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Written by: Chris Watling, CEO & Chief Market Strategist: dl+44 (0) 207 062 8804

Is Chinese Growth a Ponzi Scheme?

a.k.a. China's credit bubble

Summary & Conclusion

"China's shadow banking sector has become a potential source of systemic financial risk... To some extent, this is fundamentally a Ponzi scheme..." Xiao Gang (China Daily article), 12th October 2012

NB Xiao Gang, former Bank of China Chairman, was recently (i.e. in the last month) appointed to head of China Securities Regulatory Commission

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Chris Watling, CEO & Chief Market Strategist, Longview Economics

Direct Line: +44 (0) 207 062 8804

Email: chriswatling@longvieweconomics.com

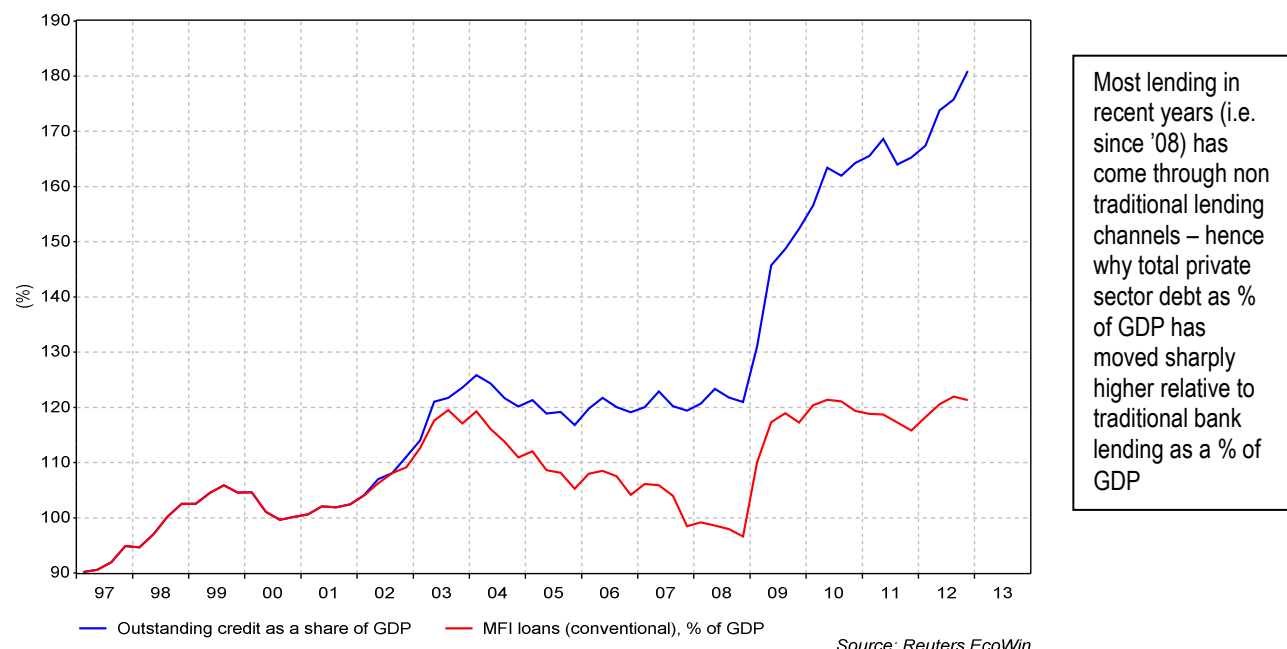
Introduction

"An emphasis by bankers on the collateral value and expected value of assets is conducive to the emergence of a fragile financial structure" Hyman Minsky, 1986

Cyclically China's economic growth looks to be gathering some momentum. Car sales are breaking out to new record highs, house prices rose sharply last month while leading economic indicators are mostly indicating strengthening growth in coming quarters (see mid month global macro, March 9th 2013: "China's Cyclical Recovery – Not Firing on all Cylinders").

Structurally, however, the quality of Chinese growth has deteriorated in recent years. Since the credit stimulus in 2009, Chinese growth has remained heavily dependent on high levels of credit creation in order to sustain its momentum. Private sector debt to GDP has risen since that time from 120% of GDP up to just above 180% (latest data) with much of that lending based on ever rising land prices. China, it would seem, is in the throes of a classic credit bubble.

Fig 1: Chinese Debt to GDP (system wide lending & traditional bank lending, %)



If correct, then the reverberations of this bursting bubble, as and when it comes about, will have significant implications, both negative and positive (albeit mostly negative), across many asset classes and many geographies. Japan, South Korea, Australia & Brazil are four of many economies for whom China is their largest trading partner. China is also well known as the biggest buyer of many commodities (including copper, aluminium & iron ore), as well as being

the key swing marginal demand economy for oil. As such this is a big theme for markets that needs to be watched closely and timed successfully.

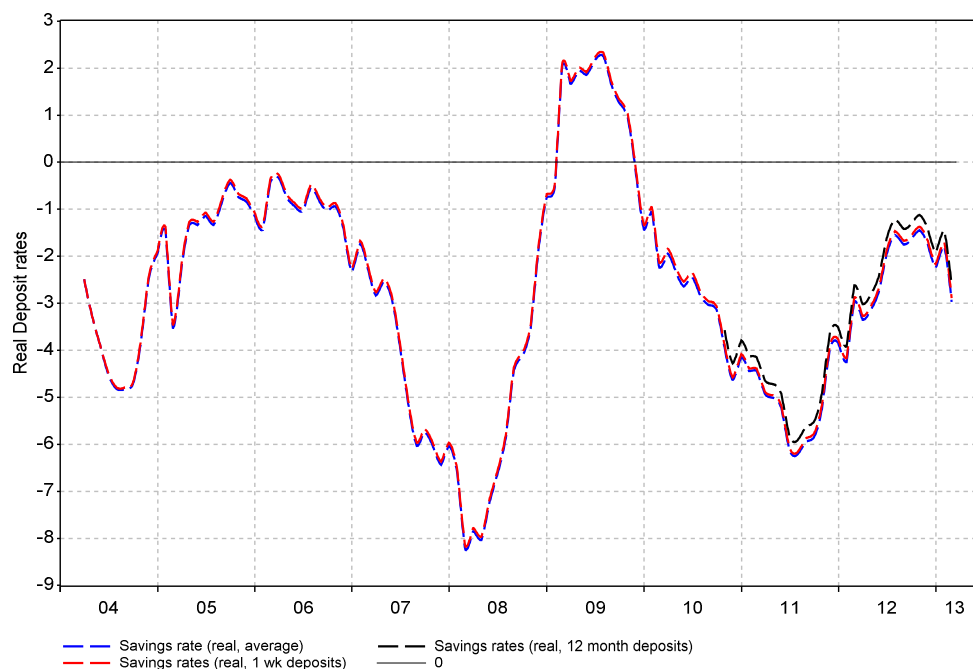
Conclusion:

