The External Balance Sheets of China and Returns Differentials

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From World Factory to World Creditor?

- **Economic Superpower**: China has the world's fastest growth, largest trade and current account surpluses and owns a third of world currency reserves (Wolf, 2011).

- **Goods Trade** : How has Chinas exchange policy lead to current account surplus (Goldstein and Lardy, 2008; Genberg et al, 2009)?

- **Assets Trade**: Does the worlds biggest manufacturing factory play the leading role in assets trade as well as the goods trade ? What is the external wealth of China ?

- **International Financial Adjustment**: Gourinchas and Rey (2007) find both the trade channel and valuation channel affect the change of net foreign assets.

- **External Wealth**: What is net foreign assets (NFA) with the valuation effects ?

- **Excess Returns**: What is the excess returns of external wealth of China?
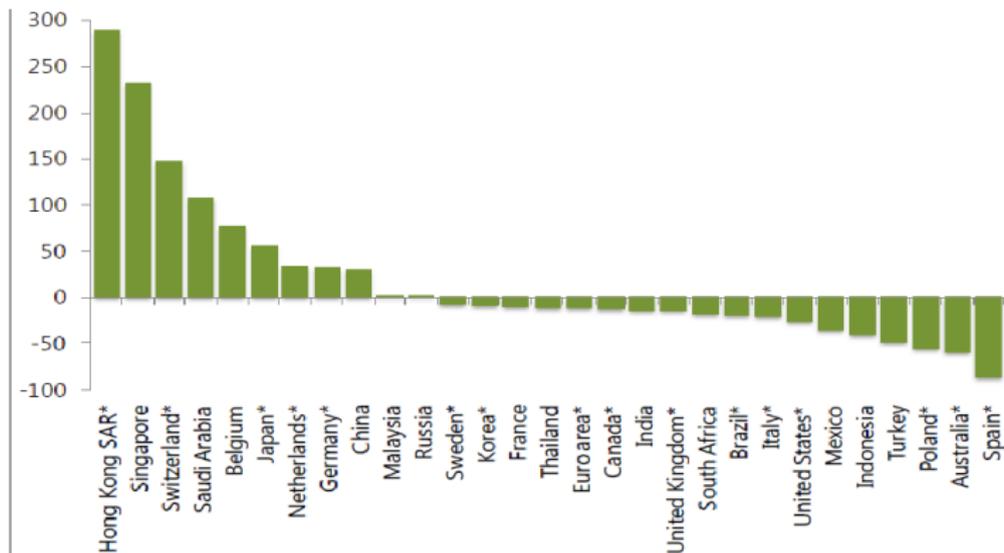
From World Factory to World Creditor?

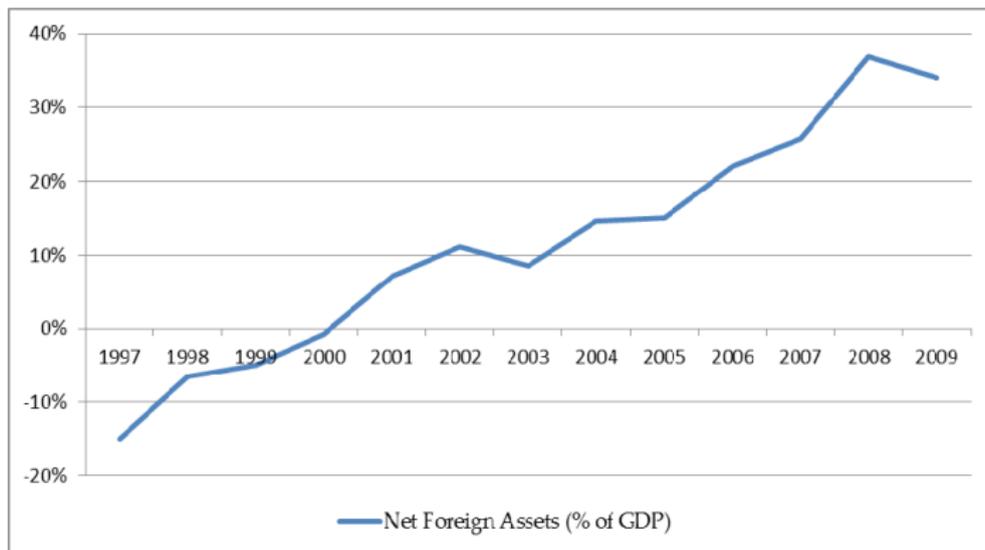## Net Foreign Assets of China (% GDP, 1992-2011)
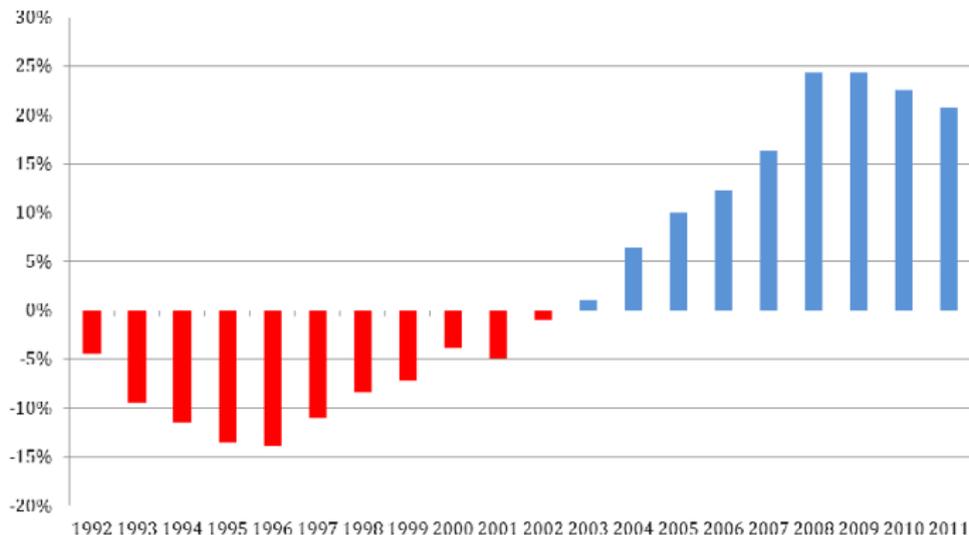
Source: IMF, Lane and Milesi-Ferretti (2013)

From World Factory to World Creditor?

