F_stat	375.3274	157.0020	40.5110	33.4064	159.4221	280.2136
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	0.9749	0.8323	0.6826	-0.5574	0.9060	1.2206

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 11: Effects of FDI on TFP

	(1) Total TFP	(2) East TFP	(3) West TFP	(4) Middle TFP	(5) Coastal TFP	(6) Interior TFP
FDI	0.352***	0.355***	0.0901	-0.196	0.300***	0.293
	(0.112)	(0.104)	(0.321)	(0.481)	(0.103)	(0.231)
FDI_1	0.0313	-0.159	-0.195	0.528	-0.0855	0.0385
	(0.161)	(0.149)	(0.440)	(0.653)	(0.150)	(0.294)

FDI_2	-0.389***	-0.170	-1.065***	-0.531	-0.168	-0.731***
	(0.120)	(0.107)	(0.381)	(0.493)	(0.106)	(0.253)
lnGDP	0.153***	0.387***	0.151***	0.582***	0.415***	0.152***
	(0.00843)	(0.0388)	(0.0122)	(0.0487)	(0.0381)	(0.0103)
lnGDP_1	-0.128***	-0.370***	-0.0882***	-0.604***	-0.410***	-0.109***
	(0.00893)	(0.0379)	(0.0136)	(0.0501)	(0.0377)	(0.0110)
inv	-0.112***	-0.129***	-0.220***	-0.0494	-0.127***	-0.128***
	(0.0174)	(0.0251)	(0.0476)	(0.0303)	(0.0256)	(0.0253)
edu	0.00195	0.00891*	-0.0127	0.0284***	0.0220***	-0.00859
	(0.00499)	(0.00502)	(0.0163)	(0.0102)	(0.00571)	(0.00796)
ind	-0.212***	-0.195***	-0.255***	0.00816	-0.109*	-0.270***
	(0.0361)	(0.0501)	(0.0745)	(0.0653)	(0.0613)	(0.0460)
gov	-0.0753*	-0.0589	-0.0454	0.180	-0.0459	0.0232
	(0.0418)	(0.0401)	(0.113)	(0.116)	(0.0410)	(0.0758)
open	0.00927	0.00839	0.0548	0.132*	0.00563	0.0154
	(0.00836)	(0.00663)	(0.0614)	(0.0775)	(0.00674)	(0.0282)
netex	-0.0132	-0.0126*	-0.104	-0.0512	-0.0162**	-0.0477
	(0.00921)	(0.00722)	(0.0648)	(0.106)	(0.00726)	(0.0428)
TFP_1	0.920***	0.920***	0.881***	0.975***	0.912***	0.918***
	(0.0114)	(0.0160)	(0.0226)	(0.0197)	(0.0190)	(0.0150)
_cons	-0.0933***	-0.0777**	-0.296***	0.111	-0.00699	-0.200***
	(0.0333)	(0.0383)	(0.0705)	(0.0798)	(0.0382)	(0.0495)
N	919	341	330	248	310	609
adj. R^2	0.897	0.947	0.873	0.928	0.928	0.894
F_stat	672.0976	503.2140	189.7076	265.4822	331.2541	431.1918
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	-0.0713	0.3250	-9.8310	-7.960	0.5284	-4.8719

Standard errors in parentheses, $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$

Table 12: Effects of FDI on Number of Patents Granted

	(1) Total patent	(2) East patent	(3) West patent	(4) Middle patent	(5) Coastal patent	(6) Interior patent
FDI	-3.922***	-1.344	-5.136**	-6.756	-2.160	-6.062***
	(1.246)	(1.331)	(2.572)	(8.315)	(1.401)	(2.257)
FDI_1	2.865*	0.543	11.34***	2.206	1.530	7.142**
	(1.649)	(1.845)	(4.175)	(9.466)	(1.945)	(3.003)
FDI_2	1.026	2.274*	1.098	1.174	1.655	1.049
	(1.242)	(1.330)	(2.941)	(7.763)	(1.389)	(2.328)
lnGDP	0.118	-0.731	0.0255	0.227	-0.815	0.108
	(0.0783)	(0.517)	(0.0945)	(1.023)	(0.556)	(0.0893)
lnGDP_1	0.0102	1.152**	-0.127	-0.110	1.126**	-0.0706
	(0.0815)	(0.504)	(0.102)	(1.050)	(0.557)	(0.0944)
inv	0.549**	0.234	1.372***	1.055*	0.371	0.964***
	(0.213)	(0.340)	(0.515)	(0.615)	(0.369)	(0.289)
edu	0.372***	0.151**	0.648***	0.497**	0.233**	0.452***
	(0.0594)	(0.0706)	(0.153)	(0.203)	(0.101)	(0.0829)
ind	0.975**	1.485**	0.240	-0.738	2.971***	0.464
	(0.466)	(0.605)	(0.866)	(1.334)	(1.014)	(0.586)
gov	2.884***	1.544	2.506	2.250	1.474	3.302***
	(0.943)	(1.216)	(1.579)	(2.727)	(1.267)	(1.257)
open	-0.0430	-0.0340	-0.590	-1.980	-0.0421	-0.571
	(0.103)	(0.0891)	(0.788)	(1.983)	(0.101)	(0.443)
netex	0.0404	0.0485	0.896	1.068	0.0364	-0.463
	(0.107)	(0.0919)	(0.835)	(2.234)	(0.104)	(0.496)
patent_1	0.467***	0.597***	0.257***	0.294***	0.555***	0.349***
	(0.0400)	(0.0625)	(0.0696)	(0.0964)	(0.0670)	(0.0517)
_cons	1.867***	-1.285	4.286***	3.969	-0.545	3.181***
	(0.550)	(1.230)	(0.813)	(2.764)	(1.389)	(0.652)
N	480	176	176	128	160	320
adj. R^2	0.785	0.880	0.743	0.739	0.881	0.743
F_stat	149.4528	108.9678	44.0959	31.5188	99.7277	79.2771
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	-0.0582	3.6551	9.8277	-4.7818	2.3034	3.2704

Standard errors in parentheses, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Table 13: Effects of FDI on Expenditure in R&D Activities

	(1) Total R&D	(2) East R&D	(3) West R&D	(4) Middle R&D	(5) Coastal R&D	(6) Interior R&D
FDI	-0.00717*	-0.00611	-0.00997	0.0433	-0.00912*	-0.00957
	(0.00418)	(0.00625)	(0.00644)	(0.0269)	(0.00503)	(0.00766)
FDI_1	0.00295	-0.00185	0.00191	-0.0535*	0.00251	-0.00155
	(0.00554)	(0.00841)	(0.0131)	(0.0278)	(0.00647)	(0.0108)
FDI_2	-0.00260	0.00315	-0.0106	0.0900***	0.00111	-0.000876
	(0.00506)	(0.00758)	(0.00793)	(0.0229)	(0.00586)	(0.00853)
lnGDP	0.000327	0.00157	0.0000191	0.00187	-0.00330	0.000299
	(0.000243)	(0.00265)	(0.000239)	(0.00503)	(0.00212)	(0.000285)
lnGDP_1	-0.000223	-0.000886	-0.000174	0.000751	0.00382*	-0.000356
	(0.000264)	(0.00262)	(0.000255)	(0.00508)	(0.00220)	(0.000312)
inv	-0.000333	-0.00157	0.00427***	-0.00271	0.00000442	0.00143
	(0.000823)	(0.00190)	(0.00146)	(0.00211)	(0.00158)	(0.00117)
edu	0.000858***	0.00136***	-0.000535	-0.000703	0.000999***	0.000478
	(0.000204)	(0.000351)	(0.000402)	(0.000594)	(0.000338)	(0.000296)
ind	0.00974***	0.0122***	0.00404	0.00367	0.0182***	0.00648***
	(0.00172)	(0.00252)	(0.00260)	(0.00523)	(0.00330)	(0.00232)
gov	-0.00155	-0.000531	-0.00300	0.00300	-0.00163	-0.00124
	(0.00298)	(0.00509)	(0.00395)	(0.00813)	(0.00394)	(0.00405)
open	-0.000176	-0.000688	-0.00269	-0.00396	0.000368	0.000990
	(0.000542)	(0.000654)	(0.00287)	(0.00648)	(0.000657)	(0.00165)
netex	-0.00129	-0.00133	0.00646*	0.0112	-0.00260*	-0.00277
	(0.00108)	(0.00124)	(0.00325)	(0.00673)	(0.00144)	(0.00207)
R&D_1	0.765***	0.717***	0.653***	0.744***	0.742***	0.658***
	(0.0323)	(0.0614)	(0.0640)	(0.0989)	(0.0614)	(0.0503)
_cons	-0.00234	-0.00725	0.000890	-0.0209*	-0.00916	0.000375
	(0.00197)	(0.00945)	(0.00222)	(0.0107)	(0.00811)	(0.00236)
N	330	121	121	88	110	220
adj. R^2	0.782	0.872	0.561	0.757	0.925	0.597

F_stat	101.6300	70.0940	14.5888	24.1083	113.2142	29.5845
p_value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
impliedβ	-0.0290	-0.0170	-0.0537	0.3117	-0.0213	-0.0351

Standard errors in parentheses, $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$

IMI International Monetary Review

Global Sluggish growth and negative real interest rate*

By Il Houng Lee*

According to a G10 Study[1], there were only two periods during which negative real interest rates prevailed for a prolonged period. These were during the 1920s and 1940s—broadly the two war periods. This observation raises the question as to why most of the advanced economies are currently facing real negative interest rates and what economic characteristics are behind this apparent "abnormal" situation. This note suggests aging coupled with foregone savings opportunity in the past, and debt and liquidity overhang to be the main causes of pushing down the natural real interest rate. These are not so much the originators of the low growth problem, but rather factors that slowed down the recovery of the global economy after a period of exuberant strong performance facilitated by globalization, technological changes and financialization and underpinned by accommodative policies.

