THE EFFECT OF THE SINGLE CURRENCY ON EXPORTS: COMPARATIVE FIRM-LEVEL EVIDENCE

Tibor Lalinský & Jaanika Meriküll

Motivation

- Optimum currency area (Mundell (1961)) -> gains from common currency vs costs from giving up country-specific monetary policy

- One of the main channels is the increased trade between members -> gains from European monetary (currency) union were lower than from other currency unions, e.g. Rose (2000) finds the effect to be much larger

- Missing consensus about the mechanisms behind the trade effect
  - Uncertainty about the distribution of gains (microdata needed)
  - Better set up of the *natural experiment*

Aim and contribution

- The aim is to estimate the effect of euro adoption on trade at the firm level
  - Firm-level export to euro area countries vs other EU countries
  - Gains at intensive vs extensive margin
  - Which firms gained the most, productivity, size, export, etc.
  - Which channel was in action behind the gains

- The paper contributes to the literature of effects of common currency areas on trade, by
  - Testing the heterogeneity of the euro effect
  - Studying the case of two natural experiments where the trade costs were reduced, but there was no increased competition from other countries

Related literature, theoretical mechanisms

- Monetary union or currency union reduces transaction costs of trade, main mechanisms in action (Baldwin et al. (2008)):
  - reduction of trade prices due to
    - lower transaction costs (exchange rate volatility and foreign exchange)
    - increased competition
  - newly-traded goods channel

- Heterogeneous gains from the reduction of transaction costs:
  - Melitz (2003) only the most productive firms export, because they can meet the fixed trade costs, i.e. decrease in trade costs -> more firms become exporters
  - Bernard *et al.* (2011) decrease in trade costs -> increase in the number of destinations per product and the number of products per destination

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Related literature, micro-level findings

- Berthou and Fontagne (2013)
  - net effect 5%, gross after controlling for increased competition 7%
  - 80% from intensive margin, 20% from extensive (new products)
  - the most productive firms gain the most
  - control for increased competition indirectly, by destination country demand proxy
- Nitsch and Pisu (2008), De Nardis et al. (2008)
  - importance of extensive margin (on Belgian and Italian data)
  - do not control for increased competition, the net effect
- Esteve-Perez et al. (2010)
  - study only probability to export (on Spanish data)
  - smallest firms benefited the most from euro

# Slovakia (SK) vs Estonia (EE)

Similarities

- SK introduced euro in 2009 (15th member), EE in 2011 (16th member)
- No increased competition from other members
- Too small to affect the equilibrium prices in the euro area (SK export is 1.6% of the euro area and EE 0.3%)

Differences

- Transaction costs related to exchange rate volatility:
  - Floating exchange rate in SK and a strict peg to euro in EE prior to the changeover
- Transaction costs related to foreign exchange
  - SK more tightly integrated to euro area than EE (49% vs 32% of exports)
  - SK was not a member of TARGET before euro adoption, but EE was