While it's not entirely clear how this credit bubble will end it holds all the necessary key conditions to qualify as a bubble. In Kindleberger's analysis bubbles have 3 key component parts: i) an extreme valuation; ii) a 'seemingly' plausible explanation; & iii) cheap money and an associated build-up of indebtedness.

China's economy has all 3: i) high asset prices (with land prices significantly higher than London land prices); ii) high and rapidly rising levels of indebtedness & cheap money (see fig 1a) – with household deposit rates, in inflation adjusted terms, that have been negative for most of the past decade. Equally it's well known, given capital account restrictions on the movement of money, that Chinese households are starved of investment options (other than property, a stock market which performed poorly from its 2007 peak through to the end of last year, and bank accounts which offer a negative real return).

The third factor, the seemingly plausible explanation, relates to the long term urbanisation story with companies, like McKinsey, forecasting an expectation of a further 350 million more people moving to cities over the next 20 years.

Fig 1a: Chinese Real (inflation adjusted) savings rates



Source: Reuters EcoWin

We liken China to the US at the end of the 1800s – a rising/emerging leading world economy (which will eventually probably become the largest economy in the world). Like the US at the end of the 1800s, though, bubbles build up during that emergence, driven by over enthusiasm about the long term future for the country and fuelled by rising asset prices and credit. Equally like the US in the second half of the 1800s, those bubbles also lead to major busts – as the bad

credit and bad investment is cleaned up from the system (e.g. 1873-79). Once it's cleaned up, though, strong economic growth should return. While the timing of the bust is complex, this investment theme needs to be monitored closely – since we expect that, at some stage over the next 1 – 3 years, this will become the dominant theme/concern in investment circles (with multiple repercussions for a variety of asset classes and economies which are meaningfully tied into the Chinese economic growth story).

Detailed analysis of the underlying system that has created this bubble is laid out in Sections 1 & 2.

Key Quotes:

China's Superbank, Sanderson & Forsythe

"A stadium (in Loudi) was paid for *in part* by the bond offering underwritten by CDB, plus bank borrowing. How would the company pay for all of this (Ed i.e. the rest of it)? The answer lay in land sales. Eighteen tracts of land valued at US\$1.5million per acre were the collateral, according to a January 2011 prospectus. That's the price recently offered for an acre of land adjoining a private golf course on Indian Hill Road in Winnetka, Illinois, one of the wealthiest towns anywhere in the world. Average family income in Winnetka: \$250,000 a year. In Loudi, average yearly take home pay is \$2,323."

P.16, Ch: 'A Town Called Loudi', China's Superbank, Sanderson & Forsythe, 2013.

E Chancellor & M Monnelly on Chinese Credit System

"The wealthiest 1% of households, according to Victor Shih of Northwestern University, control funds equivalent to two-thirds of China's huge foreign exchange reserves"

E Chancellor & M Monnelly, Jan 2013: "Feeding the Dragon: Why China's Credit System looks vulnerable", Advisor Perspectives

Xiao Gang (China Daily article), 12th October 2012

"There are more than 20,000 WMPs in circulation, a dramatic increase from only a few hundred just five years ago.....China's shadow banking sector has become a potential source of systemic financial risk over the next few years. Particularly worrisome is the quality and transparency of WMPs. Many assets underlying the products are dependent on some empty real estate property or long-term infrastructure, and are sometimes even linked to high-risk projects...

...in some cases short-term financing has been invested in long-term projects, and in such situations there is a possibility of a liquidity crisis being triggered if the markets were to be abruptly squeezed. ...

....To some extent, this is fundamentally a Ponzi scheme. Under certain conditions, the music may stop when investors lose confidence and reduce their buying or withdraw from WMPs."

NB Xiao Gang, former Bank of China Chairman, was recently (i.e. in the last month) appointed to head of China Securities Regulatory Commission

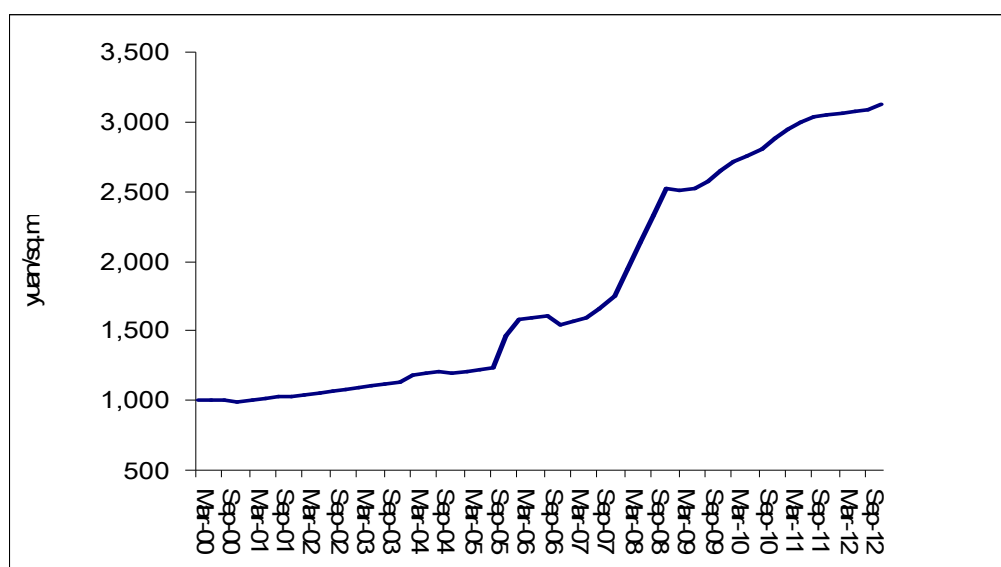
Section 1: A Deteriorating Chinese 'Economic Growth' Cocktail

A significant portion of the Chinese economic growth model is a Ponzi scheme. That is, a significant portion of the growth, in the last 5 years, has become increasingly dependent on rising asset prices (as in land and house prices – section 1a) and increasing levels of indebtedness (section 1b) while at the same time returns on capital have been diminishing (section 1c).

