ICT and exports of firms in Central and Eastern European Countries

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The paper examines

Effects of Information Communications Technology **(ICT)** on exports of firms from Central and Eastern European Countries **(CEEC)**

In the framework of **'New new trade theory'**, I employ extended Jørgensen and Schröder (2008) model

Empirical evidence is derived from the firm-level data extracted from Business Environment and Enterprise Performance Survey **(BEEPS)** for the time period 2007-2014

Internet penetration and exports

- Mid-late 1990s and early 2000s:

1. Total world exports increased from 20% of gross world product in 1994 ($5.0 trillion in 2000 US$) to 24% of gross world product (US$8.3 trillion) in 2002 (World Bank 2003).
2. The number of Internet hosts rose from 17 per 10,000 people in 1994 to 231 in 2001 ([ITU] 2003).

Reverse causality ?

➢ Clarke and Wallstein (2004), Kneller and Timmis (2016) favored the causation from Internet penetration to exporting activities

How ICT may affect exports?

Via decreasing fixed and marginal export costs

Marginal cost vs fixed costs

- industry structures: move from traditional integrated firms to production networks: original brand name manufacturer (”manufacturer without a factory”) vs actual manufacturing process (marginal cost)

Empirical findings on export costs

- Das et al. (2001) - sunk export costs vary considerably across Colombian chemical producers
- Bugamelli and Infante (2003) - substantial differences among Italian manufacturing firms’ abilities to collect information about foreign markets and consumer tastes
- Fink et al. (2005) - high cost of making telephone call significantly decreases bilateral trade flows

ICT and Trade

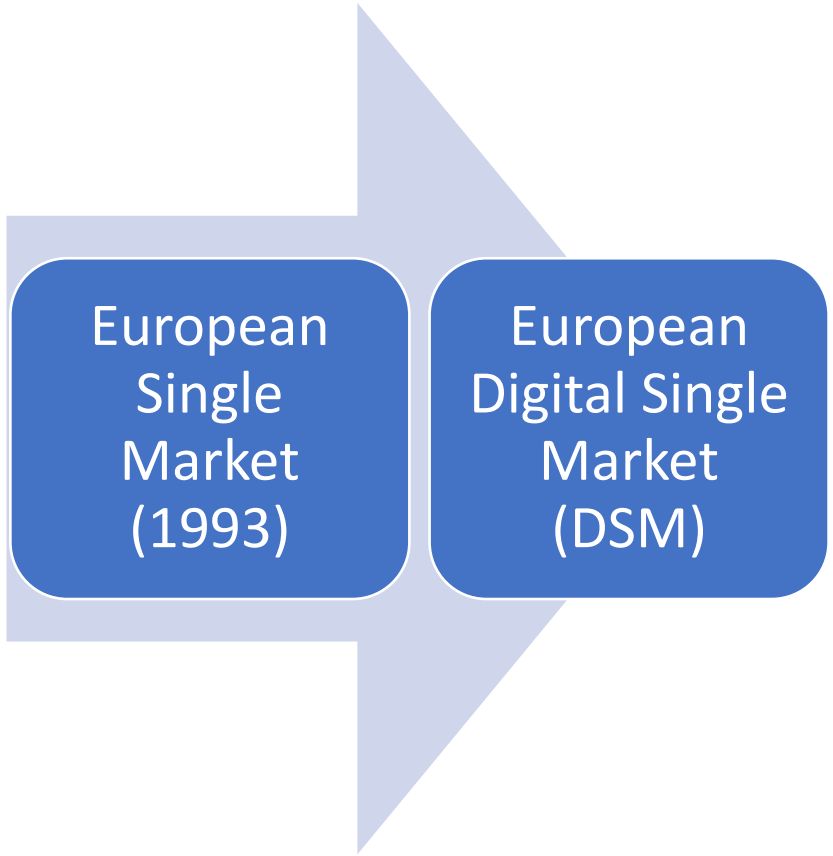
➢ICT infrastructure

- Freund and Weinhold (2002, 2004) - an increase in the number of web hosts by 10 percentage points is associated with the increase in exports in US trade services by about 0.2 percentage points.
- Portugal-Perez and Wilson (2010) - marginal effect of infrastructure improvement on exports appears to be decreasing in per capita income. However, the impact of ICT infrastructure on exports appears important for richer countries.

➢ICT use

- Liu and Nath (2013) – Internet subscriptions and Internet hosts have significant positive effects on both exports and imports in the emerging countries.
- Thiemann, Flemming and Mueller (2012) – ICT use proxied by telephone main lines, Internet usage and mobile phone subscribers, has a positive effect on trade in imports while it negatively affects export flows in fruits and vegetables.
- Bernal-Jurado and Moral-Pajares (2010) -the largest exporting and importing industries in Spain are the ones that are more engaged in electronic commerce through different communication channels, such as EDI, Minitel or Internet.

Why CEEC?



The era of information technology revolution and Internet brings the importance of digital and data-driven economy

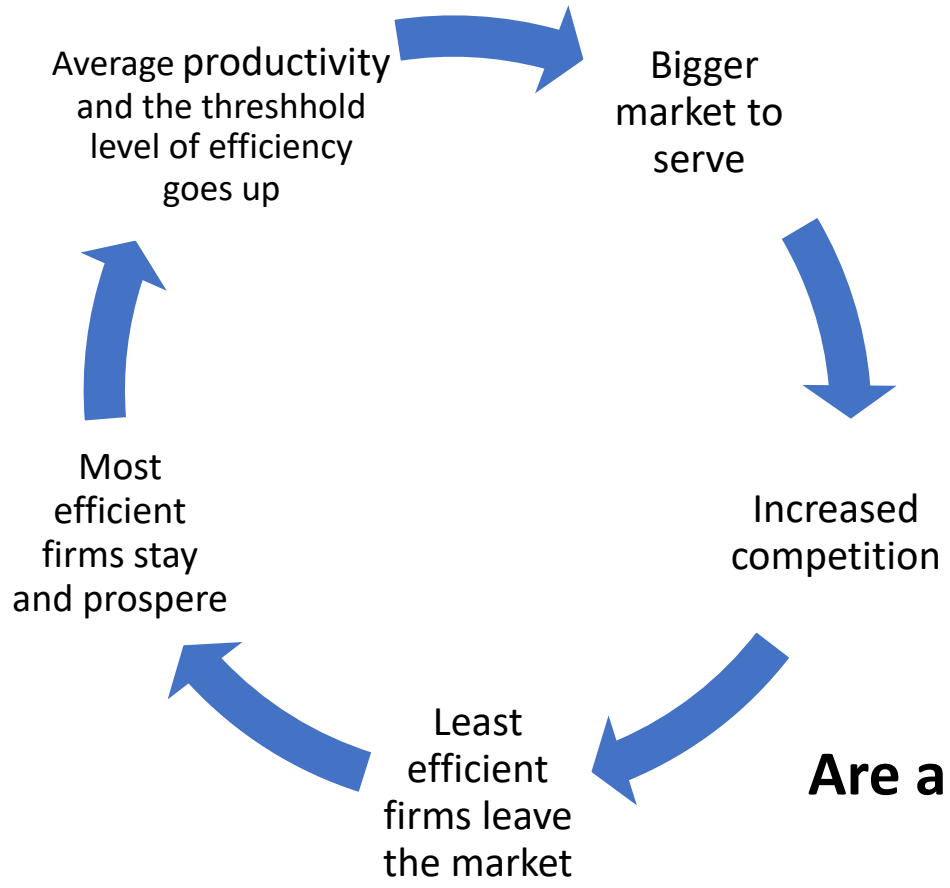
- (EC, 2015) in 2015:

i. only 15% of online shoppers in the EU were buying something from abroad

ii. only 7% of small and medium-sized enterprises were engaged in cross-border e-commerce

The „New new trade theory”

Abolihsing digital barriers to trade



Are all the EU countries ready for DSM?

Firm level studies & CEEC

- Śledziewska, et al. (2016) - CEEC internet infrastructure is not developed well enough. The considerable gap comes on engagement in online sales and in cross border e-commerce.
- Clarke (2001) - firms with Internet access tend to export more than firms without Internet connectivity in the Eastern Europe and Central Asia in 1999. Foreign ownership is also important.
- Cieślik, et al. (2013, 14, 15) - together with firm size and labour productivity, human capital and R&D spending increases extensive margins of exports in Visegrad, Baltic and Caucasus countries.

