

Margins of Trade: Czech Firms Before, During and After the Crisis

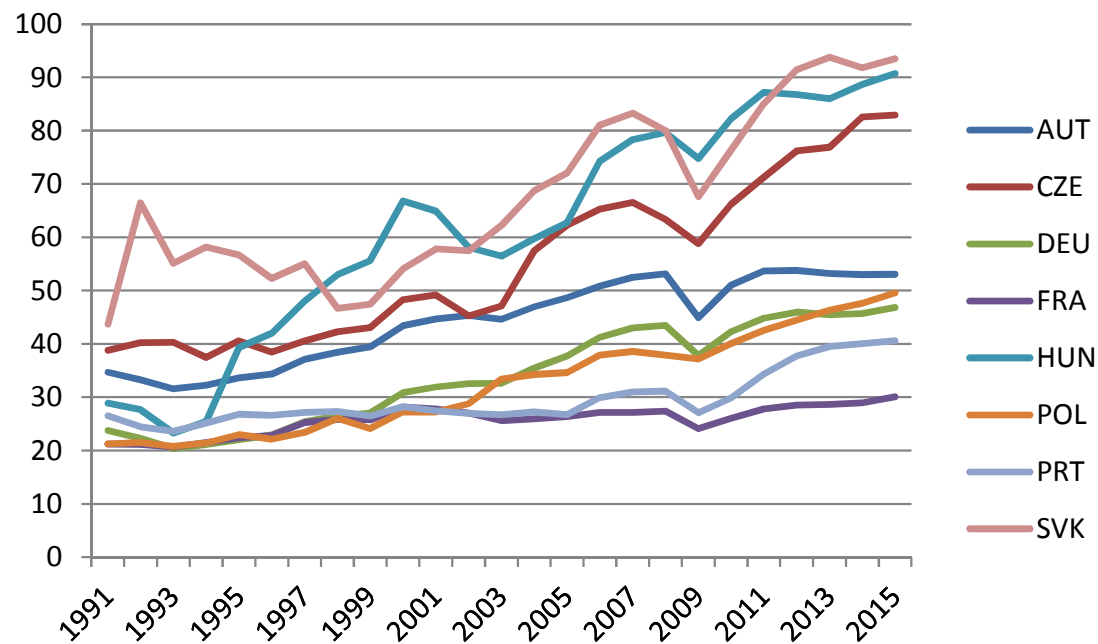
Kamil Galuščák, Ivan Sutóris

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Motivation

Exports of goods and services (% of GDP)



Source: World Bank



- Recent literature on international trade highlights the importance of firms' extensive margins in explaining the dynamics of trade
 - Entering international markets is costly
 - When facing negative shocks, firms respond first by reducing sales

- Emerging economies diversify their product portfolio as they catch up with advanced economies
 - Imbs and Wacziarg (2003) study the evolution of sectoral concentration along the per-capita income development path
 - Beltramello et al. (2012) find higher extensive margins for CEE countries

- Margins of trade are also important for understanding the adjustment of current account imbalances
 - Corsetti et al. (2013) revisit the relationship between current account imbalances and exchange rate adjustment (Obstfeld and Rogoff, 2005)
 - The expansion of varieties (extensive margin) need not be associated with terms of trade deterioration as consumers love new varieties (Krugman, 1989)

- The previous literature yields mixed results on the significance of margins
 - Bricongne et al. (2012): net extensive margin explains 55% of the French export dynamics in 2000-2007 and 11% in 2008-2009
 - Amador and Opromolla (2013): both margins are important in explaining the year-on-year variation in Portuguese export
 - Beltramello et al. (2012): extensive margin accounts for about 60% of total export growth in 1995-2007 (39 countries since 1995)
 - Silgoner et al. (2013): extensive margin of CESEE-10 countries accounts for less than 10% of export growth in 2003-2005

- Growing importance of “global value chains”, manifesting itself i.a. in a high proportion of imported intermediate goods in the export value of goods
 - Beltramello et al. (2012) find that most of the 2007-2009 trade collapse occurred at the intensive margin, being much larger in intermediates
 - Altomonte et al. (2012): intra-group French trade in intermediates exhibited a faster drop followed by a faster recovery than the arm’s length trade in 2007-2009 (bullwhip effect) as multinational firms better optimise inventories and do not suffer from large information asymmetries

