

**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

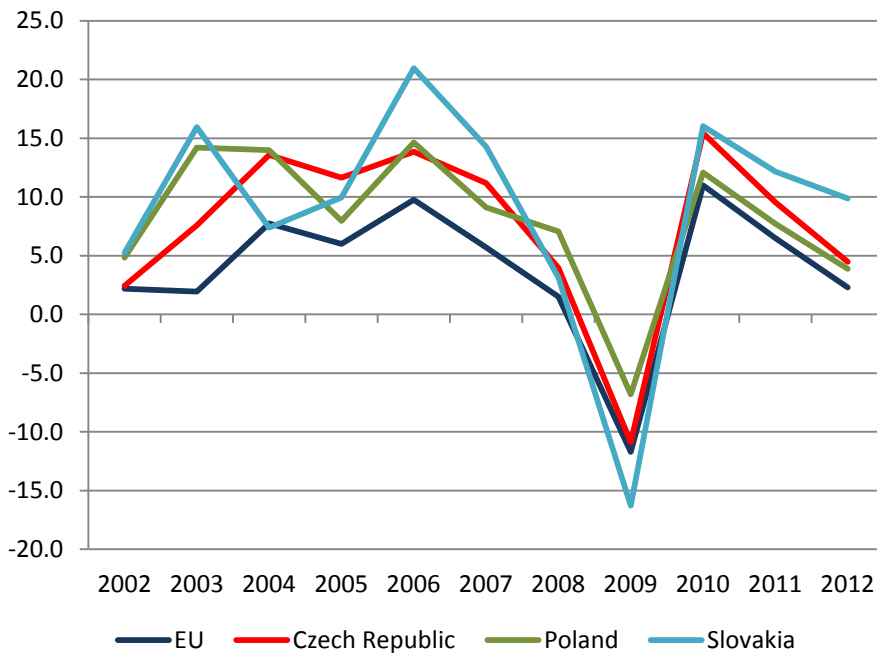
- 2 small very open / 1 big relatively closed one
- Similar level of business environment and level of development

| | Czech Republic | Poland | Slovakia |
|------------------------------|----------------|--------|----------|
| Population (mil.) | 10,5 | 38,5 | 5,4 |
| Export Openness (%) | 78 | 47 | 97 |
| GPD P.C. (PPS, % EU) | 79 | 66 | 75 |
| Relative Productivity (% EU) | 72 | 72 | 81 |
| Doing Business Ranking | 75 | 45 | 49 |

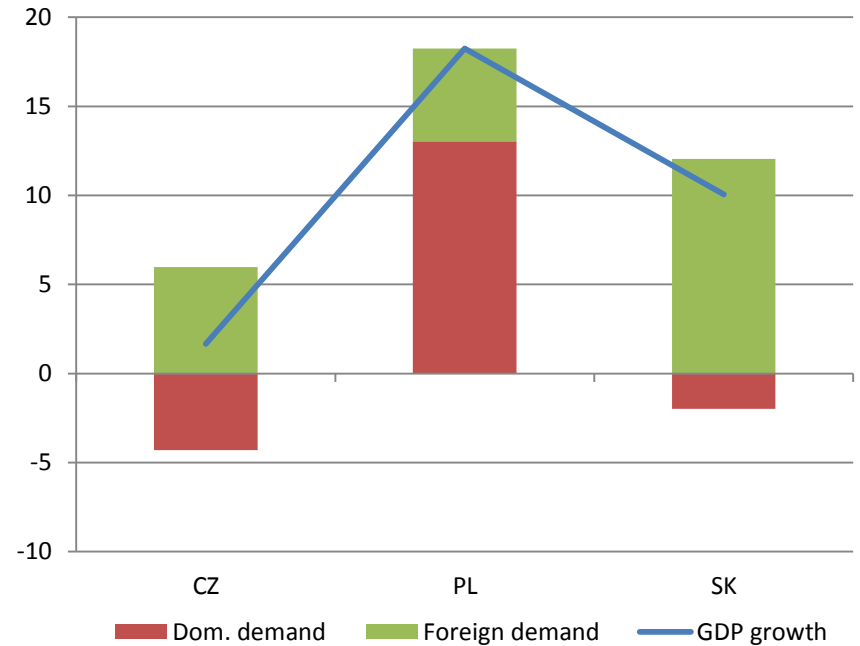
Export and Growth

- 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)



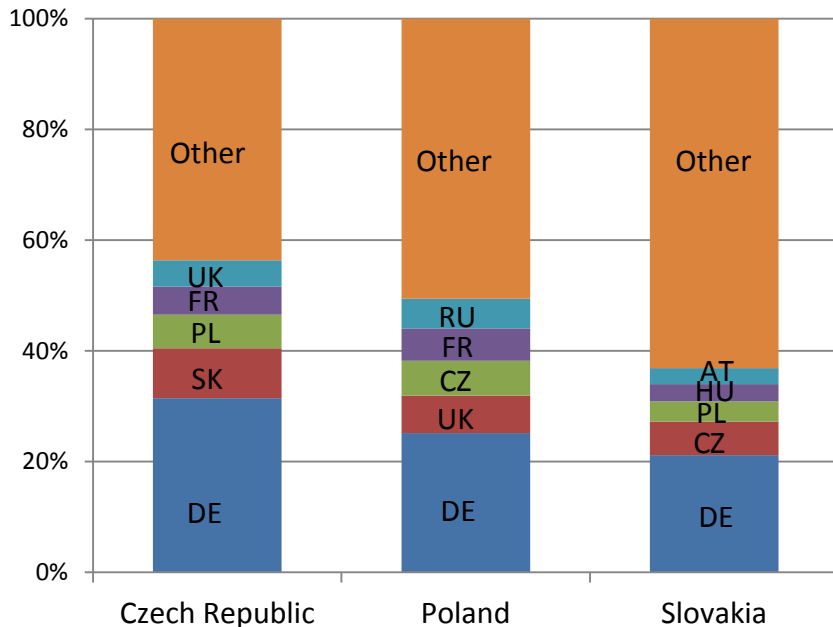
GDP Growth Comparison (2007-2012)



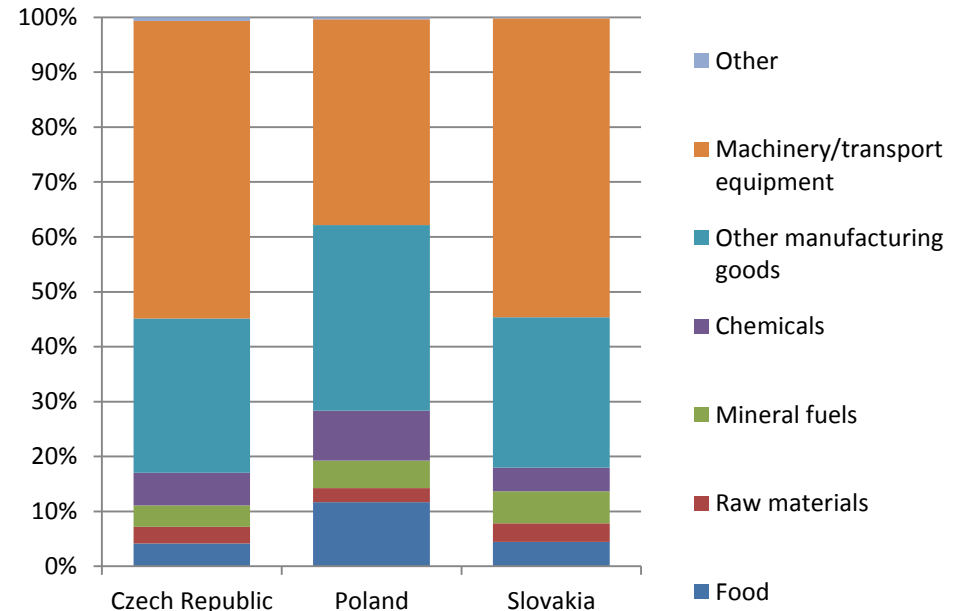
Main Trade Characteristics

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

Exports by Destinations (2012)

