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The Corporate Savings Puzzle in China: A Comparative Perspective

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Introduction

China's national savings rate, at 50% of GDP in 2007, is among the world's highest for any economy of a significant size. This has been said to be a underlying cause for the U.S. housing bubble during 2002-2007 (Bernanke, 2005; and Greenspan, 2009), and by extension, for the current global financial crisis. This illustrates the attention that has been paid to the global implication of China's savings issue. It is therefore useful to understand China's high savings rate.

For household savings, see Chamon and Prasad (2008) and Wei and Zhang (2009).

Several authors have noted that a significant part of China's high national savings rate come from its large corporate savings, which by 2007, accounted for roughly half of the national savings (Kuijs, 2005?; IMF China division, etc). It is hypothesized that this rise in the corporate savings rate is a result of inefficiency and corporate mis-governance: many state-owned firms have benefited from a windfall increase in their profits due to a rise in the global commodity/mineral prices in the last few years. At the same time, managers of state-owned firms are reluctant to pay dividends to the state even if they do not have projects with returns higher than the true cost of capital. This results in undistributed profits in these firms than cannot be justified on an efficiency ground. In other words, Chinese corporations as a whole would not save nearly as much as they do now, if these state-owned firms had been privatized. While the logic of the hypothesis is plausible, there is no firm-level evidence or even aggregate corporate savings broken down by firm ownership and sectors to support the assertion. [Based on this hypothesis, the World Bank (and now the Asian Development Bank) has advised the Chinese government to require a higher dividend payout by state-owned firms.]

At the same time, a separate literature in finance has noted a steady rise in corporate savings around the world. For example, J.P. Morgan (2005) and the IMF (2005) have noted that corporations in G-7 economies have all exhibited a rise in undistributed profits. Bates, Kahle and Stulz (2007) note that a typical firm in a developed country had so much cash holdings by 2005 that it could pay off its entire corporate debt and still has some cash left over. The corporate finance literature does not presume that the high corporate savings per se reflect inefficiency or corporate mis-governance. Indeed, Bates et al hypothesize that it could be a rational (optimal) response to rising corporate faced by corporations.

The corporate finance literature and the Chinese savings literature haven't interacted with each other much so far, but it is natural and indeed necessary to ask the question of whether Chinese corporate savings behavior is out of ordinary when compared with corporations in other countries and in the same sectors. The objective of this paper is to do exactly that.

To answer this question, one needs to work with firm level data in China and other countries. In this paper, we examine whether Chinese firms' cash holdings over asset is an outlier relative to firms in other countries, control for other factors that may affect corporate savings rate. We also examine if majority state-owned firms in China behave systematically differently from majority private-owned firms, or majority foreign owned firms. Under the hypothesis that Chinese high corporate savings reflect mis-governance and inefficiency, we should see that Chinese firms save more than non-Chinese firms, conditional on sectors, profitability and other factors that normally would affect corporate savings. In addition, we should observe that these extra corporate savings come mainly from majority state-owned firms.

Data and specification

We employ data on publically listed firms in China (1526), compare them with 23883 firms in 52 other countries. To the extent possible, we follow the specification in Bates, Kahle and Stulz (2007).

Our **preliminary investigations** yield:

- a. There is some evidence that Chinese firms hold a higher stock of cash (cash + other liquid assets) as a share of total assets than firms in other countries. The difference is 0.02-0.04 (or 2 to 4 percentage points), which is relatively modest as the mean/median cash/asset ratio across firms in all countries is 0.19/0.11 (with a standard deviation of 0.21) [Table 2, Columns 1-2 and 4-5]. Furthermore, the difference is no longer statistically significant if one looks at cash holdings in 2007 and accounts for firm-level volatility of sales over 2002-2006 (Table 2, Column 6).
- b. Within the universe of Chinese firms, majority state-owned firms do not save more. There is some evidence pointing to the opposite direction: state-owned firms may systematically save less than non-state firms. (Table 3). The difference in saving behavior across firms of different ownership may have to with the possibility that non-state firms have more volatile revenues.
- c. Chinese firms do invest more than an average firm in other countries (Table 4). Investment by Chinese firms also appears to be less sensitive to changes in Tobin's Q, a proxy for investment opportunities.

