

The long landing scenario: Rebalancing from overinvestment and excessive credit. Implications for potential growth in China

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HKIMR 7th China Conference, 14-15 January 2016
“The Growing Influence of China in the World Economy”

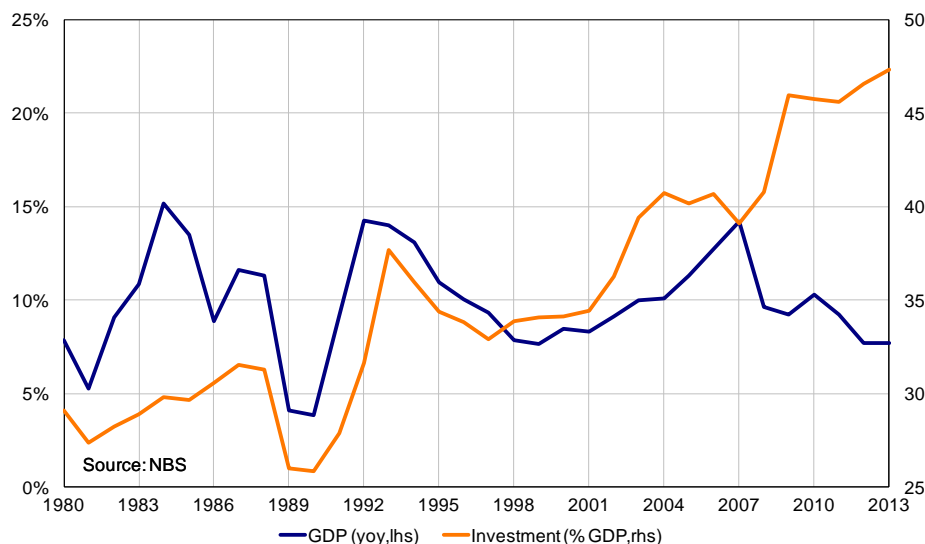
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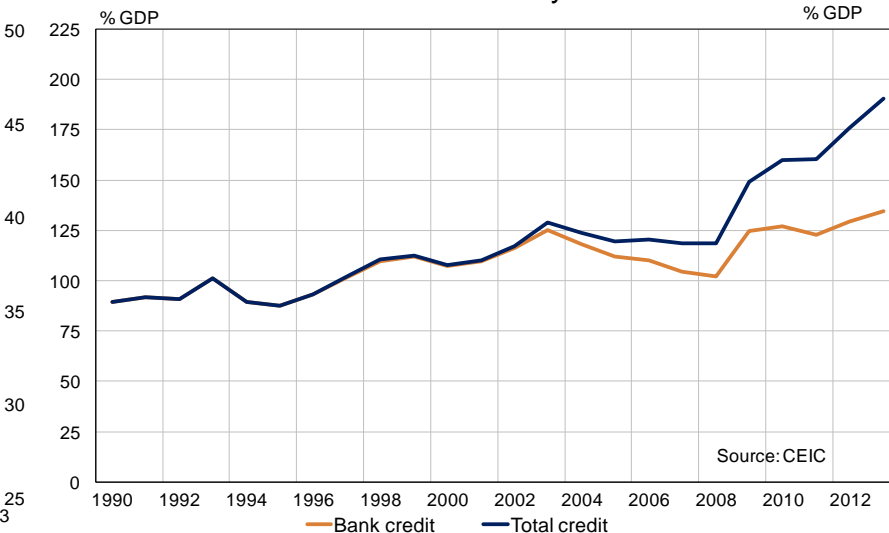
Motivation

- Confirmed slowdown of the Chinese economy (14% in 2007, 7.3% in 2014)
 - ➡ Debate : The **nature of the slowdown**: structural or cyclical ?
 - Implications for the adequacy of the policy stance
- Concerns about: overinvestment, credit bubble, housing market correction
 - ➡ The **sustainability** of the current growth model and the magnitude of the expected **rebalancing**.

China: GDP and Investment growth



China: Credit dynamics



Research question

- What is China's current potential growth and its main drivers?
- Where is China currently positioned in the economic cycle?
- How will growth evolve in the very long run?

Outline of the presentation

- China's economic context
- Methodology
- Data and forecast projections
- Results
- Policy implications
- Conclusions

China's economic context

- A unique growth performance, partly due to the catch-up process...
- But also supported by long lasting price distortions ...

Price distortions

- Low interest rates (Lardy, 2008)
- Low wages (Dollar&Jones, 2013)
- Undervalued exchange rate (Rodrik, 2008)



Imbalances

- Overinvestment (Lee et al., 2012)
- Excessive credit growth (Xiao, 2012)
- Real estate bubble (Wu et al., 2012)
- Current account surplus

- Imbalances exacerbated by the financial crisis ➡ **need for rebalancing**
 - Global economy no longer able to absorb China's excess production
 - Excess capacities worsened
 - Strong demand created by investment to disappear

What does this paper do differently ... ?