Exchange rate volatility, SK vs EE
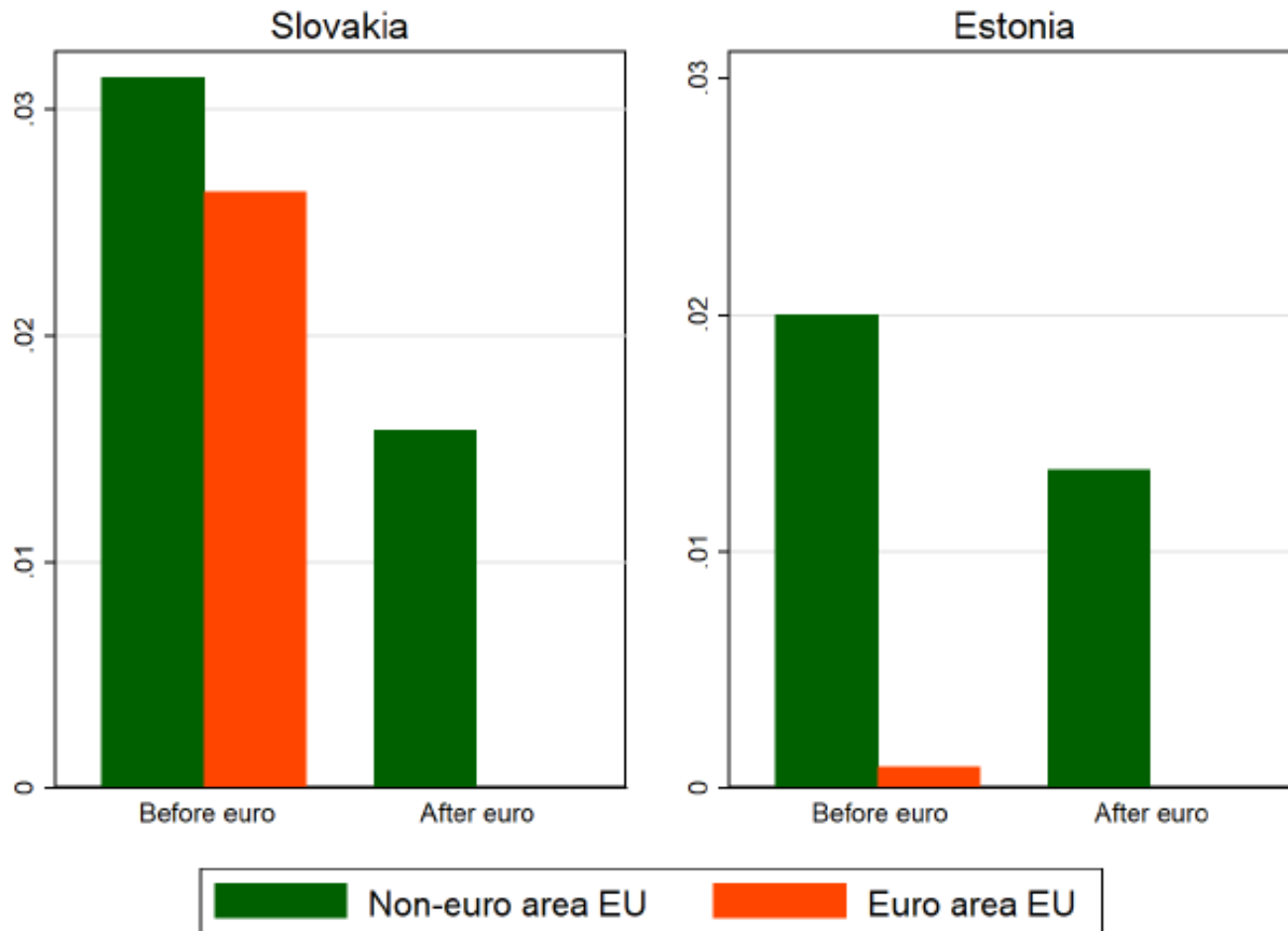
Data

- Trade data
  - Firm-level customs data of export flows by:
    - Destination markets
    - Products at 6-digit HS

- Business register
  - Firm characteristics: date of establishment, size group, type of ownership, location

- Balance sheet and profit-loss statements
  - TFP (based on real value added, real book value of net capital, employment and material inputs), debt burden (based on interests paid and profit) using definition of variables and outlier trimming as in the CompNet project

- Coverage
  - Manufacturing firms with 20 and more employees
  - Time-period: 3+3 years, 2006-11 for SK, 2008-13 for EE

Methodology

- Difference-in-difference approach: firms exporting to euro area countries vs. non-euro area countries

- We estimate the following equation using within fixed effects panel estimator and fixed effect logit (for export decision only):

$$TM_{ijt} = \alpha_{ij} + \beta_1 TM_{ijt-1} + \beta_2\, Post_t \times EA_{ij} + \beta_3 \log(TFP_{ijt-1}) + \beta_4 \log(\text{GDP}_{jt})$$
$$+ \beta_5 \log(\text{REER}_{jt}) + \beta_6 \log(\text{MP}_{jt}) + \tau_t \times sector_k + e_{ijt}$$

  where i denotes the firm, j is the destination country, t is the year and k the industry. EA_{jt} represents a dummy variable equal to 1 if the destination country was a member of the euro area, and 0 otherwise; and $Post_t$ is a dummy variable equal to 1 after home country joined the euro area, and 0 otherwise.

