Toward Recoupling?

Assessing the Global Impact of a Chinese Hard Landing through Trade and Commodity Price Channels

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6th BoC/ECB Conference, 08/06/2015
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China’s rapid growth over the past decade => driver of the rise in energy and mineral commodity demand => benefit to commodity exporters (Jenkins et al., 2008).

Slow down in the last few years and concerns about the sustainability of the growth model (Eichengreen et al. 2012, IMF 2013b, RGE 2013).

While a majority of analysts still view a soft landing as their baseline scenario, several reasons can be put forward to justify a more pronounced slowdown (overinvestment, debt and real estate trends).
Outline

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Main arguments pointing to a hard landing:

1. Historical rebalancing precedents (following overinvestment)
2. Debt dynamics
3. Probable real-estate bubble
**Figure**: China’s internal imbalances.
What does history tell us?

  - 47 episodes of rebalancing after investment-led growth
  - Growth is 3.5 percent lower on average 5 years after the investment peak (compared to 5 years before)
  - Imbalances in China much more acute

  - China shares many of the characteristics of "slowdown economies"
  - High investment-to-GDP ratio, undervalued currency, ageing population
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**FIGURE**: China’s total debt surge

*Source: People’s Bank of China, National Bureau of Statistics*

*Note: Corporate bonds, other TSF, and TSF items of shadow banking (Entrusted loans, Trust loans, Banks’ acceptance bills) are computed from flow data (starting point = 2002)*

*Note: Linear trend is computed using past data that was available at the time of estimation*

*Note: According to Drehmann et al. (2011), the 12% threshold gives 11% of false positive crisis signals (when applied to private credit)*
**Figure:** Cement production and level of development (2000).
**Cement Production & Level of Development (2007)**

**Figure**: Cement production and level of development (2007).

Sources: US Geological Survey, IMF (WEO), calculations Banque de France - SERMI
FIGURE: Cement production and level of development (2011).
Main arguments pointing to a hard landing:

1. Historical rebalancing precedents (following overinvestment)
2. Debt dynamics
3. Probable real-estate bubble
**Figure**: Oil consumption by region.
Figure: Copper consumption by region.
**Figure**: Iron ore consumption by region.

Sources: Bureau of Resources and Energy Economics (Australia), authors’ calculations.
Global VAR (first developed by Dees et al. 2007, Pesaran et al. 2004).

Widely used in the international macro literature:

- Useful to study international linkages with a limited time sample.

- Construct 1 VECMX by country.

- For a given country, a given exogenous variable (for example foreign GDP) is the weighted average of other countries’ corresponding variables (other countries’ GDP).
VARX for each country:

\[ x_{it} = a_{i0} + a_{i1} t + \sum_{j=1}^{p} \Phi_{ij} x_{i,t-j} + \sum_{k=0}^{q} \Gamma_{ik} x_{i,t-k}^* + u_{it} \]

By "pooling" estimated VARX one can rewrite the GVAR:

\[ X_t = FX_{t-1} + D_t + V_t \]
Unconditional forecast mean and variance-covariance matrix:

\[ \mu_h = E_1 F^h X_T + \sum_{s=0}^{h-1} E_1 F^s D_{T+h-s} \]

\[ \Omega_{hh} = E_1 \sum_{s=0}^{h-1} F^s \tilde{\Sigma} F'^s E_1' \]

Conditional forecast is conceptually similar to counter-factual analysis (Pesaran et al. 2007, Dubois et al. 2009).

Conditional forecast mean:

\[ \mu_h^* = \mu_h + (s_{hH}^{'} \otimes I_k) \tilde{\Omega}(I_{\tilde{H}} \otimes \Psi')[(I_{\tilde{H}} \otimes \Psi) \tilde{\Omega}(I_{\tilde{H}}(I_{\tilde{H}} \otimes \Psi'))^{-1} \tilde{g}_{\tilde{H}} \]
Bootstrap R=1000 simulations:

1. For each $r$ simulation we recalculate $X_t^{(r)}$:

$$X_t^{(r)} = FX_{t-1}^{(r)} + D_t + V_t^{(r)}$$

1.1 This allows to estimate $F^{(r)}$ (and intercept and trend).

1.2 Compute $\mu_h^{(r)}$ and $\mu_h^{(r)*}$.

2. Calculate median and other quantiles for conditional and unconditional forecasts.
► 36 countries (88% of world GDP) + 1 Metal (MPI) block + 1 oil block.
► From 1995 Q1 to 2014 Q3.
► The impact of countries on "commodity blocks" is weighted by the share of each countries in global consumption of metals and oil:
  ▶ MPI block : Copper and Iron ore consumption.
  ▶ Oil block : Oil demand.
► Several "crisis dummies" for Asia, Russia, Brazil, Turkey, Argentina, GFC, Euro Area.
## Countries