- 1) Correct investment from credit growth in order to identify the “sustainable” pace of capital accumulation
- 2) Disentangle the effects of sectoral reallocation of production factors on TFP

*K and TFP account for 90 %
of potential growth during
2000 – 2013*

- 3) Long term projections of Chinese potential growth (2030)

Methodology

- Production function approach :

$$Y_t = A_t K_t^\alpha (L_t h_t)^{(1-\alpha)}$$


TFP decomposed in 2 parts:

- Sectoral reallocations
- “pure” within sector TFP

K^* corrected for the credit bubble,
based on I^* neutral to credit growth
(Borio et al. 2014; Alberola et al. 2013)
“finance-neutral”, “sustainable”

- Smoothing filter (HP) to obtain components L^* , H^* , TFP_1^* , TFP_2^*
- Potential GDP = the level of output that the economy can produce on a sustained basis with existing resources without generating financial imbalances (accelerating credit)

Correcting for the credit bubble

- **Intuition:** - Unsustainable credit-fueled demand expansion
 - Matched by a supply response, keeping inflation stable
 - Misallocating resources : excess capacity
- «Sustainable» investment I^* : compatible with stable credit growth
- Bivariate unobserved component model (Kuttner, 1994; Planas&Rossi, 2010): unobserved component of investment (I^*) based on the interaction with credit

$$\left\{ \begin{array}{l} I_t = I_t^{*(trend)} + I_t^{cycle} \\ \Delta Credit_t = \varphi + \sum_{i=0}^r \beta_i I_{t-i}^{cycle} + \gamma \Delta I_{t-1} + \phi_j \sum_{j=1}^n \Delta Credit_{t-j} + v_t \end{array} \right.$$

Decomposition of TFP

- TFP_{total} as a residual of the production function

$$TFP_{total} = TFP_{reallocation} + TFP_{within}$$

TFP gains due to factor reallocations between sectors
« Pure » TFP gains

(1)
(2)

- We compute $TFP_{reallocation}$ based on sector specific production functions

$$Y_{i,t} = A_{i,t} \cdot K_{i,t}^\alpha \cdot (L_{i,t} \cdot h_{i,t})^{(1-\alpha)}$$

- TFP gains for the overall economy :

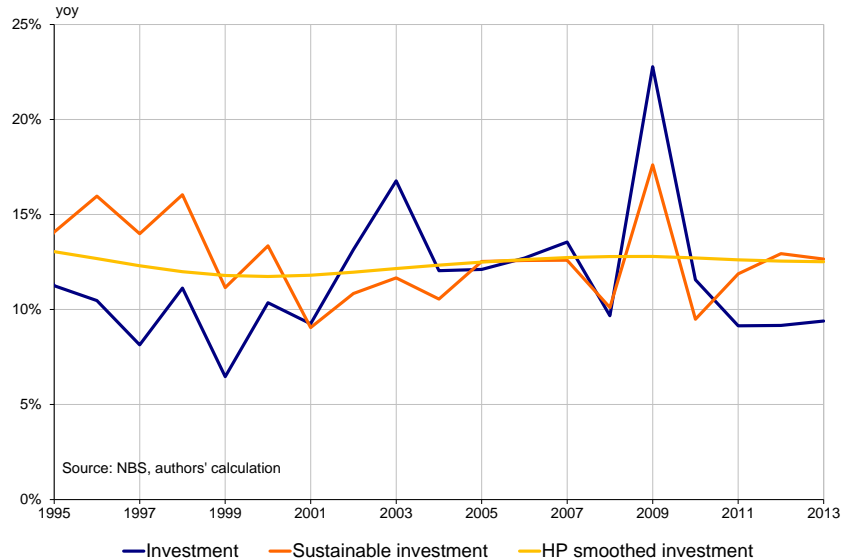
$$TFP_{total} = \underbrace{TFP_{within}}_{\text{Within sector TFP (residual)}} + \underbrace{(1-\alpha) \sum_{i=1}^3 \left(\frac{Y_i / L_i}{Y / L} - 1 \right) \frac{dL_i}{dL} + \alpha \sum_{i=1}^3 \left(\frac{Y_i / K_i}{Y / K} - 1 \right) \frac{dK_i}{dK}}_{\text{TFP reallocation}}$$

Within sector TFP (residual)
TFP reallocation

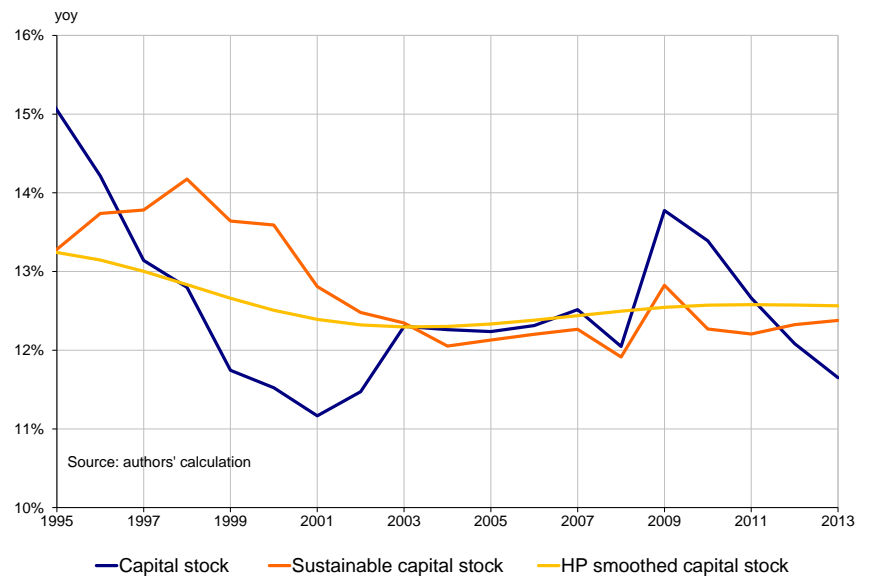
Data

- **Period** : 1952-2013 + projections 2014-2030
- **GDP**: real GDP in US\$ at constant 2005 prices
- **Capital stock**: Perpetual Inventory Method, 6% depreciation rate
- **Labor**: employees + self-employed
- **Human capital**: Barro&Lee average years of schooling * return on education
- **Credit**: Total credit (bank and non-bank)
- For **sectoral reallocations**: sector level data on GDP, labor, investment