Comparisons of Net Foreign Assets (% GDP 2011)

Net Foreign Assets (% GDP, 1997-2009)

Roadmap

1. Literature Review

2. External Balance Sheet of China with the Valuation Effects

3. A Stylised Model of China's Balance Sheet

4. Excess Returns on Net Foreign Assets Position

5. Concluding Remarks and Policy discussions

(Limited) Literature Review

- Lane and Milesi-Ferretti (2001, 2007, 2012): International Experiences
- Habib (2010): 46 countries between 1981 and 2007
- Gourinchas and Rey (2005, 2007, 2012): US case
- Curcuru Dvorak and Warnock (2008): US case
- Tille (2007), Zucman (2012) and SNB (2012): Swiss case

External Wealth of China

- Dollar and Kraay (2006): 1982-2004
- Sheng and NG (2008): 1982-2004
- Ma and Zhou (2009): 1985-2007

Data and Measurement

- I construct more structured estimates of the external wealth of China at market prices from 1997 to 2009 with valuation adjustment, following Lane and Milesi-Ferretti (2007) approach.
- Data from the balance of payments on cross border flow data and international investment position data have been officially reported by the People's Bank of China.
- Financial statements of the Bank of China and other state-owned banks, which have been provided to conduct a careful valuation adjustment to the portfolio flows.

Decompositions of External Wealth

$$A_t = FDI_{At} + PEQ_{At} + PD_{At} + OD_{At} + RES_{At}$$

$$L_t = FDI_{Lt} + PEQ_{Lt} + PS_{Lt} + OD_{Lt}$$

Note: I decompose the gross external assets and liabilities by asset class. The external assets have been divided into **outward FDI**, **portfolio debt assets**, **portfolio equity assets**, **FX reserves assets** and **other assets**. The external liabilities have been divided into **inward FDI**, **portfolio equity liabilities**, **portfolio debt liabilities** and **other liabilities**.

Estimations of External Wealth : Case of the Portfolio Debt Instrument

$$PDA_t = \frac{P_t}{P_{t-1}} PDA_{t-1} + \frac{P_t}{AP_t} Flow_t$$

$$PDL_t = \frac{P_t}{P_{t-1}} PDL_{t-1} + \frac{P_t}{AP_t} Flow_t$$

PDA_t represents the position of debt and other assets at year t. P_t is the price index of year t. AP_t is the average price index from year t to the initial year. For portfolio debt assets, I collect Global Government Bond Yields as the price index.