Section 1a: Rising Asset Prices

After many years of rapid price gains, land prices in some parts of China are now significantly higher than the equivalent type of land in England. According to official NBS (Chinese National Statistics) data the average price of land in China over the past 10 years has risen three fold in value (fig 2). In 2002 average nationwide land prices in cities were approx. 1,000 RMB/sq m. By Dec 2012, those land prices had risen to an average of RMB 3,129 per sq metre. In US\$ terms (and converted into acres) that translates into a rise from US\$525k per acre in 2002 to US\$2.03 million by end of 2012 (i.e. using exchange rates at date of translation).

Fig 2: Chinese nationwide land prices (RMB per sq. metre)



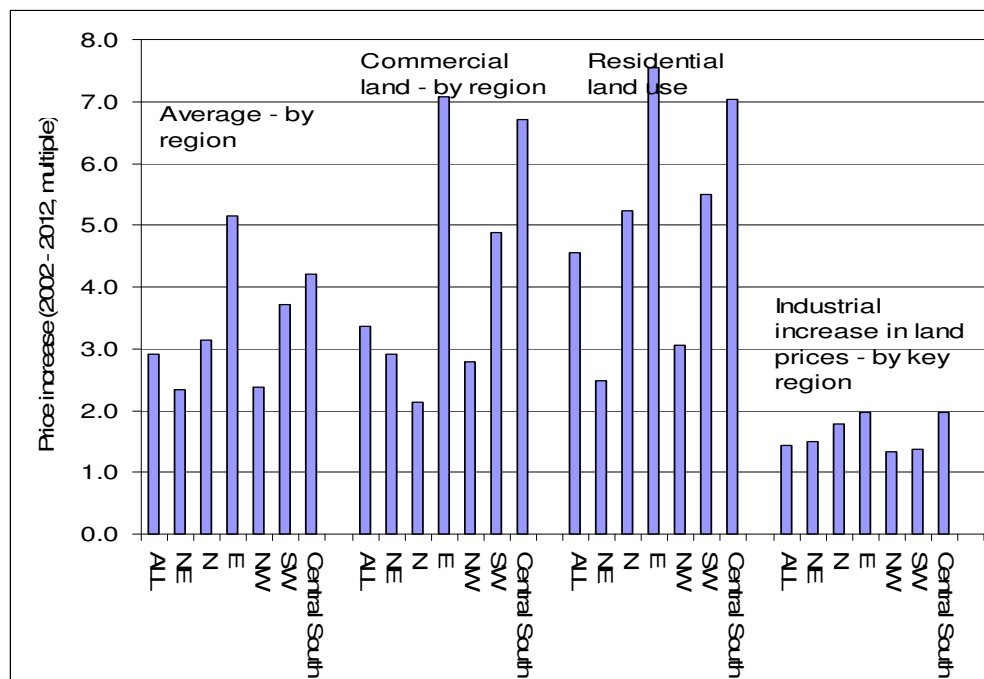
Source: Longview Economics, WIND

Within that total, there is a **wide divergence amongst the different regions** (NB the regional data is split into 6 key regions – North East, North, East, North West, South West & Central South): The lowest average increase in land prices over ten years was in the North East region (with prices increasing 2.3x since 2002). The highest average increase has been in the Eastern region (which includes cities such as Shanghai and Jiangsu) with prices increasing by 5.1x in the past decade.

Added to the wide divergence amongst regions, there has also been a wide divergence within regions **by land use**. The increase in land value for industrial use, for example, has typically been relatively subdued (rising on average by less than 2x in ten years). The increase in land prices for commercial and residential use, however, has been much more marked. Land prices

for residential use, for example, have increased since 2002 by between 2.5x to 3.1x in the North East and North Western regions (i.e. at the bottom end of the scale) up to over 7x in the East & Central South regions (fig 3).

Fig 3: Average Land price increases (multiple, from 2002 – '12): By key region & by use



Source: Longview Economics, WIND

International comparison of land prices: China has been (and still remains) a rapidly growing economy. As such a doubling (or even tripling) of land prices over a decade is arguably not so surprising. Indeed any value compounded up at 7% per annum should double in roughly a decade while a value compounding at 12% per annum would almost triple over that timeframe.

Table 1: Land prices with planning permission (residential, commercial & all land use)