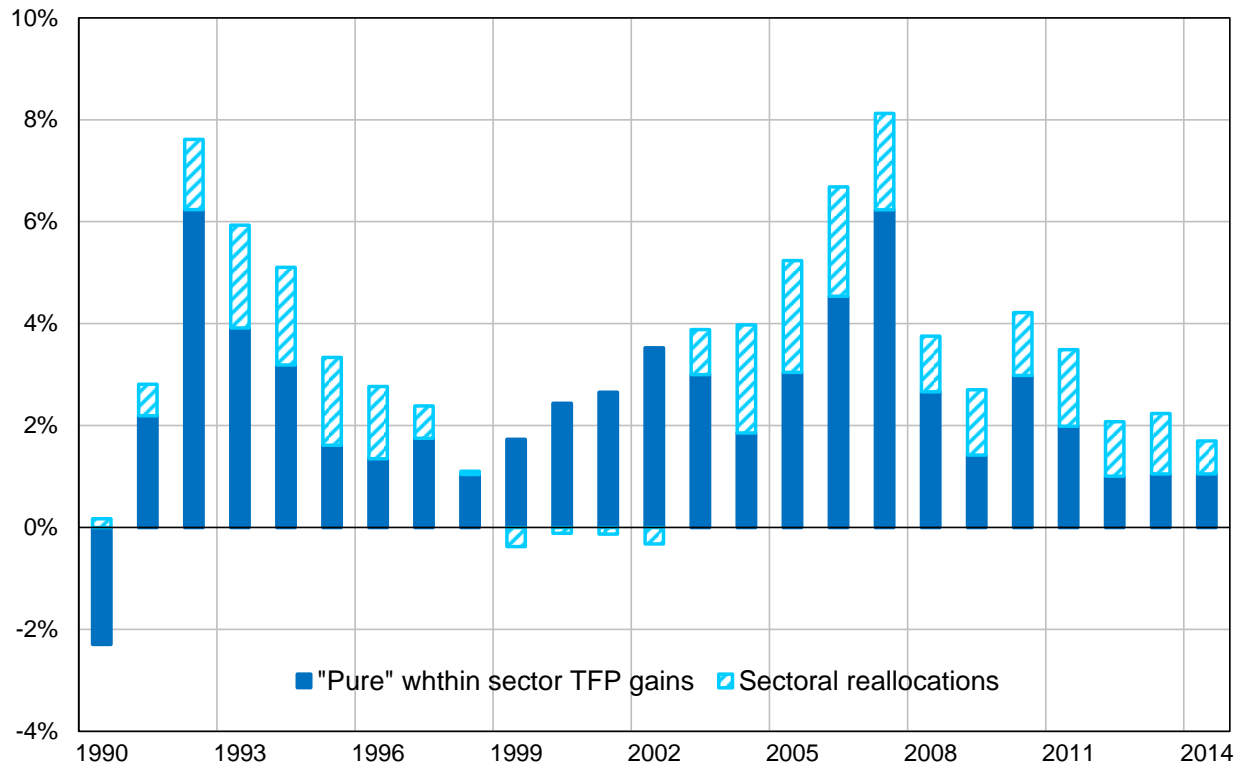
“Sustainable investment” /*



- Overinvestment identified 2009-2011
- Downward correction of ~3-6% of GFCF
- Slower K accumulation by 0.5 - 1.1%