- d. There is no evidence that majority state-owned firms invest more than other private or foreign-owned counterparts. Furthermore, there is no evidence that the investment by majority state-owned is less sensitive to Tobin's Q. In fact, there is some evidence that the reverse may be true: investment by non-state firms is higher than state-owned firms on average, and may be less sensitive to changes in investment opportunities.

These differences across firms of different ownership largely disappear once we control for SIC 2-digit sector fixed effects, suggesting the difference in sector composition between majority state-owned and non-state firms is the underlying reason for the apparent difference in investment behavior.

These results call into question the inferences from the recent China-focused literature that the high and rising corporate savings in China is unique and reflects inefficiency and corporate mis-governance.

References:

Bates, Thomas W., Kathleen M. Kahle, and Rene M. Stulz, 2007, "Why do US firms hold so much more cash than they used to?" Ohio State University Working Paper.

Bernanke, Ben, 2005, "The global savings glut and the U.S. current account deficit," the Homer Jones Lecture, St. Louis, Missouri, April 14.

Greenspan, Alan, 2009, "The Fed didn't cause the housing bubble," Wall Street Journal, March 11.

IMF, 2005, "Awash with Cash: Why Are Corporate Savings So High?" World Economic Outlook, Chapter IV, p135-159.

J.P. Morgan Chase & Co., 2005, "The Corporate Savings Glut," June 24

Wei, Shang-Jin and Xiaobo Zhang, 2008, "Sex ratios and savings rate: an intended macroeconomic consequence of social policies?"

Table 1a: Summary Statistics on Corporate Savings and Investment

	variable	p50	mean	sd	min	max	Observation
All countries	Cash holding /Asset	0.11	0.19	0.21	0	1.00	144199
	Capital expenditure/Asset	0.03	0.06	0.58	0	156.04	142017
	Dividend/Asset	0.00	0.02	0.97	0	358.00	144367
	Operation Profit/Asset	0.06	-0.48	17.47	-3528	586.16	144021
All countries except China	Cash holding /Asset	0.11	0.19	0.21	0	1.00	136864
	Capital expenditure/Asset	0.03	0.06	0.60	0	156.04	134691
	Dividend/Asset	0.00	0.02	0.99	0	358.00	137032
	Operation Profit/Asset	0.06	-0.50	17.92	-3528	586.16	136689
Asia (except China and Japan)	Cash holding /Asset	0.09	0.14	0.15	0	1.00	27005
	Capital expenditure/Asset	0.03	0.07	0.97	0	156.04	26479
	Dividend/Asset	0.00	0.02	0.09	0	11.41	27017
	Operation Profit/Asset	0.07	0.06	4.96	-557	586.16	26979
China State_owned	Cash holding /Asset	0.13	0.16	0.12	0	0.88	3941
	Capital expenditure/Asset	0.05	0.07	0.07	0	0.62	3939
	Dividend/Asset	0.00	0.00	0.01	0	0.23	3941
	Operation Profit/Asset	0.07	0.05	1.13	-71	0.66	3940
China Non_State_owned	Cash holding /Asset	0.14	0.17	0.14	0	0.95	2543
	Capital expenditure/Asset	0.04	0.06	0.07	0	0.51	2540
	Dividend/Asset	0.00	0.00	0.01	0	0.15	2543
	Operation Profit/Asset	0.07	0.05	0.36	-15	4.77	2542

Table 1b: Listed Chinese Companies by Ownership

Chinese companies	Freq.	Percent
State-owned	3,941	60.78
Foreign_owned	95	1.47
Non-state and Non-foreign	2,448	37.75

Table 1b: Country Coverage (2002 to 2007)