- Using the Czech Republic as an example of small open economy, we investigate the role of margins of trade before, during and after the 2008-2009 crisis
 - We look at the impact of the crisis
 - As the Czech economy converges to the EU, we expect extensive margins making a significant contribution to export growth
 - We investigate the role of international production linkages

- Following Bricongne et al. (2012), we use Czech quarterly data on exports by firm, destination and product in 2005-2014 to compute mid-point growth rates

$$g_{ickt} = \frac{x_{ickt} - x_{ick(t-4)}}{\frac{1}{2}(x_{ickt} + x_{ick(t-4)})}$$

- We define weights as

$$w_{ickt} = \frac{x_{ickt} + x_{ick(t-4)}}{\sum_c \sum_i \sum_k x_{ickt} + \sum_c \sum_i \sum_k x_{ick(t-4)}}$$

- Total value of exports is

$$G_t = \sum_c \sum_i \sum_k g_{ickt} w_{ickt} \cdot$$

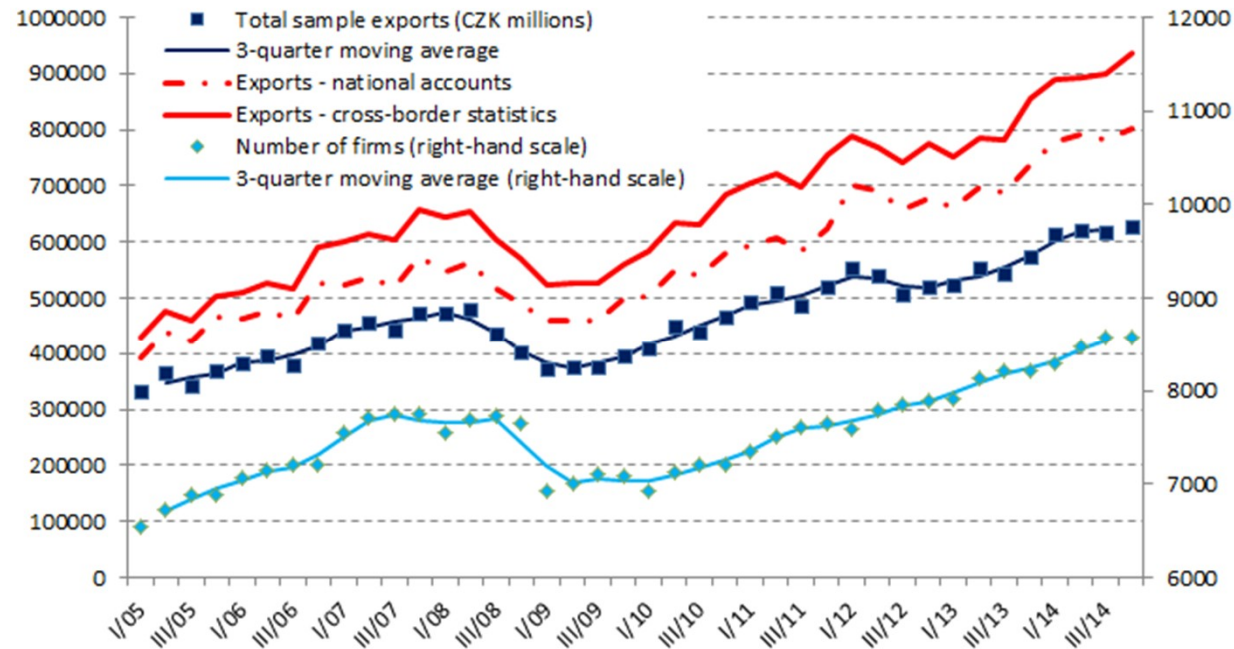
- We define extensive margins:
 - Firm extensive
 - Country extensive
 - Product extensive
- Intensive margin is the contribution of the continuing firm-destination-product export relationships
- Biases are discussed in Bricongne et al. (2012) and in Berthou and Vicard (2013)