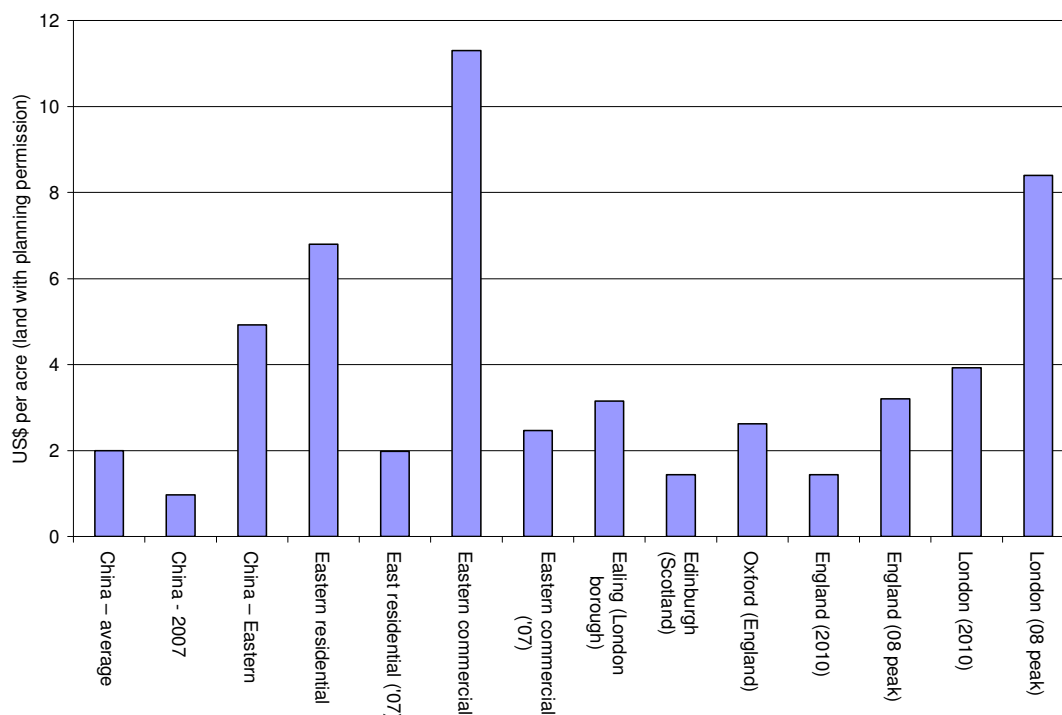
	US\$ per acre (latest data)	US\$ per acre (2007 data)
China – on average	US\$2mn (Dec 12)	US\$969k
China – Eastern region	US\$4.92mn (Dec 12)	US\$1.67mn
China – Eastern region/residential	US\$6.8mn (Dec 12)	US\$1.98mn
China – Eastern region/commercial	US\$11.3mn (Dec 12)	US\$2.47mn
UK residential land to be developed in (city/London borough):		
Ealing (London borough)	US\$3.15mn (2012 data)	
Edinburgh (Scotland)	US\$1.44mn (2012 data)	
Oxford (England)	US\$2.62mn (2012 data)	
UK Land with outline planning permission (residential)		
	Latest data	@ peak valuation
England	US\$1.44mn (2010)	US\$3.2mn (Jan '08)
London	US\$3.92mn (2010)	US\$8.40mn (Jan '08)

Source: Chinese NBS, UK VOA, Longview Economics

Compared internationally, though, Chinese land valuations appear rich. Average land prices across China are US\$2 million per acre (all uses). For residential use only, average prices are US\$3 million per acre. In Eastern China, the most expensive region of China (which includes Shanghai, Jiangsu & Fujian amongst other cities/provinces), average residential land prices are US\$6.8 million per acre, up over 3 fold from US\$2million per acre as recently as 2007. Average commercial land in the region, is more expensive still, valued at US\$11.3 million per acre, up from US\$2.5 million in 2007 – **an increase of over 4 times in 5 years**.

By way of comparison, the UK government's valuation office, in 2010, valued English land with 'outline planning permission' for residential use on average at UK£960k per acre (US\$1.4mn). In London, land with outline planning permission was valued at UK£2.6million per acre (US\$3.9mn) – i.e. significantly below the value of residential land in Eastern China (table 1). Indeed London residential land at its peak valuation (end 07/early 08) was valued at US\$8.4mn per acre – only just above the average residential land use valuation across the entire Eastern region in China.

Fig 4: Average Land Prices: China vs. England/London (various dates) – all US\$ per acre*



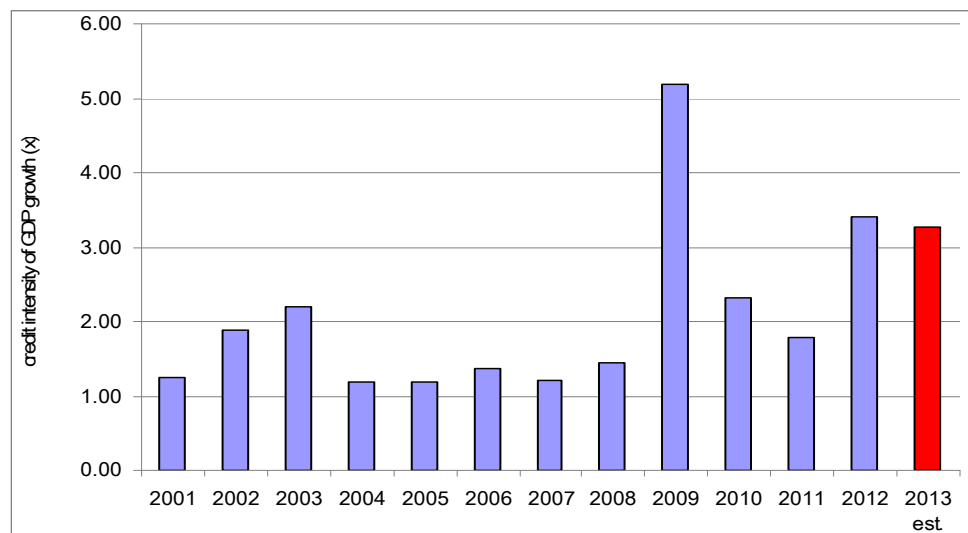
Source: Longview Economics, WIND
*all land with outline planning permission

Clearly, at least when compared to the UK & London, one of the most international cities in the world, Chinese land prices are rich.

Section 1b: Increasing Indebtedness:

There's been a significant build-up of indebtedness in China in the past 5 years. Total non-financial private sector debt to GDP has risen from 120% of GDP at the start of 2009 to over 180% of GDP currently (fig 1). Reflecting that, the credit intensity of GDP has been running at between 2x and 5x GDP since the start of 2009. That is, for every 1 RMB of nominal GDP growth, the Chinese non financial private sector has been borrowing between 2 and 5 RMB. In 2009, at the height of the credit stimulus, the ratio was running at over 5x. That dipped to around 2x in 2010 and 2011 before picking up again in 2012 to over 3x. On Bank of Communications forecasts for Chinese credit growth in 2013, it's on target to be over 3x GDP in 2013 (fig 5).