Added value of the paper

1. Tracks channels of effects of ICT on extensive and intensive margins of exports
2. Outlines impact of ICT on firm-level exports in CEEC
3. The findings provide policy recommendations

Model specification

Compared to Melitz (2003), Jørgensen and Schröder (2008) introduce heterogenous export cost

My assumptions:

$$\frac{\partial(a_i)}{\partial(ICT_i)} < 0$$

$$\frac{\partial(ma_i)}{\partial(ICT_i)} < 0$$

Empirical specification

$$\mathrm{Y}_i = \alpha_0 + \beta_1 \mathrm{lproduct}_i + \beta_2 \mathrm{medium}_i + \beta_3 \mathrm{large}_i + \beta_4 \mathrm{age}_i + \beta_5 \mathrm{for\_own}_\mathrm{i} + \beta_6 \mathrm{foreign\_tech}_\mathrm{i} + \beta_6 \mathrm{int\_infra}_\mathrm{i} + \beta_7 \mathrm{int\_use}_\mathrm{i} + c_{ij} + s_{ik} + t_{it} + \varepsilon_i$$

- Dependent Variable – (1) dummy for exporting status; (2) share of exports in total sales
- Independent Variables – firm characteristics, ICT infrastructure, ICT use
- Estimator – probit for extensive and fractional logit for intensive margins of exports

Data

- Data Source - Business Environment and Enterprise Performance Survey (BEEPS) compiled by the World Bank and EBRD
- Data coverage – 2007-2014
- Data type – Panel (by construction) but estimations are done for the pooled sample
- Sample – the new EU member states: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia
- Survey methodology - BEEPS uses stratified random sampling: the strata are firm size, sector, and geographic region within a country.

Dependent Variables

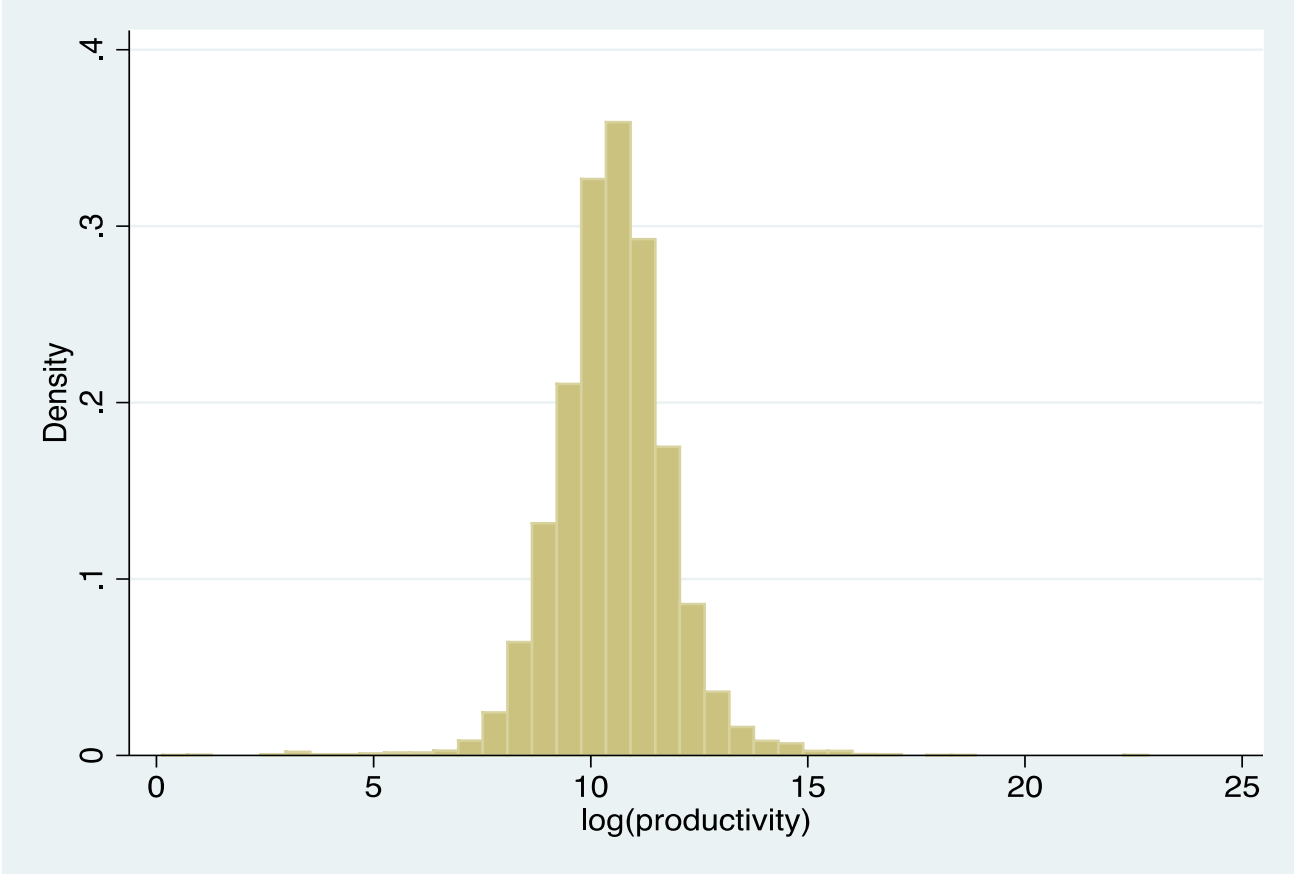
Variable Name	*Description of variable*	*Data Source*
exporter	Exporter activity: dummy variable which equals 1 if a firm's direct exports is larger than zero (any positive value of direct exports)	BEEPS
exports	Export share: share of direct exports in total annual sales	BEEPS

Independent Variables

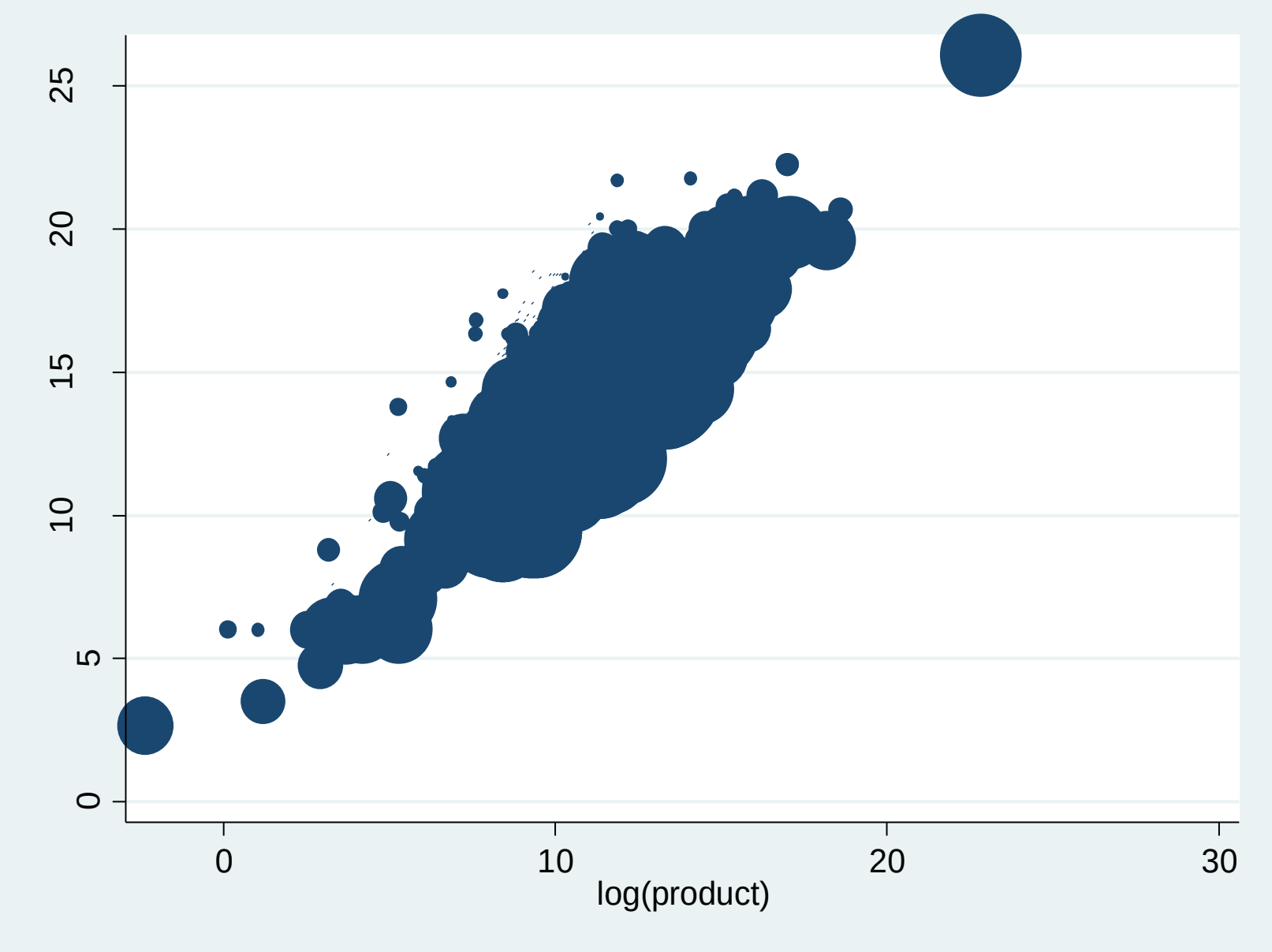
Variable Name	*Description of variables*	*Data Source*	*Exp. sign*
lproduct	Logarithm of total annual sales per permanent full-time employee	BEEPS	+
medium	Medium-size firms: dummy variable which equals 1 when a firm employs 20-99 employees	BEEPS	+
large	Large firms: dummy variable which equals 1 if a firm employs more than 99 employees	BEEPS	+
age	Age: age of a firm calculated as the difference of a year of the sruvey and a year of establishment	BEEPS	+
for_tech	Foreign technology: dummy variable which equals 1 if a firm uses technology licensed from a foreign-owned company	BEEPS	+
for_own	Foreign ownership: percentage share of a firm owned by private foreign individuals /companies/organizations	BEEPS	+
Int_infra	A categorical dummy variable which equals i) 0 if a firm does not have a high-speed broadband Internet connection on its premises; ii) 1 if a firm has a high-speed broadband Internet connection on its premises but finds that telecommunications are very severe obstacle to the operations of a firm; iii) 2 if a firm has a high-speed broadband Internet connection on its premises but finds that telecommunications are major obstacle to the operations of a firm; iv) 3 if a firm has a high-speed, broadband Internet connection on its premises but finds that telecommunications are moderate obstacle to the operations of a firm; v) 4 if a firm has a high-speed, broadband Internet connection on its premises and finds that telecommunications are minor obstacle to the operations of a firm; and vi) 5 if a firm has a high-speed, broadband Internet connection on its premises and finds that telecommunications are no obstacle to the operations of a firm.	BEEPS	+
Int_use	Internet use: dummy variable which equals 1 if a firm communicates with clients and suppliers via website; or if a firm uses Internet to order purchases online or to deliver services to the clients; or if a firm uses Internet to do research and develop ideas on new products and services.	BEEPS	+