- In the next part we apply shift-share decomposition to investigate the impact of specific factors on export growth rates
- We estimate a weighted regression
- To identify all coefficients, we impose that their weighted sum within each group of characteristics is zero
 - Positive (negative) estimate means a higher (lower) impact relative to other characteristics
 - The aggregate export growth rate is captured by the intercept

- We use quarterly datasets of individual firms exporting goods from the Czech Republic in 2005-2014 by products and destinations
 - We aggregate HS6 products into the System of National Accounts categories: capital goods, intermediate goods, consumption goods, passenger motor cars, motor spirits, other goods
 - We show results for DE, SK, PL and aggregate the remaining countries into rest of euro area, rest of EU, rest of the world
 - We define firm size by HS2 product class in each period
- We investigate the role of production linkages using the import intensity of exports as a proxy for participation in global value chains

- We address several measurement issues
 - Threshold for intra-EU export increased in 2009
 - We exclude firms from our sample in those years in which their yearly exports are below the highest threshold
 - Since 2009 firms are allowed to fill in joint reports on their exports
 - We exclude firms which are denoted as groups
 - Cross-border flows vs. national accounts data (we exclude exports by non-resident firms as a robustness check)

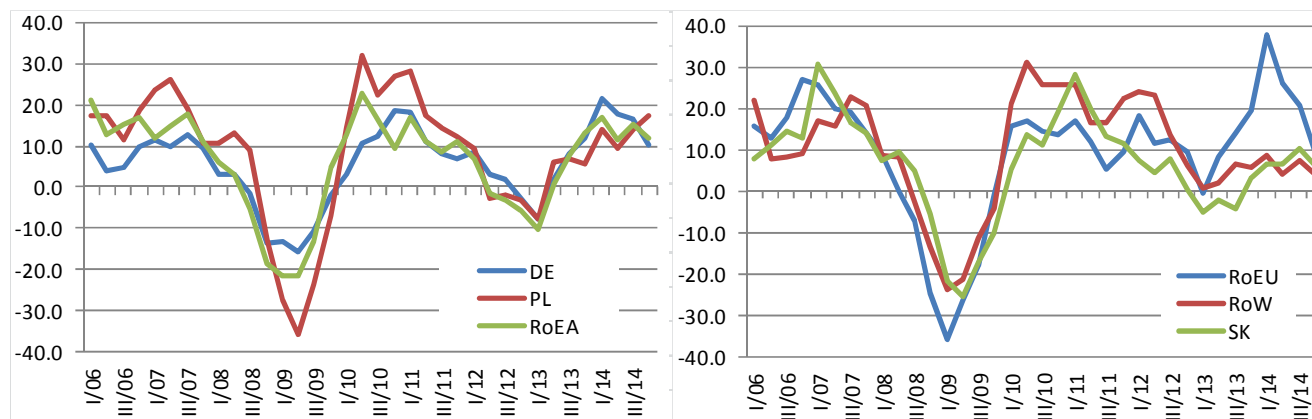
Figure 1: Exports and the Number of Exporters



Note: Total sample exports, number of firms and 3-quarter moving averages. Exports according to national accounts and cross-border statistics (f.o.b.) published by the Czech Statistical Office (red lines).

- Total sample export value has been increasing since 2005 with the exception of 2008-2009 and of 2013