Fig 5: Chinese Credit intensity of GDP growth



Since 2009, the credit intensity of GDP in China has been above and stayed above the steady state level of 1x. That high credit intensity of growth is expected to continue in 2013.

Source: Longview Economics, Reuters EcoWin

Much of that credit growth is borrowing by local government financing vehicles (LGFVs – i.e. off balance sheet corporate structures set up by local governments). The funds for the loans come from household savings/deposits which have been channelled into loans through a variety of channels (including banks, corporate bonds and wealth management products – see appendix 2 below).

Local Government Financing Vehicles (LGFVs): LGFVs were first formed in the mid 1990s when Chinese local governments were banned by the central government from borrowing in order to fund their local economic growth (NB Local governments were banned because prior local government borrowing had become excessive and had brought about the early 1990s credit bust and associated NPL spike).

In the last two decades though, as the LGFV model has evolved, it has become unsustainable and increasingly reliant on rising land prices (and land sales). In that model, local governments inject land into the LGFVs (land which is typically either misappropriated or bought at heavily discounted prices). The land is then re-valued upwards and used as collateral by the LGFVs to raise funding to finance infrastructure/investment projects (i.e. roads, railways, residential & commercial buildings, government infrastructure etc). Initially money is borrowed from the CDB

(see below) with further funds typically coming from the commercial banks (i.e. once the project has been rubber stamped by the CDB). With that borrowing collateralised by land values (and, in part, funded by land sales) the model operates smoothly – as long as land prices continue to rise. Indeed, as well as the LGFVs, local governments also rely on rising land prices – with land sales now accounting for approximately 30% of local government revenue (see 16th Nov 2012 China India weekly: “How Indebted are China’s Local Governments?”).

This model has been a key source of China’s economic growth. On some estimates over the last ten years “about 90% of China’s fixed asset investment has been at the local government level” source: JP Morgan July 2011. Furthermore, the model has been scaled up notably in recent years. **By 2007, it’s estimated that around 360 LGFVs** had been set up and were in operation (including companies like Tianjin Binhai Construction & Investment Group – set up in 2005; & Loudi City Construction Investment Group set up in 2000). Since that time the speed of creation of the LGFVs has increased dramatically such that between 2007 and 2010*, **a further 6 to 10 thousand LGFVs were set up** – backed by debt estimated to equal between 25 to 40% of Chinese GDP**.

With the resurgence of debt fuelled infrastructure projects from the middle of last year*, the numbers of LGFVs will have increased once again.**

*i.e. latest official data when both the Chinese central bank and the National Audit office carried out an audit of the state of local government financing

**depending on whose estimate is used – see 16th Nov 2012 China India weekly: “How Indebted are China’s Local Governments?”

***i.e. which the authorities put in place in order to stimulate economic growth following on from the 2011-12 slowdown

China Development Bank (CDB): The CDB sits at the centre of the Chinese infrastructure driven economic growth model and is central to the funding of the LGFVs. It’s a wholly government owned ‘non deposit taking’ bank run by Chen Yun (son of Chen Yuan a former senior Chinese policy maker). The bank was originally modelled on the classic development bank model – i.e. similar to the Korean Development Bank or the Asian development bank – and was set up to support economic development. Since its establishment, though, its become the largest development bank in the world with a balance sheet of ~US\$1 trillion which is almost twice the size of the World Bank’s balance sheet (NB the World Bank is backed by 188 member countries – while the CDB is backed solely by China).

The CDB is typically the first lender to most of the LGFV projects (according to Sanderson & Forsythe – see “China’s Superbank” published 2013). Once rubber stamped by the CDB, then the LGFVs will tend to raise further financing from the commercial banks (especially the big four SOE banks). More recently the corporate bond market and Chinese wealth management products (WMPs) have become increasingly important additional funding sources – see appendix 2.

Of the CDB’s RMB5 trillion in outstanding loans at the end of 2011 (latest available data), approximately 85% are loans to domestic Chinese based ventures/businesses. Of that 85%, approximately 70% is infrastructure or infrastructure related (i.e. railways, public highways, public infrastructure, electric power). As highlighted above, though, the CDB is not a deposit taking bank. Its primary funding source is policy bonds which typically account for over 2/3rds of its outstanding liabilities (i.e. over 2/3rds of its funding). Most of those policy bonds are

owned by the commercial banks, especially the big four banks (which are themselves majority owned by the government – see appendix 2 & 3).

As such while CDB lending isn't directly backed by household deposits, it is indirectly backed by those deposits, via the state owned commercial banks ownership of policy bonds. The commercial banks (both state owned and private) also lend directly to the LGFVs – although it's unclear what proportion of their lending is directly to these vehicles (anecdotal evidence, though, suggests it's a high percentage).

Corporate bonds & WMPs: Two other, more recent, yet still key lending channels to the LGFVs include corporate bonds and wealth management products. Corporate bond issuance has risen rapidly in the past 5 years – cumulative issuance is now at approx RMB200 billion (up from sub RMB25 billion at the start of 2008 – fig 6). Most of the corporate bonds are issued by LGFVs.

Fig 6: Chinese Corporate bond issuance outstanding (12 month moving average)



Source: PBOC, Longview Economics

Equally wealth management products (WMPs), which have also risen rapidly from sub RMB2trillion at end of 2008 to over RMB12tr today (i.e. ~US\$2tr), are another new and important source of funding for the LGFVs.

