Flexing Your Muscles: Effects of Abandoning Fixed Exchange Rates for Greater Flexibility

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Motivation

• What happens when country abandons a fixed exchange rate regime, but from a position of strength, not weakness?
  – Inverse of usual “currency crisis” situation
  – Tremendous relevance: China
Empirical Orientation

• Identify 51 “Flexings” – situations where country abandoned fix and could have expected its exchange rate to appreciate

• Empirical Question: What Happened?
  – Short, unpretentious, policy-relevant paper
Answer

• Tremendous Heterogeneity
  – Few apparent causes/determinants of flexes
  – No big growth effect on average

• Patterns Emerge
  – Growth falls more for countries with high investment rate
  – Ditto rapidly growing trade

• Conclude: China may be right to fear the flex
Definition of Flexing (1)

• Shift out of Fixed Exchange Rate
  – Use Reinhart-Rogoff (with Ilzetzki) fine (15-way) exchange rate regime classification
    • Exit from: 1) no separate legal tender; 2) pre-announced peg or currency board arrangement; 3) pre-announced horizontal band narrower than or equal to +/-2%; and 4) *de facto* peg
  – 1946m1-2007m9, 218 countries
  – *De facto not de jure*
Definition of Flexing (2)

- Examine Exchange Rate Changes over 3 months after exit
  - Require appreciation or small (<5%) depreciation
    - Motivation: reasonably expect absence of crisis
    - Examine US$(official, black-market), also SDR
  - Ignore High-Frequency Considerations
    - Longer/Shorter Horizon doesn’t matter much
    - Changing 5% threshold doesn’t matter much
  - Review, Check each observation
<table>
<thead>
<tr>
<th>Country 1</th>
<th>Country 2</th>
<th>Country 3</th>
<th>Country 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Iraq 1982</td>
<td>Malta 1972</td>
<td>Singapore 1973</td>
</tr>
<tr>
<td>Botswana</td>
<td>Ireland 1979</td>
<td>Mauritania 1974</td>
<td>South Africa 1972</td>
</tr>
<tr>
<td>Germany 1973</td>
<td>Libya 1971</td>
<td>Nicaragua 1993</td>
<td>Tunisia 1974</td>
</tr>
<tr>
<td>Haiti 1985</td>
<td>Malawi 1973</td>
<td>Peru 1967</td>
<td>Turkey 1972</td>
</tr>
<tr>
<td>Hong Kong 1972</td>
<td>Malaysia 2005</td>
<td>Philippines 1970</td>
<td>UK 1972</td>
</tr>
<tr>
<td>Iran 1974</td>
<td>Malaysia 1975</td>
<td>Portugal 1973</td>
<td></td>
</tr>
</tbody>
</table>
Determinants of Flexes

• Causes of Exits may influence outcomes
  – Hence must examine determinants first
  – Little theory (Grilli); reasonable to examine overheating/inflation/asset price bubbles

• Estimate Probit models, attempt to link flexes to macro/financial variables of interest
  – Smoothed over time into 3-year averages
    • (5-year averages similar)

• Models work poorly in practice
  – Many variants
  – Strong exception: size matters (intuitively)
## Flex Determinants: Bivariate Panel Probits, Time FE, Country RE

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th></th>
<th>Coefficient</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP Growth</td>
<td>.33</td>
<td>M2 growth</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>Consumption/GDP</td>
<td>.16</td>
<td>Reserves/M2</td>
<td>.39</td>
<td></td>
</tr>
<tr>
<td>Investment/GDP</td>
<td>.07*</td>
<td>Reserves/GDP</td>
<td>.27</td>
<td></td>
</tr>
<tr>
<td>Government spending/GDP</td>
<td>.71</td>
<td>Trade/GDP</td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td>GDP Inflation</td>
<td>.44</td>
<td>Current Account/GDP</td>
<td>.23</td>
<td></td>
</tr>
<tr>
<td>Consumption growth</td>
<td>.95</td>
<td>Export growth</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>Investment growth</td>
<td>.34</td>
<td>Import growth</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>Government Spending growth</td>
<td>.62</td>
<td>Log Population</td>
<td>.00***</td>
<td></td>
</tr>
<tr>
<td>Domestic Credit growth</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Flex Determinants: Multivariate Panel Probits, Time FE, Country RE

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption /GDP</td>
<td>-.003</td>
<td>(.006)</td>
</tr>
<tr>
<td>Investment /GDP</td>
<td>.011</td>
<td>(.010)</td>
</tr>
<tr>
<td>GDP Inflation</td>
<td>-.007</td>
<td>(.008)</td>
</tr>
<tr>
<td>Log Population</td>
<td>.081</td>
<td>(.058)</td>
</tr>
<tr>
<td>Trade /GDP</td>
<td>.002</td>
<td>(.003)</td>
</tr>
</tbody>
</table>
So, How Important is Selection Bias?