The two components of TFP

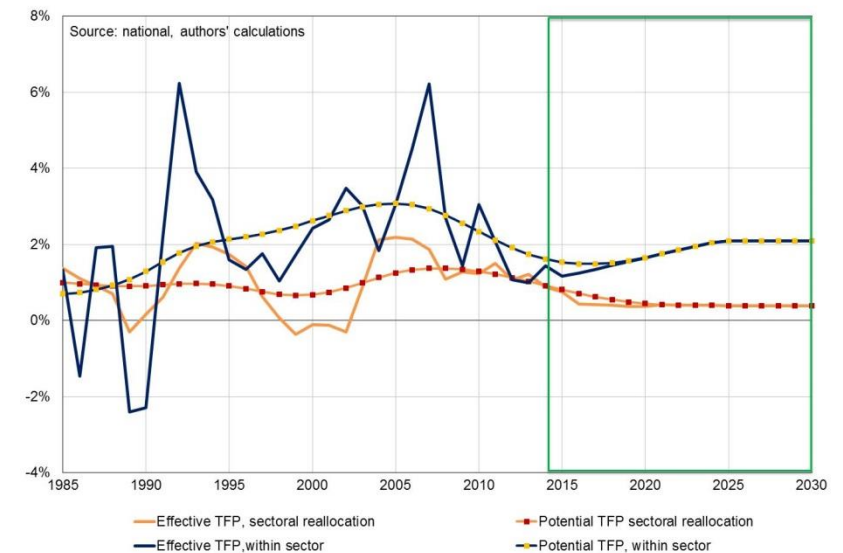
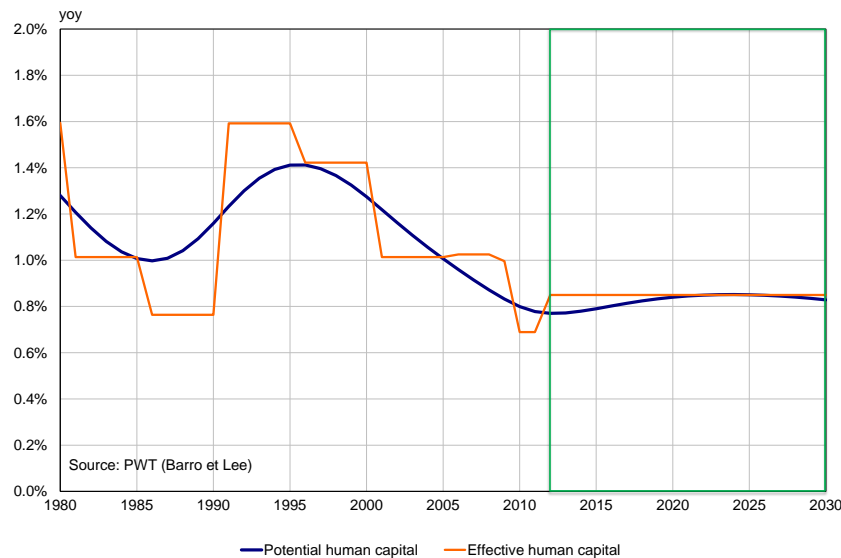
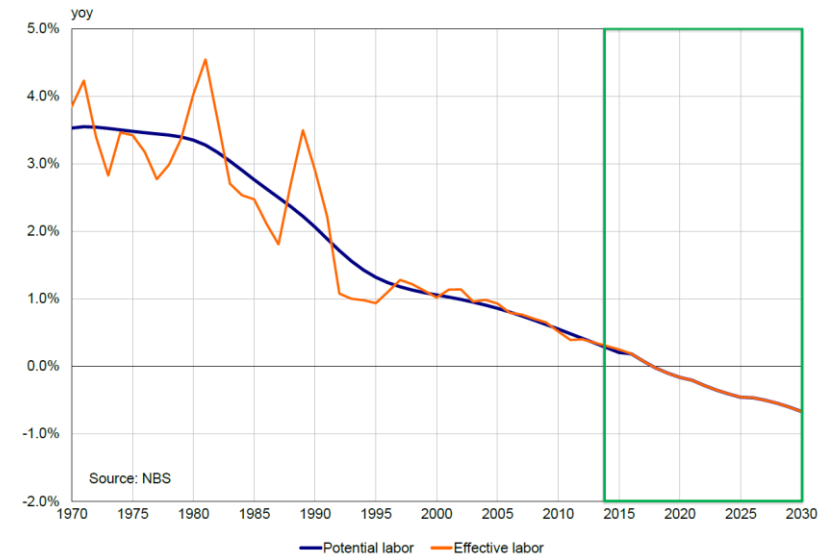
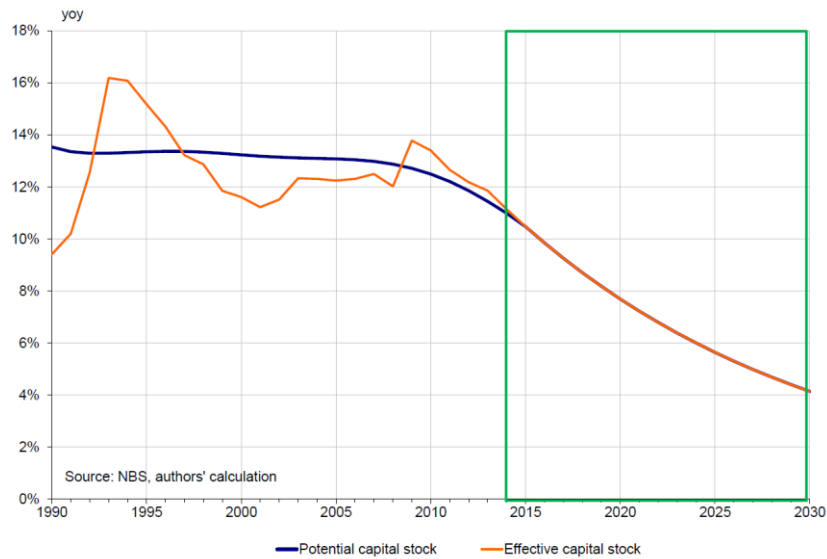


- Significant TFP gains due to sectoral reallocation of labor
- Strong within sector productivity during the 2000's

