



BANK FOR INTERNATIONAL SETTLEMENTS

# **Discussion of “How fast can China grow? The Middle Kingdom’s prospects to 2030” by Jeannine Bailliu et al**

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Disclaimer: the views expressed are those of the presenter and are not necessarily shared by the BIS

## Punditry and Chinese Growth...

- "If you put two economists in a room, you get two opinions, unless one of them is Lord Keynes, in which case you get three opinions."  
-- Winston Churchill

# China GDP growth total dollar amount vs. China GDP growth percent (12/31/00 – 12/31/14)

■ China GDP Growth Rate %      ■ China GDP Growth Amount \$



Data from the IMF as of 12/31/2014

# Punditry and Chinese Growth...

- Pundits fall into three camps:
  - Optimists: the world is  $I(1)$ 
    - Given exceptional growth in the past, my best forecast for the future is continued exceptional growth
  - Realists (?): the world is  $I(0)$ 
    - Given exceptional growth in the past, my best forecast for the future is for growth to slow closer to the norm
  - Pessimists: the world is  $I(-1)$ 
    - Exceptional growth in the past is likely to lead to slower growth in the future

## Punditry and Chinese Growth...

- I(1): China's rapid growth over a long time MUST have meant they've done something right, and perhaps that means they're likely to continue to do things right in future
- I(0): China started from a very low economic base in 1980, and catching up was very easy to begin with; but fast growth is harder to maintain the higher the income level gets
- I(-1): Recent growth has been supported by unsustainable investment trends and credit growth and the economy is likely to snap back
- Strong persistent growth like China's is exceptional (Pritchett and Summers 2014 [NBER WP20573])

## Getting beyond punditry:

- To make numerical predictions requires a model
  - BUT: our modelling assumptions embody  $I(1)$ ,  $I(0)$  and/or  $I(-1)$  assumptions
- Growth accounting is a good way to start, but:
  - Extrapolating country-specific trends:  $I(1)$
  - Assuming “exceptional” factors will normalise:  $I(0)$
  - Allowing for “overinvestment”:  $I(-1)$

# Main results:

Table 5: Comparison of Estimates of Chinese Trend Growth and Contributing Factors

Capital Stock	Period	GDP Growth	Trend Growth	Contribution				Growth			
				K	L	TFP	HC	K	L	TFP	HC
Measure incl. housing	1997-2001	8.3	8.4	4.3	0.6	2.6	0.9	8.6	1.3	2.6	1.8
	2002-2006	10.6	11.1	5.1	0.8	4.5	0.7	10.3	1.7	4.5	1.4
	2007-2010	10.9	11.1	6.1	0.4	3.8	0.7	12.2	0.8	3.8	1.5
	2011-2014	8.1	7.8	5.7	-0.1	1.5	0.7	11.3	-0.2	1.5	1.3
Measure exc. housing	1997-2001	8.3	8.4	4.4	0.6	2.5	0.9	8.7	1.3	2.5	1.8
	2002-2006	10.6	11.1	5.0	0.8	4.6	0.7	10.1	1.7	4.6	1.4
	2007-2010	10.9	11.1	6.0	0.4	3.9	0.7	12.1	0.8	3.9	1.5
	2011-2014	8.1	7.7	5.7	-0.1	1.5	0.7	11.4	-0.2	1.5	1.3
Measure exc. housing and overinvestment	1997-2001	8.3	8.4	4.4	0.6	2.5	0.9	8.8	1.3	2.5	1.8
	2002-2006	10.6	11.1	5.0	0.8	4.6	0.7	10.0	1.7	4.6	1.4
	2007-2010	10.9	11.1	5.9	0.4	4.0	0.7	11.9	0.8	4.0	1.5
	2011-2014	8.1	7.8	5.7	-0.1	1.5	0.7	11.3	-0.2	1.5	1.3