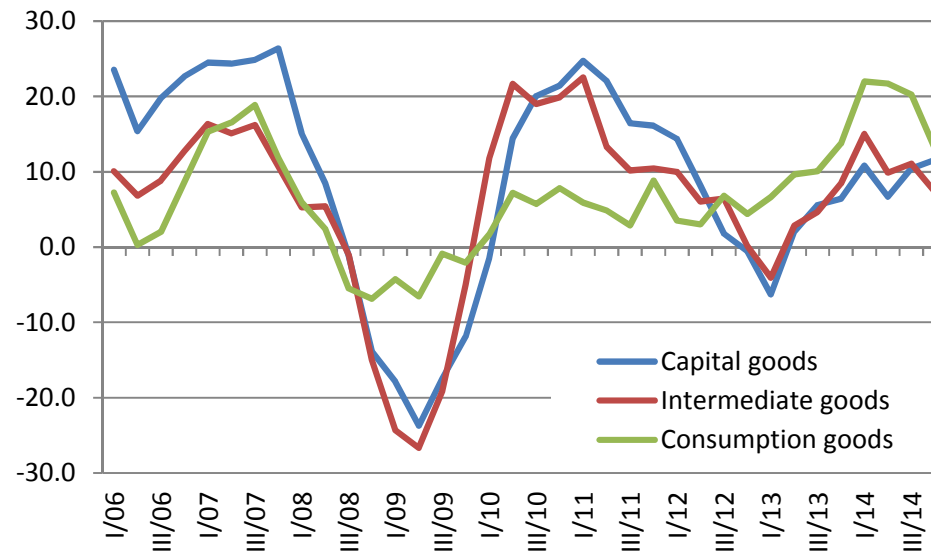
Figure A1: Exports by Destination (y-o-y changes in %)



Note: The destinations are Germany (DE), Poland (PL), Slovakia (SK), rest of the euro area (RoEA), rest of the EU (RoEU) and rest of the world (RoW).

- The 2008-2009 crisis affected exports to all destinations

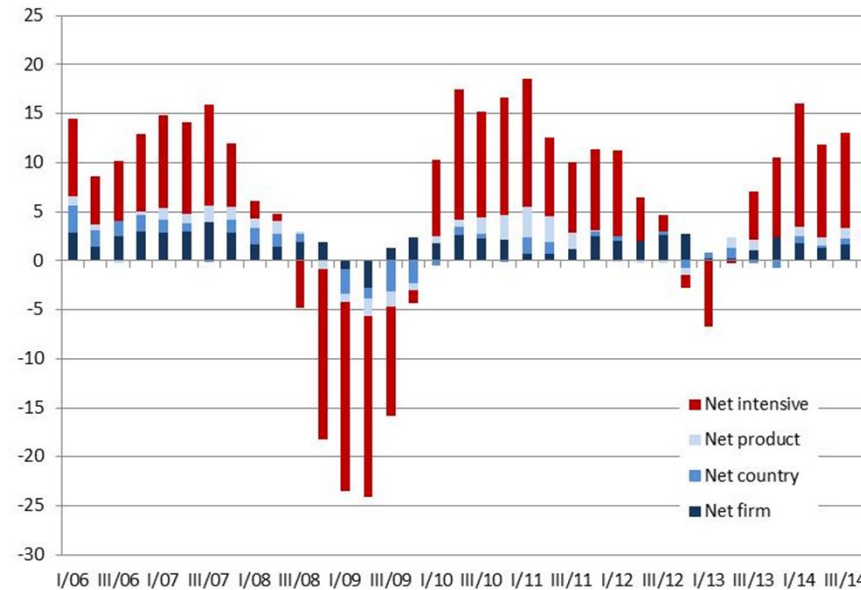
Figure A2: Exports by Main SNA Category (y-o-y changes in %)



- Exports of intermediate and capital goods declined sharply in 2008-2009 and recovered quickly in 2010
- Exports of consumption goods declined only mildly in 2008-2009

- Looking at export shares, about three quarters of exports are by the top 5% of exporters
- While DE remains the largest destination, the share of exports to ROW increased after the crisis
- Small firms export more to SK than large firms
- Exports of intermediate goods dominate (60% of exports)
- Small firms export more capital and consumption goods than large firms
- The share of exports by firms with high import intensity decreased slightly

Figure 2: Contributions of Net Margins to Mid-point Growth Rates



- The intensive margin explains most of the export growth, similar to the previous evidence for other countries
- The role of the extensive margin is smaller, but not negligible