1. Meaning of negative real interest rate[2]

Interest rate is the opportunity cost of holding money, for instant, by holding a bond. Since holding a financial asset implies deferred spending (of cash) for a future date for someone else to spend now, it can be defined as intra and inter-generational transfer (lending/borrowing) of resources. While financial assets (held by non-financial institutions) may have different meaning depending on the perspective it is looked at, from a resource transfer perspective,[3] it is an important instrument in storing savings. Intra-generational transfer means lending wealth to another agent while inter-generational transfer, a subset of the former, means lending to the government where all agents take on the burden of repayment.

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* Based on the presentations at the Lujiazui Forum 2016 and Shanghai Advanced Institute of Finance (SAIF), June 8, 201. This note reflects comments received during these events.

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[1] "Saving, Investment and Real Interest Rates" A study for the Minister and Governors by the Group of Deputies, Istituto Poligrafico E Zecca Dello Stato, Octorber 1995

[2] Real interest rates in this note refer to long term government bond yields (10 year maturity except when no data are available) as they are more relevant to real economic activity and entail sovereign risks only.

[3] For more details, please see "Optimal Liquidity and Economic Stability" L. Han and I. Lee, IMF Working Paper, No. 12/135, May 01, 2012

Against this background, below are possible cases where negative real interest rate could prevail. Since interest rate is the return on holding financial assets, at equilibrium, it is also equivalent to the cost of (return on) capital. From an equity point of view, Silvio Gesell[4] argued for zero interest rate on all financial assets since a holder of wealth should not be given the advantage of lower cost of capital relative to those who has to borrow (with no wealth).[5]

Negative real interest rate could prevail if the economic environment is so unstable that future income is not assured, and thus, risk adjusted return on capital is negative. In such a situation, investors would pay someone (the government) to use the wealth instead to retain at least the value of the principle, or to minimize the erosion of the value relative to when holding it oneself.[6] Equivalently, if such a situation prevails, then the value of currently held wealth stock is perceived to be larger in the future than now, i.e., negative discount rate. An agent who tries to maximize consumption over life time will save less if the net present value of his/her wealth (future consumption) rises.

From the market's point of view, if the current debt stock of the economy is larger than its net present value of total future income, the economy will try to deflate itself out of the debt—which is an alternative way of taxing households.[7] The reduction of the value of debt can be more instantaneous with the increase in inflation, but in the absence of inflation, negative real interest rate is an alternative way to chipping away the stock of debt, (unless the value of asset is reduced through a crash).

4 The Political Economy of Silvio Gesell: A Century of Activism; Werner Onken. The American Journal of Economics and Sociology Vol. 59, No. 4 (Oct., 2000), pp. 609-622

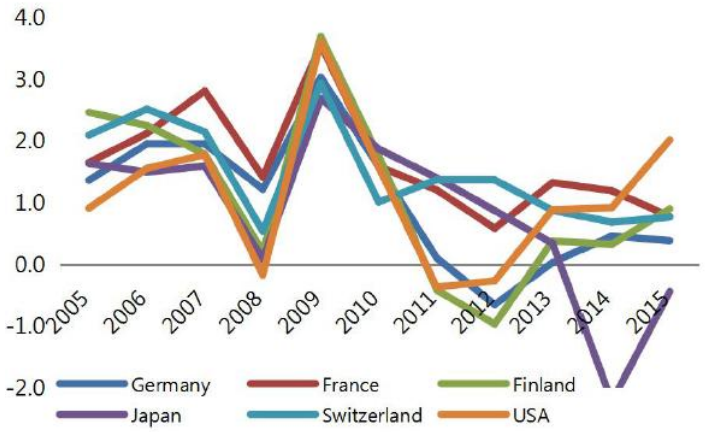
5The difference of Gesell's argument from this note is that he limits the use of money for transactions purpose.

6This point is similar to Barrow; "Rare Disasters and Asset Markets in the Twentieth Century," The Quarterly Journal of Economics, August 2006.

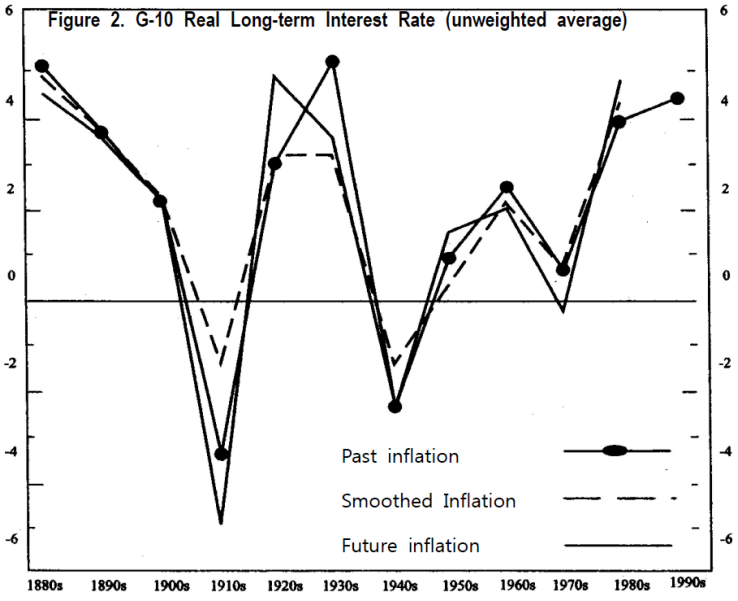
7 Carmen M. Reinhart and M. Belen Sbrancia, "The Liquidation of Government Debt"NBER Working Paper No. 16893March 2011

2. Current vs. neutral real rate of interest

Figure 1. Real Gov Bond Yields in Selected Economies (%, 10 year, CPI deflated)



Source: CEIC



Copied from: "Saving, Investment and Real Interest Rates" A Study for the Ministers and Governors by the Grou p of Deputies, Istituto Poligrafico E Zecca Dello Stato, October 1995

Currently, real long term rates in advanced economies are volatile, but along a declining trend (Figure 1). This current episode also differs from the past in that low or negative real interest rates are attributed to the fall in nominal rates and not a sudden rise in high inflation. While it is debatable whether real interest rate should be zero or even negative, based on historic norm, it is on the low side. In fact, real

long-term interest rate (defined as the unweighted average of G10 group's 10-year government debt deflated by CPI) averaged 1½-2% during 1880s and 1990s, or 2½-3% excluding the two war periods (Figure 2). Why the long-term real interest rate was negative during the wars is an issue beyond this paper, but they likely include negative return on capital and were willing to pay a premium for holding government paper (one of the safest way to retain the value of one's wealth).

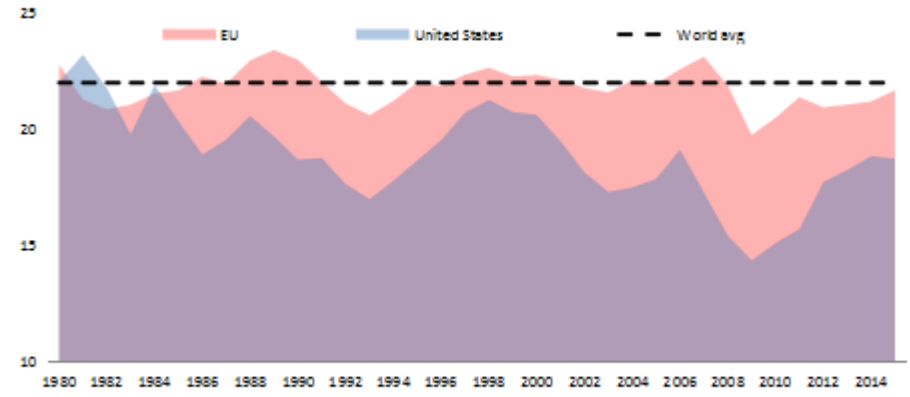
Economic history in advanced economies, as captured well in the G10 study, indicate that small positive real interest rate is the "norm" or the market determined neutral rate. More specifically, in the case of the US the average post-war real interest rate (10-year TBs) is around 2½, which is broadly similar to the average of G10 countries. 10-year government bond yields fell briefly below zero also during 1974-75, 1979-80, and 2011-12, but largely due to spurts of inflation.

3. Why neutral real rate of interest may be low

a. Lost opportunity of savings in the past

Savings in advanced economies peaked around 24% of GDP in the late 1980s, and continued to fall, leveling off at around 20% of GDP after a sharp dip following the global financial crisis (Figure 3).