PDL_t represents the position of portfolio debt liabilities at year t. P_t is the price index of year t. AP_t is the average price index from year t to the initial year. I employ EMBI China Government Bond Yields as the price index.
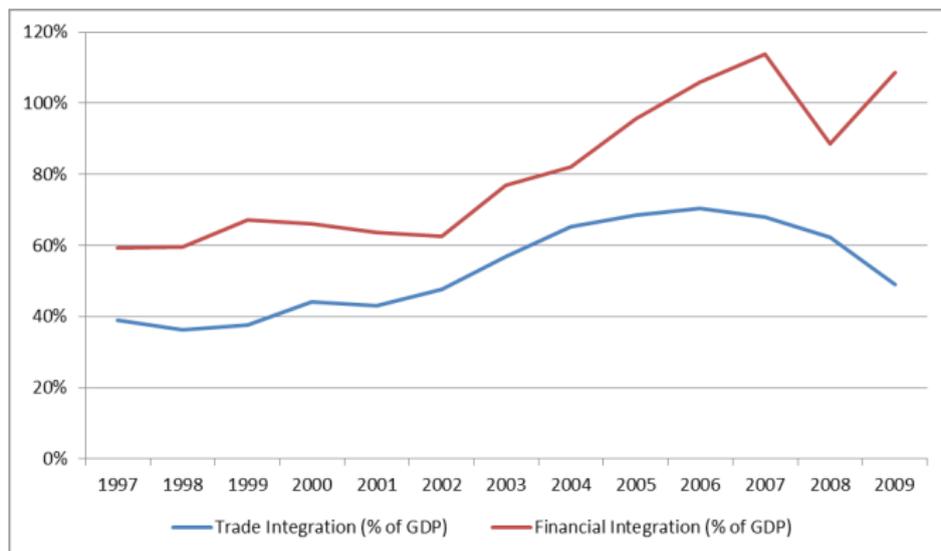
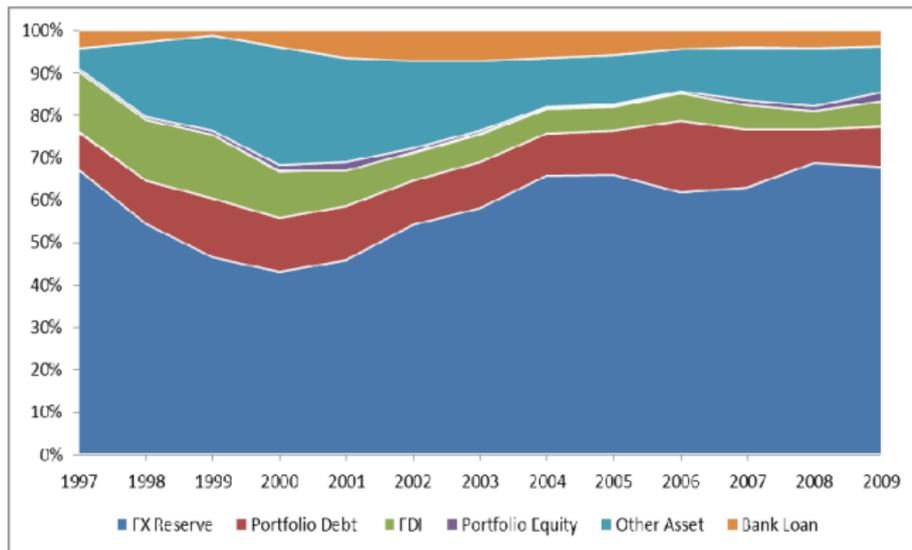# Gross Assets and Liabilities Position (% GDP, 1997-2009)
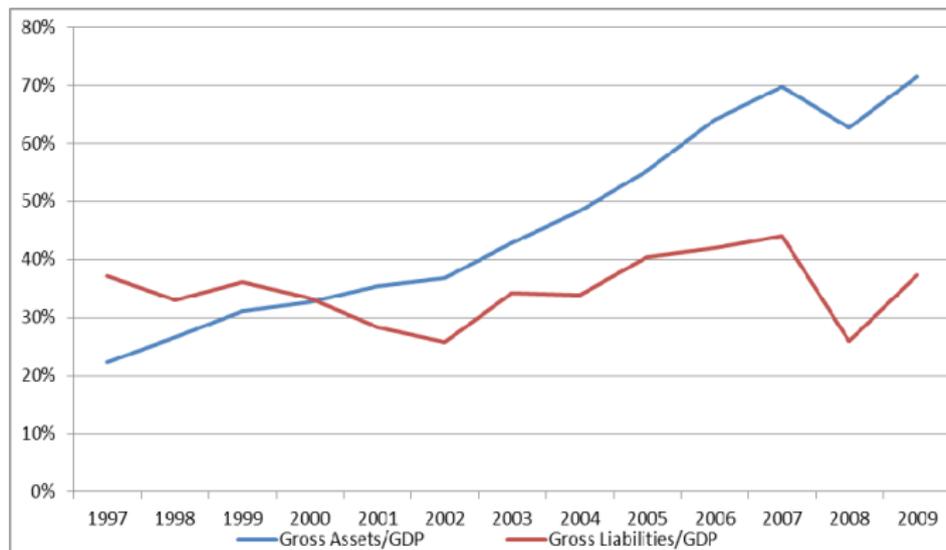
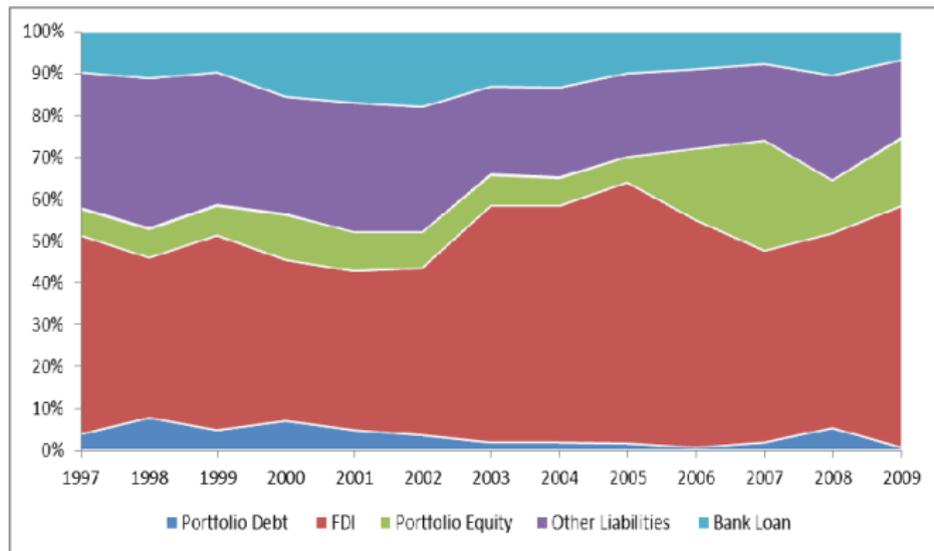# Net Foreign Assets Position (% GDP, 1997-2009)
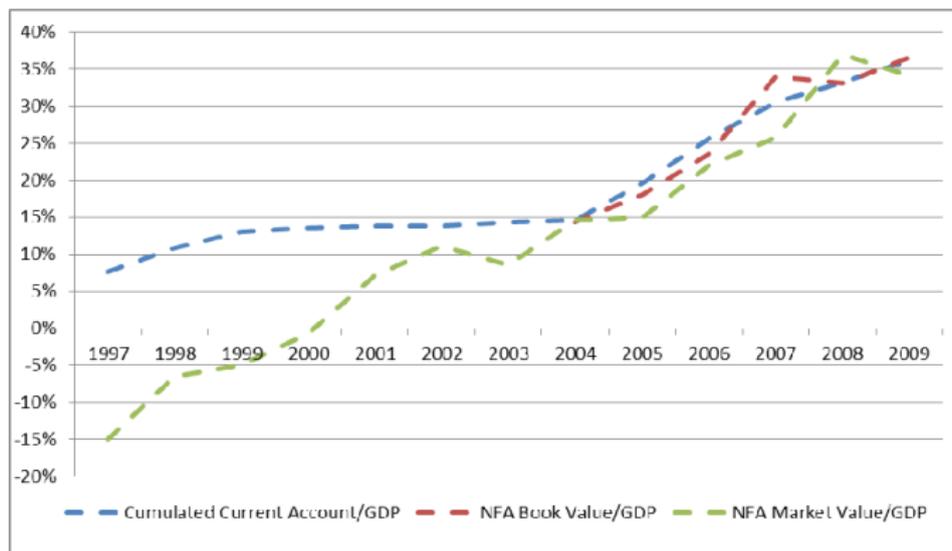
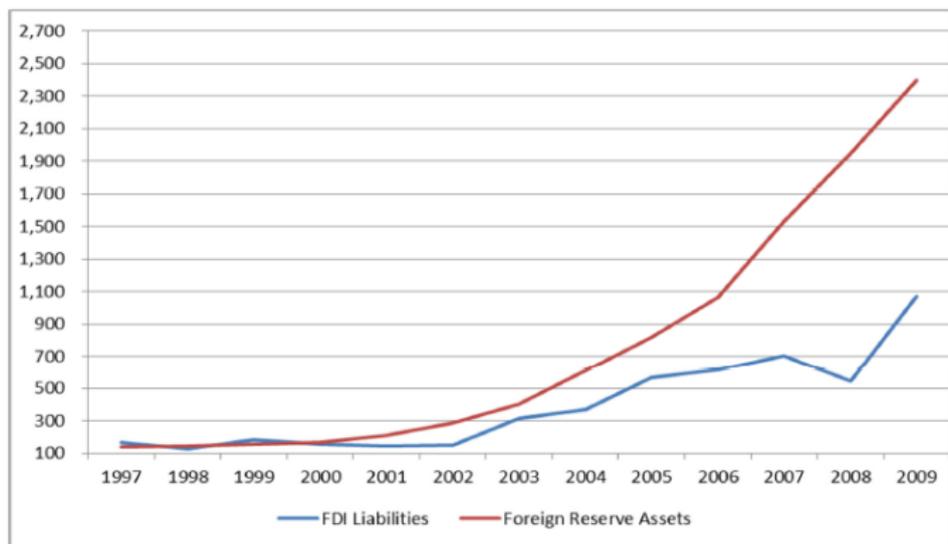# Trade Integration and Financial Integration (% GDP, 1997-2009)