Country	Freq.	Percent	Country	Freq.	Percent
ARGENTINA	306	0.21	MEXICO	537	0.37
AUSTRALIA	7,155	4.94	MOROCCO	78	0.05
AUSTRIA	363	0.25	NETHERLAND	853	0.59
BELGIUM	557	0.38	NEW ZEALAND	536	0.37
BRAZIL	1,213	0.84	NORWAY	852	0.59
CANADA	7,004	4.84	PAKISTAN	588	0.41
CHILE	678	0.47	PERU	286	0.2
CHINA	7,337	5.07	PHILIPPINES	700	0.48
COLOMBIA	109	0.08	POLAND	875	0.6
CZECH REPUBLIC	71	0.05	PORTUGAL	284	0.2
DENMARK	639	0.44	Russia	305	0.21
EGYPT	178	0.12	SINGAPORE	2,891	2
FINLAND	672	0.46	SLOVAKIA	38	0.03
FRANCE	3,631	2.51	SLOVENIA	64	0.04
GERMANY	3,527	2.43	SOUTH AFRICA	1,480	1.02
GREECE	1,574	1.09	SPAIN	604	0.42
HONG KONG	4,329	2.99	SRI LANKA	83	0.06
HUNGARY	147	0.1	SWEDEN	1,697	1.17
INDIA	5,214	3.6	SWITZERLAND	1,026	0.71
INDONESIA	1,428	0.99	TAIWAN	7,327	5.06
IRELAND	350	0.24	THAILAND	2,119	1.46
ISRAEL	768	0.53	TURKEY	1,044	0.72
ITALY	1,118	0.77	UNITED KINGDOM	8,442	5.83
JAPAN	20,422	14.1	UNITED STATES	33,292	22.98
KOREA (SOUTH)	5,165	3.57	VENEZUELA	75	0.05
LUXEMBOURG	121	0.08	ZIMBABWE	113	0.08
MALAYSIA	4,583	3.16			

Table 2: Determinants of Cash Stock over Asset, All Countries

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Tobin's Q	0.00600*** [0.00011]	0.00600*** [0.00011]	0.00268*** [0.000090]	0.00737*** [0.00012]	0.00736*** [0.00012]	0.00699*** [0.00033]
(Profit-Dividend)/Total assets	-0.0197*** [0.0016]	-0.0198*** [0.0016]	0.0129*** [0.0012]	-0.0223*** [0.0017]	-0.0224*** [0.0017]	-0.0272*** [0.0042]
Working capital/total assets	0.0202*** [0.0011]	0.0202*** [0.0011]	-0.00569*** [0.00082]	0.0171*** [0.0012]	0.0172*** [0.0012]	0.0130*** [0.0029]
Capital expenditure/total assets	-0.386*** [0.0073]	-0.386*** [0.0073]	-0.310*** [0.0054]	-0.409*** [0.0075]	-0.409*** [0.0075]	-0.410*** [0.019]
Debt/assets	-0.0180*** [0.00049]	-0.0180*** [0.00049]	-0.00692*** [0.00038]	-0.0221*** [0.00051]	-0.0221*** [0.00051]	-0.0235*** [0.0013]
Intangibles/Asset	-0.280*** [0.0030]	-0.280*** [0.0030]	-0.145*** [0.0022]	-0.193*** [0.0030]	-0.193*** [0.0030]	-0.266*** [0.0072]
negative porfit dummy	0.0739*** [0.0013]	0.0738*** [0.0013]	0.0148*** [0.00098]	0.0935*** [0.0014]	0.0934*** [0.0014]	0.0738*** [0.0033]
China dummy	0.0253*** [0.0022]	0.0376*** [0.0031]	-0.0112*** [0.0022]	0.0125*** [0.0022]	0.0266*** [0.0032]	-0.00331 [0.0073]
State-owned China's firm		-0.0229*** [0.0041]	0.00205 [0.0029]		-0.0260*** [0.0043]	-0.0118 [0.0097]
Lagged cash stock/assets			0.719*** [0.0019]			
Commodity sector				0.0516*** [0.0022]	0.0516*** [0.0022]	
Volatility of firm-level sales						0.000271** [0.00012]
year==2003	0.00677*** [0.0017]	0.00676*** [0.0017]		0.00666*** [0.0018]	0.00664*** [0.0018]	NA
year==2004	0.0196*** [0.0017]	0.0196*** [0.0017]	0.00250** [0.0011]	0.0205*** [0.0018]	0.0205*** [0.0018]	NA
year==2005	0.0236*** [0.0017]	0.0236*** [0.0017]	-0.00106 [0.0011]	0.0242*** [0.0018]	0.0241*** [0.0018]	NA
year==2006	0.0234*** [0.0017]	0.0233*** [0.0017]	0.000305 [0.0011]	0.0231*** [0.0018]	0.0230*** [0.0018]	NA
year==2007	0.0264*** [0.0017]	0.0263*** [0.0017]	-0.000704 [0.0011]	0.0263*** [0.0018]	0.0261*** [0.0018]	NA
Observations	131994	131994	103049	131994	131994	20203
R-squared	0.23	0.23	0.67	0.14	0.14	0.24
2-digit sector fixed effects	yes	yes	yes	no	no	yes