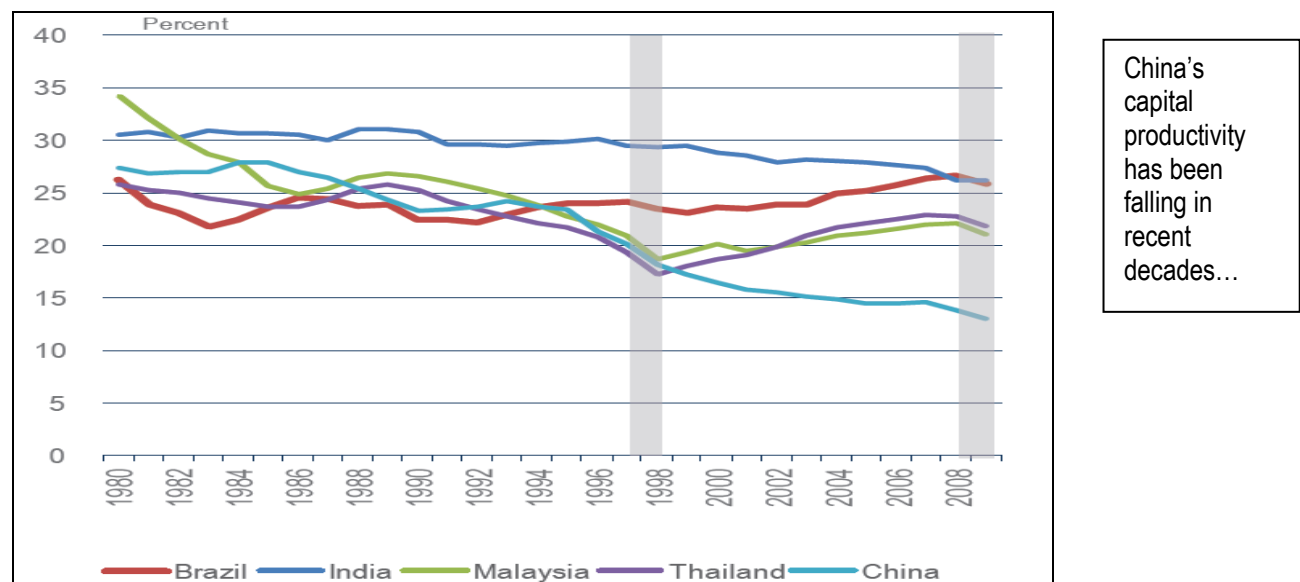
Section 1c: Diminishing Returns on Capital

Any close following of Chinese newsflow/analysis over recent years will have yielded a significant number of stories/analysis highlighting Chinese 'Ghost Cities'. Ordos, in Inner Mongolia, is one of the most well known and most widely cited examples. Ordos is a new city, built next to the old city, and is reported to have capacity to house all the residents of the old city (& more). The theory was that the residents would move from the old Ordos to the new. The reality remains a new city with no residents where house prices are reported to have now

fallen by over 80%. China's 'South China' shopping mall is another well known/often cited example of an empty construction project. The mall was completed in 2005, is estimated to be twice the size of the recently completed and large London based Westfields shopping centre (i.e. based in Shepherd's Bush, London) and has remained 99% unoccupied since that time. Australia's CBS programme recently featured several further examples of empty cities/empty roads (see [CBS 60 minutes on China](#)) including Zhengzhou city. On our visit to China last year, the head of the Eastern China unit for one of the largest Western real estate multinationals, informed our group of an entire empty suburb sitting on the outskirts of Shanghai (albeit all the properties are owned by speculators). Forsythe & Saunderson (P22 – 25) regale readers of stories of 'China's Manhattan' - where urban planners are planning and "building 164 million sq feet of office space" (equivalent to 1/3rd of the office space in Manhattan) – yet with no anchor tenants, as of yet.

Those anecdotal stories, coupled with the distorted incentives created by the political-economic axis (see MMGM 2nd April 2012: "China – Feedback from the Frontline – an update on the bubble thesis" for more analysis), have resulted in falling returns on capital. Harry Wu, in his recent research for the World Bank and Conference Board, confirmed that, showing a sharp decline in the return on capital in China – especially when measured relative to other emerging market peers. Furthermore that is consistent with our assessment of the overbuild in China (see Longview Letters no 50, 52 & 53: "Is China a Bubble?" parts I, II & III: published Nov 2010 through to Feb 2011) – in particular our analysis of the amount of residential and commercial floorspace built in the past 15 years, an assessment of the steel and copper consumption per head and so on – all of which point to significant overbuild relative to China's stage of development.

Fig 7: Marginal Product of Capital (MPK): China, Brazil, India, Malaysia & Thailand



Source: Harry Wu, World Bank, The Conference Board

A declining return on capital (which points to a falling ability to service debts), coupled with rising indebtedness and rising asset prices is not an enduring economic growth model.

Section 2: How Does it End?