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<thead>
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<td>X</td>
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<tr>
<td>Inv.</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Exp.</td>
<td>X</td>
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<tr>
<td>Inf.</td>
<td>X</td>
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<td>REER</td>
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## Oil block

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<tr>
<td>Oil surplus</td>
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<td></td>
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<tr>
<td>Oil prod.</td>
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## Metal block

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<td>X</td>
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<tr>
<td>Metal invent.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Metal prod.</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

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Impact of a Chinese Hard Landing on Commodity Exporters

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The hard landing scenario

Some studies:

- Pettis (2013) : China will grow at no more than 3% during rebalancing.

- Nabar & N’Daye 2013 (IMF WP 13-204) : downside scenario in which China would grow at no more than 4%.
Our scenarios

**Soft landing scenario:**
- GDP growth slowdown to 6% in 5 years.
- Investment growth slowdown to 4% in 5 years.
- Investment-to-GDP ratio around 42% after 5 years.

**Hard landing scenario:**
- GDP growth slowdown to 3% within 2 years.
- Investment growth slowdown to 1% within 2 years.
- Investment-to-GDP ratio around 40% after 5 years.
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Cumulated growth lost after 5 years

Asia EMES
Asia
Other EMES
ASEAN
Latin America
Asia EMES (ex. Chn)
Latin America (ex. Chn)
World
Asia (ex. Chn)
Asia ADVs
World (ex. Chn)
Euro Area
Advanced

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Impact of a Chinese Hard Landing on Commodity Exporters
3 possible transmission channels:

1. Commodity prices
2. Real exports
3. Investment

1 possible buffer:

1. Real effective exchange rate
Metal Price index

Oil price

Soft Landing
Hard Landing
**Figure:** Cumulated export loss.
**Figure**: Cumulated investment loss.
Canada

Peru

Real Effective Exchange Rate (2011=100)

Soft Landing

Hard Landing

GDP growth rate yoy smoothed in %

00Q1   03Q1   06Q1   09Q1   12Q1   15Q1   18Q1   21Q1

90
95
100
105
110
115

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Limits

Financial :
- Financial contagion => Confidence => Investment
- Rise in risk aversion => Capital outflows from EMEs
- Interaction with Fed tapering

Commodities :
- Overestimation of the impact on metal prices
- Linear model
- Lack of supply considerations (inflexion of oil producers’ strategy)
Conclusion

▶ China: Imbalances, credit growth, real-estate bubble: towards a hard landing?
▶ Large impact on both regional partners and commodity exporters
▶ Provides a possible interpretation for decoupling:
  ▶ Decoupling = Emergence of China + Imbalanced growth + Impact on commodity exporters?
  ▶ Hard landing in China may trigger partial recoupling
Thank you!
Figure: China’s total social financing

Source: People's Bank of China, China Trustee Association, National Bureau of Statistics

Note: Corporate bonds, other TSF, and TSF items of shadow banking (Entrusted loans, Trust loans, Banks' acceptance bills) are computed from flow data (starting point = 2002)

Note: Non-TSF items of shadow banking (Trusts' other AUM, informal lending) are extrapolated based on available data
**Figure**: Price-to-rent ratios in China’s ten largest cities.
**Figure**: Price-to-income ratios in China’s ten largest cities.
Figure: Urbanization and real estate in China.
FIGURE: China: Employment by sector.

Source: National Bureau of Statistics
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**China: Decomposition of Trade Balance**

Source: IMF DOTS

Asia includes: Developing Asia, Japan, Korea

Commodity exporters include: Africa, Middle-East, Commonwealth of Independant States, Australia, South America

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Impact of a Chinese Hard Landing on Commodity Exporters
**Figure**: Global demand by end-use: copper.

*Source: International Wrought Copper Council*
Global steel demand by end-use (2012)

**Source:** Metals Consulting International

- Construction incl. structural & building work
- Mechanical engineering
- Automotive
- Other transport incl. shipbuilding & rail
- Domestic appliances incl. electrical engineering
- Metal goods & fabrication
- Oil & gas exploration & transport
- Other industries / miscellaneous

**Figure:** Global demand by end-use: steel.
FIGURE: Global demand by end-use: oil.

China: Energy sources by type (2009)

Source: US Energy Information Administration

- Coal
- Oil
- Hydropower
- Natural Gas
- Nuclear
- Other renewables

**Figure**: Sources of energy in China.
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**FIGURE**: Copper: Prices and inventories.
**Figure**: Latin America: Negative correlation between commodity prices and sovereign spreads (Bastourre et al, 2013).