China Gross Assets by Asset Class

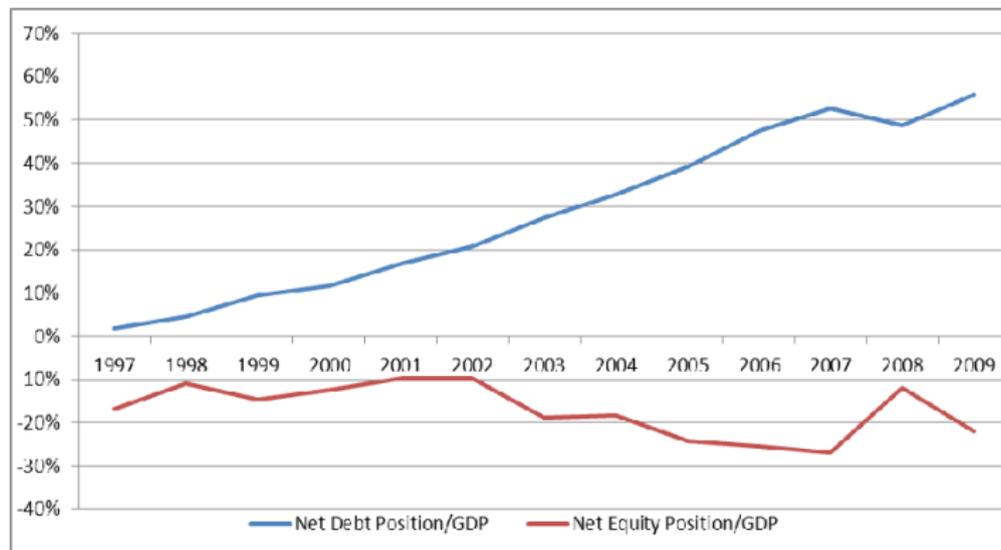# China Gross Liabilities by Asset Class

Foreign Exchange Reserve VS. FDI Position (Billions USD, 1997-2009)

Note: Dooley et al. (2008) suggest that Chinese FX reserves, in the form of Chinese holding of US Treasuries, represent

"collateral" on US FDI in China.

Net Debt and Net Equity Positions (% GDP, 1997-2009)

How to Understand the Net Foreign Assets Movements?

- Chinn and Wei (2008) find no robust evidence linking current account adjustment and the degree of flexibility of an exchange rate regime.

- Jeanne (2012) shows the negative correlation between net foreign asset and real exchange rate movements: foreign asset accumulation is accompanied by real exchange rate depreciation and reducing the rate of asset accumulation is accompanied by real exchange rate appreciation.

- The accumulation of net foreign assets is broadly associated with real exchange rate depreciations and capital controls?