Table 2: Contributions to Mid-point Growth Rates

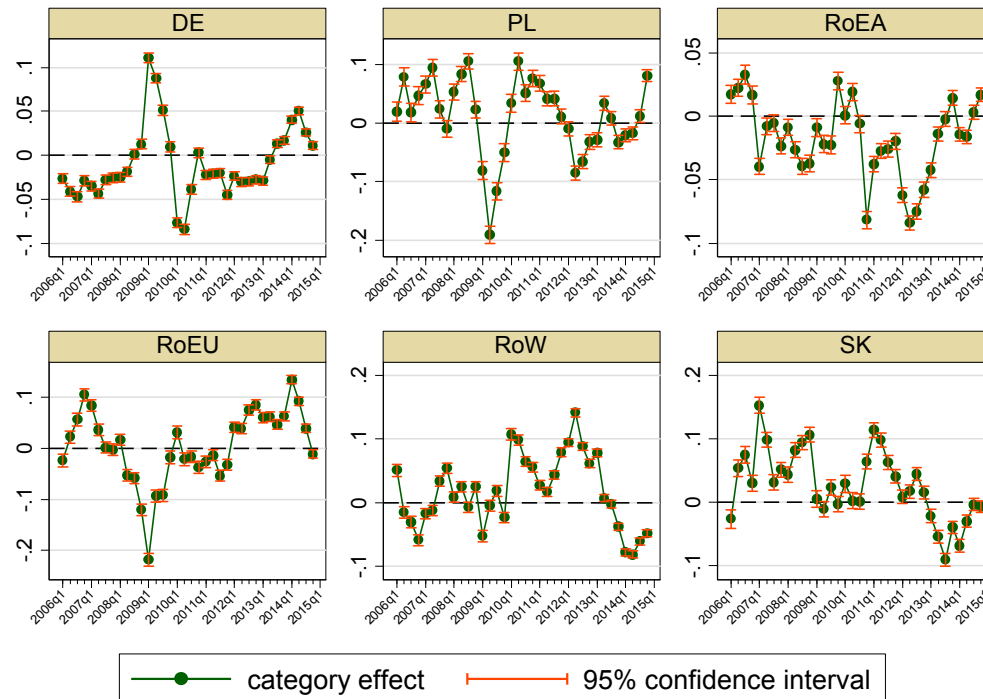
	size: all			size: 0–95%			size: 95–100%		
	2006– 2007	2008– 2009	2010– 2014	2006– 2007	2008– 2009	2010– 2014	2006– 2007	2008– 2009	2010– 2014
overall growth	12.8	-8.9	9.8	2.0	-4.3	1.0	10.8	-4.6	8.7
net intensive	7.8	-8.7	6.9	0.2	-3.9	-0.1	7.6	-4.8	7.0
intensive positive	23.7	18.1	23.5	5.0	3.9	4.6	18.6	14.2	18.9
intensive negative	-15.9	-26.8	-16.7	-4.8	-7.8	-4.8	-11.1	-19.1	-11.9
net extensive	5.0	-0.2	2.9	1.7	-0.4	1.2	3.3	0.2	1.7
net firm	2.8	0.9	1.7	0.9	-0.1	0.7	1.9	1.0	0.9
firm entry	6.4	5.7	5.6	2.6	2.1	2.5	3.8	3.6	3.2
firm exit	-3.6	-4.8	-4.0	-1.6	-2.2	-1.7	-2.0	-2.6	-2.3
net product	0.9	-0.4	0.9	0.3	-0.2	0.2	0.6	-0.2	0.8
product entry	5.8	4.8	5.2	2.2	1.9	2.0	3.6	2.9	3.3
product exit	-5.0	-5.2	-4.3	-2.0	-2.1	-1.8	-3.0	-3.0	-2.5
net country	1.4	-0.7	0.3	0.5	-0.1	0.3	0.9	-0.6	0.1
country entry	5.0	5.1	4.1	1.9	1.7	1.7	3.0	3.4	2.5
country exit	-3.6	-5.7	-3.8	-1.4	-1.8	-1.4	-2.2	-4.0	-2.4

Note: Firm size is based on the ranking by export value and HS2 product group in each period. Size groups are denoted up to the 95th percentile and the top 5% of exporters.