- The dependent variable TM_{ijt} takes value of export decision (dummy variable equal to 1 if export > 0, and 0 otherwise), number of products exported n_{ijt}, average value of export $\bar{x}_{ijt}$, and total export X_{ijt}.
- Unit of analysis: firm x destination
- In addition we control for various fixed and time dependent firm-level control variables interacted with the euro area dummy

Strong effect for Slovakia

	Export decision in each destination	Export decision in destination ×product	Number of products per destination, n_{ijt}	Average export per destination, $\bar{x}_{ijt}$	Total export per destination, X_{ijt}
Lagged dependent	0.045***	0.041***	0.133***	0.177***	0.228***
	(0.005)	(0.002)	(0.010)	(0.010)	(0.011)
Post$_t$×EA$_j$	**0.017****	**0.019****	**0.020**	**0.111****	**0.130****
	(0.007)	(0.002)	(0.014)	(0.030)	(0.032)
Log(TFP$_{ijt-1}$)	-0.005	0.005***	0.003	0.029	0.020
	(0.005)	(0.002)	(0.010)	(0.023)	(0.024)
Log(GDP$_{jt}$)	0.197***	0.064***	0.124	0.677***	0.742***
	(0.038)	(0.016)	(0.086)	(0.186)	(0.193)
Log(MP$_{jt}$)	0.073	0.011	0.098	-0.427*	-0.336
	(0.054)	(0.022)	(0.119)	(0.255)	(0.264)
Log(REER$_{jt}$)	-0.185***	-0.084***	-0.158	-0.639**	-0.740***
	(0.054)	(0.021)	(0.118)	(0.254)	(0.267)
Observations	95987	660953	35599	35595	35595
No of objects	22885	148813	11446	11445	11445
Within R^2	0.015	0.009	0.040	0.067	0.081

Almost no effect for Estonia

|	Export decision in each destination	Export decision in destination ×product	Number of products per destination, n_{ijt}	Average export per product in destination, $\bar{x}_{ijt}$	Total export per destination, X_{ijt}
Lagged dependent	0.108***	0.065***	0.183***	0.234***	0.250***
	(0.014)	(0.005)	(0.025)	(0.022)	(0.024)
$Post_t \times EA_j$	**0.042****	**0.013**	**0.005**	**0.002**	**0.004**
	(0.020)	(0.009)	(0.034)	(0.066)	(0.067)
Log(TFP_{ijt-1})	-0.000	0.005	-0.020	0.055	0.032
	(0.009)	(0.005)	(0.016)	(0.038)	(0.038)
Log(GDP_{jt})	0.006	-0.014	0.126	1.328***	1.433***
	(0.094)	(0.045)	(0.162)	(0.394)	(0.390)
Log(MP_{jt})	0.384**	0.298***	0.341	-0.817	-0.471
	(0.160)	(0.080)	(0.318)	(0.642)	(0.642)
Log($REER_{jt}$)	0.477***	0.305***	0.269	-1.552**	-1.279**
	(0.180)	(0.089)	(0.350)	(0.730)	(0.736)
Observations	12898	75547	6311	6311	6311
No of objects	3792	22701	2393	2393	2393
Within R²	0.044	0.033	0.105	0.100	0.119

Which firms gained the most from euro?

- Destination margin
  - Esteve-Perez *et al.* (2010) and Nitsch and Pisu (2008) claim that small firms gained the most
  - smaller firms gained the most (SK)
  - more productive firms gained the most (SK & EE)

- Total export
  - Berthou and Fontagne (2013) the most productive firms gained vs Nitsch and Pisu (2008) the least productive firms gained the most
  - wide gains for the more productive firms, from the second to the fourth TFP quartile (SK)
 - wide gains over the firm size (SK)

Effects over industry and product groups (SK)