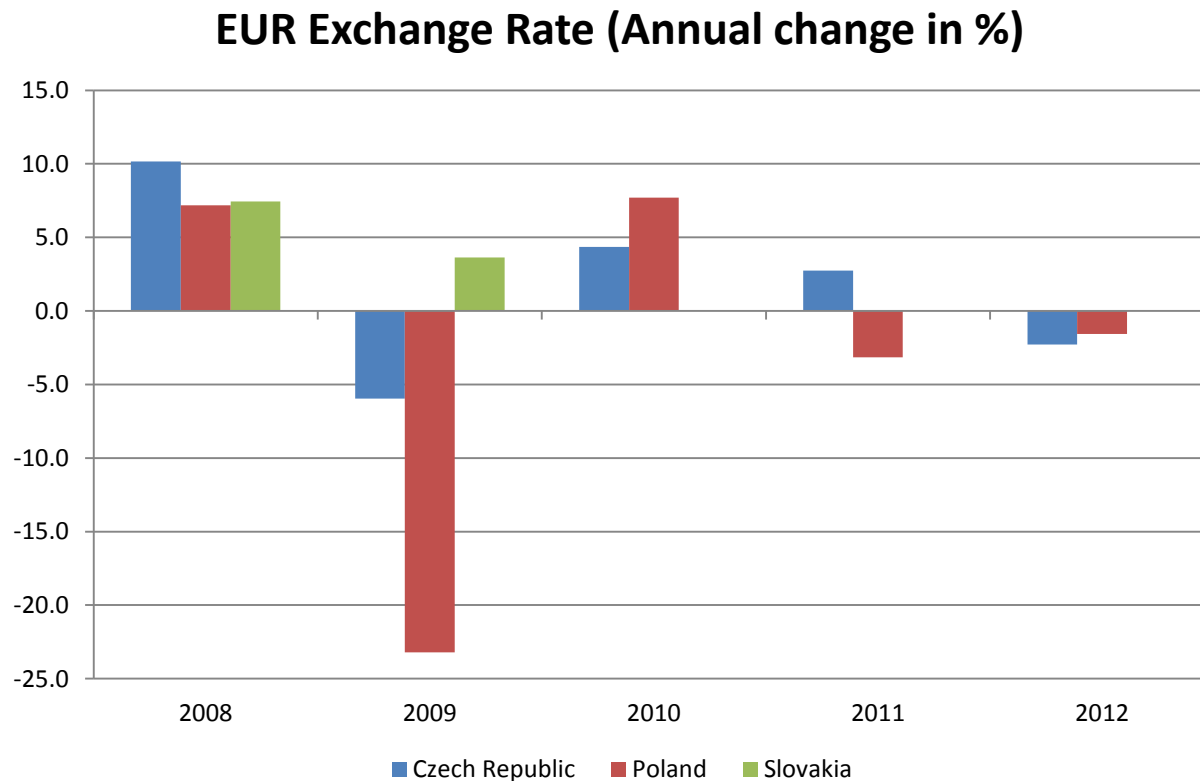


Export by products (2012)



Exchange Rate Development

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



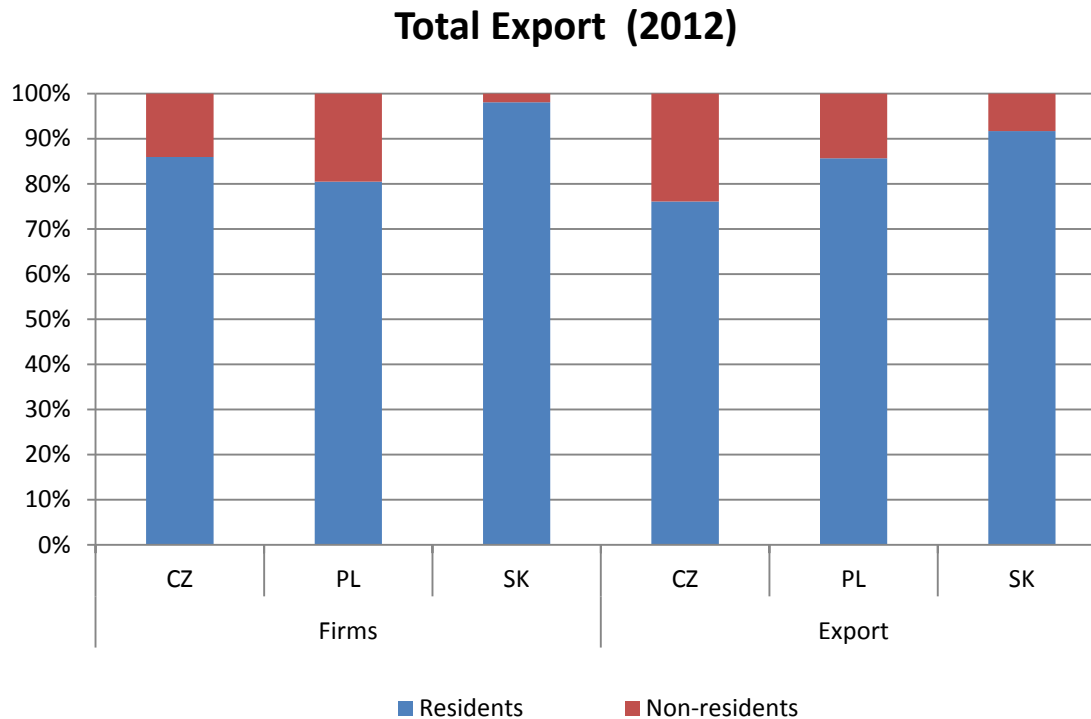
Data

- 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

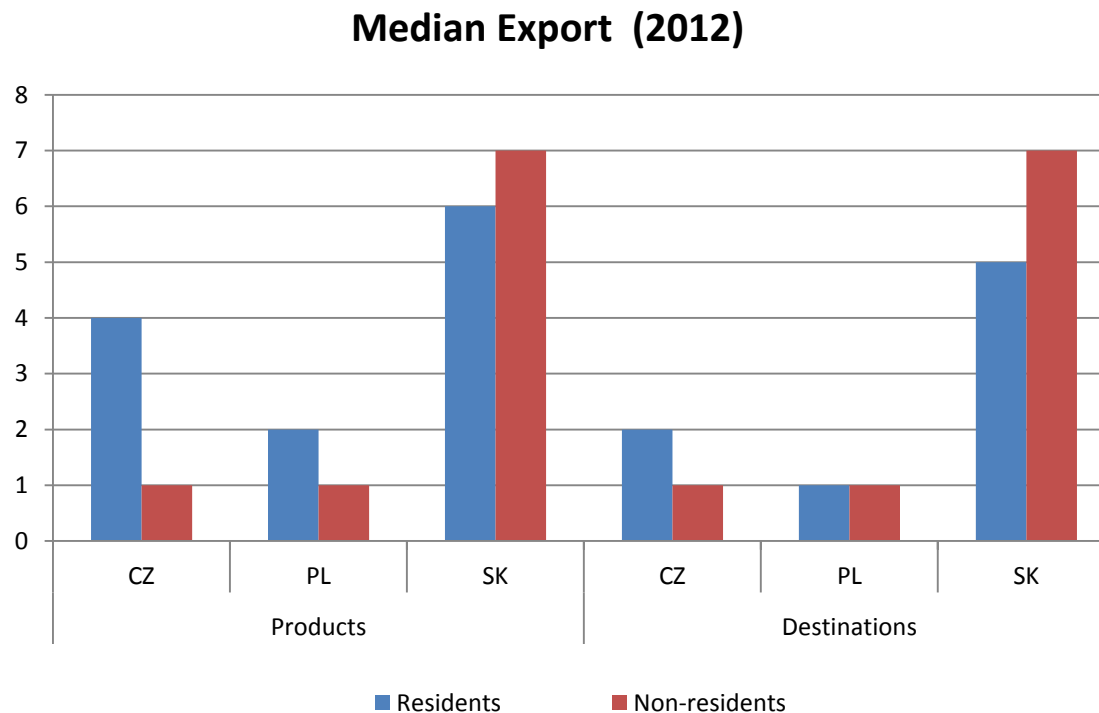
Summary Statistics – Totals (2012)

- Non-residents play important role, mainly in Czech Republic (less so in Slovakia)