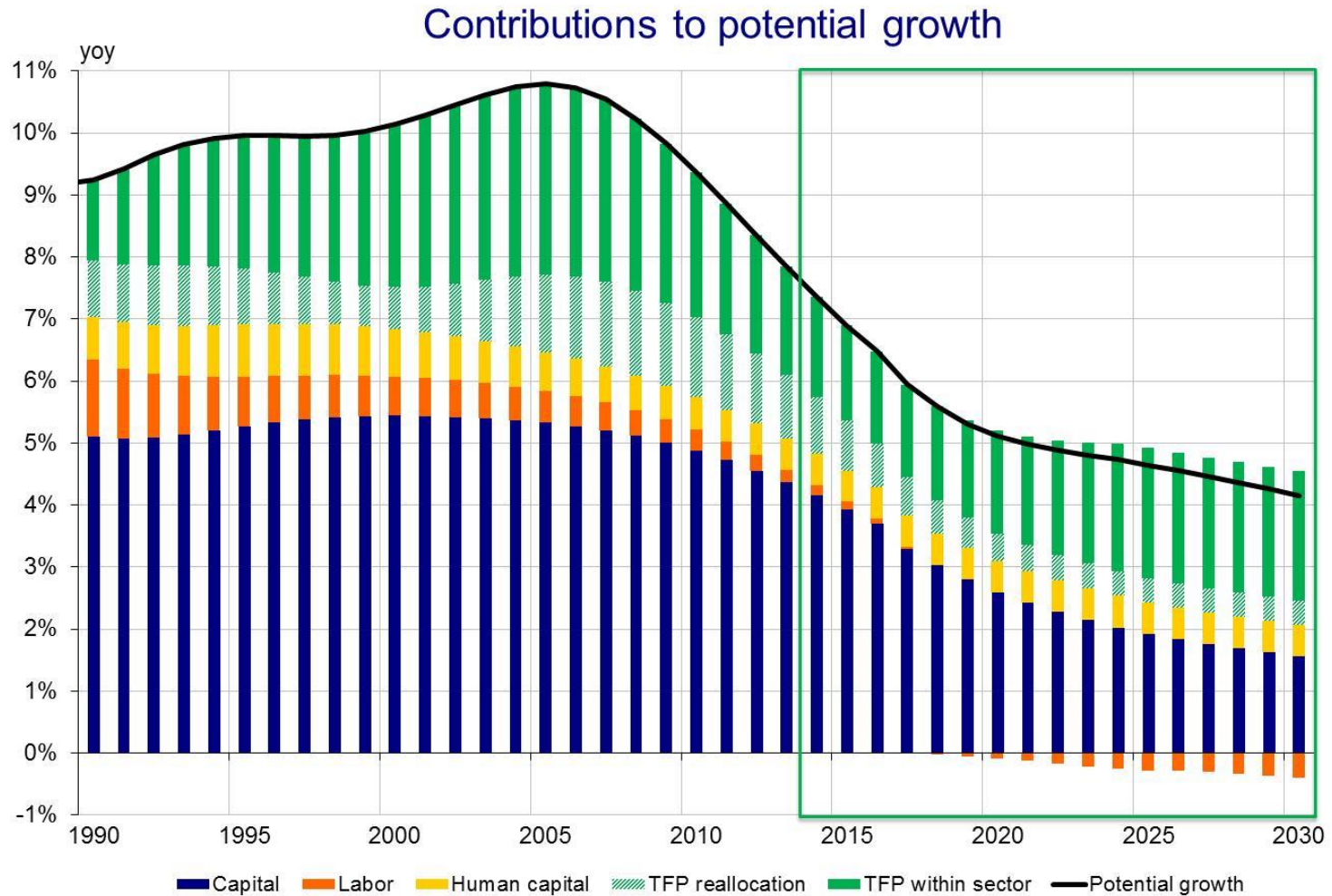
Factor projections (2014-2030)

- **Capital stock**: 34 % share of GFCF/GDP by 2030 (from 47 % in 2013)
- **Labor**: *CEPII* projections
- **Human capital**: constant average growth rate 2008-2011 (0.8 % year)
- **TFP**: consistent with the evolution of the two components
 - Factor reallocation : World Bank (2013) projections, leading to slower productivity gains
 - Within sector TFP : gradual rebound in line with reforms