Theory of Government Controls of Net Foreign Assets
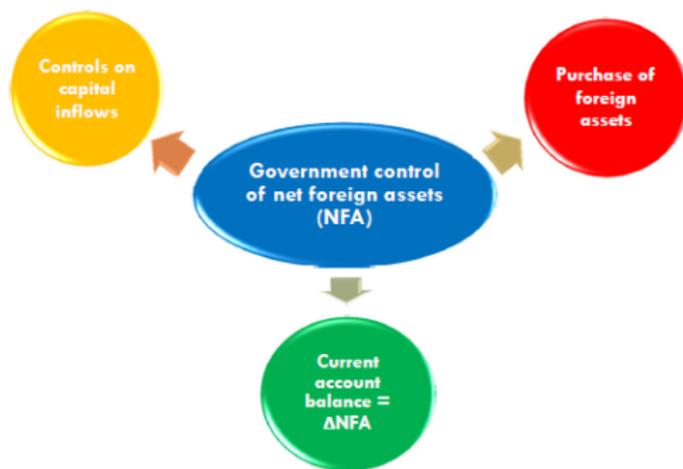
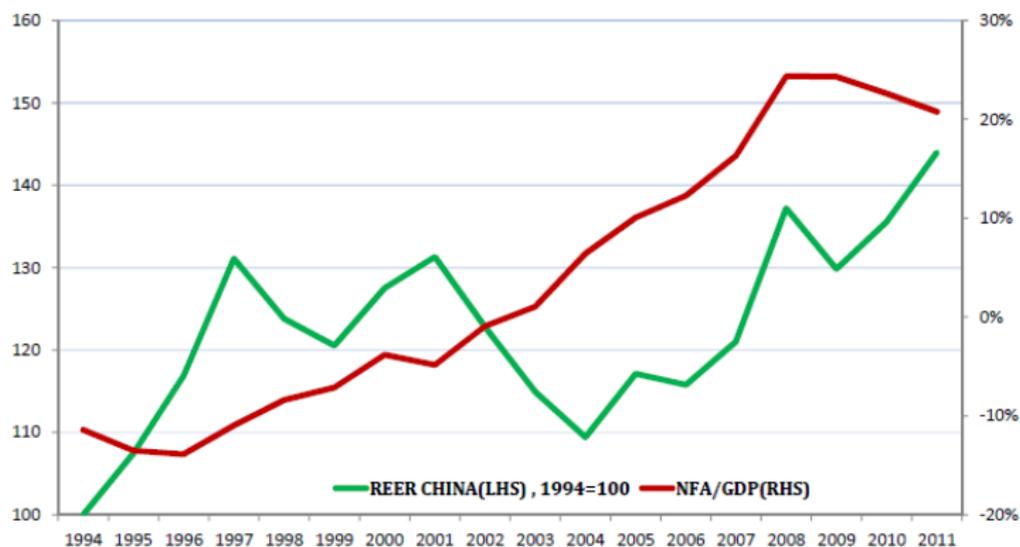Note: The theory of government controls of NFA (Jeanne, 2012).

- the current account
- the trade balance
- the real exchange rate

The Real Exchange Rate and Net Foreign Assets

Source: BIS, Lane and Milesi-Ferretti (2013)

Beyond the Exchange Rate Policy...

- Bacchetta, Benhima and Kalantzis (2012):
  - Capital controls can be optimal for a rapidly growing economy.
  - Central bank as the Ramsey planner can decide the interest rate and accumulate with international reserve.
- Ventura, Riedel and Huang (2013):
  - Economic Policy, such as the financial repression, generates government wealth and can be growth enhancing.
  - Large accumulation of reserves can also generate government revenues and be growth enhancing.

A Stylised Model of China's Balance Sheet

We use a simple OLG model where agents save a constant fraction of income (equivalent to log utility investors).

- w_t - wages of working agents
- μ - fraction of income saved
- ε - Share of each generation with desire and ability to manage privately owned enterprises (POEs)

Agents can save for old age by

- Investing in their own POEs
- Depositing savings in state owned banks which can lent to POEs and state owned enterprises (SOEs)

Production and Investment

For private enterprises

- Production is Cobb-Douglass in aggregate capital, $f(l, k) = l^{1-\alpha} k^{\alpha}$
- Investment through private savings $\varepsilon \mu w_t$ and loans from state owned banks b_t^P

State owned enterprises are less efficient

- Production is Cobb-Douglass in aggregate capital with lower productivity, $f(l, k) = \rho l^{1-\alpha} k^{\alpha}$, $\rho < 1$.
- Investment through loans from state owned banks

Credit Constraint

Private enterprises cannot borrow more than their pledgeable funds
$R^L b_t^P \leq \phi(\epsilon \mu w_t + b_t^P)$ or

$$b_t^P \leq \frac{\phi}{R^L - \phi} \varepsilon \mu w_t \qquad (1)$$

Entrepreneurs will always borrow to the credit constraint to maximize
returns, thus it holds with equality. R^L is the interest rate on loans which
we consider a policy variable.

SOE Borrowing

State owned enterprises borrow the remaining bank deposits after private borrowing thus

$$b_t^S = \left(1 - \frac{R^L}{R^L - \phi}\right) \mu w_t \qquad (2)$$

The evolution of capital in the closed economy

Given the previous allocation of savings the evolution of capital is

$$k_{t+1} = \left[\rho + (1-\rho) \frac{R^L}{R^L - \phi} \varepsilon \right] \sigma k_t^{\alpha} \qquad (3)$$

where σ is the fraction of output saved

$$\sigma = \mu(1-\alpha)$$

Government Wealth in the closed economy

Government wealth in period t is then

$$x_{t+1} = \left[(R^L - R^D) \frac{\phi}{R^L - \phi} \varepsilon + (R^S_{t+1} - R^D) \left(1 - \frac{R^L}{R^L - \phi} \varepsilon \right) \right] \sigma k_t^\alpha \quad (4)$$

where

- R^D is interest paid to depositors, which is a policy variable
- R^S_{t+1} is the return to state owned enterprises