Data is reliable ?!

productivity (in billions)	Obs.	Mean	Std. Dev.	Min	Max
Old	39266	34,6	3350	0,03	455000
Corrected	35980	0,32	43,59	0	8264,12



Outliers



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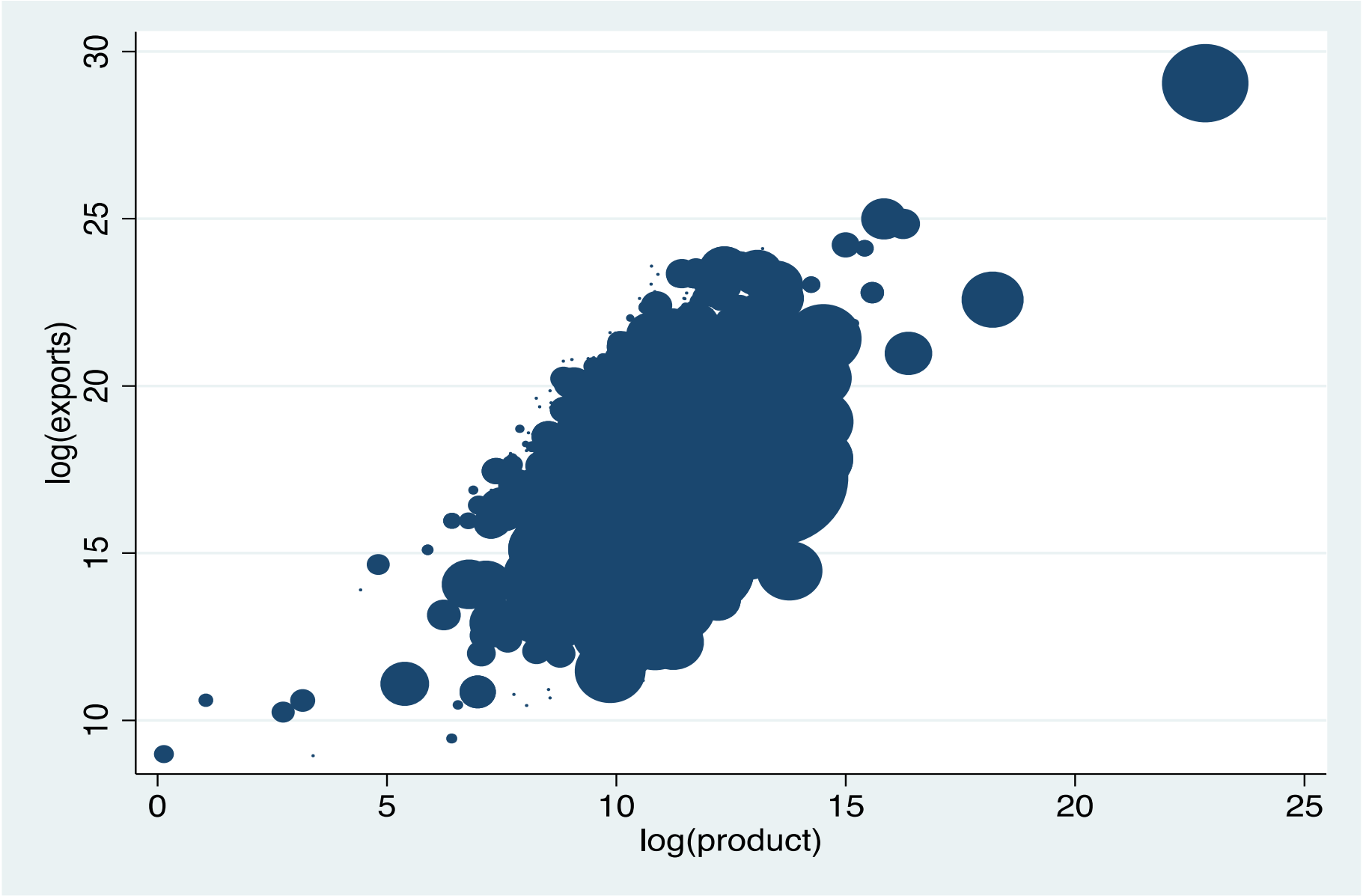
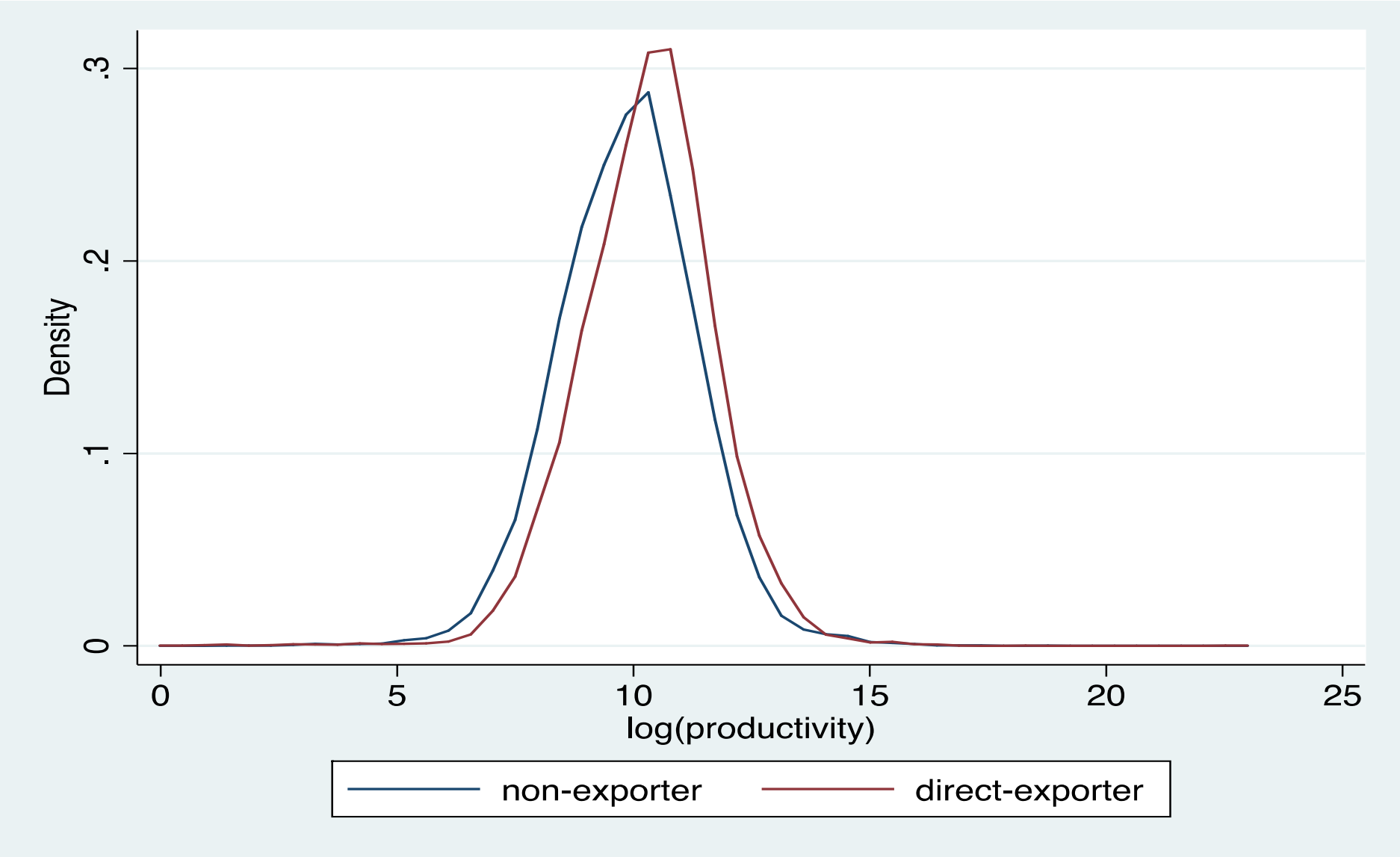
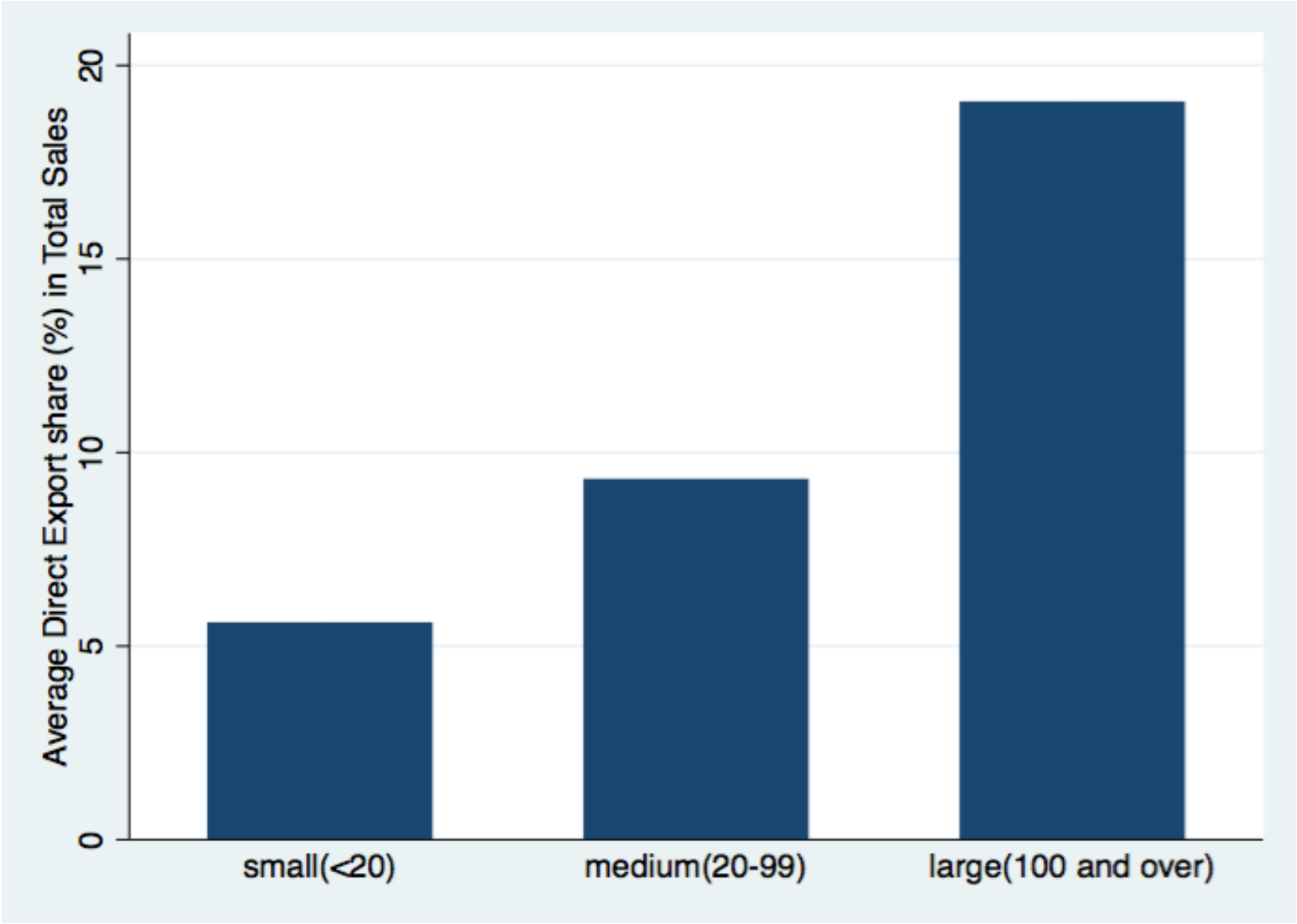