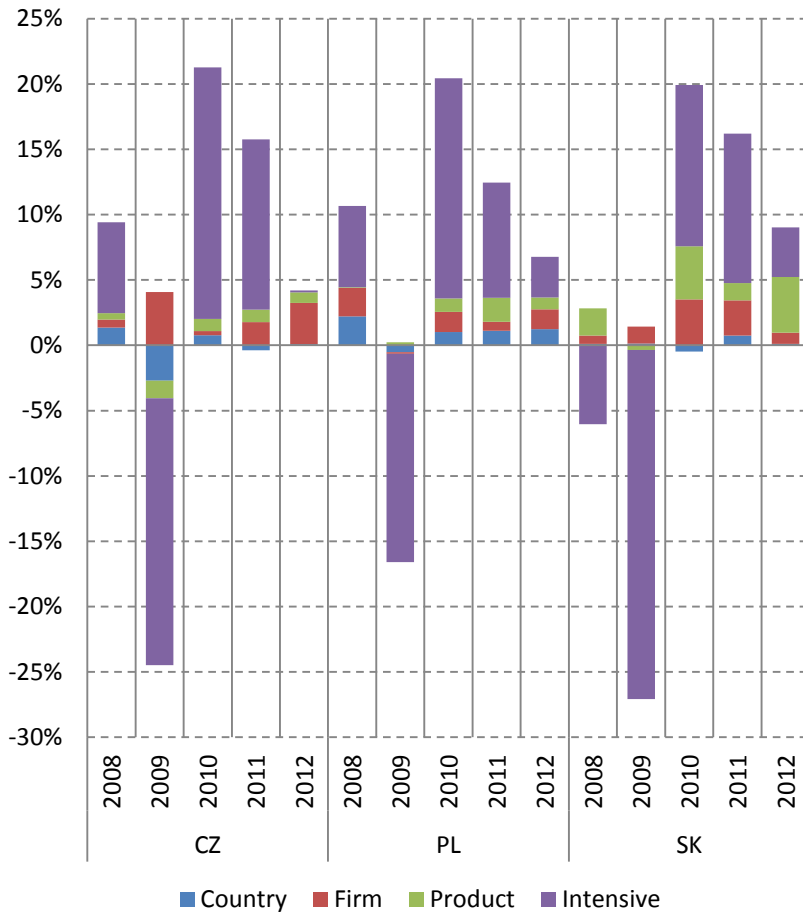


Summary Statistics – Medians (2012)

- Non-residents tend to export fewer products and serve fewer markets (but not in Slovakia)

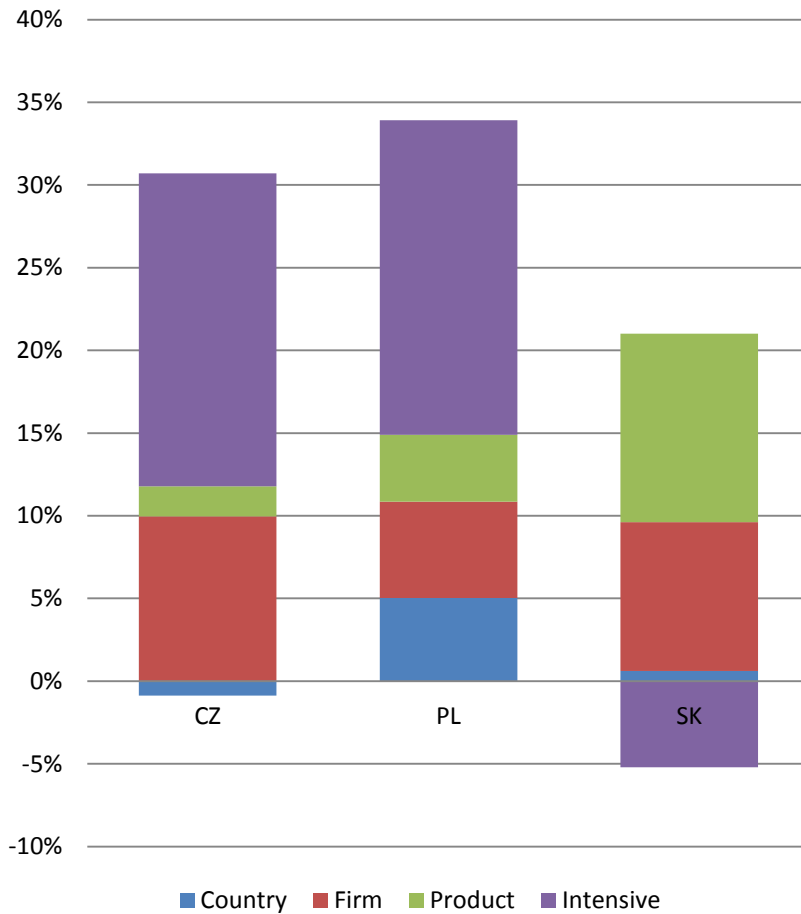


Overall Net Margins (EUR)



- 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
- 2009: drop in trade. PL - all margins. SK and CZ – new firms enter

Cumulated margins 2008-2012

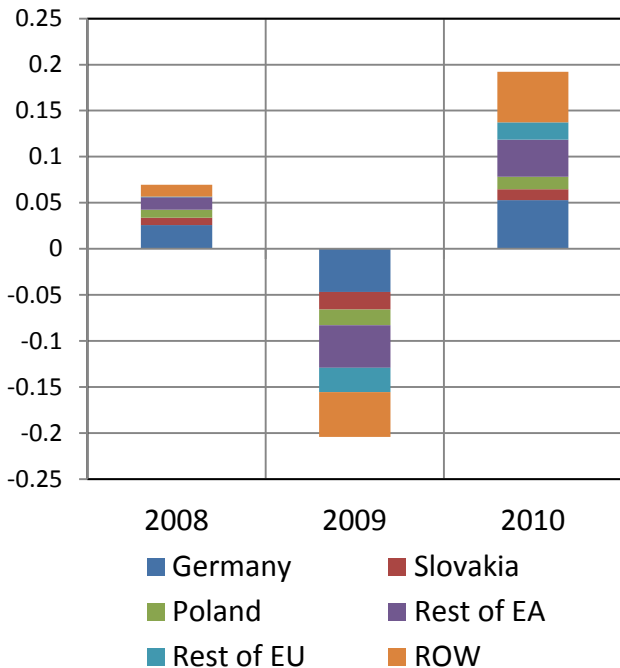


- Increase during the analyzed period (highest in PL, lowest in SK)
- Negative CEM for CZ and IM for SK! Deeper if 2009-2012 analyzed.
- Negative IM for SK with high positive contribution of EM.

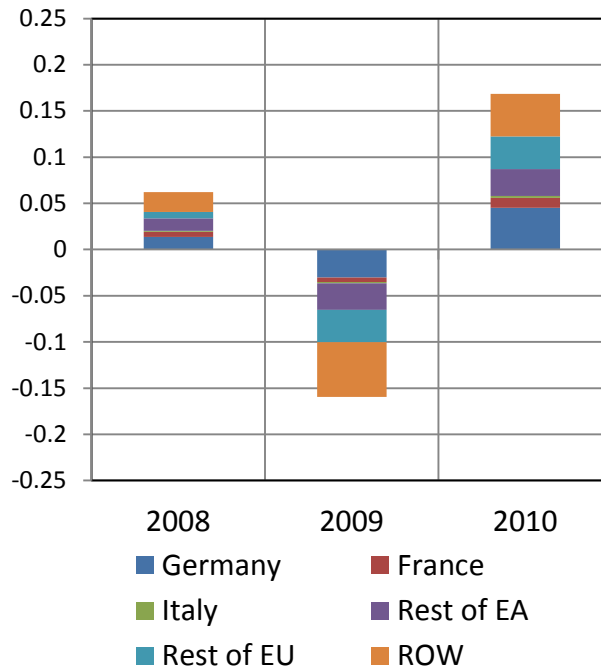
Net Intensive Margins (EUR)