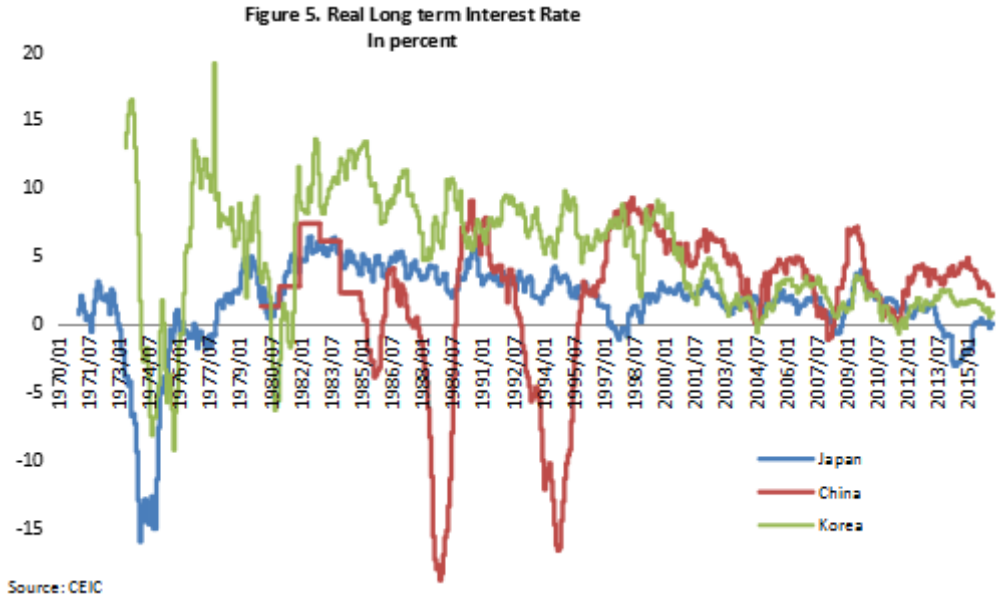
Figure 3. Savings in the US and EU
In percent of GDP



Source: World Economic Outlook, IMF

This is broadly comparable to world average savings to PPP weighted GDP over the last 50 years, which was about 22%. The gradual decline since the 2000s is also consistent with the expected savings behavior and global demography. Figure 4 shows how savings rate would have diverged from the average in Europe and the US if households had smoothed their consumption over the long term (based on the UN projection of global demography). While the accuracy of the estimated magnitude is

questionable, at least it provides a rough sense of how savings could have evolved over time if households were rational, i.e., Europe should have saved most during the 1980s, and start dissaving at around 2020. The US case is broadly similar except that its savings should have peaked during the 2000s.



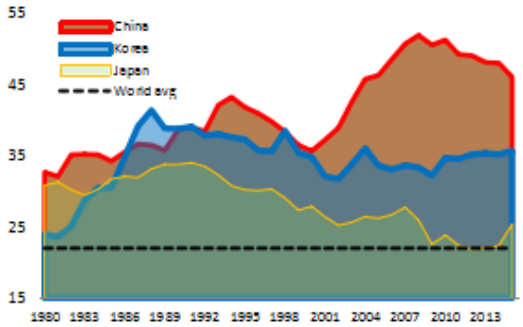
Real government bond yields in China-Japan-Korea (CJK)[8] have been positive and trending down for the last several decades (Figure 5). Negative real interest rates were present during the first half of the 1970s in Japan and Korea due to high inflation related in part to oil price as well as global monetary conditions.

As for China, high inflation that pushed real interest rate down into negative numbers during the late 1980s and mid 1990s were by-products of rapid transition efforts by the government. In more recent years, Japan's real interest rate fell below zero in line with several other advanced economies. Long term average (1980-16) of about 2½ % is broadly similar to that of the US. Korea's s real interest was higher at 5%, reflecting a much faster economic growth during this period. In the case of China, it is difficult to make a simple comparison of longer term development due to the transition period as noted earlier. But still, average real interest rate since 2000 is about 3½ % (compared with 2% for Korea) reflecting higher return on capital.

CJK's actual savings rates (Figure 6) broadly match the demography-based estimation of savings (obtained in the same way as those elaborated for advanced

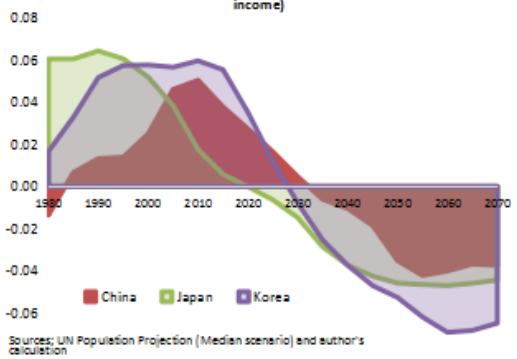
[8]Deflated by CPI except for China during 1980-85 where annual GDP deflator was used instead. Lending rates are government bonds for Japan and Korea, and lending rates (source: IFS) for China.

Figure 6. Gross Savings
In percent of GDP



Source: World Economic Outlook, IMF

Figure 7. Savings (Diversion from own LT average as share of income)

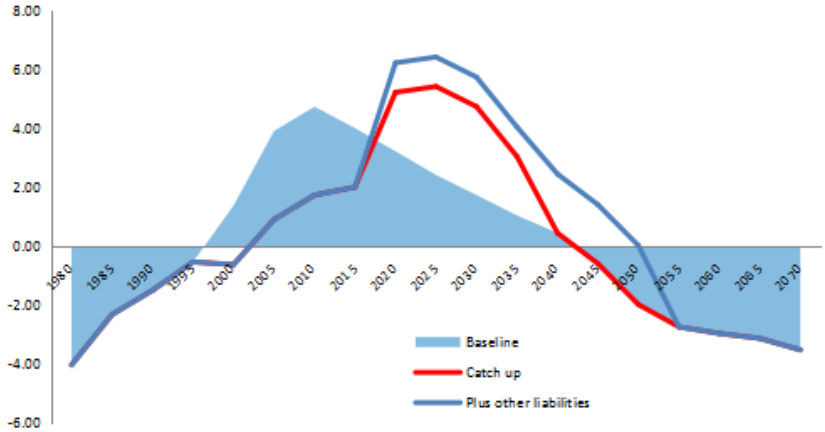


Sources: UN Population Projection (Median scenario) and author's calculation

economies earlier; CJK estimates are shown in Figure 7). According to the latter, China's savings should have peaked during the late 2000s, Japan on the other hand, should have peaked during the early 1990s and Korea during 1990-2000. Unlike in the US and Europe, actual savings broadly mirror these estimations.

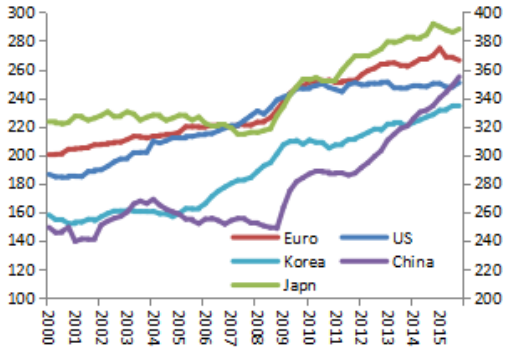
Two factors, however, could push China and Korea (and to a lesser extent Japan) to save more even though there was no lost opportunity to save. First is the recent realization of growing longevity well beyond what was expected one or two decades ago. Second is the gloomier global economic outlook without a clear time horizon for a recovery. Since CK economies are largely export dependent, these changing global prospects also mean slower domestic economic growth. Both factors have strong incentive to push up savings, subjecting them to similar situation as the US and the EU. These points are illustrated in the chart below for China (Figure 8).

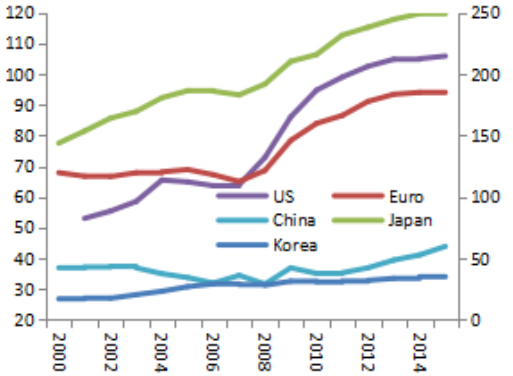
Figure 8. China: Savings Scenarios-Divergence from Baseline
In percent of Income



b. Debt and liquidity overhang

"Other liabilities" in Figure 8 include financial liabilities or public debt (or both although they are not additive by nature). Financial liabilities are intra-generational liabilities and under a well- functioning system would not be an issue as one part of





the population owes to another part of the same population. It becomes a concern only when the indebted group is highly income constrained with debt service payments posing a challenge. Public debt has a similar impact on consumption except that it its debt service burden is more widely spread through higher future tax burden. Both financial assets and government debt have risen sharply as share ofGDP in the last two decades (Figure 9 and 10 respectively).

Financial assets and liabilities are a way of holding savings of one group into the future, to be repaid at a later date. If the size of the financial assets becomes too large relative to the production capacity (i.e., expected income stream), then there is large probability that the value of savings will erode. This can take place through bursting of an asset bubble, gradually through negative real interest rate, sustained high inflation, or through the political process. If the former becomes a systemic risk, it gets converted into the latter as was the case in the US and the EU following global financial crisis.

Conclusion: A question of low consumption now or later

If the estimated demography-based consumption smoothing path during the 1980s-2010s is of any guide, then the rational response of households faced with aging is to catch up, i.e., to save more now relative to the long run average. However, this would mean compression of consumption below the long-term average,

discouraging investment. This in turn would suppress growth setting off a vicious cycle. There are two ways to overcome the current low growth trap.

One way to address such a vicious cycle is to push down the real interest rate below the already low neutral rate of interest, possibly into negative rates. This will induce agents to save less. However, if the underlying problem is structural in nature, such a push will only have a temporary effect, and the economy will be in a worse situation in a couple of years, requiring further reduction in the real interest rate. Another way would be to leave the real interest rate as is and let households to make up for their lost opportunity to prepare for aging. This would drag down growth in the short run, but once targeted wealth stock is reached, consumption would recover.

It is not clear which option will deliver better results, or minimize the losses in terms of lifetime consumption. However, if the current problem is structural in nature, the former will only postpone the needed reform and nurture a bigger problem. If left alone, the market will try to correct itself and be accompanied by a reduction in public debt and financial assets with corrective structural reforms setting the stage of a stronger recovery path. In both cases, real interest rate will likely remain below historic average. Yet, pushing it further down into large negative territory through policy rates may risk pushing the real neutral rate down further.