Factor projections

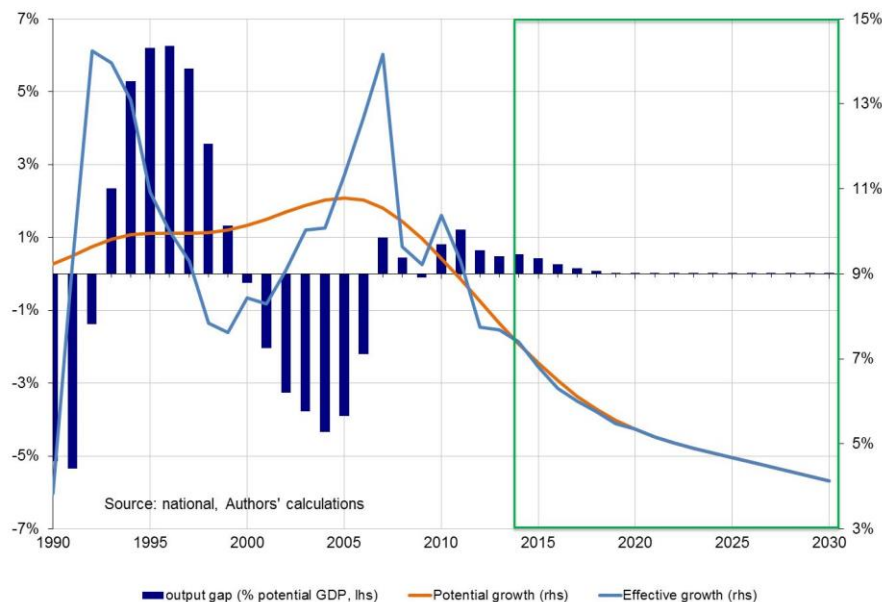


Estimates of potential growth

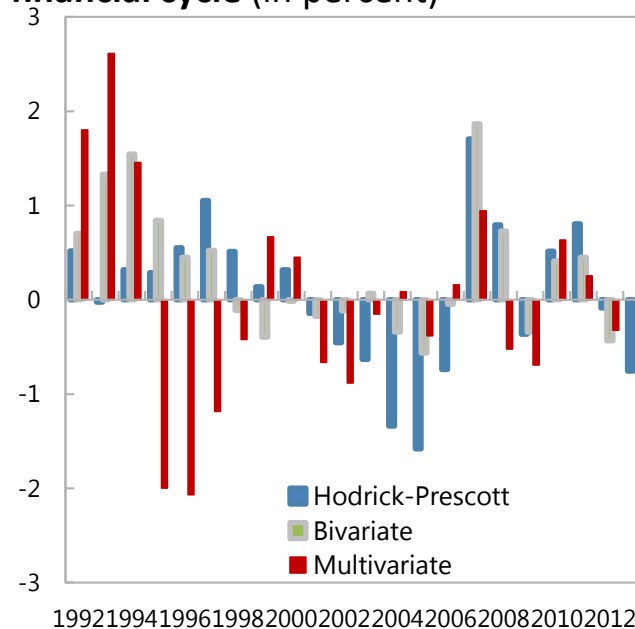


Policy implications

Output gap when controlling for credit growth



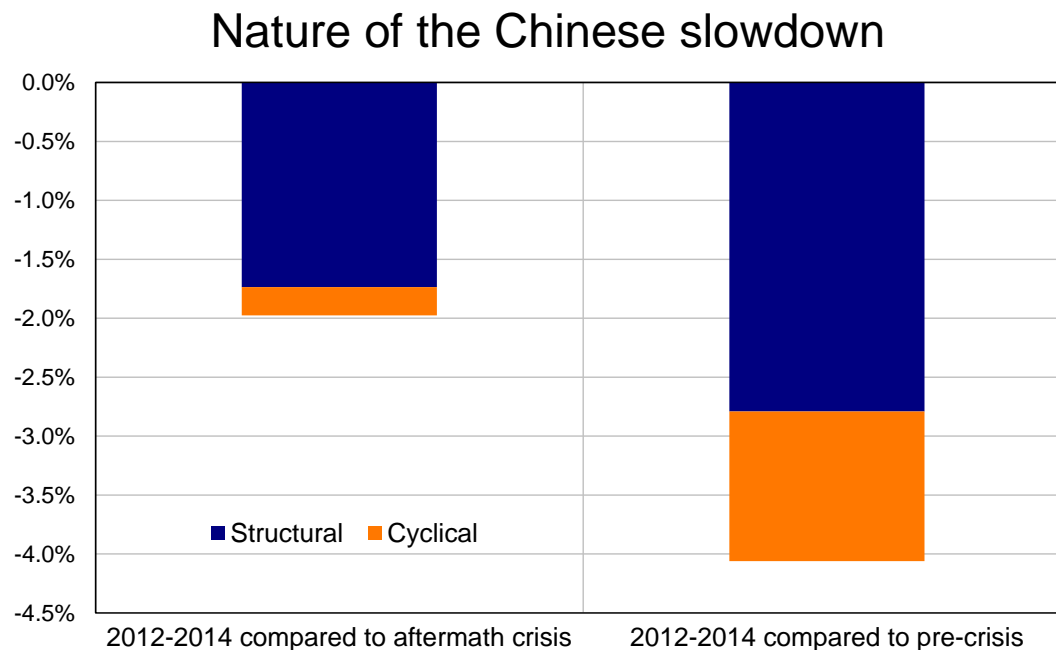
Output gap when not controlling for the financial cycle (in percent)



Maliszewski and Zhang (2015)

- Still positive output gap in 2014-2015 (~0.6 ppt), no need for stimulus
- Positive output gap only when considering the financial cycle
- Consistent with the experience of other countries ... (Pritchett & Summers, 2014)
- Convergence ... not so fast... 1/3 of US income per capita by 2030

Slowdown essentially structural



	2003-2007	2008-2011	2012-2014
Average growth rate	11.7%	9.6%	7.6%

Conclusion

- The slowdown appears largely structural
 - Overinvestment during 2009-2011, and TFP partly fueled by labor shifting from agriculture to manufacturing
 - A current small positive output gap – no rationale for stimulus
- Slowdown (below potential) needed to bring the economy to equilibrium
- Economic rebalancing should lead to further slowdown : long landing
 - Potential growth to reach ~4 % by 2030, increasingly driven by within sector TFP

Thank you for your attention!