• Seems Not Very, at least in practice
  – If flexes are random, can examine flexes without worrying much about selectivity

• Hence can proceed on to event studies
  – Mostly WDI macro data
  – Choose wide variety of macro/financial indicators
    • Focus on China-relevant characteristics (e.g., C/Y, I/Y)
    • Guided by case studies
    • (Have looked at others without success)
Default Event Study

Annual Movements around (51) Exits

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Sensitivity Analysis

Annual Movements around (32) Depreciation-Free Exits

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Devaluations (Contrast)

Deviation of Differentials from Tranquillity; Samples not Comparable
Industrial Country Panel, 1959-1993

Change in FX Reserves
Change in % Exports
Change in % Imports
Current Account (% GDP)
Gov’t Budget (% GDP)
Credit Growth
M1 Growth
Real Effect. FX Index
Interest Rate
Gov’t Bond Yield
Stock Market Index
CPI Inflation
Change in Wage Rate
Unemployment Rate
Employment Growth
Real Output Growth

Mean plus two standard deviation band
Movements 8 Quarters Before and After (81) Devaluations

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Few Apparent Trends

• Flexes are not “all alike”
  – Contrast to devaluations (Eichengreen et al) and currency crashes (Frankel-Rose)

• Big message: flexes are heterogeneous
  – Consistent with more detailed case studies
  – But univariate event studies can mask covariation
  – We look for big obvious ones, with Chinese-specific characteristics of interest
Pre-Conditions of Flexes and Growth

Growth Rates before/after (51) Exits and Pre-Conditions
3-year averages of WDI data

- Consumption (%GDP)
- Investment (%GDP)
- Consumption growth
- Investment growth

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Pre-Conditions, continued

Growth Rates before/after (51) Exits and Pre-Conditions
3-year averages of WDI data

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Some Non-Trivial Covariation

• Particularly strong effect on change in GDP growth rates of:
  – Investment (rates, growth)
  – Trade (growth)

• Can be detected statistically
### Bivariate Impact on Change in GDP Growth Rates, Flexes

<table>
<thead>
<tr>
<th>Consumption/GDP</th>
<th>0.05 (0.6)</th>
<th>M2 growth</th>
<th>-0.15** (-2.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment/GDP</td>
<td>-0.26*** (-3.9)</td>
<td>Reserves/M2</td>
<td>0.00 (0.0)</td>
</tr>
<tr>
<td>Government spending/GDP</td>
<td>0.10 (1.3)</td>
<td>Reserves/GDP</td>
<td>-0.02 (-0.4)</td>
</tr>
<tr>
<td>Consumption growth</td>
<td>-0.3** (-2.5)</td>
<td>Trade/GDP</td>
<td>0.01 (1.1)</td>
</tr>
<tr>
<td>Investment growth</td>
<td>-0.21*** (-3.7)</td>
<td>Export growth</td>
<td>-0.10* (-1.7)</td>
</tr>
<tr>
<td>Government Spending growth</td>
<td>-0.08 (-0.5)</td>
<td>Import growth</td>
<td>-0.17*** (-3.0)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-0.09 (-0.6)</td>
<td>Current Account/GDP</td>
<td>-0.02 (-0.2)</td>
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<td>Domestic Credit growth</td>
<td>-0.05 (-0.8)</td>
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Pre-Conditions and Inflation

Inflation Rates before/after (51) Exits and Pre-Conditions
3-year averages of WDI data

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Any Other First-Order Fears?

• Crisis incidence potentially important
• Different types of crises
  – Different measures of each type
• Most deliver little
Flexes and Banking Crises

<table>
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<th>Before Flexes</th>
<th>After Flexes</th>
<th>Total</th>
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<tr>
<td>Non-Crises</td>
<td>93</td>
<td>132</td>
<td>225</td>
</tr>
<tr>
<td>Crises</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>136</td>
<td>230</td>
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Five-year periods before/after flexes
Test of Equality: $\chi^2(1) = .9$; p-value = .3.
Crises taken from Bordo et al.; other measures deliver similar results.
## Flexes and FX Crises

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<th>Total</th>
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<tr>
<td><strong>Non-Crises</strong></td>
<td>83</td>
<td>123</td>
<td>206</td>
</tr>
<tr>
<td><strong>Crises</strong></td>
<td>11</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>94</td>
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Five-year periods before/after flexes
Test of Equality: $\chi^2(1) = .3; \ p\text{-value} = .6.$
Crises taken from Bordo et al.; other measures deliver similar results.
Caveats

• Can’t go too far with only 51 observations
• Analysis all reduced-form
• Especially weak evidence of determinants of flexes
  — Hints that credit booms precede flexes
• Accordingly, caution appropriate
  — Short, policy-oriented, unpretentious paper
Conclusion

• Little evidence of major effects after flexing
• Still, some evidence consistent with Chinese caution. Since 1999, for China:
  – Investment > 40% GDP
  – Export Growth > 20%
  – Import Growth > 15%
  – Chinese values are extreme for flexers!
  – All associated with bigger post-flex slowdowns