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

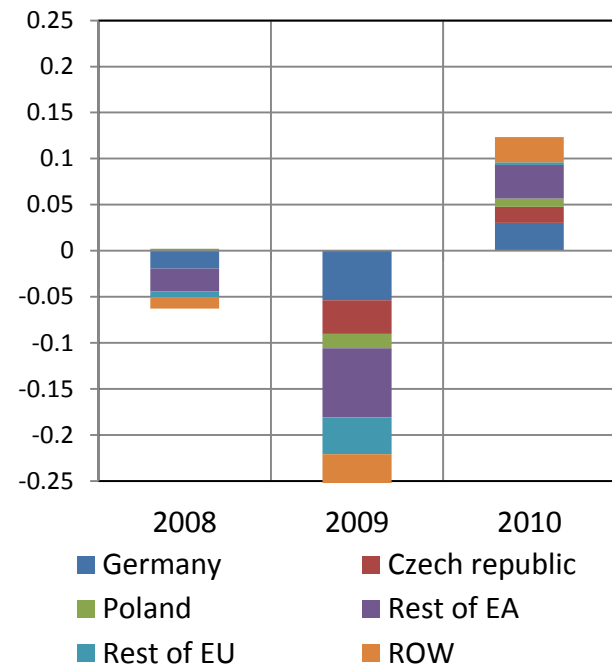
Czech Republic



Poland



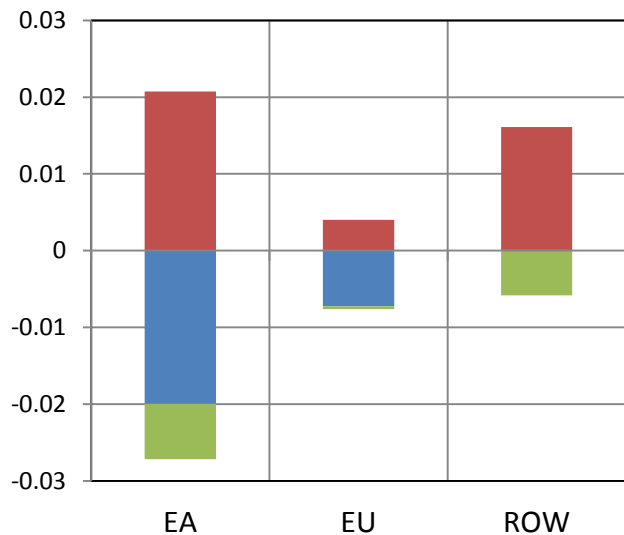
Slovakia



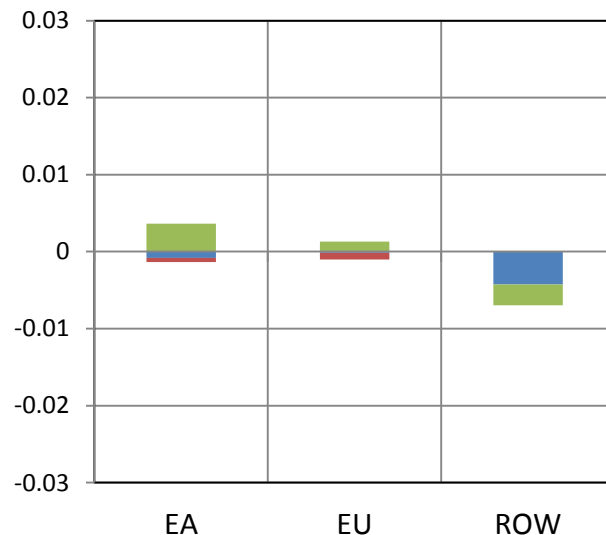
Net Extensive Margins in 2009

- 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 $CZ > SK > PL$

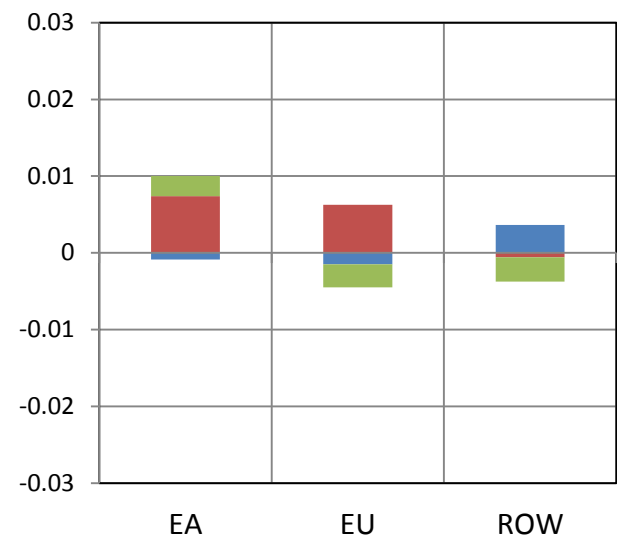
Czech Republic



Poland



Slovakia

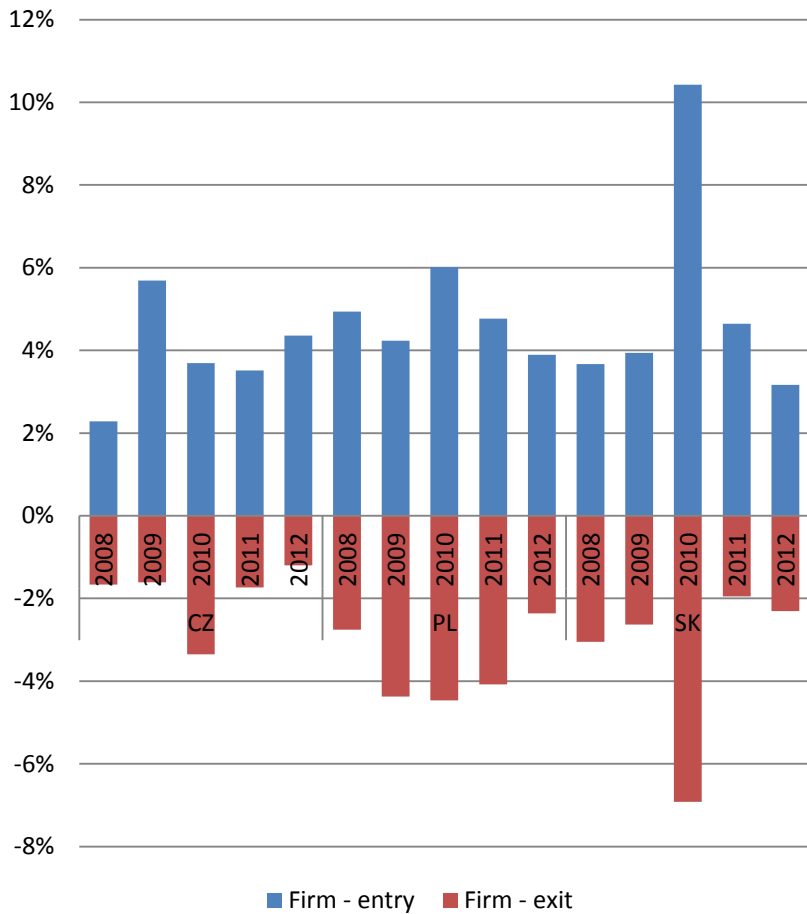


Country Firm Product

Country Firm Product

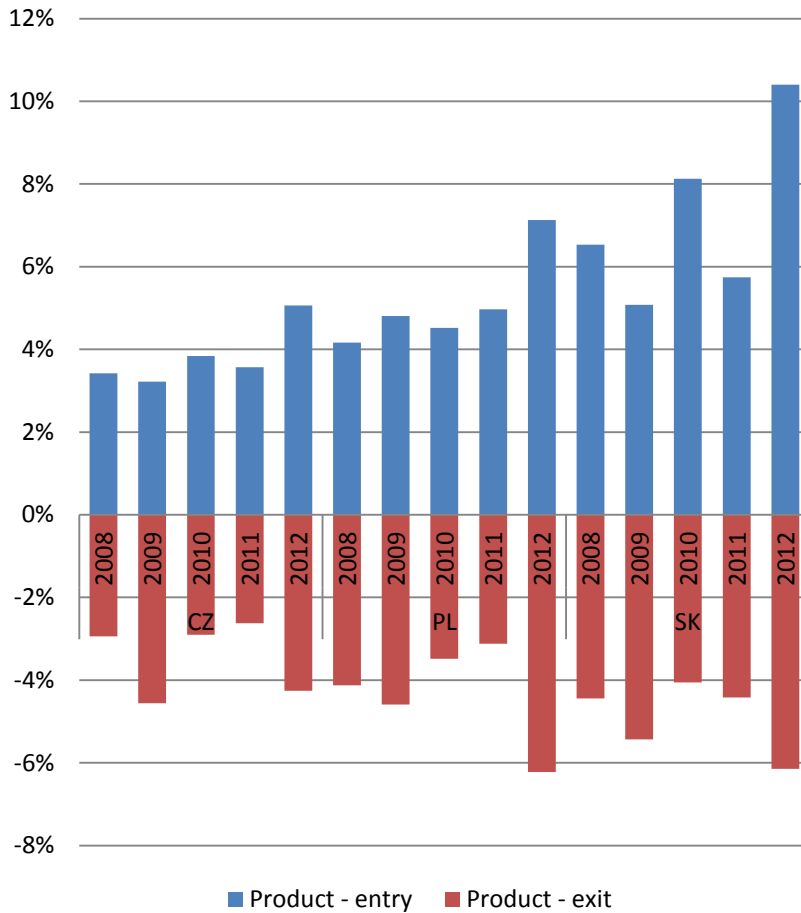