Note : Column 6 is only for year 2007 as we add sales volatility.

Table 3: Determinants of Cash Stock over Asset for Chinese' Firms

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Tobin's Q	0.00764*** [0.00091]	0.00283*** [0.00058]	0.00765*** [0.00091]	0.00847*** [0.00091]	0.00846*** [0.00091]	0.00414*** [0.0012]
(Profit-Dividend)/Total assets	0.00334 [0.016]	0.0366*** [0.010]	0.00331 [0.016]	-0.00997 [0.016]	-0.00979 [0.016]	-0.0265 [0.039]
Working capital/total assets	-0.0236*** [0.0049]	-0.00819*** [0.0031]	-0.0236*** [0.0049]	-0.0253*** [0.0049]	-0.0252*** [0.0049]	0.0203* [0.012]
Capital expenditure/total assets	-0.0314 [0.023]	-0.224*** [0.016]	-0.0314 [0.023]	-0.0640*** [0.023]	-0.0636*** [0.023]	0.00715 [0.059]
Debt/assets	-0.171*** [0.0087]	-0.0376*** [0.0056]	-0.171*** [0.0087]	-0.185*** [0.0085]	-0.185*** [0.0085]	-0.115*** [0.020]
Intangibles/Asset	-0.350*** [0.025]	-0.0804*** [0.016]	-0.350*** [0.025]	-0.347*** [0.025]	-0.347*** [0.025]	-0.262*** [0.049]
negative porfit dummy	-0.0534*** [0.0060]	-0.0224*** [0.0039]	-0.0534*** [0.0060]	-0.0552*** [0.0061]	-0.0552*** [0.0061]	-0.0397*** [0.014]
State-owned China's firm	-0.0151*** [0.0031]	0.00381* [0.0021]	-0.0150*** [0.0031]	-0.0168*** [0.0030]	-0.0172*** [0.0031]	-0.00521 [0.0071]
Lagged cash stock		0.696*** [0.0083]				
foreign owned			0.0014 [0.012]		-0.00812 [0.012]	
Commodity sector				0.0033 [0.012]	0.00319 [0.012]	
Volatility of sales						0.0510** [0.020]
year==2003	0.00119 [0.0053]	0.00707** [0.0032]	0.00119 [0.0053]	0.00187 [0.0054]	0.00187 [0.0054]	NA
year==2004	-0.00353 [0.0053]	0 [0]	-0.00353 [0.0053]	-0.00241 [0.0053]	-0.00241 [0.0053]	NA
year==2005	-0.0192*** [0.0053]	-0.000251 [0.0031]	-0.0192*** [0.0053]	-0.0179*** [0.0054]	-0.0179*** [0.0054]	NA
year==2006	-0.0237*** [0.0052]	0.00617** [0.0031]	-0.0237*** [0.0052]	-0.0225*** [0.0053]	-0.0225*** [0.0053]	NA
year==2007	-0.0229*** [0.0052]	0.00945*** [0.0033]	-0.0229*** [0.0052]	-0.0233*** [0.0053]	-0.0232*** [0.0053]	NA
Observations	6423	5170	6423	6423	6423	1071
R-squared	0.19	0.65	0.19	0.16	0.16	0.21
2-digit sector fixed effects	yes	yes	yes	no	no	yes

Note : Column 6 is only for year 2007 as we add sales volatility.