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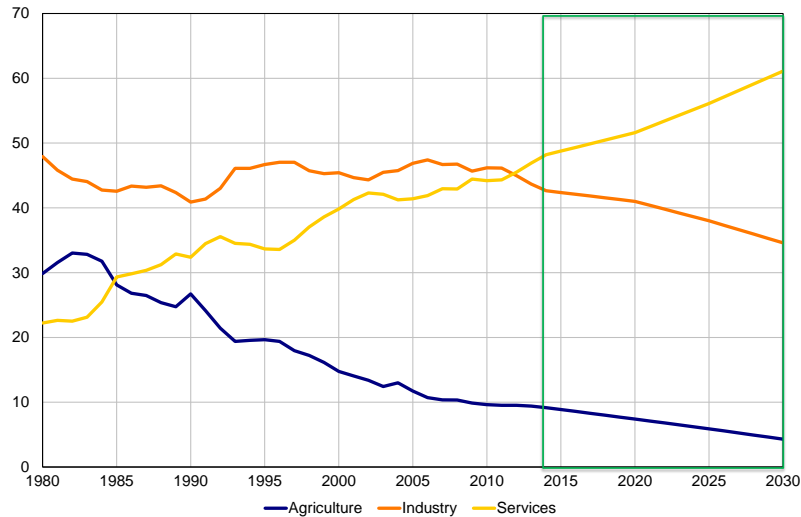
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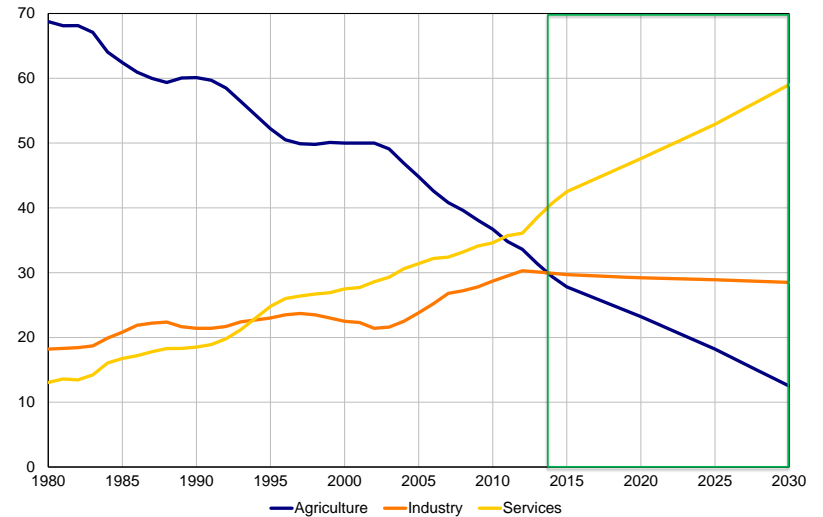
Appendix