IMI International Monetary Review

Reforming the International Monetary System -A Sequence Agenda

By Michel Camdessus and Anoop Singh*

Introduction

It is close to a decade since the start of the global financial crisis (GFC)—the first of the 21st century—and its origins, costs, and recovery are being debated. The crisis raised critical questions about how the international policy framework monitors, regulates, and manages global liquidity and the consequent risks for international financial stability. Given the depth of the crisis, the enormous economic and social costs of the ensuing recession and, since then, the increased fragmentation of the global financial safety net, we need to consider how the international monetary system must be fundamentally reformed to ensure its greater stability.

The urgency of this reconsideration is reinforced by a number of factors that could have multiple effects on global liquidity. Most important among them is the ongoing historic rise of emerging markets, and the growing likelihood that tomorrow's key financial players—official and private— will come from emerging markets. Over the next decade, emerging and developing economies will likely account for at least half of global financial assets, with a number of systemically important banks. This historic shift of global activity and finance from advanced economies to emerging and developing economies has clear governance implications and their rising financial integration will also impact global liquidity. In the near term, the prospects and timing of the Federal Reserve's further "lift-off" are immediate factors. Coupled with renewed concerns about retrenchment in global markets already affected by ongoing regulatory reforms, they have increased financial market uncertainties.

These factors all confirm the importance of managing global liquidity as a global public good. We will turn to this issue next, before discussing an agenda for an in-depth reform of the international monetary system that is responsive to the needs of the changing world economy during the period reviewed by this book

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Liquidity—An evolving global public good

Liquidity is a global public good and the international economy is immediately and radically affected, at times, by its excessive volatility.[12] Today, private actors increasingly dominate the global provision of liquidity. Of course central banks play a key role in monitoring its developments and, as much as possible, in ensuring that liquidity is provided sufficiently to international markets. They have recently increased significantly the number of swap agreements but they have stopped well short of developing an institutionalized global swap network that some have favored to meet the needs of the system in all circumstances.[3] This is understandable as central banks are primarily driven by domestic mandates.

Why have the issues posed by global liquidity not been more effectively addressed despite the great debates that have taken place over the decades, including those sparked by Robert Triffin and Charles de Gaulle (who referred to the dollar's "exorbitant privilege") in the 1960s?[4] Many reasons have contributed to it—mainly, national differences that have prevented an effective consensus from developing, including after the Jamaica Agreement, on these issues.

The origin of the problem can be traced to Triffin's demonstration of the dilemma in which the country, whose currency dominates the global system, finds itself. Indeed, the lessons of post-Bretton Woods history are clear in that the main reserve currency country—the United States—has found itself unable to overcome the Triffin dilemma—how to manage the twin responsibilities of a domestic monetary policy and the provision of adequate global liquidity.

For any reserve currency, once that country's central bank determines the volume of its currency issue, the needs of its national economy overrides the needs of the global economy. As there is no pre-established harmony between the needs of the national economy in question—in this case the United States—and those of the global economy, the world faces a continuing risk of excess or shortage of global liquidity.

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[1] Details are explained in The International Monetary Fund 1945-1969— Twenty years of International Monetary cooperation (IMF 1969).

[2] Keynes well recognized it in his proposal to establish a Clearing Union. Indeed, Keynes then emphasized the analogy with a national banking system and he saw the need for an instrument "of international currency having general acceptability between nations" (IMF 1969).

[3] Edwin Truman has examined this issue in numerous papers, for example in "Enhancing the global financial safety net through central bank cooperation" (Vox 2013).

[4] Tommaso Padoa-Schioppa explained the long standing debate in his lecture delivered at Louvain-la-Neuve in February 25, 2010, "The Ghost of Bancor: The Economic Crisis and Global Monetary Disorder."

These debates led to the recognition of the need for a complementary asset created or managed by a global institution. Negotiations over this issue culminated in the creation of the Special Drawing Rights (SDR) instrument in 1969, designed to make up for the shortcomings of a system too dependent on fluctuations in the United States' balance of payments. The global community enshrined in Article 8 of the IMF's statutes the commitment of each of its members to make the SDRs "the principal reserve asset" in the international monetary system.

However, the radical changes that affected the economic environment in the early 1970s—the devaluation of the dollar, the development of the Eurodollar market, the oil shock—effectively turned the SDR instrument into a stillborn asset, until the spectacular allocation of $250 billion in 2009 in response to the global financial crisis.

Meanwhile, various attempts to revive the debate over the reform of the monetary system (namely a plan to create a substitution account, the Plaza and Louvre accords, the discussions of 1993-1994 around an 'equity allocation' to respond to the needs of countries in transition) have not gone forward.

More recently, following a suggestion of the Palais-Royal group (Boorman and Icard 2011), a new attempt at exploring the liquidity issue was undertaken by a group of experts at the Bank for International Settlements (BIS), chaired by Jean-Pierre Landau, Deputy Governor of the Bank of France (BIS 2011). This group cast important new light on this issue, emphasizing that the nature of the problem has dramatically changed since the 1970s. During the early decades (1960–1980), the volume of global liquidity continued to be determined mainly by fluctuations in the United States' balance of payments. Increasingly, thereafter, private capital flows in international financial markets took over from the US balance of payments, becoming the major driver of global liquidity creation, beyond the scope of any regulation. Thus, the world today is subject to two volatile sources of fluctuating liquidity:

- The United States' balance of payments, even though the Fed has stated its desire to have the international economic situation included, within its statutory constraints, in the determination of its monetary policy;

- Much more importantly, private capital movements, which together with very lax monetary policy in the United States, were at the root of the mostrecent crisis.

Hence the Landau-led group underscored the need to reopen discussions at the highest level, and for the global community to take necessary steps to gain better control over the volatility of global liquidity.

In the absence of such a mechanism, the world will continue to be vulnerable to the sudden drying up of liquidity or of disorderly acceleration in capital flows. This risk must be prevented. This makes indispensable an in-depth debate over the initiatives to be envisaged to address a major flaw in the current international monetary situation.

Consensus on this issue is, nevertheless, very slow to build. Why? Certainly, the G20 has been struggling to come up with answers; they have focused on an important array of banking and financial reforms, but they have stopped well short of addressing the fundamental problem of calibrating global liquidity to the needs of the global economy. This problem was clearly underlined already in 2010-11 by a group of veterans from past international monetary battles, in the framework of the informal meetings of the Palais-Royal Initiative.[5] They have been unanimous in warning that the crisis could repeat itself:

> "In the run up to the crisis, an unsustainable global expansion was facilitated by rapid growth in global credit. The result was a commodity price boom and what was subsequently recognized as a global asset price boom. Then the crisis struck…leaving central banks around the globe scrambling for hard currency financing. From peak to trough, gross capital inflows worldwide fell from nearly 20 percent of global GDP to less than 2 percent. Now they appear to be heading back to, or exceeding, their pre-crisis level, and the risk remains of a return to "business as usual." Such extreme fluctuations have critical effects on the functioning of the global economic and financial system and macro-financial stability at the country level" (Boorman and Icard 2011).

Five years after, a convincing solution to this problem has not yet been found. It is time to try again to take the reform agenda forward and to provide this global public good with a better system of monitoring and provision.

A sequenced reform agenda

The global community faces a heavy agenda to avert another global financial crisis. First, it must complete a series of reforms already on the table designed to equip the IMF with the ability to meet current needs. Then, it must actively prepare for negotiations to introduce a reliable mechanism for regulating liquidity. At a stage down the road, this could lead to the need to transform the IMF into a global monetary institution. This will imply a complex and prolonged negotiating process which needs to be carefully sequenced as the leaders of the system will have to face issues of immediate urgency while adapting it to the problems which will become

[5] Details are explained in The International Monetary Fund 1945-1969— Twenty years of International Monetary cooperation (IMF 1969).

more and more pressing during the next three decades. One could anticipate three critical steps that could finally deliver the global public good of a stable monetary and financial system:

As a first step and without delay, a number of measures already identified by the IMF and/or the Palais-Royal Initiative should be discussed and hopefully adopted.

• Preferably simultaneously, or as a second step, a reliable mechanism for regulating global liquidity should be adopted and implemented.

• The third step—as part of a new Bretton Woods— should complete these reforms of the system bytransforming the IMF into a full-fledged global monetary institution.

These are the issues to be examined in the rest of this paper.

Overdue IMF reforms

The first step is clear—the IMF must be equipped with reforms consistent with the responsibilities the global com-munity has already assigned to it over the years. These reforms have been frequently elaborated on the basis of suggestions of IMF management and staff since the global financial crisis. The Palais-Royal Initiative provided a comprehensive set of recommendations in 2010–11. These were taken up by the G20 but, following the sovereign debt crisis in Europe, their implementation has lagged.

In summary, four major areas still require work:

- Tailoring the IMF's surveillance methods and instruments to today's problems;
- The volatility of exchange rates;
- Strengthening the IMF's legitimacy and governance; and
- Taking stock of the new dimensions of the global liquidity issue and building the SDR instrument tobetter deal with it.

In each of these areas, major problems remain unresolved. We will focus for now on the first three areas, and then address the last issue when searching for a mechanism to monitor global liquidity.

Tailoring the IMF's methods and instruments to today's problems

There are three major issues here:

- The equity and effectiveness of its surveillance;

- The necessary broadening of its scope to capital movements; and
- The introduction of a sovereign debt crisis resolution mechanism that would prevent repeats of several regrettable cases, including the Greek experience.

First, at least as much as crisis response, surveillance is the IMF's primary function. If effectively conducted, it should prevent crises from developing.[6] In the wake of the recent global crisis, and in response to requests from the G20, the IMF's surveillance instruments have been appropriately broadened.[7] However, the continuing problem is that IMF surveillance, in practice, has unequal effectiveness. It carries much more weight in countries that depend on the IMF for financing—until recently, generally emerging market or developing countries—than those that don't, such as the advanced countries. While these other countries cannot ignore IMF findings, they are only very inconsistently taken into account; this includes the IMF's findings in its flag-ship reports that are crucial to its global responsibilities, and part of the recent modifications in global surveillance implemented by the IMF.