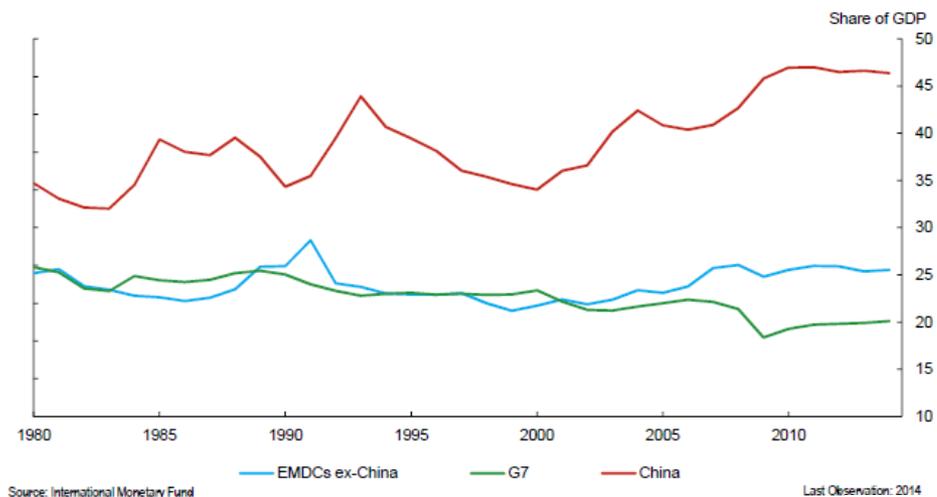


Figure 3: Investment-to-GDP ratio

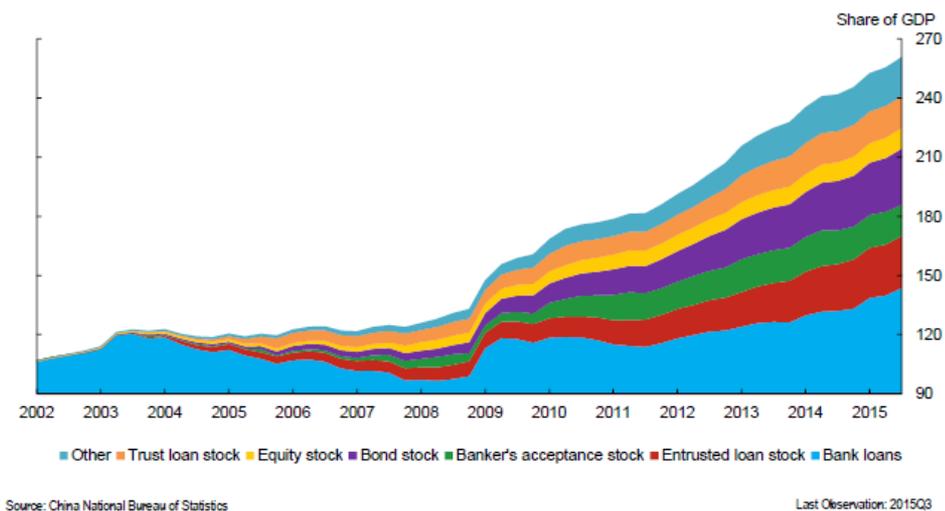


Figure 7: China's stock of total social financing (TSF) as a share of GDP