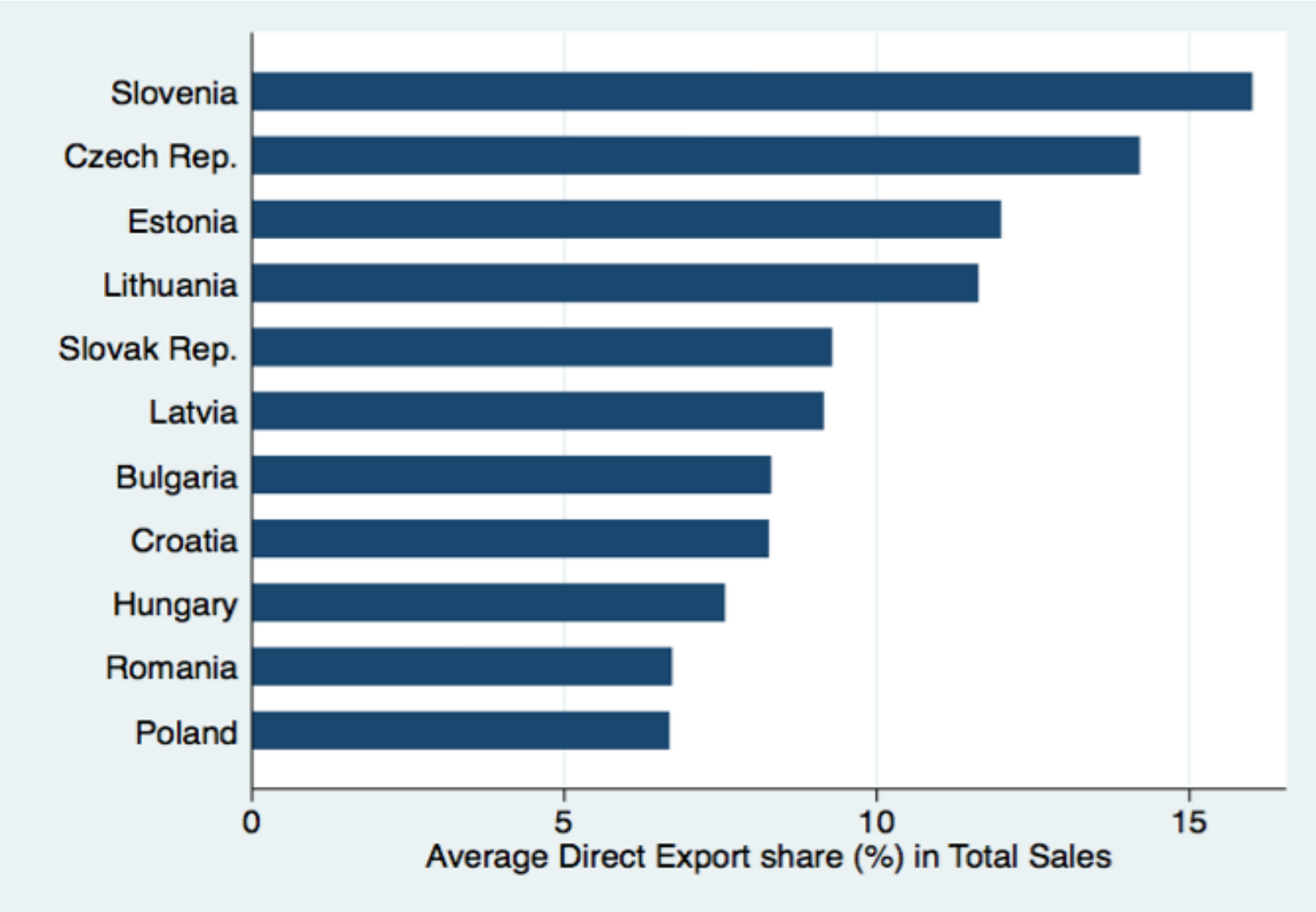
Kernel distribution of productivity: exporter vs non-exporter firms