Table 4. Determinants of Investment over assets for all firms

	Case 1	Case 2	Case 3	Case 4	Case 5
China dummy	0.00969*** [0.0012]	0.0101*** [0.0012]	0.00827*** [0.0015]	0.00900*** [0.0015]	-0.000364 [0.0014]
Tobin's Q	0.000674*** [0.000041]	0.000655*** [0.000041]	0.000655*** [0.000041]	0.000674*** [0.000041]	0.000470*** [0.000041]
Tobin's Q *China	-0.00165*** [0.00032]	-0.00176*** [0.00033]	-0.00171*** [0.00033]	-0.00163*** [0.00032]	-0.000569 [0.00038]
Profit/Asset	-0.000361 [0.00050]	0.0000457 [0.00051]	0.0000495 [0.00051]	-0.000359 [0.00050]	-0.000024 [0.00050]
Profit/Asset*China	0.0883*** [0.0073]	0.0904*** [0.0074]	0.0900*** [0.0075]	0.0881*** [0.0073]	0.0434*** [0.0065]
negative porfit dummy	-0.0130*** [0.00050]	-0.0171*** [0.00050]	-0.0171*** [0.00050]	-0.0130*** [0.00050]	-0.00746*** [0.00047]
State-owned China's firm			0.00318** [0.0016]	0.00124 [0.0016]	0.00212 [0.0015]
lagged capital expenditure					0.536*** [0.0025]
Commodity sector		0.0919*** [0.00073]	0.0919*** [0.00073]		
year==2003	-0.00260*** [0.00065]	-0.00272*** [0.00066]	-0.00271*** [0.00066]	-0.00260*** [0.00065]	0 [0]
year==2004	0.00211*** [0.00064]	0.00182*** [0.00066]	0.00182*** [0.00066]	0.00211*** [0.00064]	0.00545*** [0.00054]
year==2005	0.00456*** [0.00064]	0.00437*** [0.00065]	0.00438*** [0.00065]	0.00456*** [0.00064]	0.00601*** [0.00054]
year==2006	0.00685*** [0.00063]	0.00667*** [0.00064]	0.00669*** [0.00064]	0.00685*** [0.00063]	0.00542*** [0.00053]
year==2007	0.00784*** [0.00063]	0.00754*** [0.00064]	0.00756*** [0.00064]	0.00784*** [0.00063]	0.00642*** [0.00053]
2-digit sector fixed effects	yes	no	no	yes	yes
Observations	140851	140851	140851	140851	108412
R-squared	0.15	0.11	0.11	0.15	0.41

Table 5. Determinants of Investment over assets for China firms

	Case 1	Case 2	Case 3	Case 4	Case 5
State-owned China's firm	-0.0117*** [0.0026]	-0.0122*** [0.0026]	-0.0116*** [0.0027]	-0.00354 [0.0024]	-0.0113*** [0.0026]
Tobin's Q	-0.000900* [0.00053]	-0.00121** [0.00054]	-0.00118** [0.00054]	-0.000263 [0.00049]	-0.000877 [0.00053]
Tobin's Q *State Owned	0.000683 [0.00089]	0.0011 [0.00091]	0.00108 [0.00091]	-0.000185 [0.00082]	0.000666 [0.00089]
Profit/Asset	0.0430*** [0.0087]	0.0544*** [0.0089]	0.0538*** [0.0089]	0.0191** [0.0080]	0.0426*** [0.0087]
Profit/Asset*State Owned	0.163*** [0.019]	0.200*** [0.019]	0.200*** [0.019]	0.0970*** [0.017]	0.163*** [0.019]
negative profit dummy	-0.0211*** [0.0032]	-0.0187*** [0.0033]	-0.0187*** [0.0033]	-0.0117*** [0.0030]	-0.0211*** [0.0032]
lagged capital expenditure				0.436*** [0.012]	
Commodity sector		0.00862 [0.0061]	0.00883 [0.0061]		
foreign-owned			0.0150** [0.0066]		0.0103 [0.0066]
year==2003	0.00164 [0.0028]	0.00172 [0.0029]	0.00171 [0.0029]	0.00467* [0.0025]	0.00164 [0.0028]
year==2004	0.00113 [0.0028]	0.0012 [0.0029]	0.0012 [0.0029]	0.00155 [0.0025]	0.00113 [0.0028]
year==2005	-0.00492* [0.0028]	-0.00485* [0.0029]	-0.00486* [0.0029]	-0.00194 [0.0025]	-0.00493* [0.0028]
year==2006	-0.0115*** [0.0027]	-0.0114*** [0.0028]	-0.0114*** [0.0028]	-0.00553** [0.0024]	-0.0115*** [0.0027]
year==2007	-0.00684** [0.0028]	-0.00679** [0.0028]	-0.00687** [0.0028]	0 [0]	-0.00690** [0.0028]
Observations	6473	6473	6473	5206	6473
R-squared	0.12	0.07	0.07	0.32	0.13
2-digit sector fixed effects	yes	no	no	yes	yes