Country Firm Product

Firm entry/exit rates



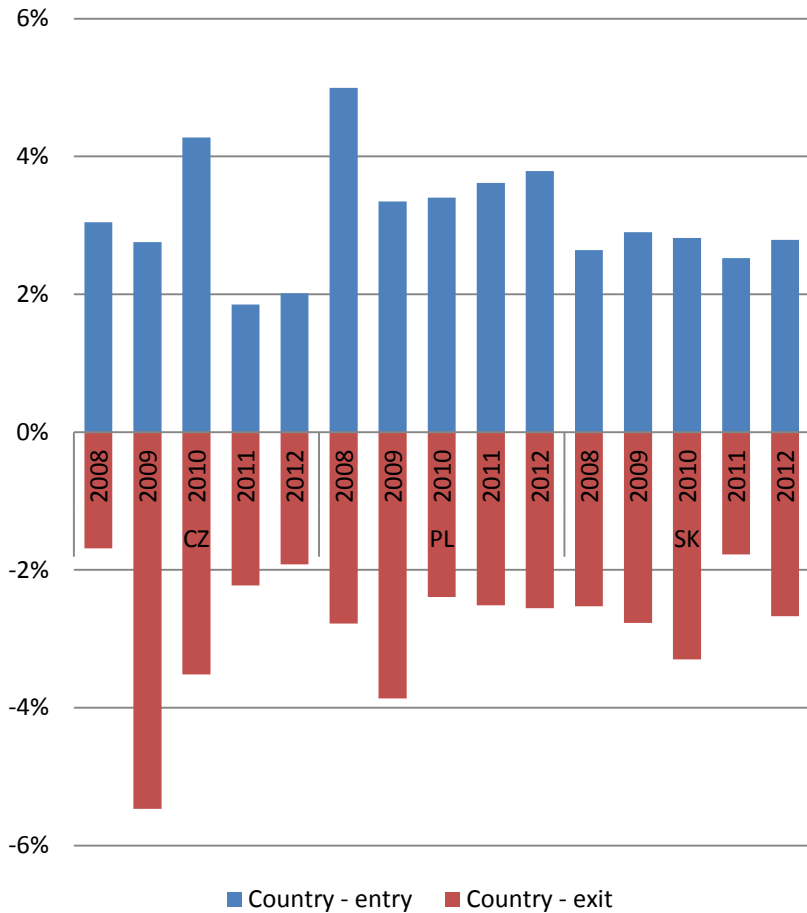
- Different timing of firm reaction.
 - PL: Almost zero firm margin in 2009 – larger exit and larger entry (PL)
 - CZ: Increase in exit mostly in 2010
 - SK: Peak of entry in exit in 2010 (SK)

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

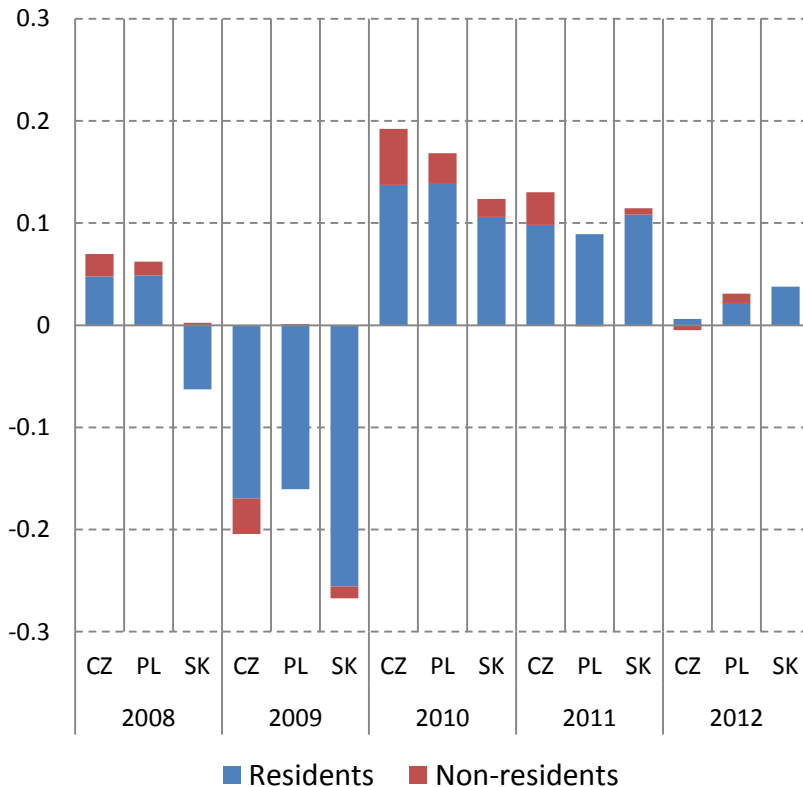


- Country entry remains positive
- CZ and PL: 2009 – lots of exit from destinations.
- SK: exit delayed to 2010
- PL: recovery through new entry