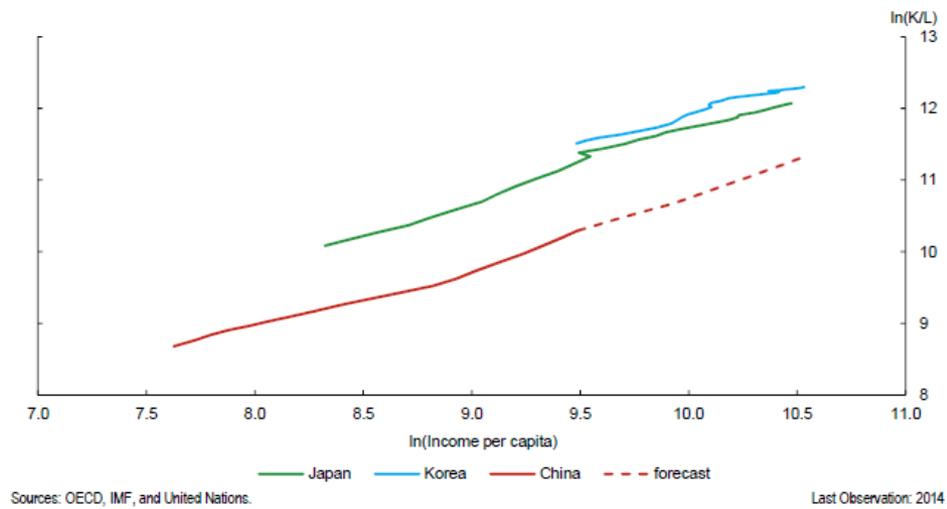


Figure 19: Capital-Labour Ratio and Per Capita Income: China Relative to Other East Asian Countries

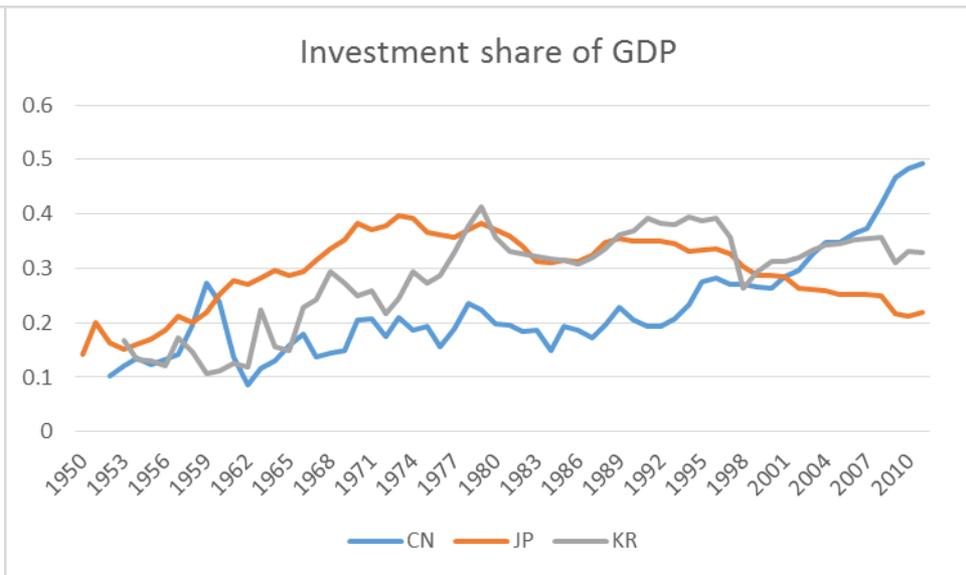
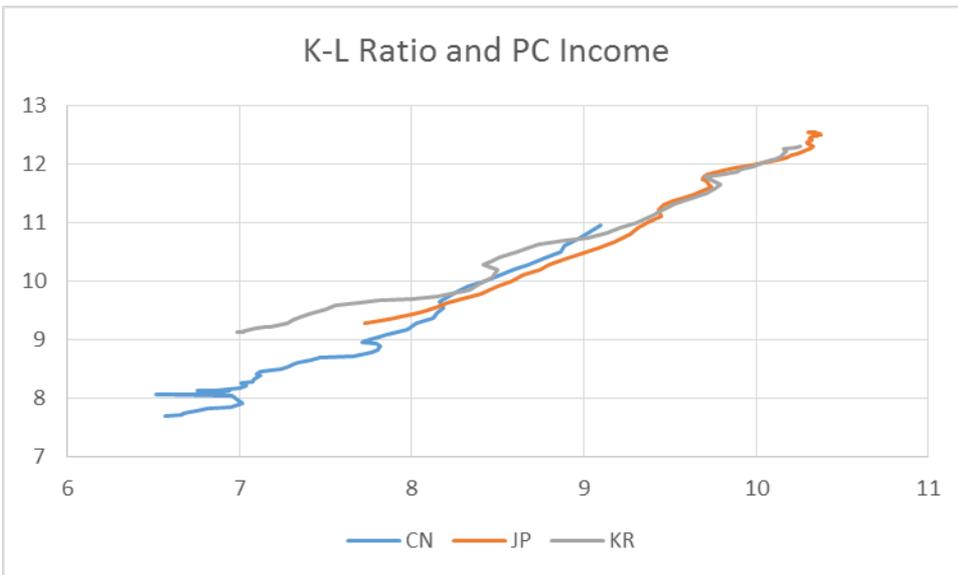