Figure 1: Average Cash Holding over Total Assets

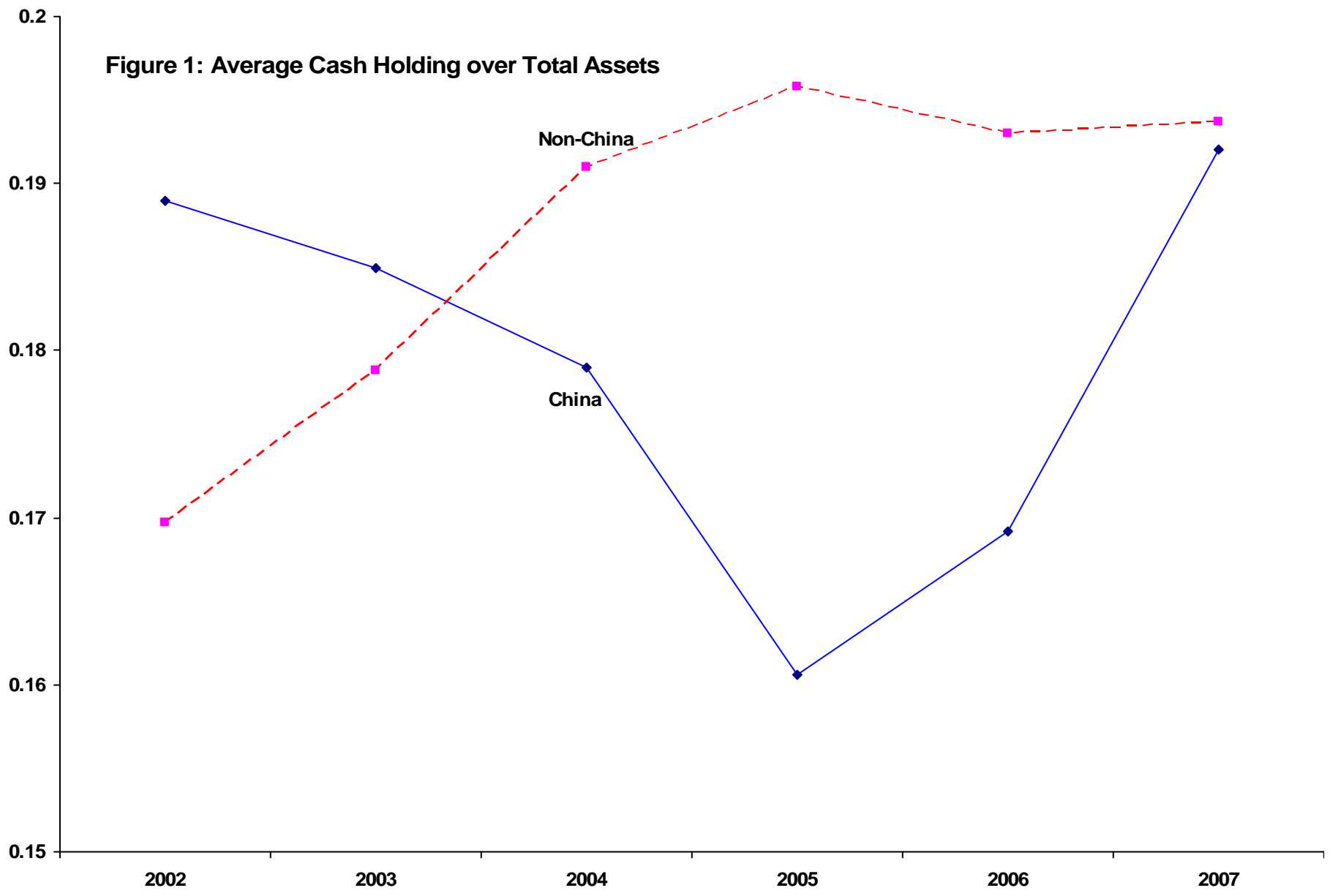


Figure 2. Average Investment