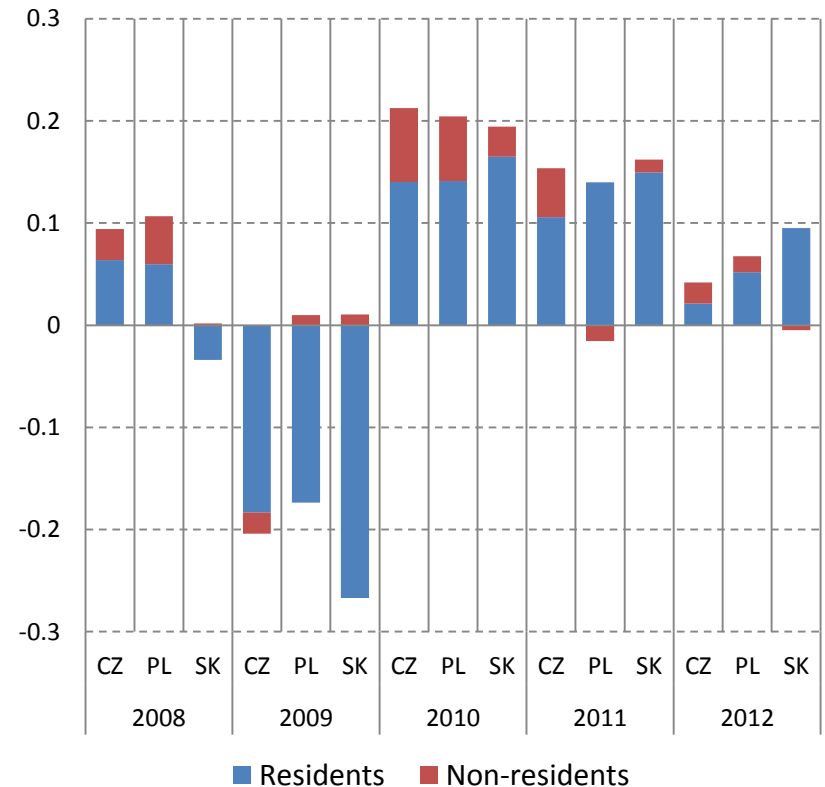
Residents vs Non-residents

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

Intensive margin



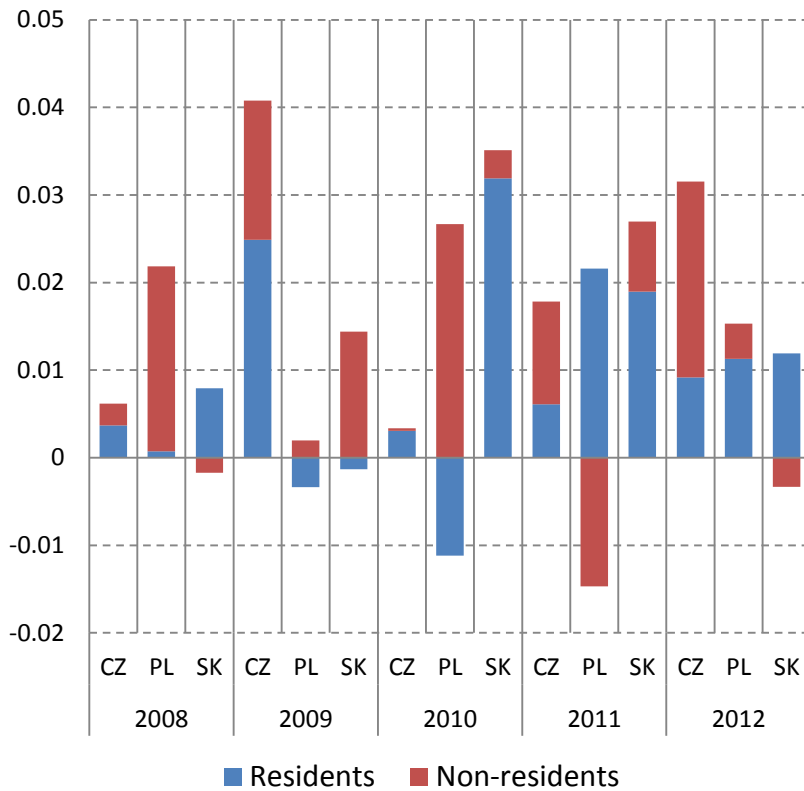
Overall change in trade



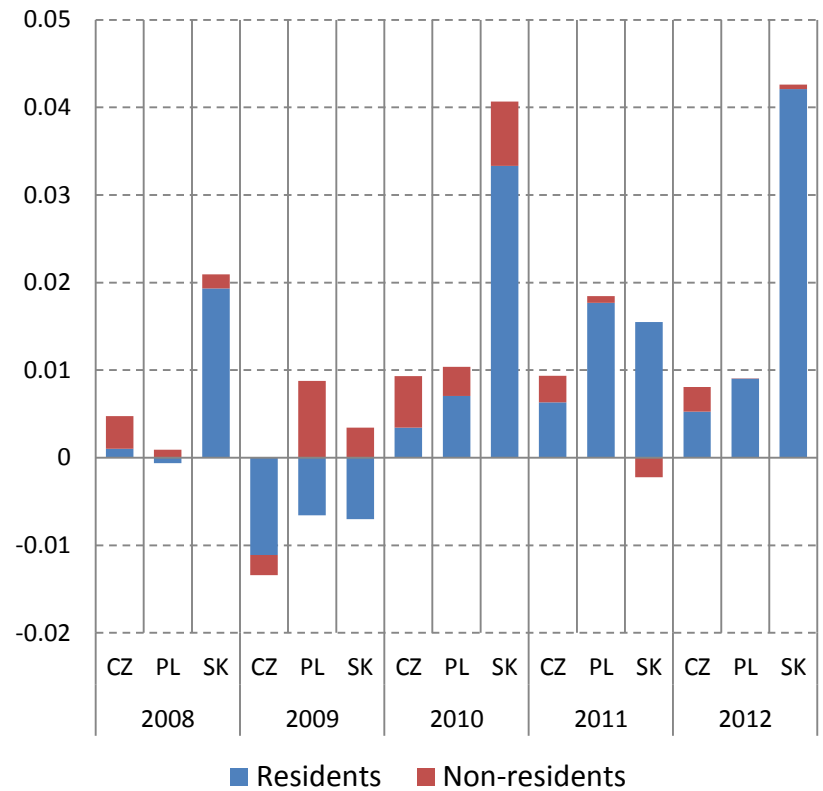
Firm and product extensive margin

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

Firm extensive margin

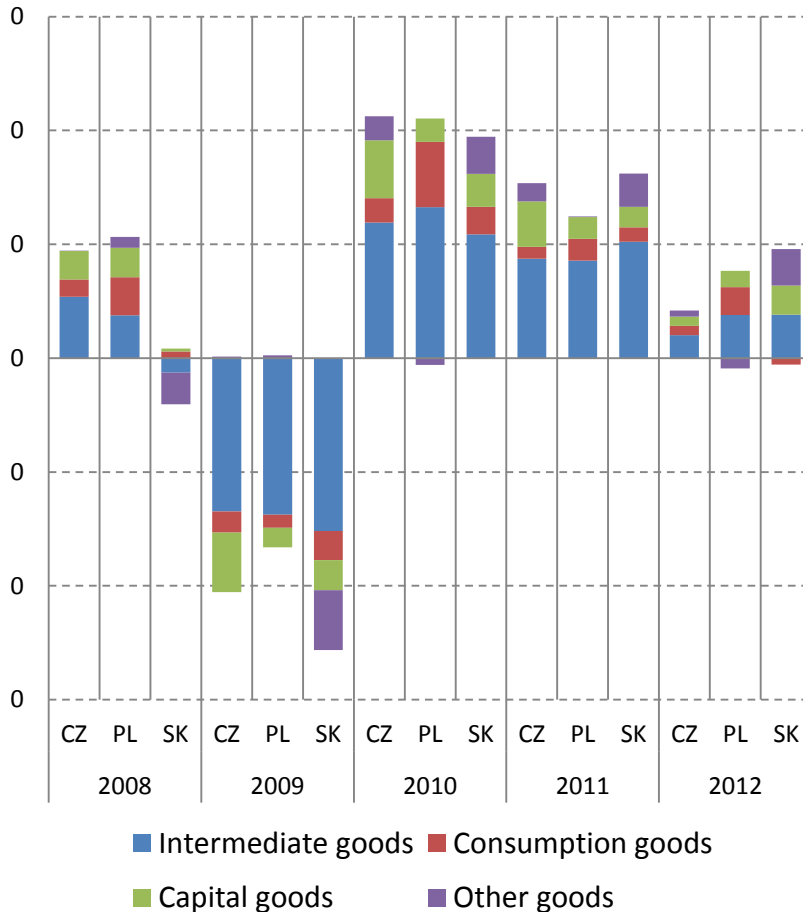


Product extensive margin



Product Groups Decomposition

Overall change in trade

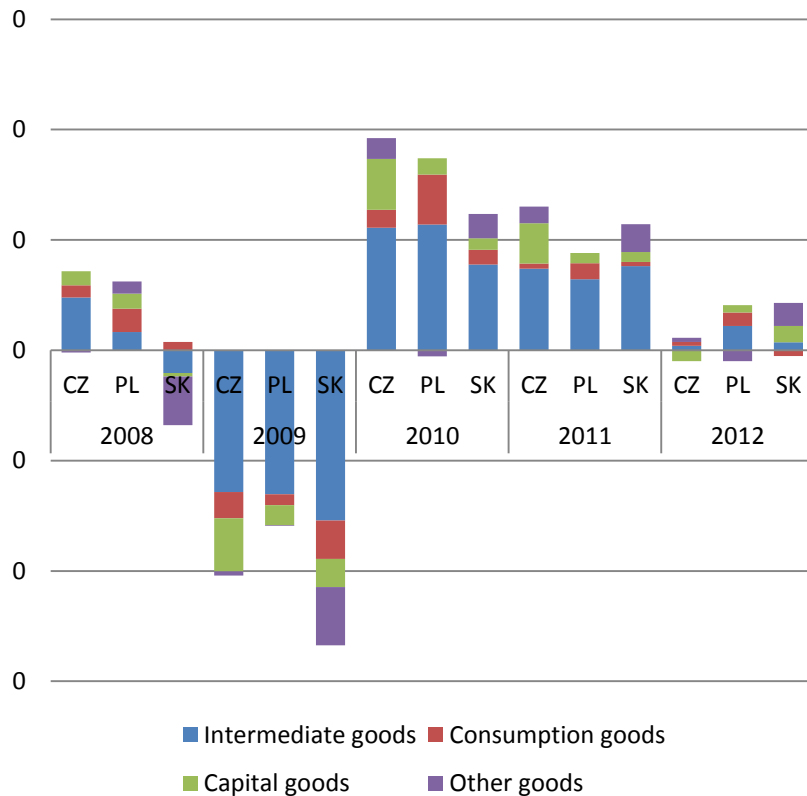


- Largest driver of the change in trade were intermediate goods
- Similar contributions in all three countries
- Slightly higher impact of capital goods in CZ, consumer goods in PL and other goods in SK