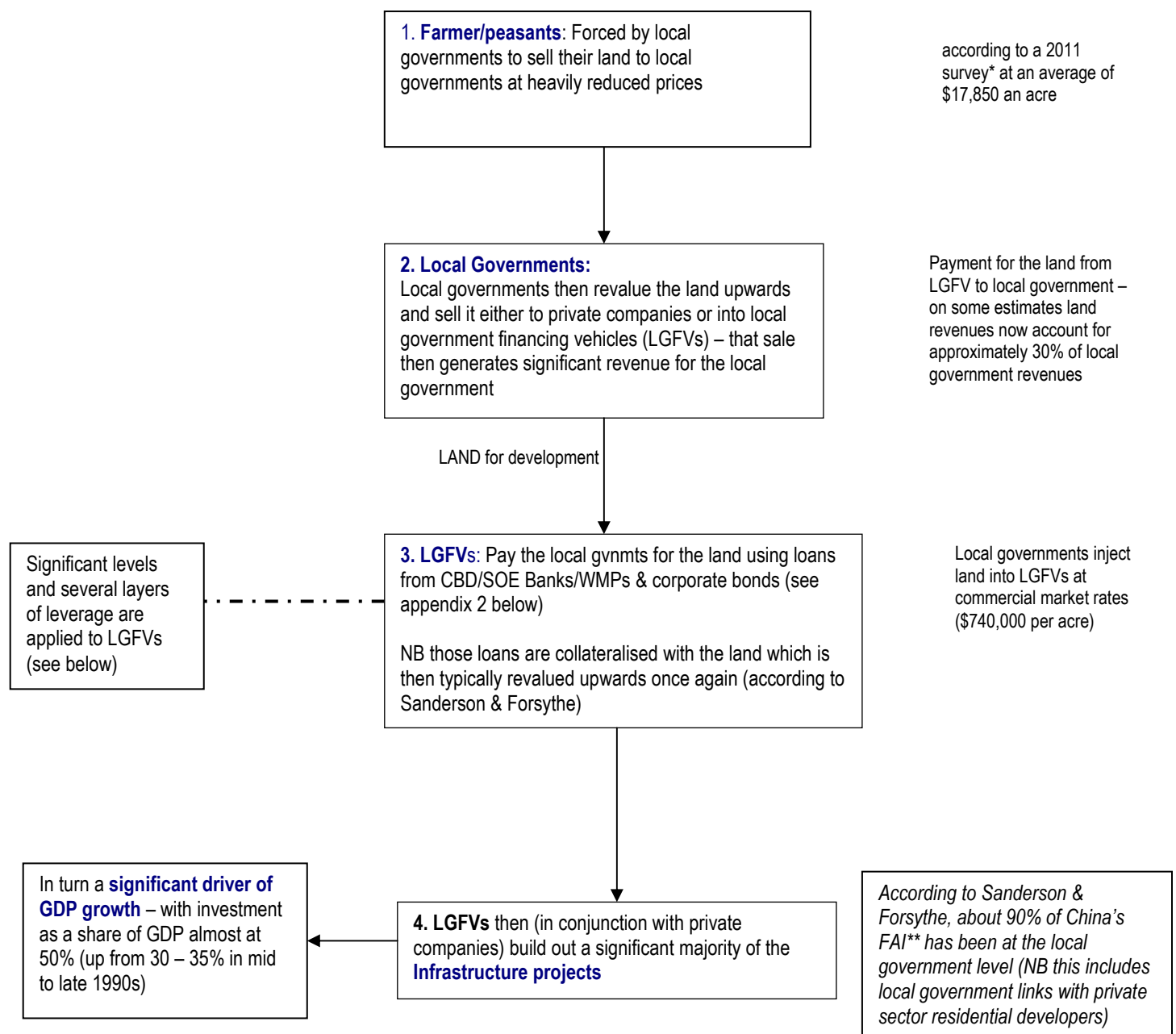
Credit bubbles typically end when the cost of money starts to be tightened – i.e. either as the domestic central bank starts to tighten rates in response to actual or perceived inflation threats or when money becomes tight in response to withdrawal of overseas funding (i.e. capital flight).

Currently, though, China is not running a current account deficit (and has indeed run a surplus for many years – and has not therefore been a net capital importer). A classic emerging market style credit crunch – with overseas investors all attempting to withdraw their money at the same time, is therefore not possible. Equally inflation, whilst surprising to the upside last month (3.2% Y-o-Y), is not currently excessively high – although an economic reacceleration could bring about a sustained uptrend in inflation and therefore a required monetary tightening from the central bank.

This credit bubble could also end if the new Chinese leadership determines that it regards the current economic model as too risky and too credit fuelled (i.e. it determines to address the credit excesses in the system at the start of its 10 year tenure). There are clearly factions within Chinese policy making circles that are of that view. The PBOC has made several noises in recent years about the risks created by the LGFVs. Most recently the re-appointed governor, Zhou Xiaochuan made comments along those lines: “one-fifth of loans to financing arms of local governments are risky” – comments at a March 13th press briefing. Equally his re-appointment as PBoC Governor is also seen as a signal that the leadership want to continue with financial sector reform (given he’s widely regarded as the architect of prior financial sector reforms). The newly appointed Premier, Li Keqiang, also discussed economic reform during his speech over this past weekend, while many of Li Keqiang’s newly appointed deputies are also well known reformers (including Vice Premier Ma Kai & Finance Minister Lou Jiwei).

Money could also become tight, whether regionally or nationally, because of a sudden loss of confidence. That could occur for a variety of reasons, whether its related to a loss of confidence in relation to the wealth management products or connected to the purportedly large underground lending sector (which China Banking Regulatory Commission chairman Liu Mingkang is reported to have estimated as approx 3 trillion yuan (US\$470 billion) in size in 2011). This happened on a small scale in Wengzhou in 2011.

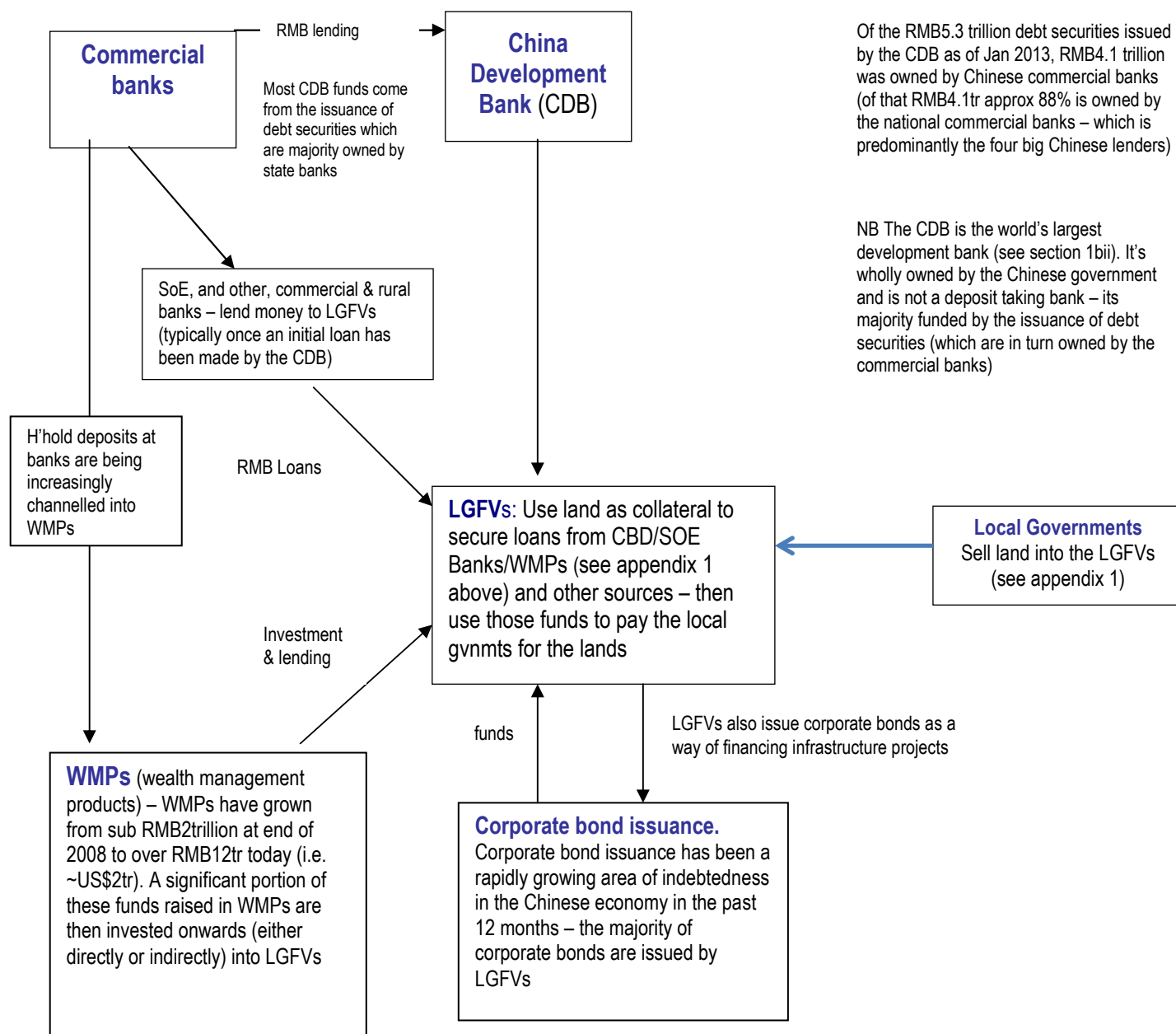
Appendix 1: LGFVs & China's economic growth model