Projections on sectoral allocations

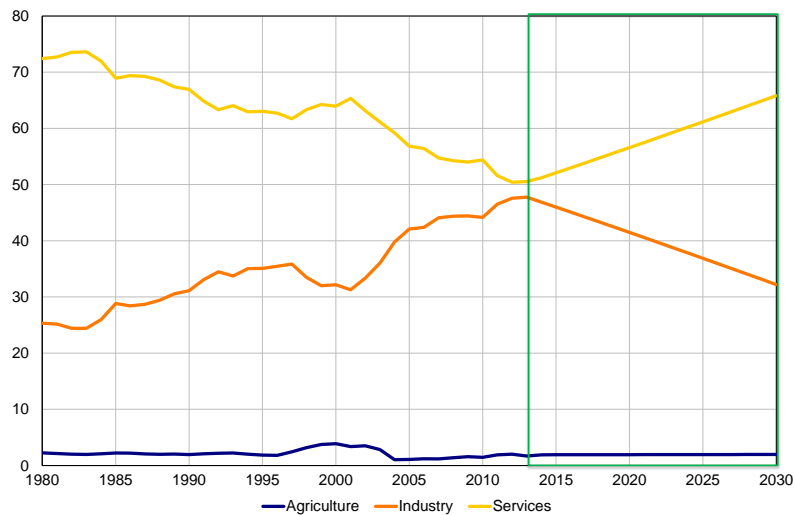
GDP decomposition by sector



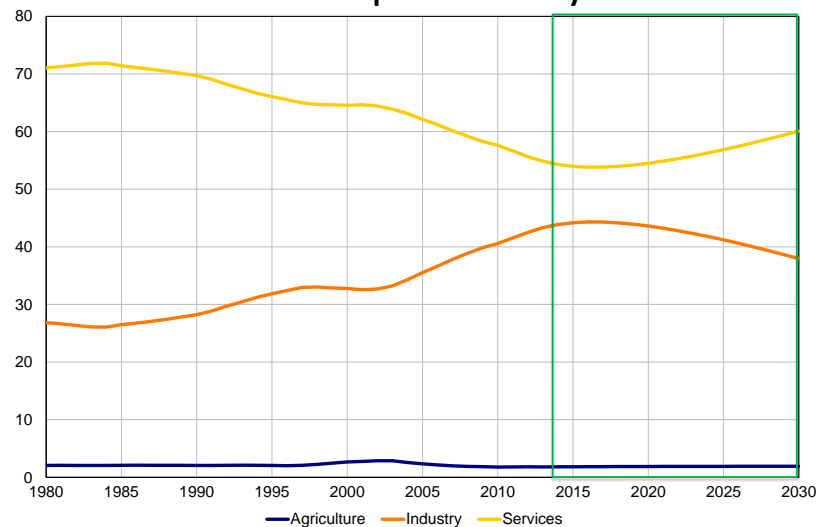
Labor decomposition by sector



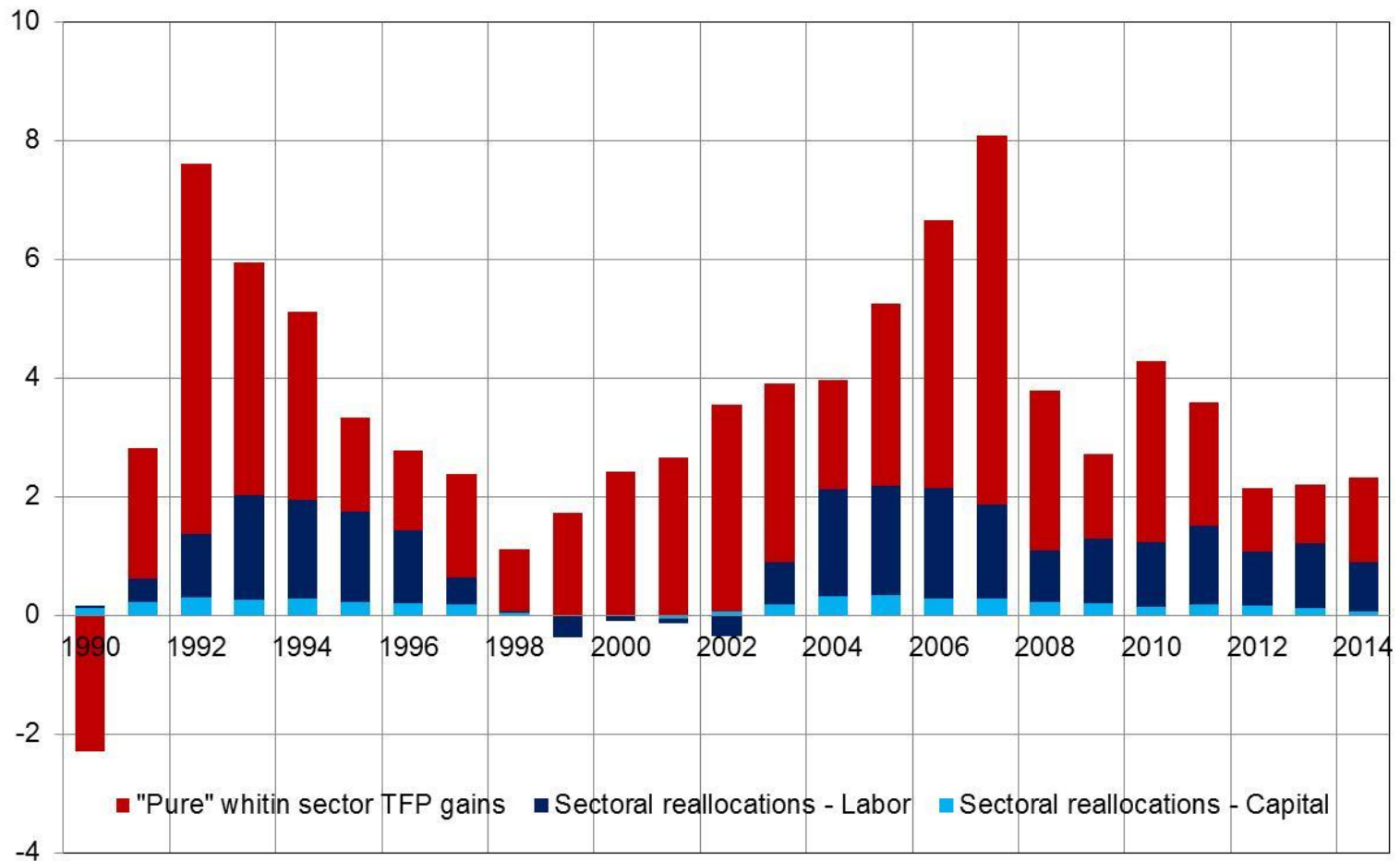
GFCF decomposition by sector



K stock decomposition by sector



TFP and sectoral reallocations



More on correcting for the credit bubble

$$I_t = I_t^{trend} + I_t^{cycle}$$


$$(1-L)I_t^{trend} = \mu_{t-1} + e_t$$

$$(1-L)\mu_t = v_t$$

I^{trend} is RW(2)

$$(1 - \rho_1 L - \rho_2 L^2)I_t^{cycle} = \varepsilon_t^{cycle}$$

I^{cycle} is AR(2)

$$\Delta Credit_t = \varphi + \gamma(1-L)^2 I_{t-1} + \sum_{i=0}^r \beta_i cycle_{t-i} + \phi_1 \Delta Credit_{t-1} + v_t$$

e_t white noise with variance V^{trend}

v_t white noise with variance V^{slope}

ε_t white noise i with variance V^{cycle}

Comparison with the literature

	Period	Potential Growth	Contributions to potential growth			
			Capital	Labor	Human capital	TFP
Bailliu et al. (2014)*	1997-2001	8.6	4.0	0.7	0.9	2.9
	2002-2011	11.0	5.0	0.7	0.7	4.6
	2013	8.3	4.6	0.1	0.7	2.9
	2014-2018	7.2	4.2	0.0	0.6	2.5
	2019-2023	5.8	3.5	0.0	0.5	1.9
	2024-2030	4.2	2.7	-0.1	0.6	1.1
Manu (2013)	1993-2002	9.7	5.6	0.4	0.6	3.0
	2003-2012	10.1	6.3	0.2	0.4	3.2
	2013-2015	8.0	5.4	-0.2	0.3	2.5
	2016-2020	7.0	4.6	-0.4	0.3	2.6
Alberola et al. (2013)	1992-1997	9.8	4.9	0.8	-	4.1
	1998-2002	9.3	4.5	0.7	-	4.1
	2003-2011	9.9	5.3	0.4	-	4.2
	2011	9.9	-	-	-	-
Haltmaier (2013)**	2010	9.9	-	0.4	-	9.5
	2020	8.2	-	-0.2	-	8.4
	2030	5.4	-	-0.4	-	5.8
World Bank (2013)	2011-2015	8.6	-	0.3	-	8.3
	2016-2020	6.9	-	-0.2	-	7.1
	2021-2025	6.0	-	-0.2	-	6.2
	2026-2030	5.1	-	-0.4	-	5.5
Kuijs (2009)	2010-2015	8.4	5.4	0.2	0.5	2.3
	2016-2020	7.0	4.6	-0.5	0.6	2.3

* Capital stock excluding housing investment and corrected for overinvestment.

** Lower investment scenario.

Table C.3: Comparison of Chinese potential growth estimates in the recent literature.