There have been many recommendations to address this issue, such as developing indicative guidelines of imbalances, as recommended by the G20, among others, but these have not been carried forward effectively enough. Hence, we have the conundrum that the countries with the most influence on the global environment, and on financial markets, generally evade the influence of the institution tasked with ensuring balance in the global economy. What is still needed is a paradigm shift in this area, which could be driven by the G20, which has recognized the problem.

Tommaso Padoa-Schioppa explained the long standing debate in his lecture delivered at Louvain-la-Neuve in February 25, 2010, "The Ghost of Bancor: The **Economic Crisis and Global Monetary Disorder.**

Secondly, as has become so apparent, at least since the 1994–95 Mexican crisis, capital movements have become fundamental determinants of the stability of the global system. The global community has fully recognized this, certainly since the IMF-World Bank meetings in Hong Kong in 1997, and also the need for the IMF to be assigned monitoring responsibility over movements in capital account balances, same as it exerts over current account balances. This will need an amendment to the IMF's Article of Agreement, but consensus on this amendment has not been reached, the world remains dangerously vulnerable in this area.

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[6] As explained in Article IV of the IMF's Articles of Agreement signed by each IMF member.

[7] Details are contained in the IMF "2014 Triennial Surveillance Review— Overview Paper" (2014).

Third, the same situation applies to sovereign debt, a problem of increasing importance as countries open their capital accounts in the framework of global international financial integration. Efforts to develop a statutory mechanism for sovereign debt resolution have not moved ahead, although progress has been made in including collective action clauses (CACs) in the issuance of sovereign bonds on the international capital markets. However, a reliable resolution mechanism remains to be established, particularly as other forms of sovereign borrowing have mushroomed.

Thus, much remains to be done. This is also the case as far as the volatility of exchange rates is concerned.

This volatility adds perniciously to the instability of the system. Tensions are more and more damaging in the context of financial globalization. This calls for increased discipline on the part of the countries, and it is time to make countries' obligations of exchange rate policies more specific. The suggestions of the Palais-Royal Initiative concerning the use of benchmarks based on macroeconomic fundamentals to identify and reduce instability and misalignment deserve careful consideration. This is particularly the case for the major countries, in light of their special responsibility to mitigate large swings of their currencies and their negative impact on global markets.

Strengthening the IMF's legitimacy and governance

To anchor the IMF's role as a global monetary institution, especially in the present context, issues of its legitimacy and governance need to be effectively addressed. Among these, three in particular are worth highlighting.

First, there is the problem with its democratic governance in a changing global environment. Whereas the G8 and G20 have been constantly assigning new responsibilities to the IMF, they have only very gradually responded to repeated criticism from emerging market and developing countries, and civil society, with regard to its governance structure. Their responses have generally taken the form of periodic quota reviews, based on complex and questionable methods for adjusting country quotas, that have been agonizingly slow in changing the representation at the Executive Board, and in voting rights, in response to the changing realities in the global economy.

Although a partial correction of quotas was adopted in 2010 at the G20 Summit in Seoul, its ratification by the United States Congress faced repeated delays, and was finally only just completed, some five years later, at end-2015. Even with this correction taking place, the problem remains, as the global economy has changed further in this period. China's voting share, for example, has now doubled, but is still just 6 percent despite its economy weighing well in excess of 10 percent of global

GDP. Even though most decisions are adopted by consensus, this situation does serious harm to the institution's legitimacy and image. There is a long way to go yet.

Second is the issue of reforming decision making at the IMF, and bringing it more in line with what was agreed in principle in the Jamaica Accords. In a world where monetary and financial transactions are of vital importance and the political dimension of economic questions is key, the time is ripe to entrust final decision-making power at the IMF to a body comprising ministers and central bank governors, rather than the present Executive Board of senior officials. This reform would have the merit of officially placing responsibility in the hands of the final decision makers and of better recognizing the role central bank governors should play in the institution.

The third issue concerns the legitimacy of the G20 itself, which has established itself as the ultimate global forum for management of the global economy. Although this grouping played a very useful role during the last crisis, its legitimacy is still sorely lacking. Taking into account the participation of the EU, some 40 countries are effectively represented in the G20. The UN, meanwhile, includes 205 member countries. For the G20 to be able to adopt recommendations or rules that are enforceable everywhere, the makeup of the G20 would need to be reformed along the lines, for example, of the Bretton Woods institutions and their regional constituencies. This would give all countries the opportunity to have a say in decisions that concern them.

A mechanism to regulate global liquidity

Two types of measures appear necessary to regulate global liquidity:

• The first ought to be self-evident. It would consist of the creation of a high-level group charged with overseeing global liquidity. A group of central bank governors should be invited to report periodically—every six months, for example—to the IMF's International Monetary and Financial Committee (IMFC). This committee, the former Interim Committee, should become the ministerial organ of the G20 and bear ultimate responsibility, inter alia, for calibrating global liquidity. In this context, it helps that central banks are becoming more independent, and Stanley Fischer usefully points to the benefits of this (Fischer 2015). But, ultimately, the system needs the ministerial authority that will be provided by the IMFC.

The group of governors tasked with this over-sight could usefully comprise the governors of the central banks whose currencies are included in the SDR currency basket, which now includes the RMB, and, eventually, presumably the Indian rupee. Through this recognition of its dimensions, the SDR instrument could be thoroughly over-hauled and—this is the second measure—able to fulfill the role of the regulatory instrument originally assigned to it.

• Today, as a matter of urgency, we should restore the potential of the SDR by ensuring that the managers of the system have the power to use itmuch more flexibly and as needed by the global liquidity situation.

Excellent suggestions toward this end were recently formulated by the experts brought together by the Triffin Foundation (Triffin International Foundation 2014). In particular, they proposed specific measures that need to be taken for the new SDR instrument to be promptly issued if needed and, just as rapidly, mopped up, to stabilize the global liquidity situation. These measures include steps to give the SDR much more visibility in the operations of the IMF and other institutions in the official sector, thereby building its potential to become competitive with other internationally used currencies. Above all, the currently flawed definition of this instrument should be reviewed and full monetary status granted to it, as an effective condition for it to become the principal reserve asset in the international monetary system, as originally envisaged in the IMF's Articles of Agreement. In this context, two other changes of unequal importance should be considered:

1. Reform of the irrational present regime of allocations, which consists of providing supplementary SDRs to countries less in need of them than others;

2. Changing the 'anachronic' denomination of this instrument.

The adoption of these measures would constitute a major step forward in modernizing the current system. It would then be time to take the third step in the reform of the international monetary system. It is already clear that the global system is evolving in the direction of a new multi-polar monetary universe, differing markedly from that faced by the Bretton Woods conference. In all likelihood, this will require a new set of negotiations just as ambitious as those the "founding fathers" of the Bretton Woods institutions had the vision to undertake at the end of WWII.

Toward a new Bretton Woods?

Why?

In concluding their work amidst the last great crisis, the members of the Palais-Royal Initiative issued a clear warning:

> "The crisis heralded, indeed accelerated, a transition to a new world where emerging market economies play a role on a par with advanced ones in driving global growth; a world that will be fundamentally multi-polar and in which global monetary problems must be dealt with cooperatively. The international monetary system to which we aspire is one that preserves the gains of the past sixty-five years without succumbing to its own instability. It

> is a system that maintains freedom of trade and current payments and that allows sharing more widely the benefits of financial globalization, appropriately regulated. It is a system where all countries recognize their stake in global stability and accept that near-term national objectives may, if needed, be constrained by the global interest. International cooperation is, in the long run, a necessary ingredient in the search for national prosperity. This should lead every country to look with a renewed sense of responsibility and discipline to the system as a whole. The opportunity for the emergence of a fully-fledged international monetary order is here at stake" (Boorman and Icard 2011).

Regrettably this pressing call was received by ears deafened by the roaring of the European debt crisis. Several stakeholders also saw in it the risk of failure or of sparking further instability, while struggling to see the opportunities it presents.

It is, yet, a major opportunity, which we cannot afford to continue to ignore, whatever the difficulty of the task and the arduous negotiations it will require. Leading this change will be up to those nations or group of countries who recognize that, in an increasingly interconnected world, the need for stability of the international monetary system is becoming a global public good of the highest importance requiring much closer cooperation between the system's members. At a time, for instance, when a currency—the RMB, long considered a minor player—could begin to challenge the dollar's hegemony, it will be elementary wisdom for the leading countries to plan for the transition--substituting a genuinely cooperative global monetary management to disorderly and mutually dam-aging competition. This new framework could also offer a useful way to ensure adequate regulation of global liquidity.

Looking back, global liquidity has long been hostage to the vagaries, first, of fluctuating output from gold mines, then of the balance of payments of the dominant economy and, more recently, of international capital flows. It is time that its stability becomes the responsibility of an institution designated to do so by the entire global community. Setting up such an institution and equipping it with the necessary monetary tools is an ambition that will require a new Bretton Woods conference (Bretton Woods II), which will need to be planned with the utmost care. For now, the major monetary powers could show their intention to move in this direction by implementing a number of preliminary measures.

Even if constructed, as recommended by the Palais-Royal Initiative, on the basis of a revamped IMF, the necessary negotiations should be launched in time for the new institution to be up and running, if possible, during the 2020s. It is therefore important to settle urgently on an agenda for these negotiations and to adopt the preliminary measures likely to pave the way for its success.