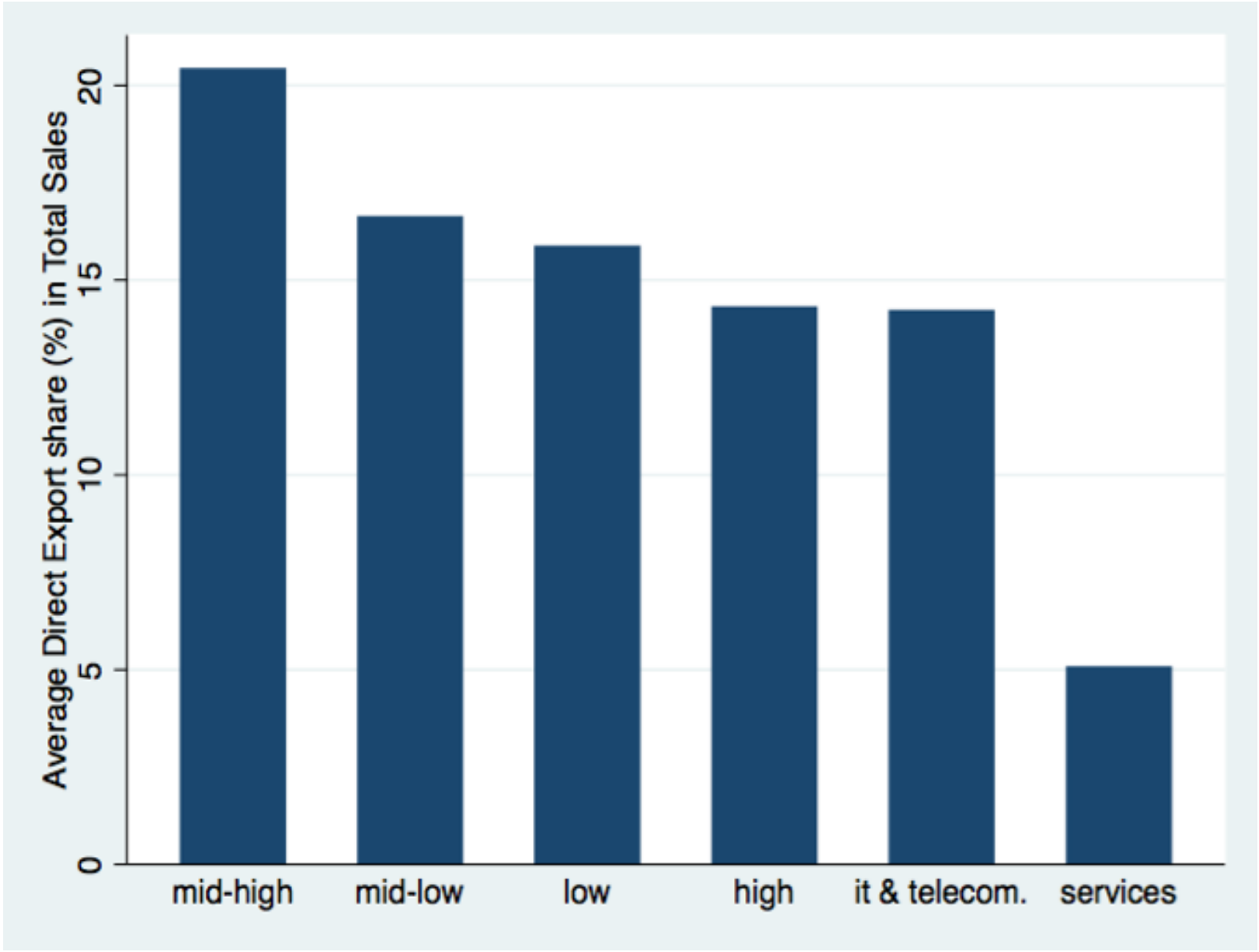
Export shares by firm size



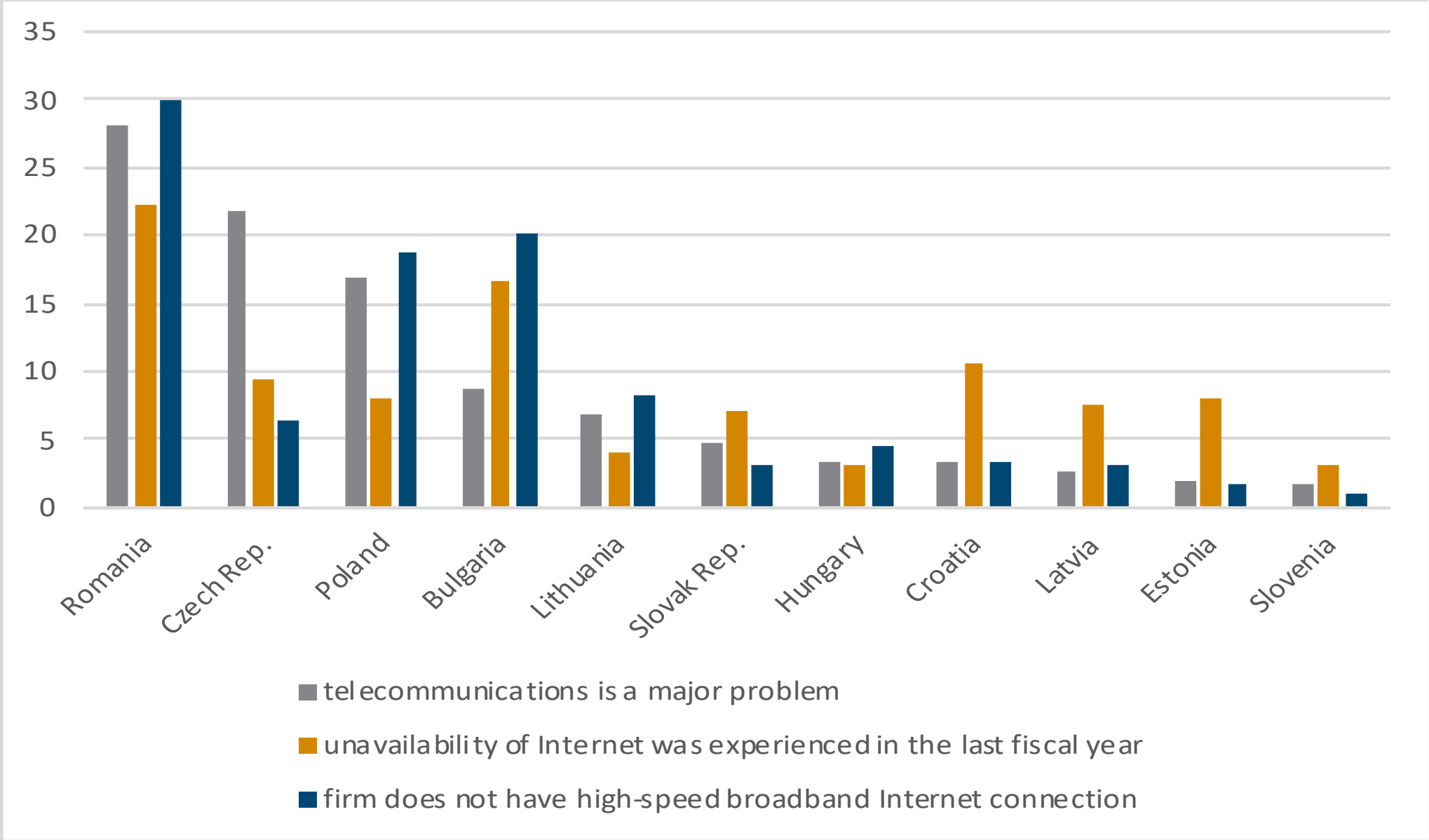
Average direct export shares in total annual sales across CEEC