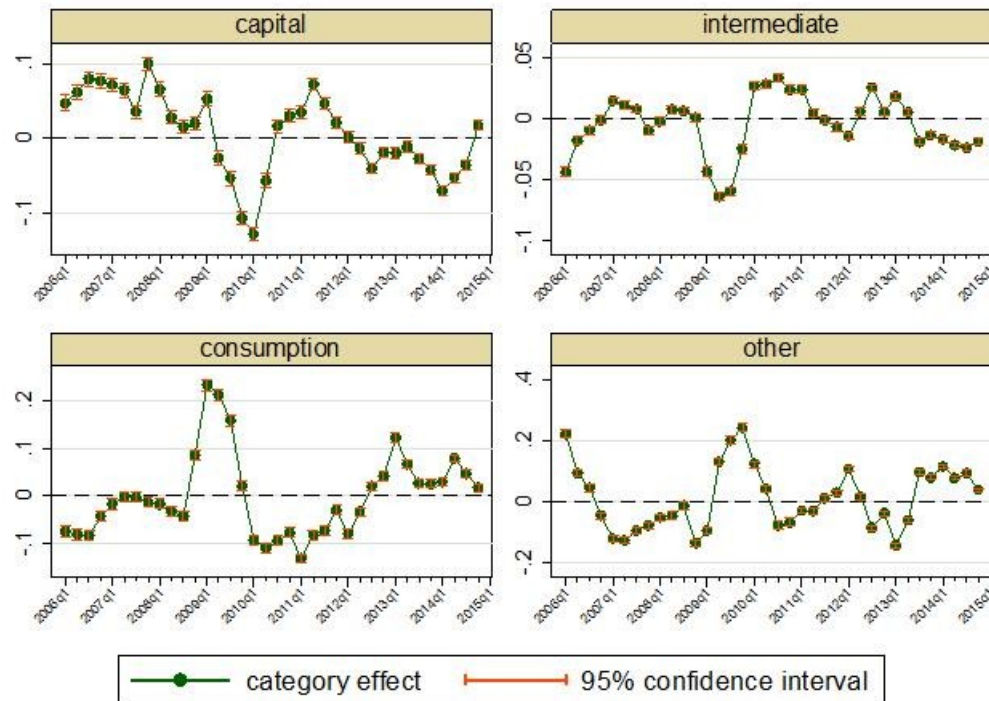
- Net extensive margin accounts for 39% of export growth in 2006/7, 25% in 2009 and 2010, 30% in 2011 and 25% in 2014
 - Net firm margin remained slightly positive in 2008/9
 - We observe much lower net country margin after the crisis, due to large firms, exports to Europe and of capital and intermediate goods