From these considerations emerge the contours of an agenda for a Bretton Woods II. This could consist of the following:

1. Completing ongoing negotiations on the reform of the IMF;
2. Concluding parallel work on the governance and collaboration with other organizations in the global monetary and financial system (such as the World Bank, FSB, BIS, WTO);
3. Developing the new role of global liquidity management and regulation entrusted to a new IMF.

Let us for now focus on the last point.

Toward a new IMF

The transformed Fund should be charged, in cooperation with the national or international central banks, with continuously monitoring global liquidity flows, and preparing the regulatory decisions that would need to be taken to manage it. Empowered by this mission and set up with a fully-fledged monetary asset, the governing body of the Fund would decide, if necessary, to add or withdraw liquid-ity depending on the state of the markets. This would not be far removed from the mechanism outlined by Keynes at the start of the 1930s, when he wrote:

"The ideal system would surely be in the foundation of a supranational bank that would have similar relations with the national central banks to those that exist between each central bank and its subordinate banks" (Keynes 1930).

A century later, what may have appeared visionary, even utopian, in the 1930s could soon appear simply logical in light of the problems inherent in an increasingly integrated world. Nevertheless, the political reality is that—barring a fresh major crisis—the global community could be reluctant to commit to such a groundbreaking project. Hence, comprehensive analysis and discussion of the issue should be launched, preferably under the aegis of the IMF and the world's main central banks in association with academia and international research centers. The challenge, at that stage, would be to make international public opinion more aware of the ongoing risks of instability inherent in the current system, leading possibly to a new, large-scale crisis, and then of the need for a new global mechanism properly equipped to prevent it or to face it in credible fashion.

In the present turbulent context, for several years now, China has shown keen interest in these questions, and the Governor of the People's Bank of China has formulated bold proposals to this end.[8] Europe, on its side, could reiterate its long

[8] People's Bank of China Governor Zhou Xiochuan has written frequently about reforming the international monetary system, for example, see "Re-form the International Monetary System" (2009).

standing interest for international monetary system reform and also demonstrate its desire to contribute to strengthening the efficiency of the IMF's governance structure, for instance, by expressing its readiness to accept a further reduction in its representation in the Bretton Woods institutions through the merger of two of its constituencies, perhaps followed, sooner or later, by establishing a single Euro group constituency. Such a move would have the merit of making clear the need for a far-reaching reform, as well as Europe's desire to play a full part in it.

In the current climate, it would be highly desirable for major stakeholders to take this initiative as soon as possible, so that such work could lead to concrete proposals and to the convening of a conference mandated to propose the needed changes to the Articles of Agreement of the IMF. One option is for China and/or for a number of major emerging countries, which are increasingly aware of the risks of the current system for Europe and other countries or group of countries, to launch a joint initiative to this end.

Conclusion

The world toward which we are heading in the next 30 years will be dominated not by one large hegemonic power but by several monetary poles along continental lines. In order for international monetary relations to evolve as harmoniously as possible in such a context, it is vital that the central structures be seen as legitimate and equipped with the necessary legal and financial instruments. This could be best done through a global monetary institution, centered in a transformed IMF, with a stronger mandate for surveillance, stabilization of exchange rates and global liquidity, effective mechanisms for reducing the risk of disorderly spillovers, and for dealing with debt restructuring. But the ambition behind this reform does not stop there. It should also contribute to creating better conditions so that the global community can achieve, despite all the obstacles it faces, especially those from conflicts, inequality, and climate change, truly sustainable development.

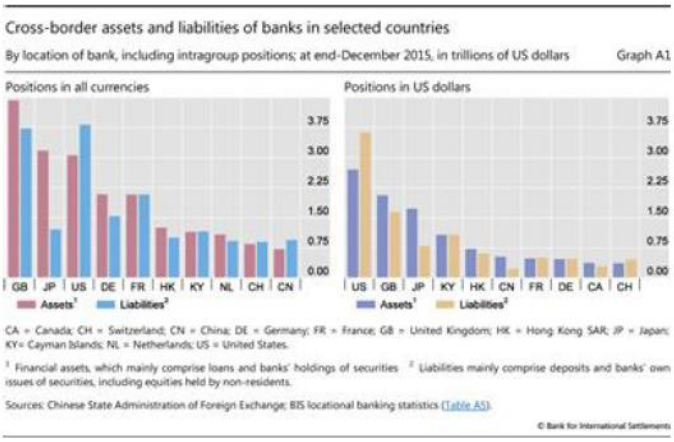
IMI International Monetary Review

Contribution by Chinese Banks to RMB Internationalization

By Herbert Poenisch*

The expansion of overseas activities of Chinese banks has long been subject to discussion and speculation but hard numbers were difficult to obtain. The IMF mentioned in its GFSR of April 2015 that 'there is anecdotal evidence that there has been a significant increase in Chinese bank lending overseas'[1]. The Bank for International Settlements (BIS) together with the State Administration of Foreign Exchange (SAFE) for the first time published data in its recent Quarterly Review[2].

The BIS and SAFE held that Chinese banks, ie all commercial and investment banks in China, including the policy banks are an important source of USD credit, their cross-border USD assets totaled USD 529 bn at the end of 2015, making it the 6th biggest global lender after the US, UK, Japan, Cayman Islands and Hong Kong (see right hand graph below). These data are stocks[3] and based on the locational principle.



Source: BIS Quarterly Review, June 2016

Affiliates of Chinese banks outside mainland China are reported by these territorial entities, such as Chinese banks in Hong Kong, Singapore, London etc. Banks in China appear to fund their

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[1]IMF (2015): Global Financial Stability Report, April www.imf.org/publications

[2]Hu Hong and Wooldridge, Philip (2016): International business of banks in China. In: BIS Quarterly Review, June www.bis.org/publications. The data (IBS) have not yet been published on the SAFE website www.safe.gov.cn

[3]Balance of Payments Financial Accounts data show flows.

cross-border USD assets in part by USD raised from international banks and partly from domestic Chinese firms and households.

Looking at the cross-border offshore RMB business, Chinese banks reported liabilities of USD 436bn, matched by claims of only USD 58 bn. At large this reflects the deposits of non-Chinese residents with banks outside China which in turn deposited with banks on the mainland. These offshore RMB originate from Chinese imports or FDI paid in RMB, deposited in other banks and channeled back to Chinese banks. But why are assets in RMB so low and liabilities in RMB declining compared to the USD business?

While the data are welcome, they give rise to more questions. How do they square with the data provided by SAFE[4], the China Development Bank (CDB) and Import-Export Bank of China alone who claimed to have outstanding loans to the rest of the world of USD 700 bn at the end of 2014? Bank of China (BoC) and Industrial and Commercial Bank of China (ICBC) reported trade financing claims of over USD 100bn each already in 2010. Where are RMB deposited other than Hong Kong, which published RMB deposits in its territory of only USD 150bn[5]? How does the offshore listing of Chinese banks affect their overall external claims and liabilities?

At the end of 2015 the funding Chinese banks' cross-border business at USD 944bn exceeds the total cross-border assets of USD 722bn by USD 222bn (see left hand graph above). On the contrary, banks in Hong Kong which include subsidiaries of Chinese banks had cross-border claims of USD 1254bn exceeding their liabilities of USD 1004bn, thus using domestic currency to fund cross-border lending[6]. The direction of lending of banks residing in Hong Kong has also changed since the Global Financial Crisis from lending the bulk to the rest of the world to lending to emerging Asia. Chinese banks could be part of this picture[7].

Chinese banks have been asked by Chinese leaders to support the 'going abroad of Chinese enterprises', 'the one belt one road' strategy, and the 'internationalization of the RMB'. In addition, the policy banks pursue their objectives, such as trade financing by the Import-Export Bank of China and project financing by the CDB.

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[4]The International Investment Position of China reports banking claims (loans and trade finance) of USD 980bn at the end of 2015 and banking liabilities (loans and trade finance) of USD 600bn. See IIP www.safe.gov.cn

[5]Jia Le and Jinyue Dong published a graph of CNH deposits totaling about RMB 1.5trillion, or USD 250bn for all offshore centres. In: A tale of two markets, IMR 15 April 2016 graph 2.

[6]BIS (2015): Locational banking statistics www.bis.org/statistics

[7]Remolona, Eli, Shim, Ilhyock (2015): The rise of regional banking in Asia and the Pacific. In BIS Quarterly Review, September www.bis.org/publications

While Chinese banks have set up branches and subsidiaries in many EME, their funding at the outset might be intergroup financing from the head office (included in the above graph) as local funding has not yet been sufficiently developed.

What activities have Chinese banks financed in their cross-border business? First and foremost, Chinese foreign trade, secondly, Chinese foreign direct investment and thirdly, mergers and acquisitions abroad, involving Chinese companies.

It seems that Chinese banks, financing Chinese trade and FDI prefer to use USD over RMB. A BIS study on trade finance states that 'in China, trade finance loans aredenominated twice as often in US dollars than in RMB'[8]. For example, a Chinese exporter is being prefinanced by a Chinese bank in USD which shows a USD claim on a foreign importer of Chinese goods. Similarly, Chinese projects in EME financed by the China Development Bank produce a claim in USD rather than RMB.

What might be the reasons for this development out of step of a greater push for internationalization of RMB?