Our results confirm previous findings:
- Scale-intensive and traditional goods sectors benefited
- Euro induced vertical specialisation: the trade of intermediate and consumer goods increased the most
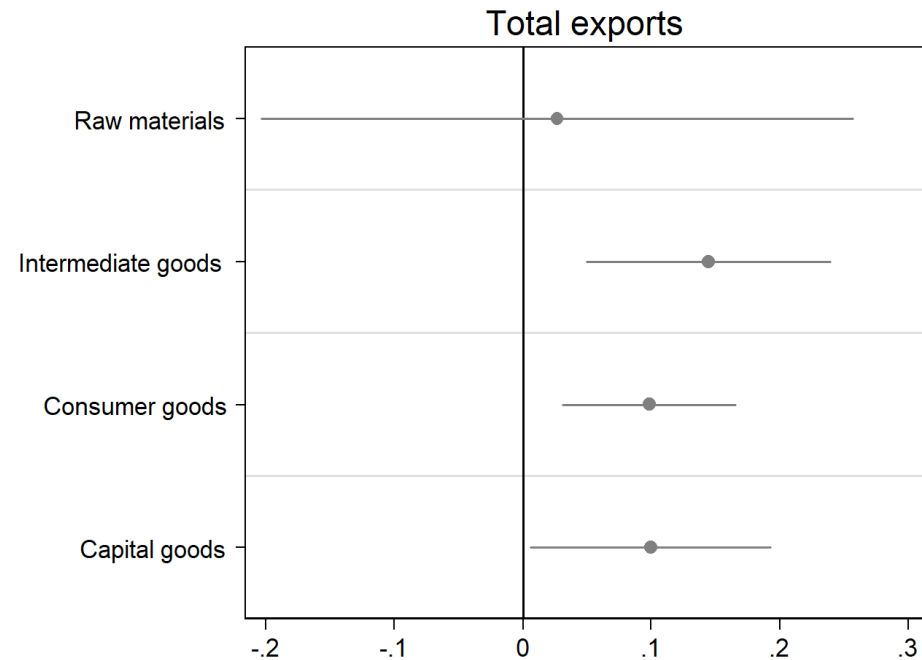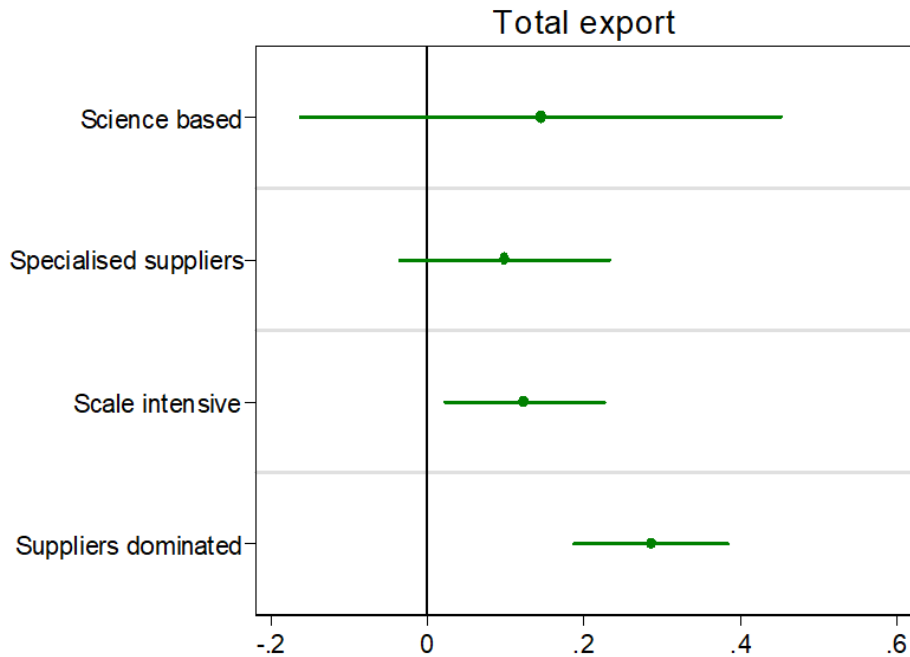
Effects over the size of export (SK)

