Determinants of the Trade Balance in Industrialized Countries

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Motivation

- **large and persistent trade deficits**
  - USA, Greece, Portugal, Spain, United Kingdom and Australia and CEEC
- **large and increasing trade surpluses**
  - Germany, Austria, Finland, Netherlands, Switzerland, Sweden and Ireland
- **Changes in the net FDI stock position**
  - From net inflows to net outflows: Spain, Norway, Canada, (Austria)
  - Increasing net outflows: EU 15 except Sweden and Belgium & Lux.
  - Increasing net inflows: CEEC
- **Austria interesting country case:**
  - One of the largest improvements of the trade balance among industrialized countries in the last 15 years
  - change in the net FDI position is moderate
  - Net FDI position does not match the position of that of the trade balance
  - Improvement of the REER
Motivation

- Trade balance and net FDI position are connected (accounting identity)
- Determinants differ between countries with negative and positive positions
- Impact of government budget balance
  - Twin deficits: USA, UK, CEEC
- Little consensus on the magnitude and size of the determinants
- Novelty of the paper
  - Determinants for 32 industrialized countries
  - More recent period
  - Cross-country heterogeneity of the determinants
Motivation

Evolution of the trade balance (in % of GDP)
Motivation

Outward FDI stock in % of the GDP
Motivation

Change in the net FDI stock position in % GDP

- Bulgaria
- Hungary
- Estonia
- Czech Republic
- New Zealand
- Latvia
- Romania
- Lithuania
- Poland
- Ireland
- Turkey
- Portugal
- Slovenia
- Greece
- Republic of Korea
- Australia
- Austria
- Denmark
- Italy
- Canada
- Spain
- Japan
- Sweden
- Finland
- United States
- France
- United Kingdom
- Norway
- Germany
- Netherlands
- Iceland
- Switzerland

net FDI stock position 1992
net FDI stock position 2006
Motivation

Net FDI stock position and trade surplus

Trade balance as a percentage of GDP 2007 in %

Net FDI stock position as a percentage of GDP 2006
Empirical model

- trade balance equation introduced by Goldstein and Khan (1985)

\[ TBGDP_{it} = \alpha_i + \alpha_1 \ln REER_{it} + \alpha_2 \ln Y^*_{it} + \alpha_3 \ln Y_{it} + \alpha_4 PRIMBALGDP_{it} + \varepsilon \]

- TBGDP: trade balance as a percentage of nominal GDP
- REER: real effective exchange rate index
- Y*: weighted average real GDP per capita of the 40 major trading partners
- Y: real domestic GDP per capita
- PRIMBALGDP: primary balance as a percentage of GDP
- Estimation method: mixed models, fixed effects with dummy interaction terms
Hypotheses and previous literature

• Lane, Milesi-Ferretti (2002, EER)
  – Trade balance = f(real rate of return on foreign assets, domestic real GDP growth, real exchange rate, net foreign asset position lagged)
  – rate of return > growth rate
    • => inverse relationship between trade balance and the net foreign asset position

• Real effective exchange rate index (REER) effects
  – real devaluations improve the trade balance in the long-run (see Arize, 1994; Bahmani–Oskooee, 1985, 1991; Himarios, 1985, 1989; Miles, 1979; Shirvani and Wilbratte, 1997; Bahmani–Oskooee and Ratha, 2004 for a survey)
  – Central and Eastern European countries: insignificant effects of the real effective exchange rate index (Bahmani–Oskooee, Kutan, 2008)
Hypotheses and previous literature

• Real domestic and foreign income
  – impact of foreign GDP is positive \((\alpha_2 > 0)\)
  – impact of domestic GDP is negative \((\alpha_3 < 0)\)

• Effects of the government budget balance
  – coexistence of both budget deficit and trade deficit \(\Rightarrow\) twin deficit
  – mixed evidence (Mohammadi and Skaggs, 1996)
  – Darrat (1988): budget deficit causes trade deficit
Data