over Total Assets

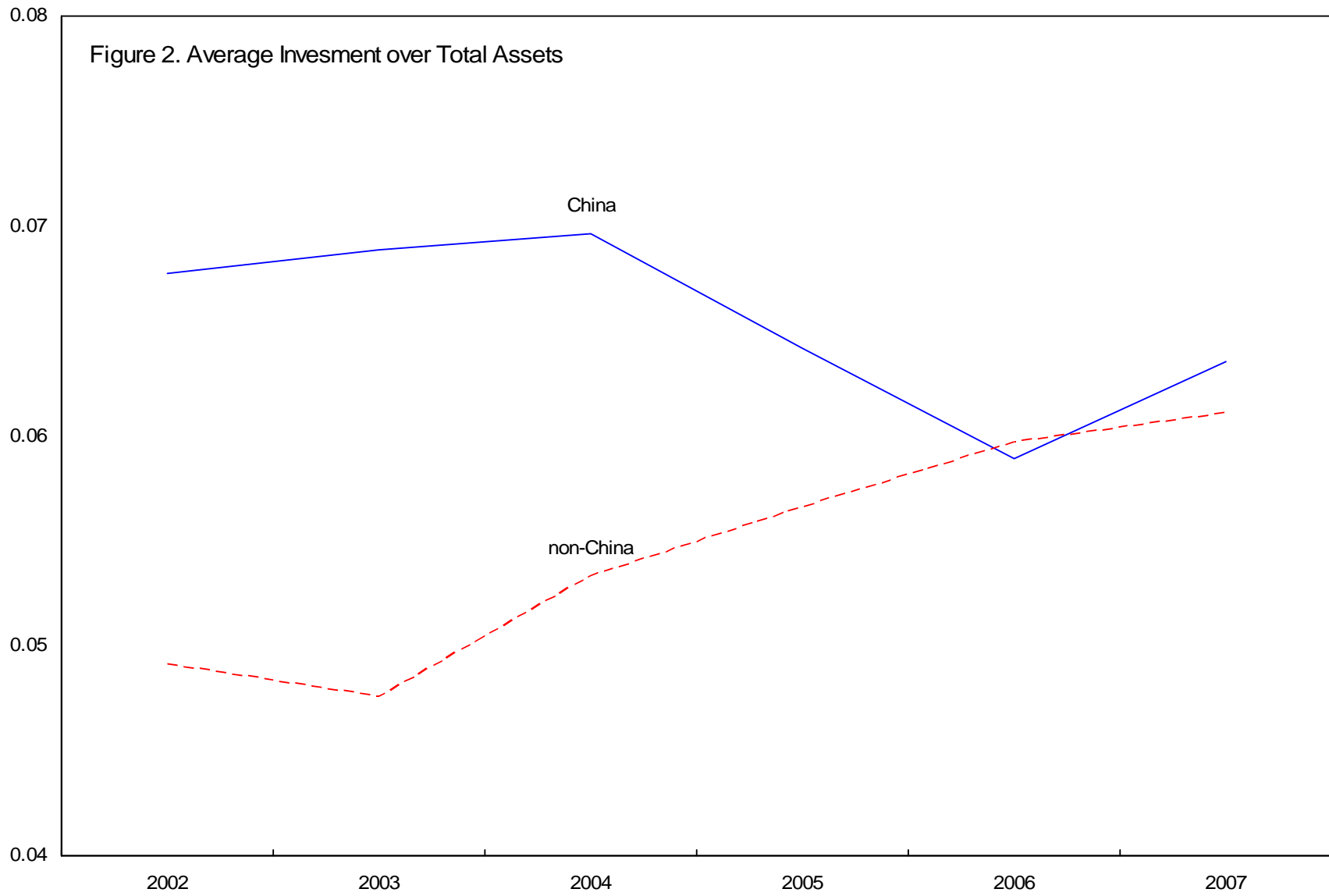


Figure 3: Average Cash Holdings over Assets for Chinese Companies