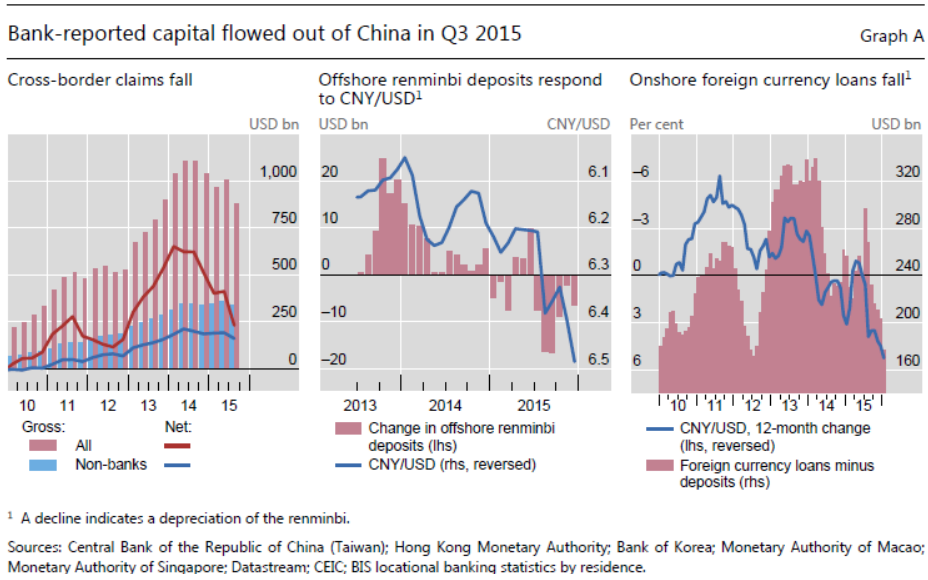
Chinese state owned banks play a double role, they are an instrument of government policy but at the same time they are encouraged to work on commercial lines, make profits, or at least avoid losses.

The first main reason is the gradual weakening of the RMB versus the USD (as witnessed in recent years), having one's assets in a strong currency such as the USD while building up liabilities in depreciating RMB would make sense.

The second reason, linked to the RMB/USD exchange rate are the capital outflows from China, on the USD component as well as on the RMB component (see graph below)[9].

[8]Committee of the Global Financial System (2014): Trade Finance: developments and issues. In: CGFS No 50, January www.bis.org/publications

[9]McCauley, Robert N and Shu, Chang (2016): Dollars and RMB flowed out of China. In: BIS Quarterly Review, March www.bis.org/publications



[1] A decline indicates a depreciation of the renminbi.

Sources: Central Bank of the Republic of China (Taiwan); Hong Kong Monetary Authority; Bank of Korea; Monetary Authority of Macao; Monetary Authority of Singapore; Datastream; CEIC; BIS locational banking statistics by residence.

Source: BIS Quarterly Review March 2016

Foreign banks reported a reduction of USD deposits (left hand graph; which is a capital outflow for China) with banks in China since the end of 2013. Similarly, offshore RMB deposits with mainland banks declined markedly since mid-2015 (centre graph, also a capital outflow) closely related to the RMB/USD exchange rate.

The increase in cross-border USD dollar claims by Chinese banks supports the official 'going out' strategy but at the same time represents a capital outflow.[10] If this strategy reflects a reduction in holding of USD assets this would fit into the strategy of reducing China's dependence on the USD and as such would be commendable. If it is only a substitution between official holdings of USD assets to USD banking claims the net effect would not be achieved.

Concluding these short remarks on the first official data on cross border business by Chinese banks and the internationalization of RMB by Chinese banks, leads one to the conclusion, that Chinese banks are only a vehicle for this role. The final decision lies with the holders of offshore RMB, whether banks, firms or private individuals. After all, an international currency does not only offer denomination of trade, settlement of trade but also store of value. A lot needs to be done to make RMB a truly international currency.

[10] Capital outflows are the natural consequence of current account surpluses and have no negative connotation. In 2014 net banking outflows amounted to USD 252bn. www.safe.gov.cn

IMI News

Press Conference of IMF World Economic Outlook 2016

On April 15th, 2016, the Press Conference of IMF World Economic Outlook 2016 was successfully held in Renmin University. This conference was co-sponsored by International Monetary Institute (IMI) of Renmin University, the IMF Resident Representative Office in China, the Finance Committee of the European-American Foreign student Association of China, and the Global Economics Big Data Center at the Central University of Finance and Economics. IMF Senior Resident Representative for China, Alfred Schipke, and Deputy Representative, Raphael Lam, IMF economist LIAN Weicheng, as well as former Deputy Bureau Chief of the State Administration of Foreign Exchange, WEI Benhua, delivered speeches; ZHANG Zhixiang of the People's Bank of China presided over the meeting.

WEI Benhua and Alfred Schipke opened the floor, with WEI offering an overview of the present global economic situation as well as his views on the Chinese development. He underscored the importance of the WEO for the international exchange of ideas on global economic issues and noted that although worldwide economic recovery continues, the pace of recovery is relatively slow. The Chinese economy is presently in a transitional phase: with emphasis on the New Normal, environmental protection, green economy, inclusive growth, and improving social welfare, economic growth has somewhat slowed down. WEI called on the international community to reaffirm its confidence in China, strengthen international cooperation, and decisively pursue policy measures that promote global economic development.

Raphael Lam delivered a keynote speech entitled *Chinese Economy Outlook*. He analyzed China's GDP growth rate statistics, overcapacity and the adjustment, and inequality in growth. He held that China has flexible monetary policy and accelerating credit growth, but fundamentals of corporate finance still remain weak; fiscal deficit and budget deficit are moderate, but deficits in a broad sense are still great; consumption has grown, but at a moderate pace; exchange rate is generally stable, but faces unstable external environment. He pointed out that, policies in the 13th Five-Year Plan are aimed at more environment-friendly, inclusive and sustainable development. We need to strike a balance between slowdown and reform, identify the proper goal, remove loopholes in financial leverage, step up the reform, strengthen exchanges and communication, and thus formulate more effective microeconomic policy.

The Economic Counsellor of Turkey Embassy in Beijing, Abdurrahman Ozlen Savkar, the Financial Counsellor of Italian Embassy in Beijing and Bank of Italy Beijing Office, Lorenzo Bencivelli, IMI researcher, and the financial counsellor of German Embassy in Beijing, Robert Elsen, the economic and financial counsellor of German Embassy in Beijng, and The Deutsche Bundesbank Beijing Office, Thomas Notheis, First Secretary of the Brazilian Embassy in Beijing, Augusto Castro, Project Officer of German Corporation for International Cooperation, and Sino-German Center of Finance and Economics, Qi Lan, Secretary of the Board of Directors in Shenhua Group Corporation Limited, Huang Qing, etc. have also attended the conference and shared their views. Attendees shared their views on structural reforms, the internationalization of renminbi, the exchange rate system and so on.

The Symposium of External Experts on RMB Internalization Report 2016

From May 2nd to May 7th, 2016, members from IMI and the joint research group of PBoC went to Germany to carry out research on the cooperation between China and German under the Belt and Road Initiative. These IMI members are Ben Shenglin, Executive Director of IMI; Tu Yonghong, Deputy Director of IMI; Qu Qiang, Director Assistant; and Researcher, Qian Zongxin. The research group are formed by government officials, experts, scholars, and business representatives from PBoC, Embassy of the People's Republic of China in the Federal Republic of Germany, and Sino-German Center of Finance and Economics (SGC).

On May 3rd, members of IMI attended the side event of the annual conference of ADB, namely the guest of honor session on "New Financing for Asia and Europe and Approaches to Developing Infrastructure" and on "Supporting Local Currency Bond Market in Investing Infrastructure — Study of Successful Cases in China, India and Indonesia", in which they discussed the unprecedented close economic ties between China and Germany.

On May 4th, IMI and Frankfurt Goethe University, House of Finance co-hosted the roundtable discussion on "the internationalization of RMB and the establishment of RMB offshore market in Frankfurt". The meeting was attended by Deputy Director Bu Yongxiang accompanied by four experts; Zhang Junbiao, Alternate Representative of the PBoC Representative Office in Frankfurt; Wang Xing, Deputy Consul of the Consulate-General of the PRC in Frankfurt; Chen Han, Member of the Executive Board of China Europe International Exchange (CEINEX); branch managers of the Bank of China, China Construction Bank, Agricultural Bank of China and Bank of Communications in Frankfurt; senior managers of

Chinese-funded enterprises including PetroChina; reporters of the Xinhua News Agency, Frankfurt Branch; members from German financial institutions; and teachers and students from Frankfurt Goethe University.

During their stay, members of IMI also visited many financial institutions, such as the German Federal Bank, European Central Bank, German Exchange Group (Deutsche Börse Group), Federal Financial Supervisory Authority (BaFin), CEINEX, German Savings Banks Association (DSGV), German Agency for International Cooperation (GIZ), Bank of Communications Co., Ltd. Frankfurt Branch, and the headquarter of the Industrial and Commercial Bank of China (Europe) in Luxemburg.

IMI and OMFIF jointly organized the Urban Forum in Beijing

On May 23rd, the International Monetary Institute (IMI) of Renmin University of China and the Official Monetary and Financial Institutions Forum (OMFIF) jointly organized the 2016 Urban Forum in Beijing. James Bullard, president of the Federal Reserve Bank of St. Louis and a member of the Monetary Policy Committee (MPC) meeting, attended the forum and delivered a speech. The forum was hosted by David Marsh, the Managing director and Chief Executive Officer of the OMFIF.

Mr. Bullard's speech was themed "Slow Normalization or No Normalization". He firstly discussed two views on the recent U.S. monetary policy: one is that based on the evolvement of the economy, the FOMC would gradually increase the policy rate; the other view holds that according to the market-based forecasts of FOMC policy, the policy rate would remain relatively stable. These two views have shown two different expected policy rate paths in the next several years. Later, Mr. Bullard briefly analyzed and contrasted each view, and pointed out that the main reasons for the gradual increase of the policy rate are the relatively strong U.S. labor markets, the U.S. inflation closer to target of 2%, and the waning international headwinds. However, in the market-based outlook, the slow U.S. real GDP growth and low U.S. inflation expectations have major influence on market analysis which suggests that the policy rate will stay at a relatively low level for a while.