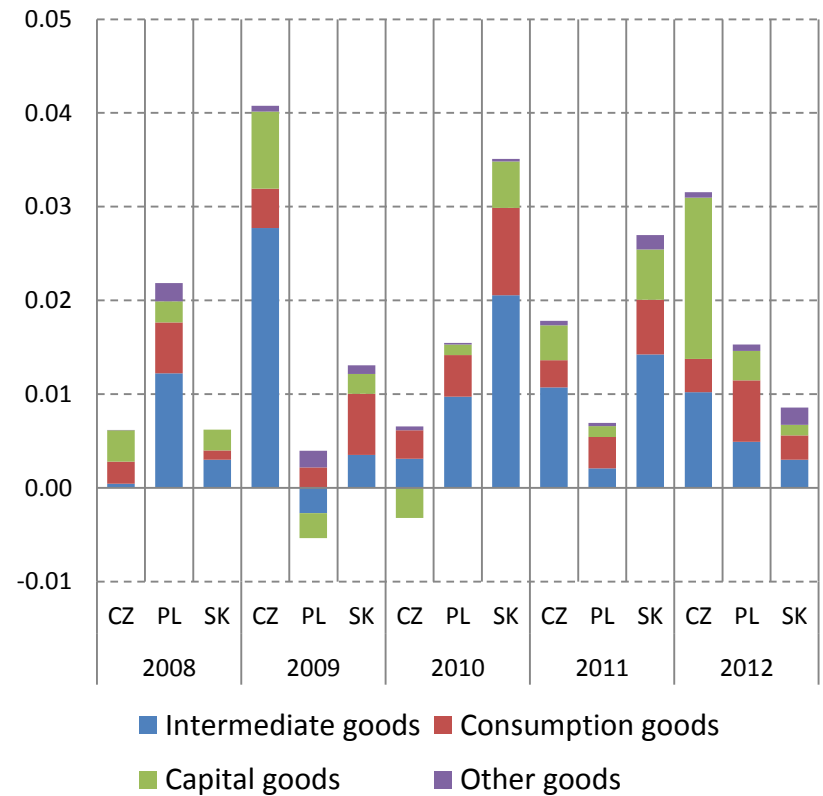
Product Groups Decomposition

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

Intensive margin



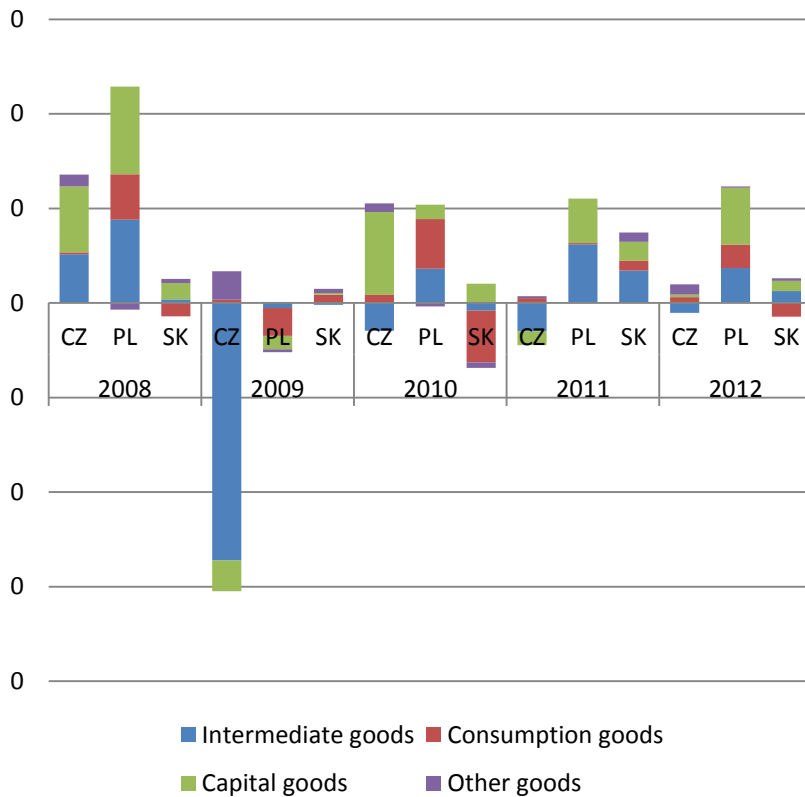
Firm extensive margin



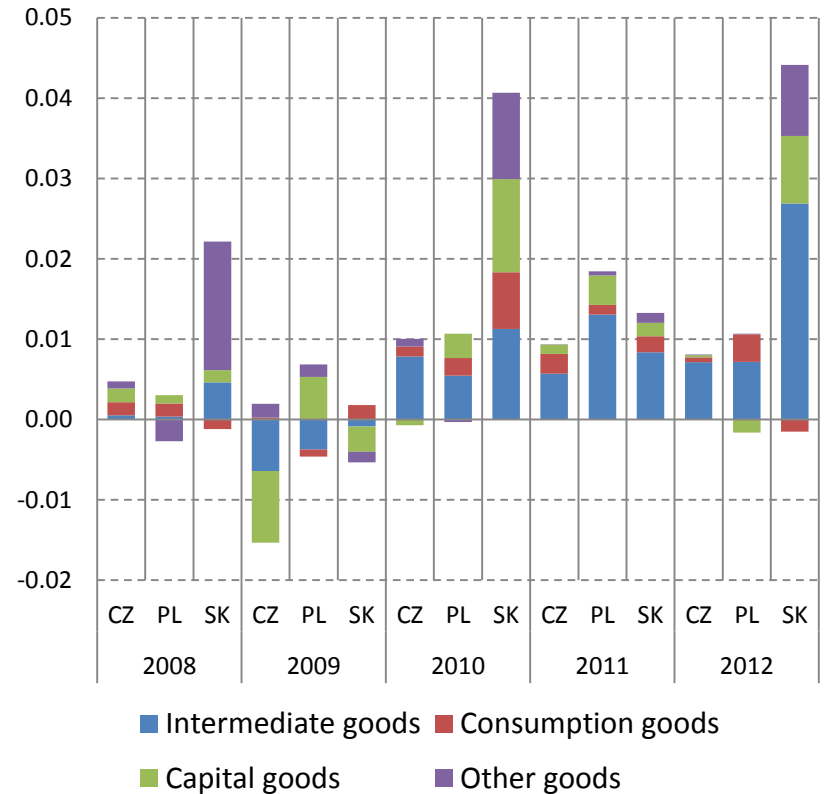
Product Groups Decomposition

- 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.