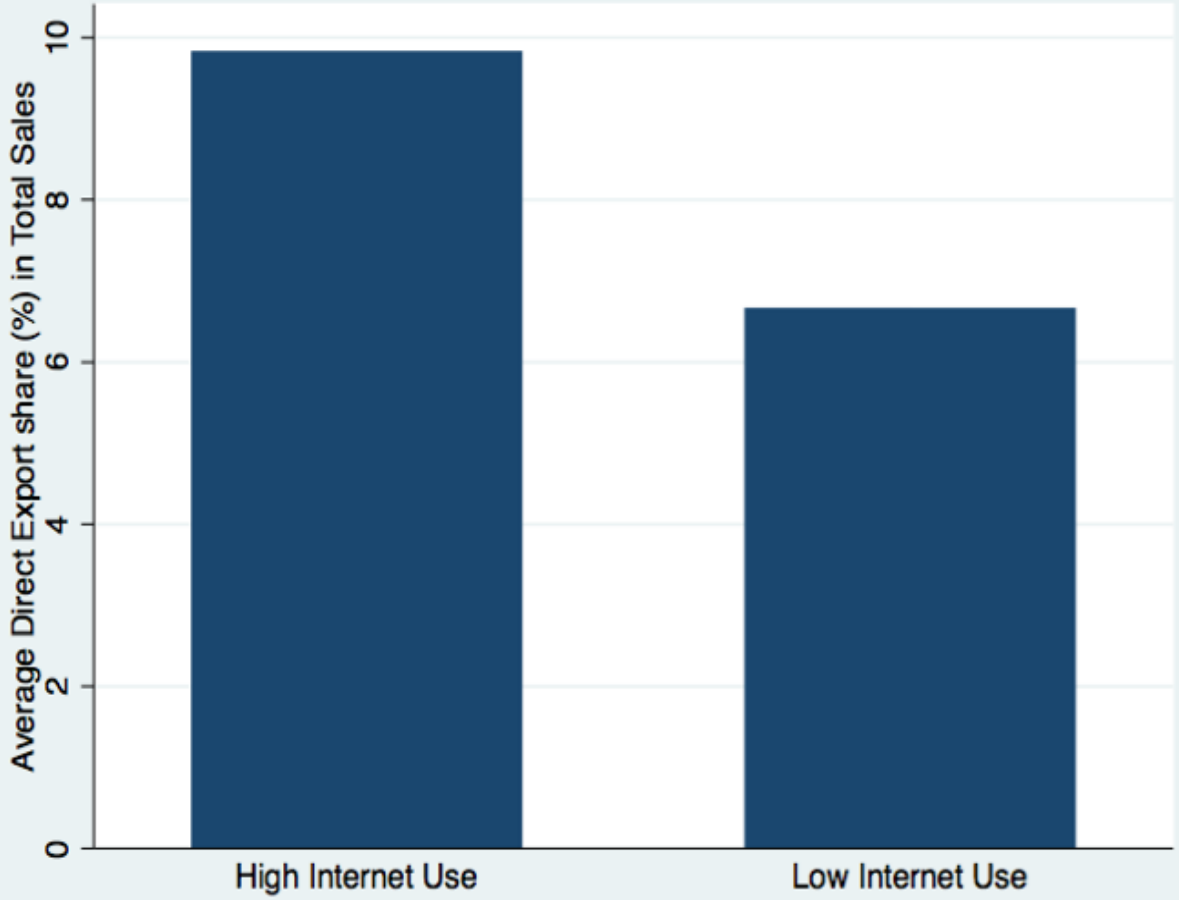
Average direct export shares in total annual sales across CEEC

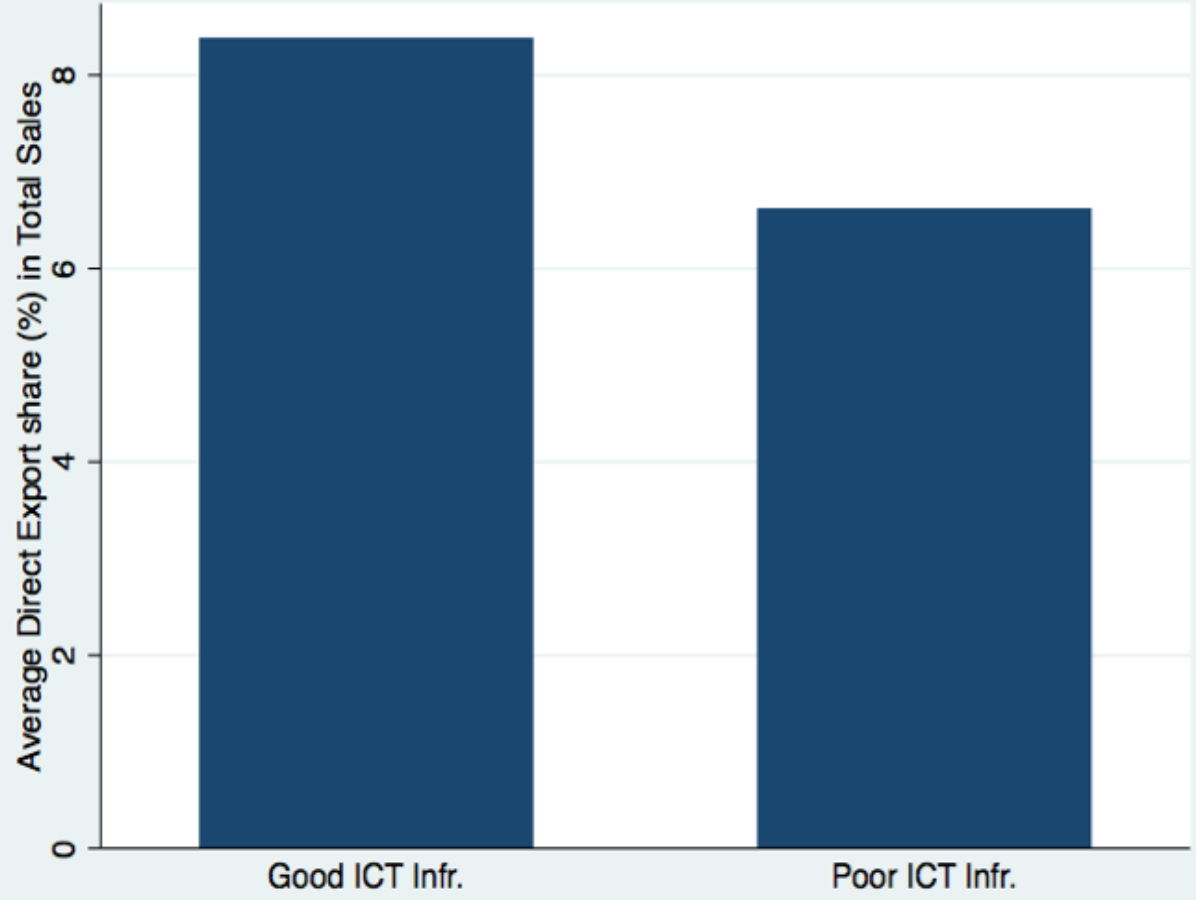


How much of an obstacle are telecommunications for firms in CEEC?



Average export shares and ICT





Empirical results on extensive margins of exports

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
int_infra	0.050***		0.0455*	0.0425*	0.0424*			
	(0.019)		(0.025)	(0.025)	(0.024)			
int_use		0.68***				0.364**	0.357**	0.363**
		(0.14)				(0.166)	(0.166)	(0.166)
lproduct			0.095***	0.113***	0.113***	0.111***	0.093***	0.110***
			(0.027)	(0.028)	(0.027)	(0.025)	(0.0246)	(0.025)
medium			0.380***	0.413***	0.411***	0.472***	0.444***	0.470***
			(0.094)	(0.094)	(0.092)	(0.08)	(0.079)	(0.077)
large			0.862***	0.969***	0.966***	1.046***	0.922***	1.042***
			(0.135)	(0.132)	(0.132)	(0.102)	(0.105)	(0.102)
age			0.001	-0.002	-0.002	-0.001	0.0003	-0.001
			(0.01)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)
for_tech				0.0183	-0.0561		0.0183	-0.035
				(0.134)	(0.140)		(0.134)	(0.118)
for_own					0.006***			0.006***
					(0.0016)			(0.001)
Constant	2.391*	2.129	-1.837	-2.354	-2.338	-2.190	-1.746	-2.167
	(1.332)	(1.354)	(1.752)	(1.684)	(1.691)	(1.404)	(1.442)	(1.408)
Country Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Sector Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time Dummies	YES	YES	YES	YES	YES	YES	YES	YES
N	18498	18486	16536	16571	16571	18046	17994	18046