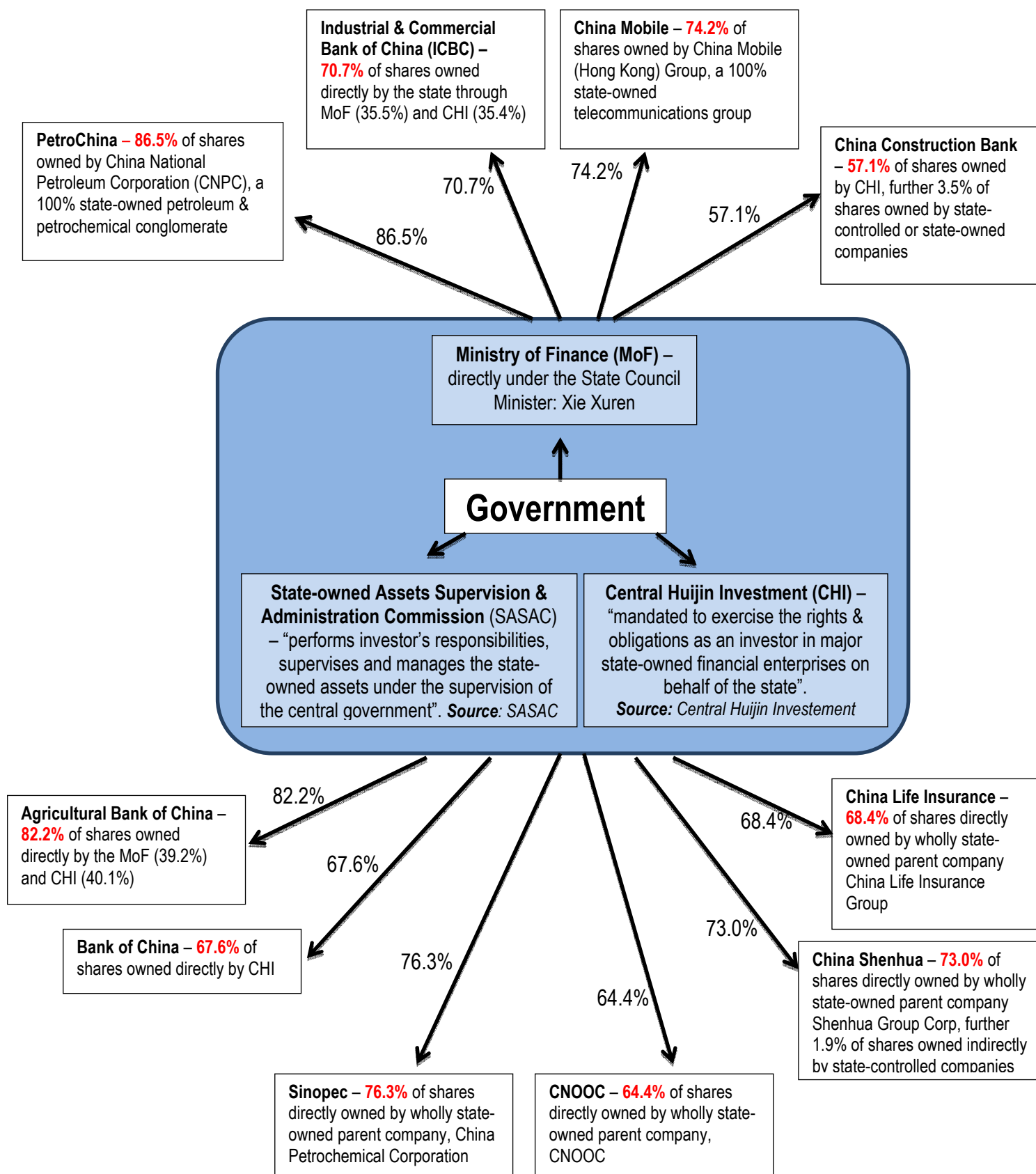
*survey conducted by US based Landesa Rural Development Institute, Renmin University & Michigan State University across 17 provinces in 2011.

**NB FAI = Fixed Asset Investment (i.e. running at close to 50% of GDP)

Appendix 2: How are the LGFVs funded?



Appendix 3: Government ownership of China's 10 largest listed companies (%)



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