The evolution of capital in the open economy

With the option of outside investment and f_t the net foreign assets of the government (which reduces the funding available to SOEs) the new evolution of capital is

$$k_{t+1} = \left[\rho + (1-\rho)\frac{R^L}{R^L - \phi}\varepsilon\right]\sigma k_t^\alpha - \rho f_t \tag{5}$$

with the condition that

$$f_t \le \left(1 - \frac{R^L}{R^L - \phi}\varepsilon\right)\sigma k_t^\alpha$$

Government Wealth in the open economy

With the option of outside investment and an excess return R^* then government wealth becomes

$$x_{t+1} = \left[(R^L - R^D)\frac{\phi}{R^L - \phi}\varepsilon + (R^S_{t+1} - R^D)\left(1 - \frac{R^L}{R^L - \phi}\varepsilon\right)\right]\sigma k_t^{\alpha} + (R^* - R^S_{t+1})f_t \tag{6}$$
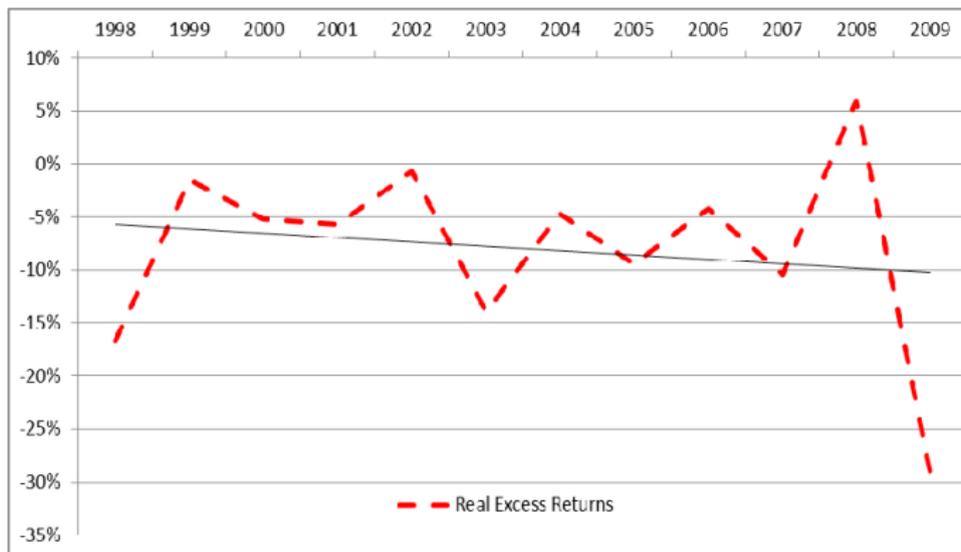
Estimations of Excess Returns

Standard Approach by Habib (2010)

- Yield of investment income $y_t^A = \frac{II_t^A}{A_{t-1}}$; $y_t^L = \frac{II_t^L}{L_{t-1}}$
- Rate of capital gains $CG_t^A = \frac{CG_t^A}{A_{t-1}}$; $CG_t^L = \frac{CG_t^L}{L_{t-1}}$
- $CG_t^A = A_t - A_{t-1} - CO_t$; $CG_t^L = L_t - L_{t-1} - CI_t$
- Total returns $r_t^A = \frac{II_t^A + CG_t^A}{A_{t-1}}$; $y_t^L = \frac{II_t^L + CG_t^L}{L_{t-1}}$

Excess Returns: Yields, Capital Gain and Total Return by Year (%)

(%)	Excess Yield	Excess Return of Capital Gain	Excess Returns	Total Assets Returns	Total Liabilities Returns
Mean	-3.3	-3.4	**-6.6**	-0.3	6.3
St. Deviation	1.2	9.5	**10.2**	17.2	23.0
Median	-3.5	-1.1	**-4.9**	3.1	5.0
Min	-5.0	-24.7	**-29.7**	-31.4	-31.8
Max	-1.4	-13.7	**-12.2**	-25.0	-50.6

Excess Return of Net Foreign Assets (%, 1998-2009)

Decompositions of Excess Returns by Year (%)
Buys high and sells low ?

Returns by Asset Class	1998-2009	1998-2000	2001-2005	2006-2009
FDI Assets Return	-0.2	-1.5	0.0	0.4
FDI Liabilities Return	4.3	-0.8	5.4	6.8
FDI Excess Return	**-4.5**	**-0.7**	**-5.3**	**-6.4**
Portfolio Equity Asset Return	0.01	-0.1	0.0	0.1
Portfolio Equity Liabilities Return	1.02	-0.2	0.5	2.6
Portfolio Equity Excess Return	**-1.1**	**0.1**	**-0.5**	**-2.5**
Portfolio Debt Asset Return	0.1	-1.1	0.2	0.8
Portfolio Debt Liability Return	-0.1	-0.3	0.1	-0.2
Portfolio Debt Excess Return	**0.2**	**-0.8**	**0.1**	**0.9**
Foreign Exchange Reserves Official Returns	3.21	N/A	2.51	4.09
Returns Differentials: Reserves Official Returns-FDI Liabilities	**-1.1**	**N/A**	**-2.9**	**-2.7**

Main Findings

- Net foreign assets have grown rapidly since 2001 and exceeded 35% of GDP in 2009.
- The FX reserves assets and FDI liabilities account for more than 50% of total positions and thus dominate the gross positions of assets and liabilities separately.
- The asymmetric structure of the external balance sheet of China: short position in equity and long position in debt.
- The most striking and strong finding is the considerable size of negative excess returns as much as 6.6% per year.
- Return effect: the outstanding performance of inward FDI compared to outward FDI and portfolio equity and debt investment by foreign reserves.