Table 5: Comparison of Estimates of Chinese Trend Growth and Contributing Factors

Capital Stock	Period	GDP Growth	Trend Growth	Contribution				Growth			
				K	L	TFP	HC	K	L	TFP	HC
Measure incl. housing	1997-2001	8.3	8.4	4.3	0.6	2.6	0.9	8.6	1.3	2.6	1.8
	2002-2006	10.6	11.1	5.1	0.8	4.5	0.7	10.3	1.7	4.5	1.4
	2007-2010	10.9	11.1	6.1	0.4	3.8	0.7	12.2	0.8	3.8	1.5
	2011-2014	8.1	7.8	5.7	-0.1	1.5	0.7	11.3	-0.2	1.5	1.3
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	2007-2010	10.9	11.1	6.0	0.4	3.9	0.7	12.1	0.8	3.9	1.5
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	2002-2006	10.6	11.1	5.0	0.8	4.6	0.7	10.0	1.7	4.6	1.4
	2007-2010	10.9	11.1	5.9	0.4	4.0	0.7	11.9	0.8	4.0	1.5
	2011-2014	8.1	7.8	5.7	-0.1	1.5	0.7	11.3	-0.2	1.5	1.3

Table 7: Forecast of Chinese Trend Growth and Contributing Factors

Capital Stock	Period	Trend Growth	Contribution to Trend Growth*				Growth Rate			
			K	L	TFP	HC	K	L	TFP	HC
	2015-2020	7.0	3.2	-0.1	3.3	0.6	6.5	-0.3	3.3	1.1
	2021-2025	5.9	2.7	-0.3	3.0	0.5	5.3	-0.6	3.0	1.0
	2026-2030	4.9	1.9	-0.5	2.9	0.6	3.7	-1.0	2.9	1.2

# Is the contribution of Human Capital (HC) I(1) or I(0)?

- Main driver of HC: share of university grads increasing from 23% to 44%
- Cross-country evidence: declining marginal returns to education
- Recent past in China: increasing returns:

Education level	Marginal return
Primary	7.7%
Secondary	8.9%
Tertiary	13.4%

- The future: more like the past, or more like the rest of the world?