During the Q&A session, Mr. Bullard patiently responded to the audience's questions concerning his personal views about the spillover effect of the U.S. monetary policy on emerging market countries, his predicts and ideas on the prospect of the internalization of RMB, the potential problems that might occur during the internalization of a currency, and whether and how other central banks' decisions are considered during the design of the U.S. monetary policy.

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The First RMB Liaison Network Forum: The Evolution of the Multicurrency Reserve System

On 24th May 2016, the first RMB Liaison Network Forum (RLN) was successfully held by the International Monetary Institute of Renmin University of China (IMI), the Official Monetary and Financial Institutions Forum (OMFIF), the International Finance Institute of Bank of China, and China Construction Bank (CCB) at Renmin University of China. The forum focused on the evolution of the multicurrency reserve system and was co-hosted by David Marsh, the member of the IMI advisory board and Managing Director of OMFIF, and by Professor BEN Shenglin, the Executive Director of IMI and Founding Dean of the Academy of Internet Finance Technology of Zhejiang University. A wide range of representatives were invited to deliver speeches on the conference.

A wide range of representatives were invited to deliver speeches on the conference. Speakers included WEI Benhua (Former Deputy Administrator of the State Administration of Foreign Exchange), ZHANG Zhixiang (Former Director General of the International Department of People's Bank of China), Robert Dohner (Senior Consultant for Asia and Deputy Assistant Secretary at the U.S. Department of the Treasury), XIAO Geng (Professor of Practice in Finance and Public Policy at School of Business and Faculty of Social Sciences of the University of Hong Kong), SUN Lujun (Director of Guoxin International Investment Co.,Ltd.), CHEN Weidong (Deputy Executive Director of the International Finance Institute of Bank of China), BIAN Weihong (Deputy Research Fellow of the International Finance Institute of Bank of China)，GUO Meijun (Business Director of Cross-border RMB Business of China Construction Bank)， WAN Tailei (Director of the International Communication Department of the National Association of Financial Market Institutional Investors)，ZHAO Xijun (Associate Dean of the School of Finance of Renmin University of China), HE Qing (Associate Head of the School of Finance of Renmin University of China), XU Gao (Chief Economist of Everbright Securities)，XIA Le (Chief Economist for Asia at the Research Department of Banco Bilbao Vizcaya Argentaria)，Augusto Castro (Director of Trade at the Embassy of Brazil in China), Supradit Tangprasert (Chief Representative of Bank of Thailand in China)，Tsyplakov Sergrey (Chief Representative of the Beijing Office of Sberbank)，YoungWook Kim (the Beijing Office of Bank of Korea), PyungSeup Yang (Chief Representative of the Beijing Office of the KIEP)，ZHOU Qi (Representative of the Beiing Office of the Monetary Authority of Singapore)， Edward Lu Kean

(Representative of the Beiing Office of the Central Bank Of Malaysia), TU Yonghong (Deputy Director of IMI), and SONG Ke (Deputy Director of IMI).

The forum covered two major topics, with the first topic being *The Evolution of the Multicurrency Reserve System*. The second topic is *The Future Development of RMB Internationalisation for the Capital Market*. In the round table discussion session, representatives exchanged views on issues such as the development of RMB internationalization and the exchange rate mechanism.

It is noted that the RMB Liaison Forum aims to construct a non-official safe channel of information to support GPIs in conducting practices related to RMB businesses and transactions, with special focus being given to enhance cooperation and information exchange, and representatives from the public sector being major participants. The work of RLN includes releasing information about the timeline and arrangement of trade and investment, covering the development of the liberalization of China's capital account, comprehensive macro-economic data, exchanges of views in RMB cross-border trade application, investments and capital market transactions, and information upgrading of settlements.

IMI & CEPS Jointly Held the Third EU-Asian Financial Services Relations Annual Meeting

May 26 to 27, The Third EU-Asian Financial Services Relations Seminar was held in Beijing's Financial Street jointly by Center for European Policy Studies (CEPS), International Monetary Institute of Renmin University of China (IMI), Asian Securities Industry & Financial Market Association (ASIFMA), Afore Consulting, Center of Bank and Financial Law of University of Singapore. Andrea Enria, president of European Banking Authority, Wei Benhua, academic committee member of IMI and former deputy administrator-in-bureau of the State Administration of Foreign Exchange, Ben Shenglin, executive director of IMI, and more than 100 Chinese and foreign guests from leading financial institutions and organizations including European Central Bank, People's Bank of China, Hong Kong Monetary Authority, Hong Kong Securities and Futures Commission, Info-Communication Development Authority of Singapore attended the meeting.

The year 2016 is of special significance. China takes the presidency of G20 in 2016, and last year is the 40th anniversary of the establishment of China-EU diplomatic relations. This meeting is a platform for policy makers, scholars and leading managers from EU and Asia to communicate and exchange ideas on

EU-Asian trade, investment and financial services, and thus to promote the industry's prosperous development.

This meeting covered various topics related to EU-Asian financial services relations, including examining the basic principles of trading books, corporate bond, Internet finance, payment innovation, stock market fluctuations, shadow banking and asset management. The meeting had six topics: Trading Book of Banks: Implications of Bank Transaction Model, Corporate Debt in Asia: An Increasingly Integrated Regional Market, How Do Financial Technologies Redefine the Financial Industry, Means of Payment in the 21th Century, Asian Stock Market: Critical Moment, Asian Shadow Banking and Asset Management.

Ben Shenglin, executive director of IMI, shared his insightful view on Chinese Internet finance in the session of How Do Financial Technologies Redefine the Financial Industry on the first day of the meeting. He mentioned the differences in Chinese Internet finance and that of the western world, why does Internet finance develop so rapidly in China, and what can western countries learn from China's Internet finance development. In the end, he answered questions from other scholars.

In regard to the issue of consumer protection, Wei Benhua, administrator-in-bureau, as the keynote speaker of the second day's meeting, hosted the relevant topic and made a speech.

2016 International Monetary Forum and Press Conference of RMB Internationalization Report

On July 24th, 2016 International Monetary Forum and Press Conference of RMB Internationalization Report was held in Renmin University. Over 500 experts and scholars from finance management departments, research academies and financial companies attended the conference, including Chen Yulu, vice governor of People's Bank of China; Liu Wei, president of Renmin University; Wu Qing, director of Shanghai Stock Exchange; Li Yang, former associate dean of Chinese Academy of Social Sciences; Chen Yunxian, former vice provincial governor of Guangdong Province; Wang Jiang, vice president of Bank of Communications; Guo Qingwang, dean of the School of Finance of Renmin University; Cao Tong, president of Xiamen International Financial Technology Co. LTD, former vice president of Export-Import Bank of China; Yaseen Anwar, former governor of Central Bank of Pakistan; and Anoop Singh, former director Asia and Pacific Department of IMF. Over a hundred media reporters participated in this event.

This forum is hosted by Renmin University and Bank of Communications, co-sponsored by the School of Finance of Renmin University, China Financial

Policy Research Center, OMFI, and organized by International Masonry Institute. The opening ceremony of the forum and Press Conference of RMB Internationalization Report consists four parallel forums. Guo Qingwang was the moderator of the Press Conference.

President Liu Wei made an opening remark on behalf of Renmin University. He pointed out that Renmin University makes full use of its academic advantage and rich talent resource to publish research reports of great international influence. Renmin University is becoming an important think tank for the new round of reform in China. In the past five years, policy makers in China attached great importance to the RMB Internationalization Report, because the Report provided an independent and objective reference to the decision making. It also raised wide attention in the International Community after the publication of the English, Japanese and Korean version. President Liu believed that the Report as an important reference would promote RMB internationalization and become a successful example for the cooperation between universities and companies. Afterwards, guests gave speech on different aspects of RMB Internalization.

The theme of the parallel forum I is Reform of RMB Exchange Rate System and Prevention of Exchange Rate Risks. The theme of the Parallel Forum II is “Chinese Capital Market: open-up, risk and supervision”. The theme of Parallel Forum III is “Supply-Side Reform and Risk Prevention of Real Economy. Parallel Forum IV is “Dialogue between Chinese and American Student Leaders”. In this forum, student representatives from Renmin University, Tsinghua University, Yale University and other famous universities held a round table meeting on “China-US Cooperation: How to defend against Macro-Financial Risks” in Chinese.

Call for Papers

International Monetary Review

International Monetary Review is an internal academic magazine sponsored by International Monetary Institute. Following the principle of including both Chinese and western merits with precise and practical academic spirit, International Monetary Review focuses on the cutting-edge theoretical researches in internationalization of RMB, reform of international monetary system, regional monetary and financial cooperation, China's international financial strategies, and other macro-financial theories and policies.
We welcome submissions by scholars, experts and practitioners in financial industry. Papers and articles should center on key financial issues and follow academic standard and scientific methodology. We welcome quality articles based on data analysis and theoretical model and other insightful articles with standard writing.

Prepare your article

General rule: Submitted manuscripts should be double-spaced texts in 10.5 point font, and formatted for paper of standard size with margins of at least 20mm on all sides. Pages should be numbered, and an abstract (of no more than 200 words), as well as keywords and complete author affiliations, should be included in the paper in the title page. A regular article should not exceed 50 pages.
Mathematics: Equations must be identified by consecutive Arabic numbers in parentheses on the right. Expressions should be aligned and compound subscripts and superscripts clearly marked if there is any potential for confusion.
Figures: Figures must be of professional quality and ready for reproduction. They should be numbered consecutively. Black-and-white versions of figures are required for printing purposes, but color figures can also be supplied for online dissemination.
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