Policy Implications

- It is worth mentioning the connection between the external wealth of China and international monetary system.

- At the pace of RMB internationalization, can we expect the rising excess returns as well as the increasing external wealth?

- The mainly state owned foreign asset investment . Can we expect more private sector involvement in cross border investment?

- The composition of external asset holdings really matters. Can we expect more outward FDI or portfolio equity investment?

Further Research

Ongoing project:

- Investment Return Differentials (Rey and Huang, 2013)
- Making Sense of China's Economic Policy (Huang, Ventura and Riedel, 2013)

- Asset price and valuation channel: state-contingent and volatility risky net external position.
- The accumulation of foreign reserve is partly due to capital controls policy in China. The importance and effectiveness of these capital controls deserve further study.

Additional Slides

Facts and Fictions of External Wealth

- Balance of Payment Statistics: Flow vs. Stock

$$NFA_t - NFA_{t-1} = CA_t + CG_t + KA + t + OC_t$$

- Cumulated Current Account: Historical Cost

$$NFA_t = \sum_{i=0}^{t} TB_t + \sum_{i=0}^{t} TR_t + \sum_{i=0}^{t} IIB_t + \sum_{i=0}^{t} CG_t + \sum_{i=0}^{t} KA_t + \sum_{i=0}^{t} OC_t$$
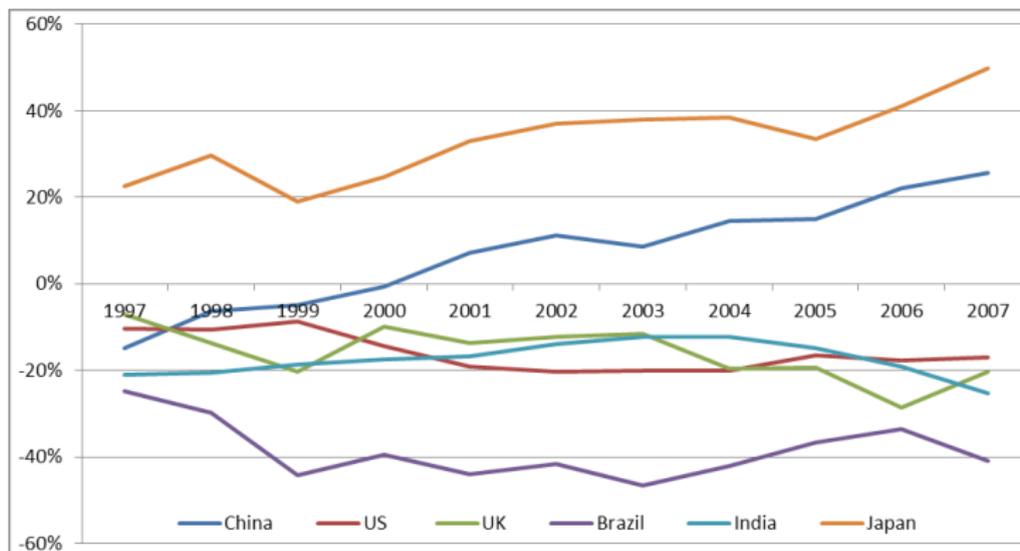
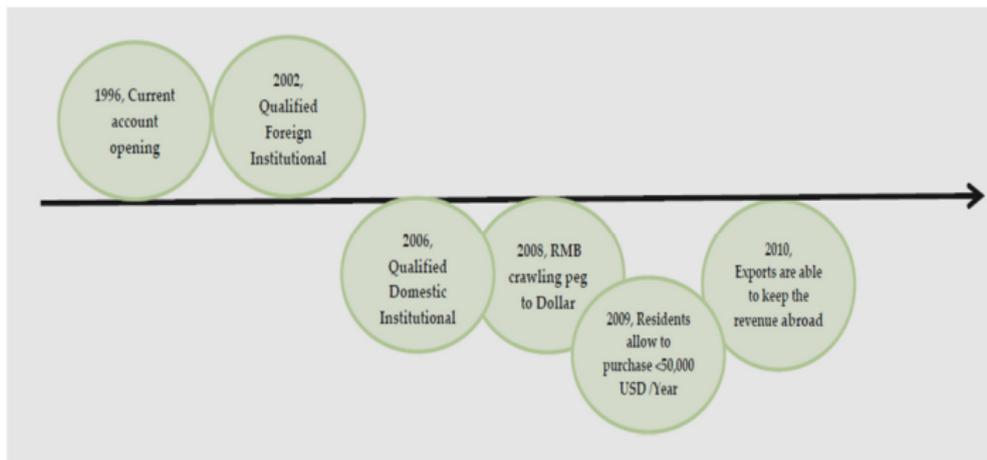- Official International Investment Position: Book Value