# The largest contributor to future growth is TFP...

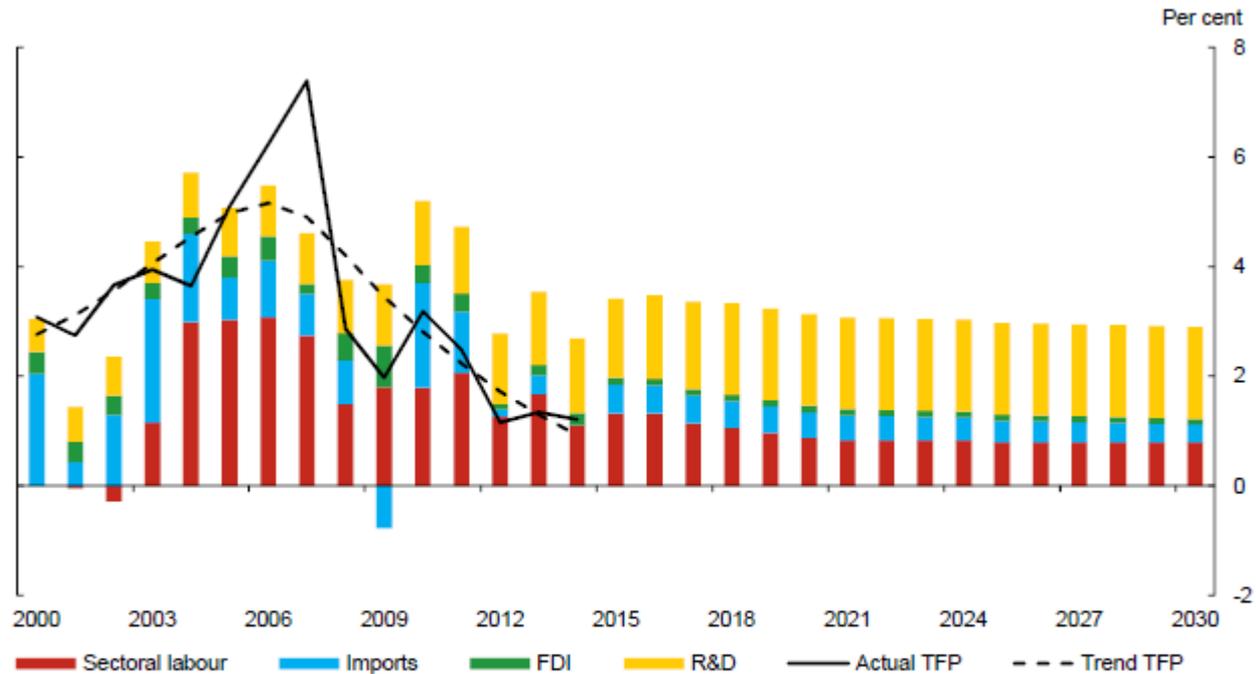


Figure 25: Forecasted TFP Growth

## Contribution of FDI and imports to TFP:

- Growth in FDI and imports leads to growth in TFP
  - What's the mechanism? (Lee et al 2011)
    - Weak empirical evidence
    - Need to distinguish between source of FDI
      - "North-South" vs "South-South" (including round-tripping through Hong Kong?)
  - Doesn't the base matter?
    - CN = large economy; base as a share of GDP will tend to be lower than economies in Lee et al (2011)

## Contribution of R&D to TFP:

- Growth in R&D leads to growth in TFP
  - “a 1 percent increase in R&D spending raises TFP growth by 0.7 p.p.” (Griffith 2004)
  - ... especially for economies not at the Frontier
  - BUT: based on OECD sample
- Comparison with other countries?

## Comparing TFP with other studies:

Table 1: Average Growth Over 16-Year Period Starting from a Ratio of 20% of U.S. GDP Per Capita

	Real GDP	Labour	Human Capital	Capital Stock	TFP
Japan (from 1955)	10.6%	1.4%	0.5%	10.7%	5.0%
Taiwan (from 1970)	8.8%	3.6%	1.3%	12.0%	0.6%
Korea (from 1978)	8.4%	2.5%	1.1%	11.5%	1.4%
<i>China (from 2014)</i>	<i>6.3%</i>	<i>-0.2%</i>	<i>1.1%</i>	<i>5.4%</i>	<i>3.1%</i>

Note: Data for Japan, Taiwan, and Korea are from the Penn World Tables.

TABLE V  
TOTAL FACTOR PRODUCTIVITY GROWTH: HONG KONG

Time period	Annual growth of:						Labor share
	Output	Raw capital	Weighted capital	Raw labor	Weighted labor	TFP	
61–66	0.109	0.169	0.162	0.032	0.025	0.035	0.643
66–71	0.065	0.075	0.078	0.025	0.024	0.023	0.660
71–76	0.081	0.075	0.080	0.033	0.024	0.039	0.662
76–81	0.099	0.093	0.098	0.051	0.064	0.022	0.617
81–86	0.058	0.078	0.079	0.019	0.027	0.009	0.593
86–91	0.063	0.062	0.066	0.005	0.022	0.024	0.609
<b>66–91</b>	<b>0.073</b>	<b>0.077</b>	<b>0.080</b>	<b>0.026</b>	<b>0.032</b>	<b>0.023</b>	<b>0.628</b>

Raw inputs are the arithmetic sum of subcomponents, with no adjustment for hours of work. Weighted inputs are translog indices of factor input growth, with labor services measured by hours of work.

## Final point... a need for robustness

- What happens with alternative assumptions?
  - Use existing framework to illustrate sensitivity