Understanding the export dynamics in the Czech Republic, Poland and Slovakia: Evidence from Firm-Level Data

Joint CompNet cross-country project

[preliminary]

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Introduction

• Focus on 3 New Member States: Czech Republic, Poland, Slovakia
• 2 non-euro area / 1 euro area member

• Following Bricongne et al. (2012), we decompose the export dynamics into (firm, country, product) extensive and intensive margin
• Non-residents/residents decomposition
• Decompositions by use (capital, intermediate, consumption goods)
• Decomposition by factor content/technology
• Run firm-level regressions to explain different margins of trade
Basic facts

• 2 small very open / 1 big relatively closed one
• Similar level of business environment and level of development

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<tr>
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<th>Czech Republic</th>
<th>Poland</th>
<th>Slovakia</th>
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<tr>
<td>Population (mil.)</td>
<td>10.5</td>
<td>38.5</td>
<td>5.4</td>
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<tr>
<td>Export Openness (%)</td>
<td>78</td>
<td>47</td>
<td>97</td>
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<td>GPD P.C. (PPS, % EU)</td>
<td>79</td>
<td>66</td>
<td>75</td>
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<tr>
<td>Relative Productivity (% EU)</td>
<td>72</td>
<td>72</td>
<td>81</td>
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<tr>
<td>Doing Business Ranking</td>
<td>75</td>
<td>45</td>
<td>49</td>
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Export and Growth

- Significant drop in exports during crisis in all three countries
- But export remains key growth driver in CZ and SK
- Poland – continuous growth (in 2009) thanks to domestic demand and dropping imports (depreciation)

**Total export (real growth)**

**GDP Growth Comparison (2007-2012)**
Main Trade Characteristics

- Important bilateral linkages, high on dependance on DE
- Dominating transport equipment, higher share of food in PL

**Exports by Destinations (2012)**

- Czech Republic: DE, Other
- Poland: DE, Other
- Slovakia: DE, Other

**Export by Products (2012)**

- Czech Republic: Other, Machinery/transport equipment, Other manufacturing goods, Chemicals, Mineral fuels, Raw materials, Food
- Poland: Other, Machinery/transport equipment, Other manufacturing goods, Chemicals, Mineral fuels, Raw materials, Food
- Slovakia: Other, Machinery/transport equipment, Other manufacturing goods, Chemicals, Mineral fuels, Raw materials, Food
Exchange Rate Development

- Continued appreciation in SK versus depreciation in PL and CZ in 2009
Data

• Extrastat and Intrastat data in 2007-2012, products at CN8
• Focus on HS6 since 2007 (major changes to HS6 in 2007, previous years will be added in the next part)
• Use yearly information to construct mid-point growth rates

• Define non-residents and products by use (using BEC classification)
• Decomposition by Sudip Ranjan Basu (forthcoming) at HS4 into: technology intensive, fuels and primary, resource intensive manufacturing
Summary Statistics – Totals (2012)

- Non-residents play important role, mainly in Czech Republic (less so in Slovakia)
Summary Statistics – Medians (2012)

• Non-residents tend to export fewer products and serve fewer markets (but not in Slovakia)
Overall Net Margins (EUR)

- Most of the changes in trade are driven by intensive margins.
- In 2008 trade was growing in CZ and PL, negative intensive margin in SK.
Cumulated margins 2008-2012

- Increase during the analyzed period (highest in PL, lowest in SK)
- Negative CEM for CZ and IM for SK! Deeper if 2009-2012 analyzed.
- Negative IM for SK with high positive contribution of EM.
Net Intensive Margins (EUR)

- Drop in trade across all major destinations in all three countries (in 2009)
Net Extensive Margins in 2009

- Very heterogenous adjustment, new Czech and Slovak firms entering export markets, new products exported from Poland to EA (and rest of EU)
- Fewer products exported outside EU
- Contributions of Extensive margin CZ > SK > PL
Firm entry/exit rates

- Different timing of firm reaction.
  - PL: Almost zero firm margin in 2009 – larger exit and larger entry (PL)
  - CZ: Increase in exit mostly in 2010
  - SK: Peak of entry in exit in 2010 (SK)
Product entry/exit rates

- 2009: increased exit rates in all countries – most of adjustment through exit
- Product turnover smallest in CZ, largest in SK
Country entry/exit rates

• Country entry remains positive
• CZ and PL: 2009 – lots of exit from destinations.
• SK: exit delayed to 2010
• PL: recovery through new entry
Residents vs Non-residents

- Visible non-residents’ contribution to the post crisis recovery in both IM and total trade

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**Intensive margin**

**Overall change in trade**
Firm and product extensive margin

- At the extensive margin non-residents contribute mainly to the firm margin, less to the product or country margin.
Product Groups Decomposition

- Largest driver of the change in trade were intermediate goods
- Similar contributions in all three countries
- Slightly higher impact of capital goods in CZ, consumer goods in PL and other goods in SK
Product Groups Decomposition

• Intermediate goods drive the intensive margin
• Also important driver for FEM (negative in PL 2009)

**Intensive margin**

**Firm extensive margin**

- Intermediate goods
- Consumption goods
- Capital goods
- Other goods
Product Groups Decomposition

- Intermediate goods drive most of the CZ CEM decline in 2009.
- In PL CEM driven by consumption goods in 2009.
- Intermediates again important for PEM.
Factor intensity (FEM/CEM)

Firm extensive margin

Country extensive margin
Factor intensity (PEM/IM)

Products extensive margin

Intensive margin

- Resource intensive
- Primary and fuels
- Technology intensive
- Unclassified
Cross-effects from regressions

• OLS estimates of cross-effects from firm-level regressions
• Margins: net country extensive, net product extensive, net intensive (continuing export relationships by firm, country)
• Dependent variable: w_gr
• Dummies for years, source countries, destination countries, products by use, non-residents
  – Values for the highest value of w_gr within firm
### CEM
- 2009: negative in CZ
- 2011: positive in SK
- More in CZ to ROEA, ROEU (SK and PL more to DE); PL: less to ROW
- More Intermediate products in SK
- Non-residents less significant in PL

### PEM
- 2010: positive in SK
- More in SK to ROEA and ROW (SK firms expand their product portfolio)

### IM
- 2009: positive in PL
- 2010-2012: positive in SK
- SK: lower contribution to ROW
- Non-residents less significant in PL
Conclusions I

• Most adjustment through intensive margins across all major destinations in 2009
• Non-residents drive firm extensive margins up
• More than 50% variation in trade due to intermediate goods. Large contribution to extensive margin.
Conclusions II

• Country exits higher in CZ in 2009
• CEM oriented more to Germany in SK & PL, more intermediate products in SK
• SK firms expand their product portfolio to ROEA and ROW
• Greater role of intensive margin in SK, in 2009 also in PL
• Possible extensions: expand to earlier years taking changes in HS over time into account