Figure 3: Decomposition of Export Growth Rates

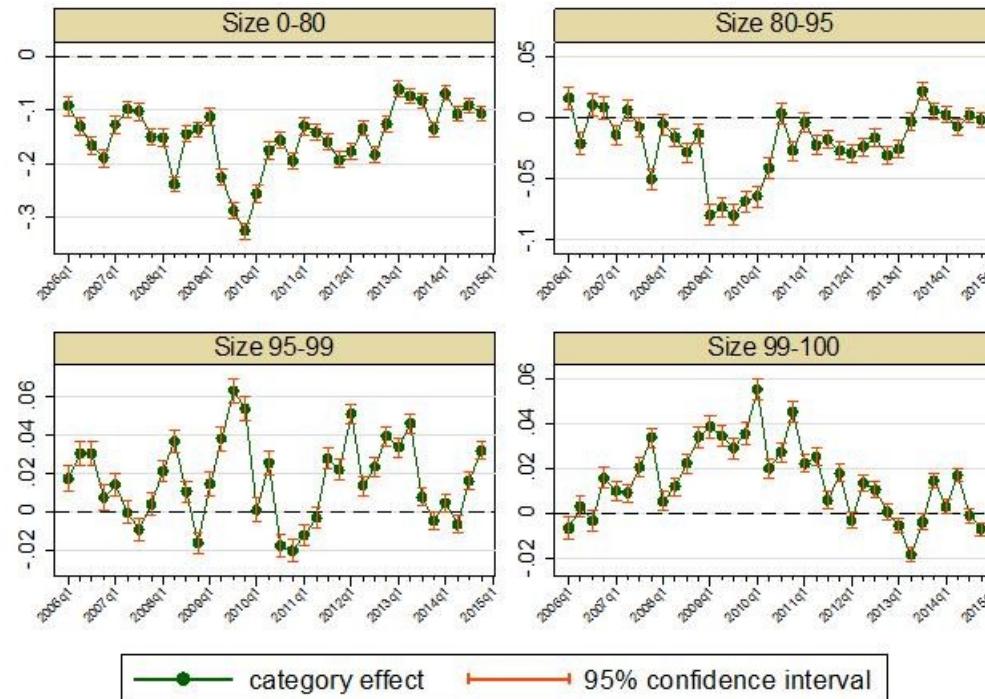
(i) destinations



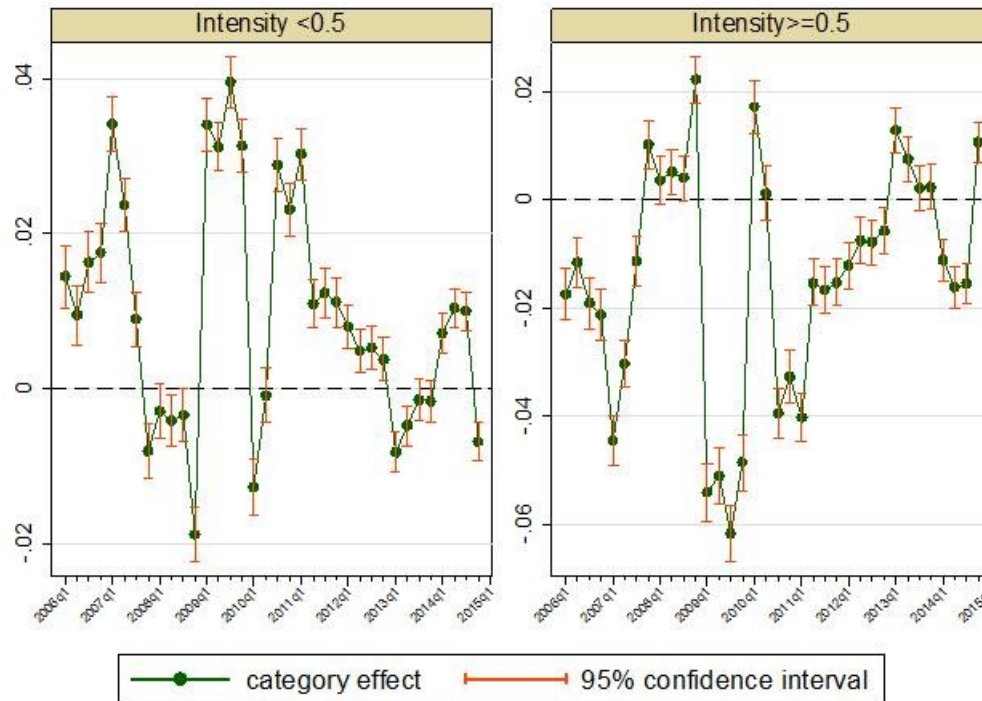
- Exports to Germany fared relatively better during the crisis, while exports to PL and rest of EU were hit harder
- After the crisis, exports to ROW were growing faster



- During the crisis, export of capital and intermediate goods decreased relatively more than of consumption and other goods
- The fall in exports of capital goods seems to have arrived later than the drop in intermediate goods exports



- The contribution of small firms was negative, even more so in the crisis



- Firms with lower import intensity of their export performed better during and after during the crisis

- We investigate the role of trade margins in Czech export growth
- Intensive margin explains most of the export growth, in line with findings in the literature for other countries
- The contribution of the net extensive margin declined after the crisis
 - This may signal a lower rate of convergence
- Exports to non-European countries gained more relevance in the post-crisis years

- Using import intensity of exports as a proxy, the results suggest that firms involved in production chains were affected more severely during the crisis
 - This corroborates findings from other studies on the impact of the participation in international production linkages on firms' trade
- Our results are robust to several measurement issues

Thank you for your attention

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www.cnb.cz

Kamil Galuščák
Adviser to the Board
kamil.galuscak@cnb.cz