Number of products

Average export per product
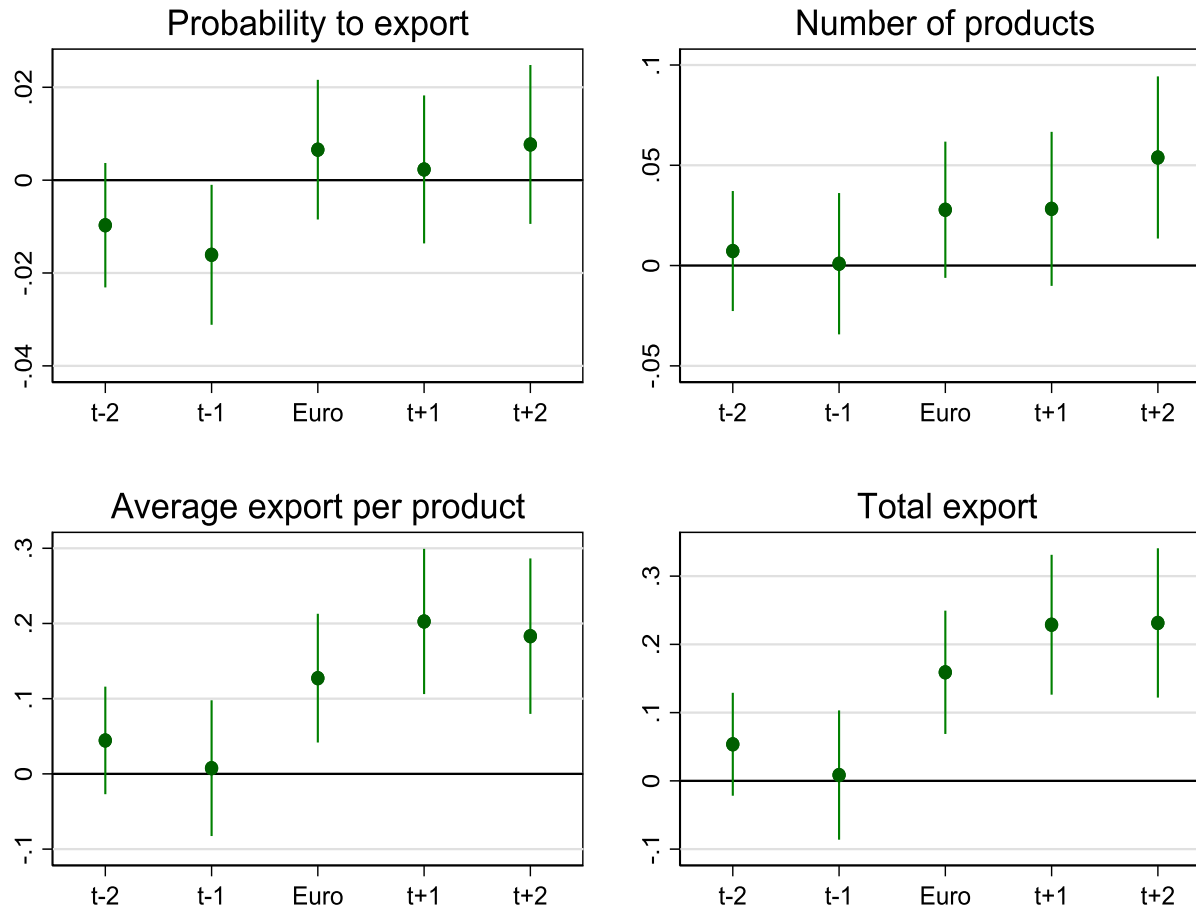
Total export
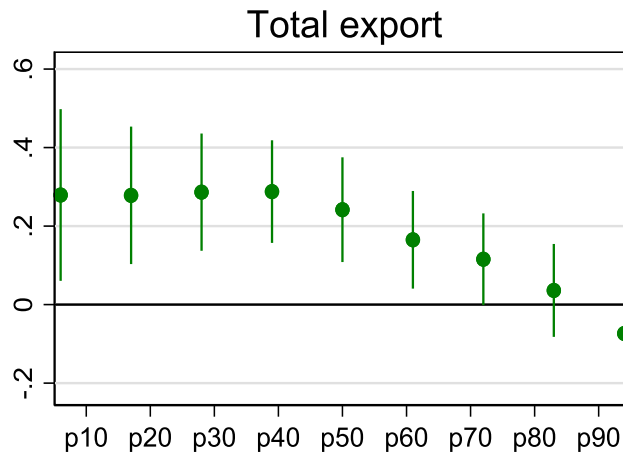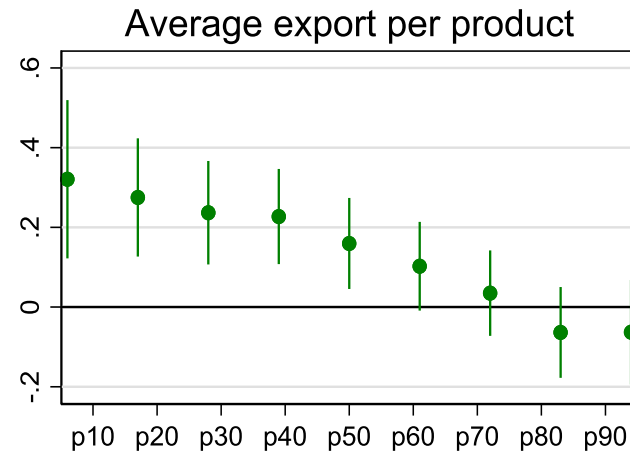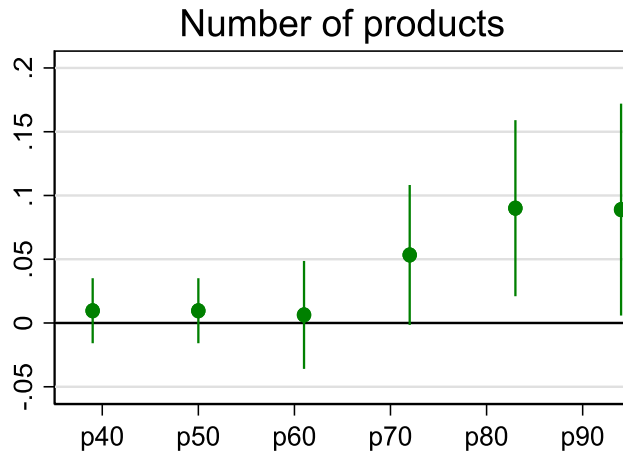
Results based on unconditional quantile regressions*:
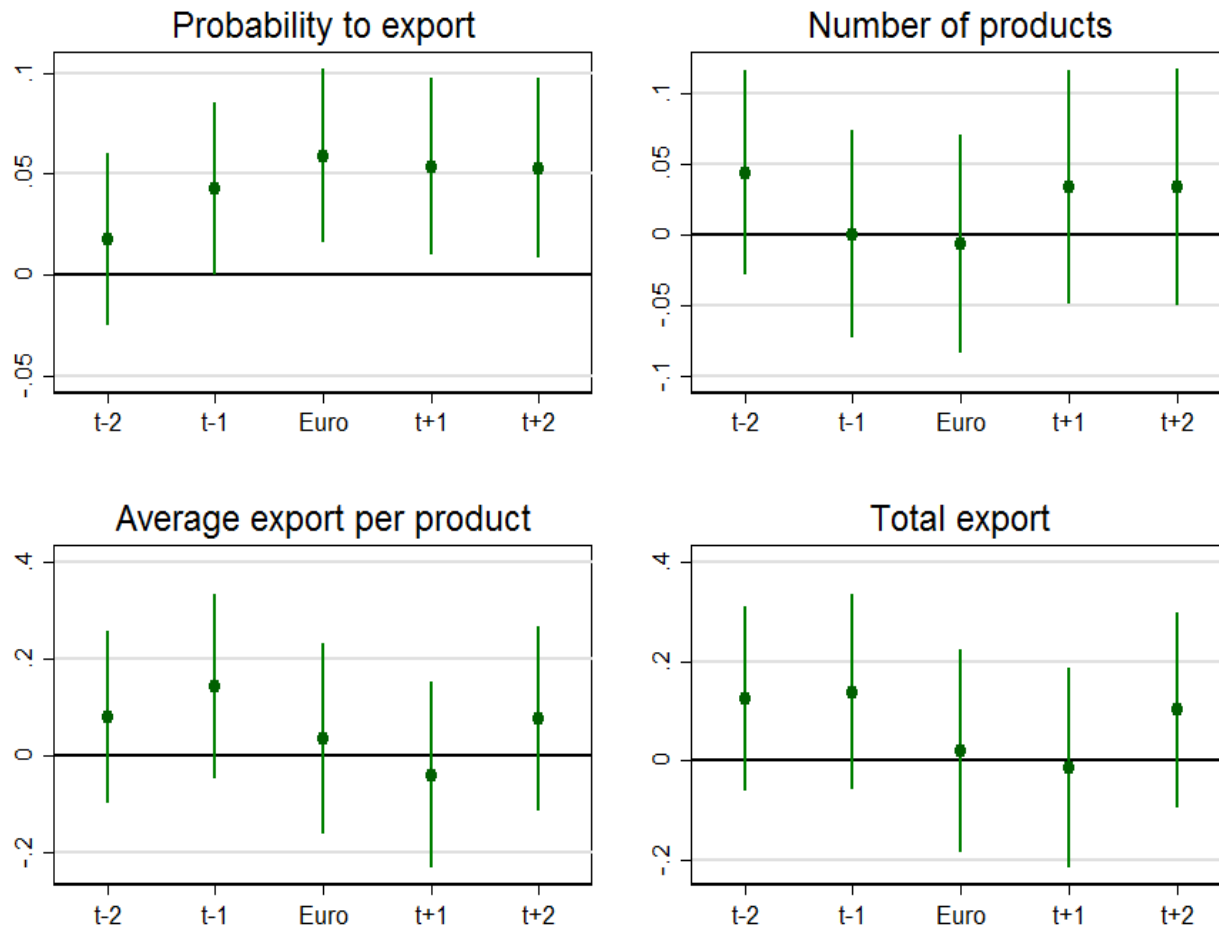
- Higher product margin for multi-product exporters
- Higher intensive margin for small exporters
- Intensive margin dominates ⇒ the overall effect originates from smaller exporters
- Transaction costs ↓ ⇒ concentration of exports ↓