• Data and descriptive statistics
  – REER indices:
    • NEER: geometric weighted average of bilateral exchange rates against the currencies of the 36 major trading partners.
    • deflated by the difference in domestic and foreign unit labour costs in the total economy
  – Real foreign GDP per capita:
    • weighted average of domestic real GDP per capita of 40 trading partners
    • weights: share of country’s exports going to the other countries
Descriptive statistics

Evolution of the trade balance

- Total sample unweighted
- Subsample 1 (net inflows countries)
- Subsample 2 (net outflows countries)
- Austria
Descriptive statistics

Evolution of trade-weighted foreign GDP in const. prices

- total sample unweighted
- subsample 1 (net inflows countries)
- subsample 2 (net outflows countries)
- Austria
Descriptive statistics

Evolution of the real effective exchange rate
Descriptive statistics

Evolution of the primary budget balance (as percentage of GDP)

- total sample unweighted
- subsample 1 (net inflows countries)
- subsample 2 (net outflows countries)
- Austria
Descriptive statistics

Spearman's correlation: -0.31; p-value: 0.08

Average annual change in the real effective exchange rate 95-07 (on the basis of unit labour costs)
Empirical results

- **Total sample**
  - semi–elasticity of the real effective exchange rate: –0.054
  - semi–elasticity of real foreign GDP per capita: 0.062
  - semi–elasticity of real domestic GDP per capita: –0.029
  - coefficient on budget balance: 0.163

- **Subsample incl. countries with a positive net FDI stock position**
  - smaller effects in absolute values

- **Results for Austria**
  - semi–elasticity of the real effective exchange rate: –0.208
  - semi–elasticity of real foreign GDP per capita: 0.27
  - semi–elasticity of real domestic GDP per capita: –0.02
  - coefficient on budget balance: 0.276
### Empirical results

Results of the fixed effects model for the determinants of the trade balance

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<th>Coeff.</th>
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<tbody>
<tr>
<td>In REER</td>
<td></td>
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<tr>
<td>In REER x dummy variable for countries with a positive net FDI position</td>
<td>-0.054</td>
<td>-4.46</td>
<td>-0.083</td>
<td>-4.57</td>
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<td>In real foreign GDP per capita</td>
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<td>0.059</td>
<td>2.37</td>
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<td>In real foreign GDP per capita x dummy variable for countries with a positive net FDI position</td>
<td>0.062</td>
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<td>0.102</td>
<td>3.38</td>
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<td>In real domestic GDP per capita</td>
<td></td>
<td></td>
<td>-0.091</td>
<td>-1.71</td>
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<td>In real domestic GDP per capita x dummy variable for countries with a positive net FDI position</td>
<td>-0.029</td>
<td>-1.10</td>
<td>-0.082</td>
<td>-2.47</td>
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<tr>
<td>Primary balance as percent of GDP</td>
<td>0.169</td>
<td>3.47</td>
<td>0.260</td>
<td>4.54</td>
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<tr>
<td>Primary balance as percent of GDP x dummy variable for countries with a positive net FDI position</td>
<td></td>
<td></td>
<td>-0.002</td>
<td>-1.73</td>
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<td>Constant</td>
<td>0.005</td>
<td>3.76</td>
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<td>R² within</td>
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<td>0.13</td>
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<td># of observations</td>
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<tr>
<td># of countries</td>
<td>32</td>
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</table>
Conclusions

• Main explanations of Austria‘s widening trade surplus:
  – Trade balance reacts more strongly to changes in foreign GDP in Austria than that other countries
  – Improvement of REER also contributes the increased trade balance (one fifth)
  – Dampening effect of domestic GDP is weak
  – Improvement of the budget balance => minor role

• Future work
  – Relationship between net foreign asset position and the trade balance depends on a) Rate of the return on foreign assets and b) domestic growth rate
  – Stronger effect when the difference between the rate of the return on foreign assets and the domestic growth rate is high
  – Dynamic model