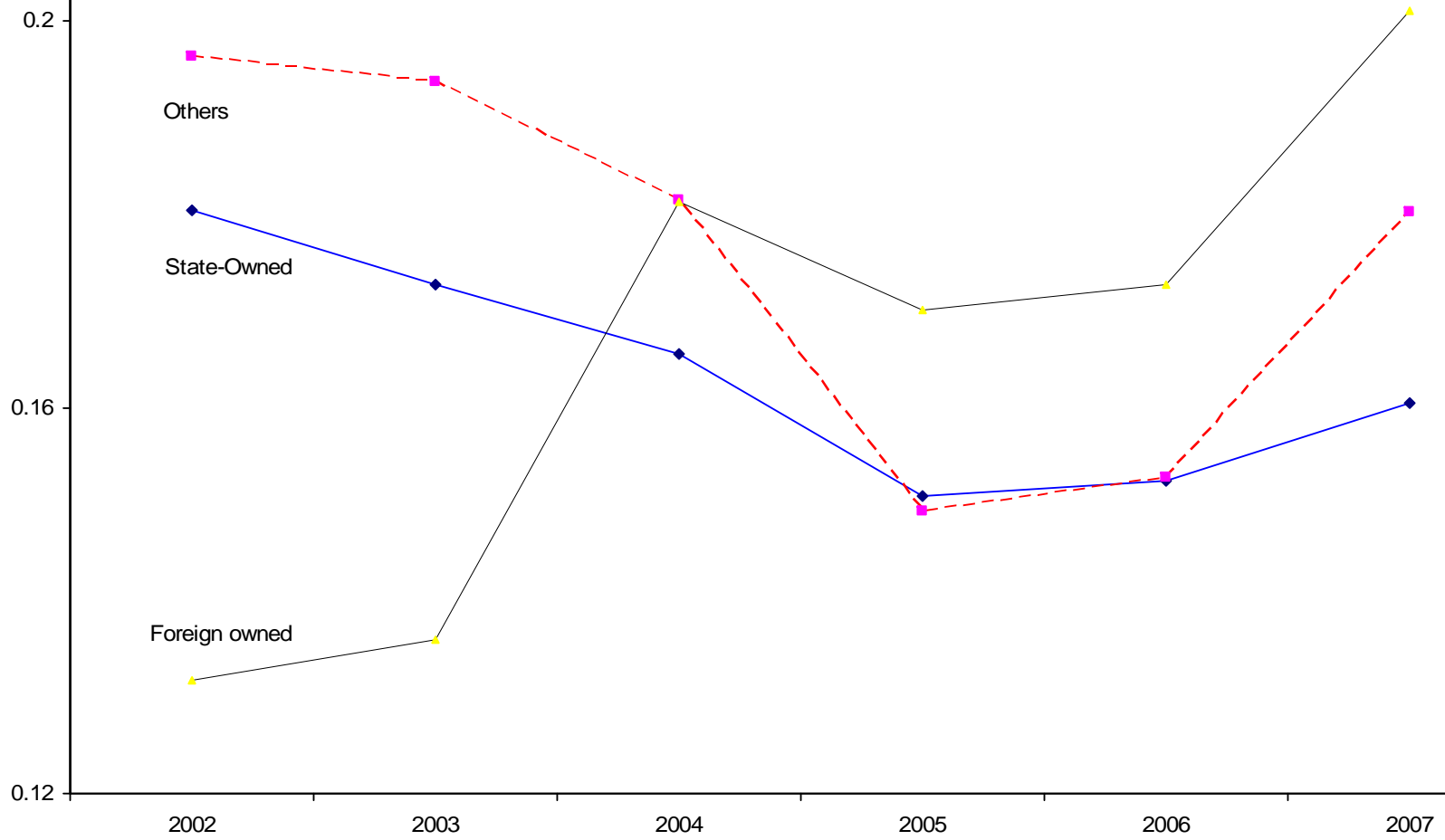


Figure 4: Average Investment over Assets for Chinese Companies