* following Firpo et al. (2009)

Euro trade effect by year (SK)

Euro trade effect by year (EE)

Robustness: placebo treatment & GMM

	Slovakia		Estonia	
	Non-euro area countries only, random split to treatment and control	Alternative estimation method, system GMM	Non-euro area countries only, random split to treatment and control	Alternative estimation method, system GMM
Lagged dependent	0.225***	0.325***	0.136***	0.288***
	(0.016)	(0.017)	(0.031)	(0.043)
Post$_t$×treatment$_{ij}$	**0.065**	**0.109***	**0.020**	**-0.048**
	(0.053)	(0.036)	(0.095)	(0.042)
Other controls	yes	yes	yes	yes
Observations	15550	32991	2966	5979
No of objects	4922	10523	1140	2262
Within R^2	0.124		0.183	
Sargan test		5.526		1.651
No of instruments		123		119

Other robustness tests

- Industry-level import prices (based on BACI)

- Specifications without lagged TFP or country-level control variables

- Longer sample of five years prior and five years after the changeover

Summary

✓ The importance of extensive margin or the new-goods hypothesis not confirmed (only small part via this channel)

✓ Broader group of firms benefited compared to previous studies

- In terms of TFP and size

- Scale-intensive and traditional supplier dominated sectors

- All product groups except raw materials

⇒ wide gains support the transaction costs story

✓ Intensive margin dominates and reduced transaction costs contribute to lower concentration of exports (higher gains for smaller exporters)

Summary (continued)

✓ Strong effect of euro on exports from SK, but not from EE

- In EE euro increased only probability to export to euro area destinations

✓ Pre-euro exchange rate regime matters

⇒ the higher reduction of exchange rate volatility the higher savings in transaction costs (peg in EE, floating ER in SK)

✓ Potential gains in trade from common currency area

- Smaller BG, (DK) and larger for HR, CZ, HU, PL, RO, (UK) ?

Thank you for your attention

Larger expected gains for SK than for EE

Channel	Expected direction of the effect	Introduction of euro in 1999	Changeover to euro in SK in 2009	Changeover to euro in EE in 2011
Lower transaction costs from exchange rate volatility	(+)	Strong	Strong	No
Lower transaction costs from foreign exchange	(+)	Strong	Strong	Moderate
Lower interaction of transaction costs and importance of euro area in trade	(+)	Variable	Strong	Moderate /No
Increased competition from other euro area members	(-)	Strong	No	No