$$NFA_t = A_t - L_t$$

- External Wealth: Market Value

$$NFA_t - NFA_{t-1} = CA_t + VAL_t$$

# International Comparisons of Net Foreign Assets (% GDP, 1997-2009)

China: Capital Controls Policy

Note: the mainly state owned sectors dominate foreign asset investment : SOE and BIG 4 stated owned banks. The reform would encourage more private sector to invest abroad and more private outflow in FDI.
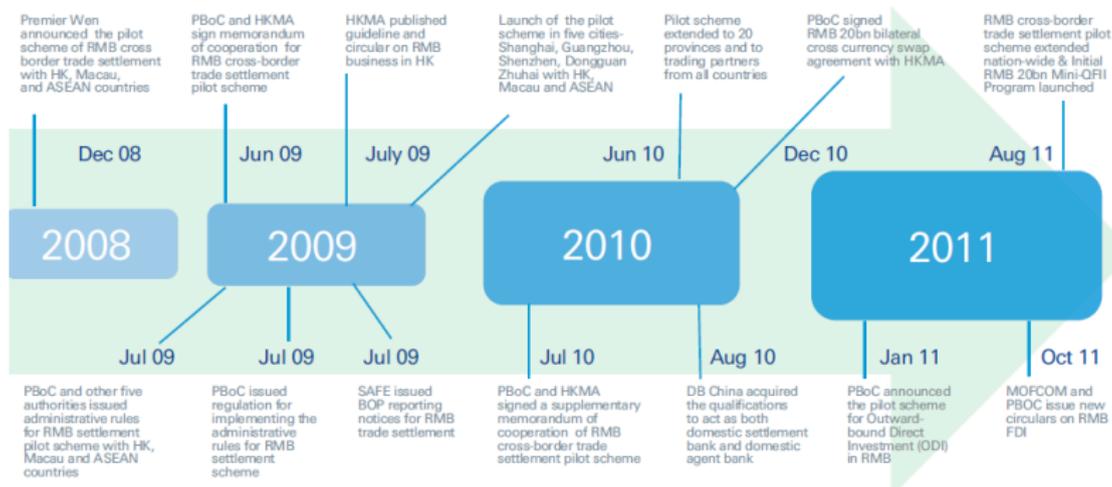
Source: People Bank of China (2012) and SAFE (2012)

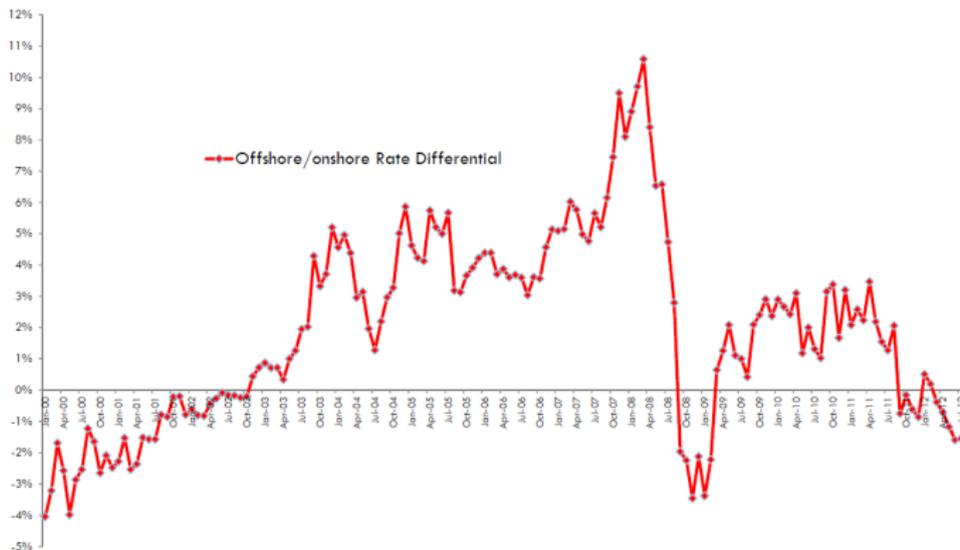# China: *De Jure* Index of the Capital Controls Policy
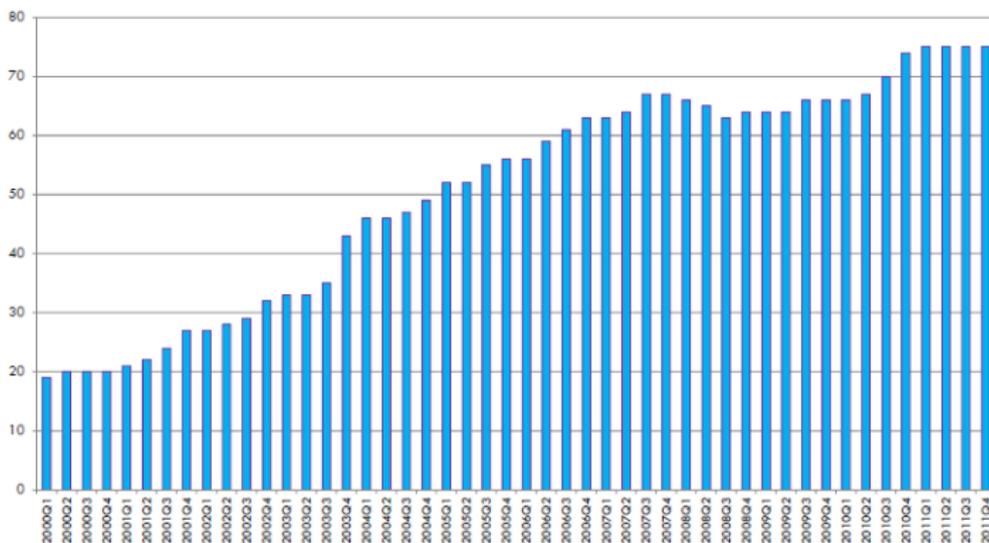
Source: IMFs AREAER (2012)

RMB offshore Market Development and RMB Internationalization

Source: Hong Kong Monetary Authority (2012) and Deutsche Bank (2012)

Exchange Rate Movement Expectations (%, USD/CNY)

Note: Offshore Rate : CNY NDF(non-deliverable forward); Onshore Rate: RMB spot rate Offshore/ onshore rate differential= -

(Offshore rate-onshore rate)/ onshore rate Source: People Bank of China (2012) and HKMR(2012)