Empirical results on intensive margins of exports

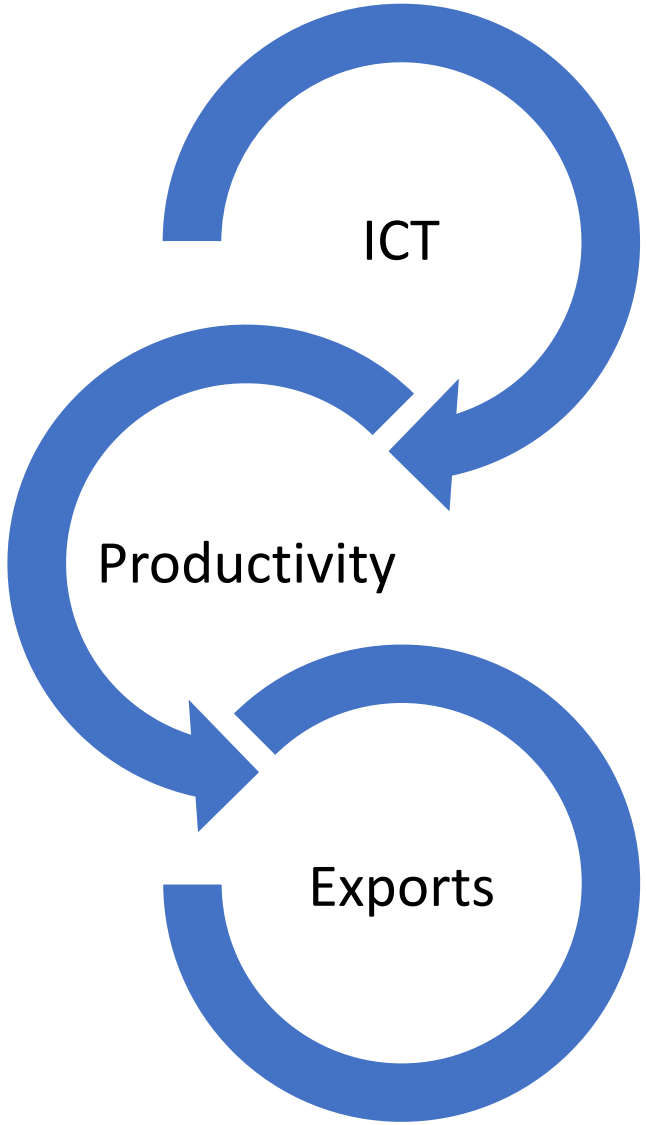
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
int_infra	0.0051		-0.0001	-0.0009	-0.0012			
	(0.045)		(0.004)	(0.0035)	(0.0034)			
int_use		0.929***				0.002	0.002	0.0016
		(0.335)				(0.013)	(0.013)	(0.013)
lproduct			0.0069*	0.0069*	0.0049*	0.0095***	0.0095***	0.006*
			(0.004)	(0.004)	(0.004)	(0.004)	(0.0036)	(0.004)
medium			0.0243*	0.0252*	0.0197	0.0352***	0.0352***	0.029***
			(0.0139)	(0.014)	(0.014)	(0.011)	(0.0113)	(0.011)
large			0.142***	0.144***	0.117***	0.182***	0.182***	0.146***
			(0.026)	(0.026)	(0.026)	(0.022)	(0.022)	(0.020)
age			-0.0009	-0.001	-0.0005	-0.0003	-0.0004	-0.0001
			(0.001)	(0.001)	(0.0007)	(0.001)	(0.0006)	(0.001)
for_tech				-0.0154	-0.0332*		-0.00002	-0.022
				(0.0186)	(0.019)		(0.0174)	(0.017)
for_own					0.002***			0.002***
					(0.0003)			(0.0003)
Constant	4.666**	2.551	0.879**	0.867**	0.875**	0.479	0.479	0.546*
	(2.341)	(2.034)	(0.375)	(0.374)	(0.362)	(0.337)	(0.337)	(0.327)
Country Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Sector Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time Dummies	YES	YES	YES	YES	YES	YES	YES	YES
N	18449	20800	16552	16552	16521	18021	18021	17973

Empirical findings

- In line with the literature on “Melitz effects” and economies of scale
- ICT infrastructure and ICT use increase probability of exporting
- Hardly any evidence on positive and significant effect of ICT variables on shares of exports

The end of the story?

- What if ICT impacts exports via labour productivity?



ICT and Productivity

- “Computers are everywhere but in productivity statistics”, Solow, 1987
- “Measure of our ignorance”, Abramovitz (1956)
- ICT as a General Purpose Technology (Bresnahan and Trajtenberg,1995; Crafts, 2008)
- Human capital and digital literacy is needed to enable ICT use

ICT in Cobb-Douglas Production function

$$\mathrm{Y}_i = A_i {K_i}^{\alpha} {L_i}^{\beta}\,, \qquad \alpha + \beta = 1$$

$$\mathrm{Y}_i = A_i {K_i}^{\alpha} {L_i}^{\beta} {H_i}^{\gamma} {ICT_i}^{\delta}\,, \qquad \alpha + \beta + \gamma + \delta = 1$$

$$\frac{\mathrm{Y}_i}{L_i} = \frac{A_i {K_i}^{\alpha} {L_i}^{\beta} {H_i}^{\gamma} {ICT_i}^{\delta}}{L_i} = A_i \frac{{K_i}^{\alpha} {L_i}^{\beta} {H_i}^{\gamma} {ICT_i}^{\delta}}{{L_i}^{\alpha} {L_i}^{\beta} {L_i}^{\gamma} {L_i}^{\delta}} = A_i \frac{{K_i}^{\alpha}}{{L_i}^{\alpha}} \frac{{L_i}^{\beta}}{{L_i}^{\beta}} \frac{{H_i}^{\gamma}}{{L_i}^{\gamma}} \frac{{ICT_i}^{\delta}}{{L_i}^{\delta}} =$$

$$= A_i \left(\frac{K_i}{L_i}\right)^{\alpha} \left(\frac{H_i}{L_i}\right)^{\gamma} \left(\frac{ICT_i}{L_i}\right)^{\delta}$$

$$\log(y_i) = \log\left(A_i\, {k_i}^{\alpha}\, {h_i}^{\gamma} {ict_i}^{\delta}\right) = logA_i + \alpha \log(k_i) + \gamma \log(h_i) + \delta \log(ict_i)$$

Empirical Equation

$$\log(y_i) = \alpha_0 + \alpha(\text{log\_k\_pw})_i + \gamma(\text{log\_h})_i + \delta(\text{log\_ict})_i + c_{ij} + s_{ik} + t_{it} + \epsilon_i$$

Estimated by OLS

Dependent Variable

Variable Name	*Description of variable*	*Data Source*
lproduct	Logarithm of total annual sales per permanent full-time employee	BEEPS

Independent Variables

Variable Name	*Description of variables*	*Data Source*	*Exp.sign*
log_k_pw	Logarithm of physical capital value: net book value of machinery vehicles, and equipment per full-time employee	BEEPS	+
log_ict	Logarithm of number of full-time employees at the end of fiscal year with a university degree	BEEPS	+
log_h	Logarithm of the number of full-time employees which regularly use computers to perform their jobs	BEEPS	+

Effects of ICT on labour productivity

	(1)	(2)	(3)	(4)
log_k_pw	0.205***	0.190***	0.113***	0.130***
	(0.029)	(0.032)	(0.037)	(0.038)
log_h		0.057		-0.139
		(0.043)		(0.105)
log_ict			0.200***	0.281***
			(0.039)	(0.105)
Constant	8.188***	8.131***	8.900***	10.433***
	(1.892)	(2.573)	(2.048)	(2.817)
Country Dummies	Yes	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
N	13938	13528	11762	10712

Estimating cross elasticity

$$\frac{\partial(exports)}{\partial(ICTuse)} = \frac{\partial(lproduct)}{\partial(ICTuse)} \times \frac{\partial(exports)}{\partial(lproduct)}$$

	Extensive Margins		**Intensive Margins**	
Marginal Effects	**Direct**	**Indirect**	**Direct**	**Indirect**
ICT infrastructure	5 %	0,6 %	insignificant	0,2 % points
ICT use	8 %	0,6 %	insignificant	0,3 % points

Conclusions

- ICT infrastructure and ICT use directly increase the probability of exporting by 5% and 8%, respectively
- 1% increase in regular use of computers by workforce increases labour productivity by 0.281%
- By enhancing labour productivity, ICT use increases the probability of exporting by 0.6 % and shares of exports by 0.3% points.
- By enhancing labour productivity, a strong ICT infrastructure indirectly increases extensive and intensive margins of exports by 0.6% and 0.2% points, respectively.
- Digital literacy in explaining labour productivity outperforms human capital approximated by the number of workers with university degrees