Country extensive margin

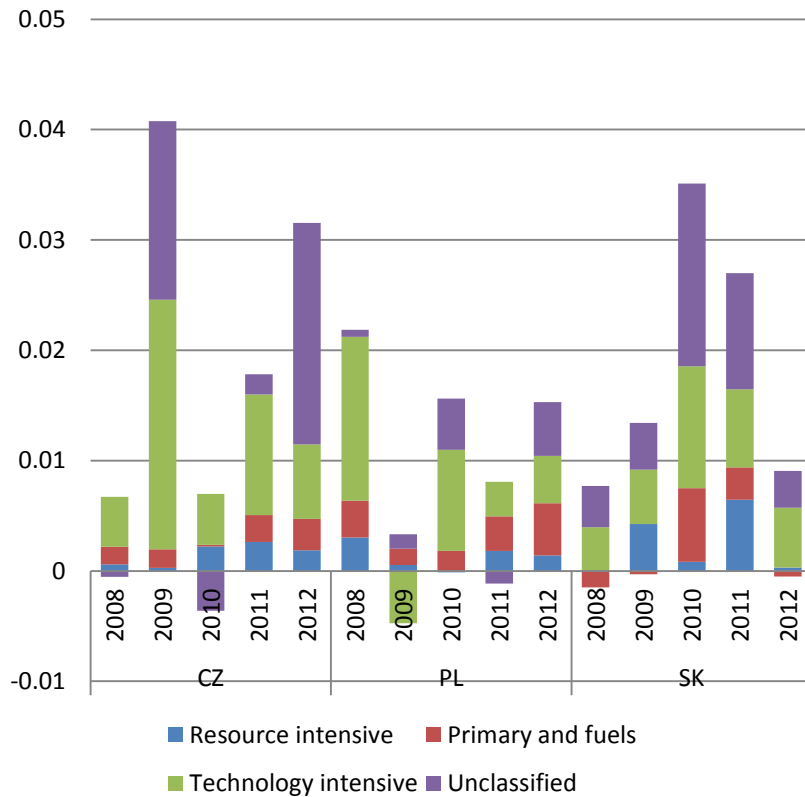


Product extensive margin

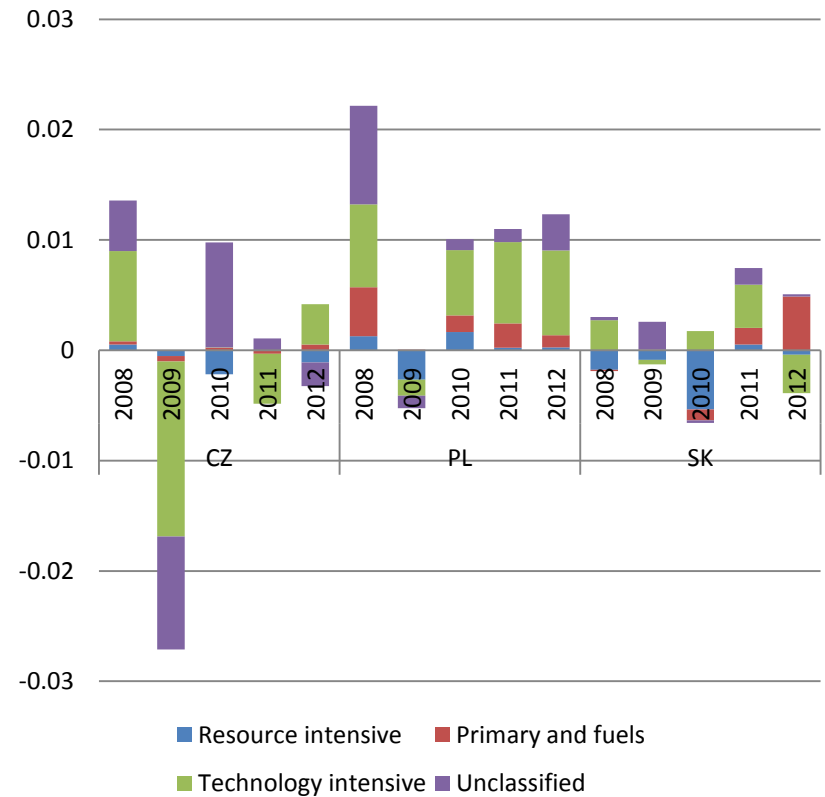


Factor intensity (FEM/CEM)

Firm extensive margin

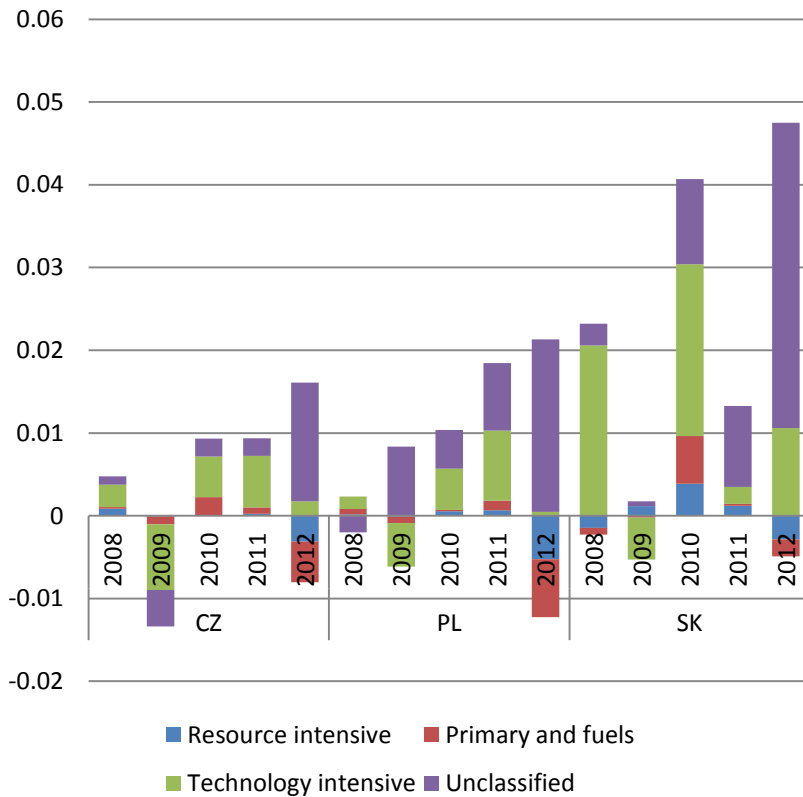


Country extensive margin

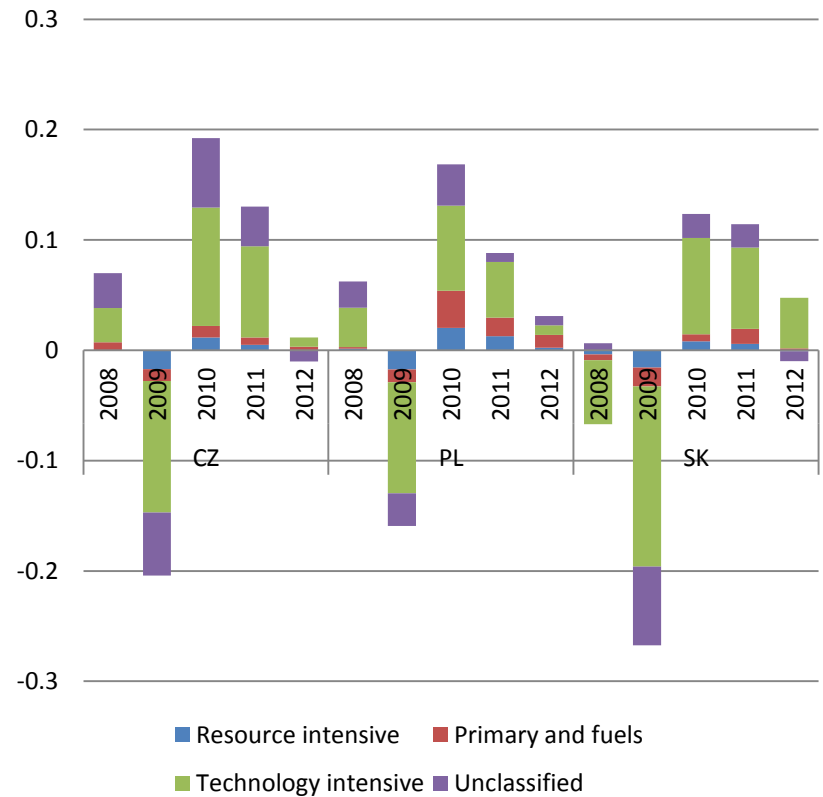


Factor intensity (PEM/IM)

Products extensive margin



Intensive margin



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

| | Net country extensive | Net product extensive | Net intensive |
|-----------------|-----------------------|-----------------------|---------------|
| 2009*PL | + | | + |
| 2009*SK | + | | |
| 2010*PL | | | |
| 2010*SK | | + | + |
| 2011*PL | | | |
| 2011*SK | + | | + |
| 2012*PL | | | |
| 2012*SK | | | + |
| ROEA*PL | - | | |
| ROEA*SK | - | + | |
| ROEU*PL | - | | |
| ROEU*SK | | | |
| ROW*PL | - | | |
| ROW*SK | | + | - |
| intermediate*PL | | | |
| intermediate*SK | + | | |
| consumption*PL | | | |
| consumption*SK | | | |
| other*PL | - | - | - |
| other*SK | - | + | - |
| non-res.*PL | - | | - |
| non-res.*SK | | | |

- 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