Policy Recommendations

- Due to high degree of heterogeneity in terms of ICT infrastructure and ICT use across CEEC, more targeted policies should be developed for every country to upgrade ICT infrastructure and connectivity in CEEC
- As importance of ICT use in raising export activities is higher than that from ICT infrastructure, deployment of ICT should be more important than solely developing strong ICT infrastructure
- Providing trainings on ICT deployment and improving digital literacy of workers could improve performances of firms

Thank you very much for your attention & feedback

Stay in touch:

Research gate/Linkedin – Tinatin Akhvlediani

Jørgensen and Schröder (2008) model

Consumers

$U = \sum c_i^{\theta}, \theta \in (0,1)$

$U = \sum_{i_d=1}^{N_d} c_{d,i_d}^{\theta} + \sum_{i_t=1}^{N_t} c_{t,i_t}^{\theta} + \sum_{i_f=1}^{N_f} c_{f,i_f}^{\theta}$

c_{d,i_d} - consumption of variant “id” of non-exported domestic products

c_{t,i_t} - consumption of variant “it” of the exported domestic products

c_{f,i_f} - consumption of variant “if” of imported products

The number of varieties actually produced: $n_d\ n_t\ n_f$

By symmetry: $n_t = n_f^* = n_f = n_t^*$

Firms

- The only factor of production is labour – *L*, which is remunerated at wage *w* that is normalized to *1*.
- To enter firms need to bear fixed cost of entry (entry cost) *f*= e_k+ e_w =>
- $e_k = f\delta$ entry fee in monetary units; $e_w = (1-\delta)\, f$ - entry cost in labour units
- Two separate rounds, instead of introducing shocks (probability to die as in Melitz (2003)
- Prior to entry there is no knowledge of marginal cost
- Prior to entry all firms are homogeneous in terms of fixed cost of production α
- Upon entry, but prior to production, the marginal cost type is revealed β_l, (low-productive) β_h (high-productive); such that β_l=$\phi\beta_h$, ϕ>1
- With probability γ firms are high-productive type
- Upon one round of production, firm-specific export costs a_i is disclosed, $a_i \in [0, \alpha]$ with $\mathrm{F}(.)$ distribution function (public knowledge)

Trade

- Trade is costly: ad valorem tariff $\tau \in (0,1)$
- a_i and τ create asymmetry
- $\pi_{dj} = p_{dj}x_{dj} - \left(\alpha + \beta_j x_{dj}\right)w$
- $\pi_{zj} = p_{tj}x_{tj} + (1-\tau)p_{zj}x_{zj} - \left(\alpha + a_i + \beta_j(x_{tj} + x_{zj})\right)w$
- $j = l, h$; x_{dj} is the output of pure domestic firms; x_{tj}, x_{zj} are are the output of an exporting firm to the home and the foreign market

Market Clears

- Goods market clearing condition:

$Lc_{d,i_d} = x_{d,i_d}$; $Lc_{t,i_t} = x_{t,i_t}$; and $L^* c^*_{f,i_f} = x_{t,i_t}$

- Income expenditure clearing
- $Lw + R = p_{dh}x_{dh}n_{dh} + p_{th}x_{th}n_{th} + p_{fh}x_{fh}n_{fh} + p_{dl}x_{dl}n_{dl} + p_{tl}x_{tl}n_{tl} + p_{fl}x_{fl}n_{fl}$
- *R* is net profit of all firms => $R = \tau p_{zh}x_{zh}n_{zh} + e_k m$
- e_k and tariff revenues are redistributed to consumers
- *m* is number of firms

Prices & Quantities

- Within marginal cost categories:
  - $p_{dh} = p_{th} = \frac{\beta_h}{\theta}$;
  - $p_{zh} = \frac{p_{dh}}{1-\tau}$;

  - $x_{zj} = x_{zj}^{*} = x_{dj}\,(1-\tau)^{\frac{1}{1-\theta}}$

Prices & Quantities

- Across marginal cost categories:
  - $p_{dl} = p_{tl} = \frac{\phi\beta_h}{\theta} = \phi p_{dh}$
  - $p_{zl} = \frac{p_{dl}}{1-\tau}$
  - $x_{dl} = x_{dh} \left(\frac{1}{\phi}\right)^{\frac{1}{1-\theta}}$

  - $p_{dj} = p_{tj} => x_{dj} = x_{tj}$
  - $p_{zj} = p_{zj}^{*}$ *by symmetry*

Free Entry-Exit Equilibrium

- Entry of firms occurs until expected profits equal entry cost:
- $\pi^{exp} = \gamma[F(\bar{a}_h)\pi_{zh} + ((1 - F(\bar{a}_h)\pi_{dh}] + (1 - \gamma)\,[F(\bar{a}_l)\pi_{zl} + ((1 - F(\bar{a}_l)\pi_{dl}] = f$
- By inserting profits :
- $\pi^{exp} = \gamma\left[\frac{\bar{a}_h}{\alpha}\,(p_{th}x_{th} + (1-\tau)p_{zh}x_{zh} - \left(\alpha + \frac{\bar{a}_h}{2} + \beta_h(x_{th} + x_{zh})\right)\right) + (1 - \frac{\bar{a}_h}{\alpha})\,(p_{dh}x_{dh} - (\alpha + \beta_h x_{dh}))\Big] = f$
- So by following Melitz, high-cost firms exit immediately

Number of firms participating in industry

- Number of firm is derived either from income expenditure clearing or from labour market clearing :
- $m = \frac{L(1-\theta)}{\alpha\gamma + f\left(\delta + \theta(1-\delta)\right) + \frac{\bar{a}_h{}^2}{2\alpha}}$
- Who starts production – γm
- Who exits – $(1-\gamma)m$
- Export active – $n_{th} = \frac{\bar{a}_h}{\alpha}\gamma m$
- Non-trading domestic firms – $n_{dh} = (1 - \frac{\bar{a}_h}{\alpha})\gamma m$
- Number of varieties - $\tilde{n} = n_{dh} + 2n_{th}$

Fixed cost of exporting

Compared to Melitz (2003), Jørgensen and Schröder (2008) introduce heterogenous export cost

$$\bar{a}_h = \left(\sqrt{\alpha^2 + 2\alpha \left(\frac{f}{\gamma} + \alpha \right) (1-\tau)^{\frac{2}{1-\theta}}} - \alpha \right) (1-\tau)^{\frac{1}{\theta-1}}$$

My assumptions:

$$\frac{\partial(a_i)}{\partial(ICT_i)} < 0$$

$$\frac{\partial(ma_i)}{\partial(ICT_i)} < 0$$

ICT in Cobb-Douglas Production function

$$\mathrm{Y}_i = A_i {K_i}^{\alpha} {L_i}^{\beta}\ , \qquad \alpha + \beta = 1$$

$$\mathrm{Y}_i = A_i {K_i}^{\alpha} {L_i}^{\beta} {H_i}^{\gamma} {ICT_i}^{\delta}\ , \qquad \alpha + \beta + \gamma + \delta = 1$$

$$\frac{\mathrm{Y}_i}{L_i} = \frac{A_i {K_i}^{\alpha} {L_i}^{\beta} {H_i}^{\gamma} {ICT_i}^{\delta}}{L_i} = A_i \frac{{K_i}^{\alpha} {L_i}^{\beta} {H_i}^{\gamma} {ICT_i}^{\delta}}{{L_i}^{\alpha} {L_i}^{\beta} {L_i}^{\gamma} {L_i}^{\delta}} = A_i \frac{{K_i}^{\alpha}}{{L_i}^{\alpha}} \frac{{L_i}^{\beta}}{{L_i}^{\beta}} \frac{{H_i}^{\gamma}}{{L_i}^{\gamma}} \frac{{ICT_i}^{\delta}}{{L_i}^{\delta}} =$$
$$= A_i \left(\frac{K_i}{L_i}\right)^{\alpha} \left(\frac{H_i}{L_i}\right)^{\gamma} \left(\frac{ICT_i}{L_i}\right)^{\delta}$$

$$\log(y_i) = \log\left(A_i\, {k_i}^{\alpha}\, {h_i}^{\gamma} {ict_i}^{\delta}\right) = logA_i + \alpha \log(k_i) + \gamma \log(h_i) + \delta \log(ict_i)$$

Number of firms

Country/year	2007-2009	2011-2014
Bulgaria	718138	1367745
Croatia	4109891	119473
Czech Rep.	580871	337402
Estonia	1641368	685142
Hungary	315095	285373
Latvia	23926	276166
Lithuania	2843132	18084
Poland	1170116	653515
Romania	1060427	603376
Slovak Rep.	491932	973035
Slovenia	121378	875781
Total	55566561	25977659