

The Complementarity between ICT Use and Competition in

Mexico*



1) Introduction



2) Data and descriptive Statistics



3) Empirical strategy

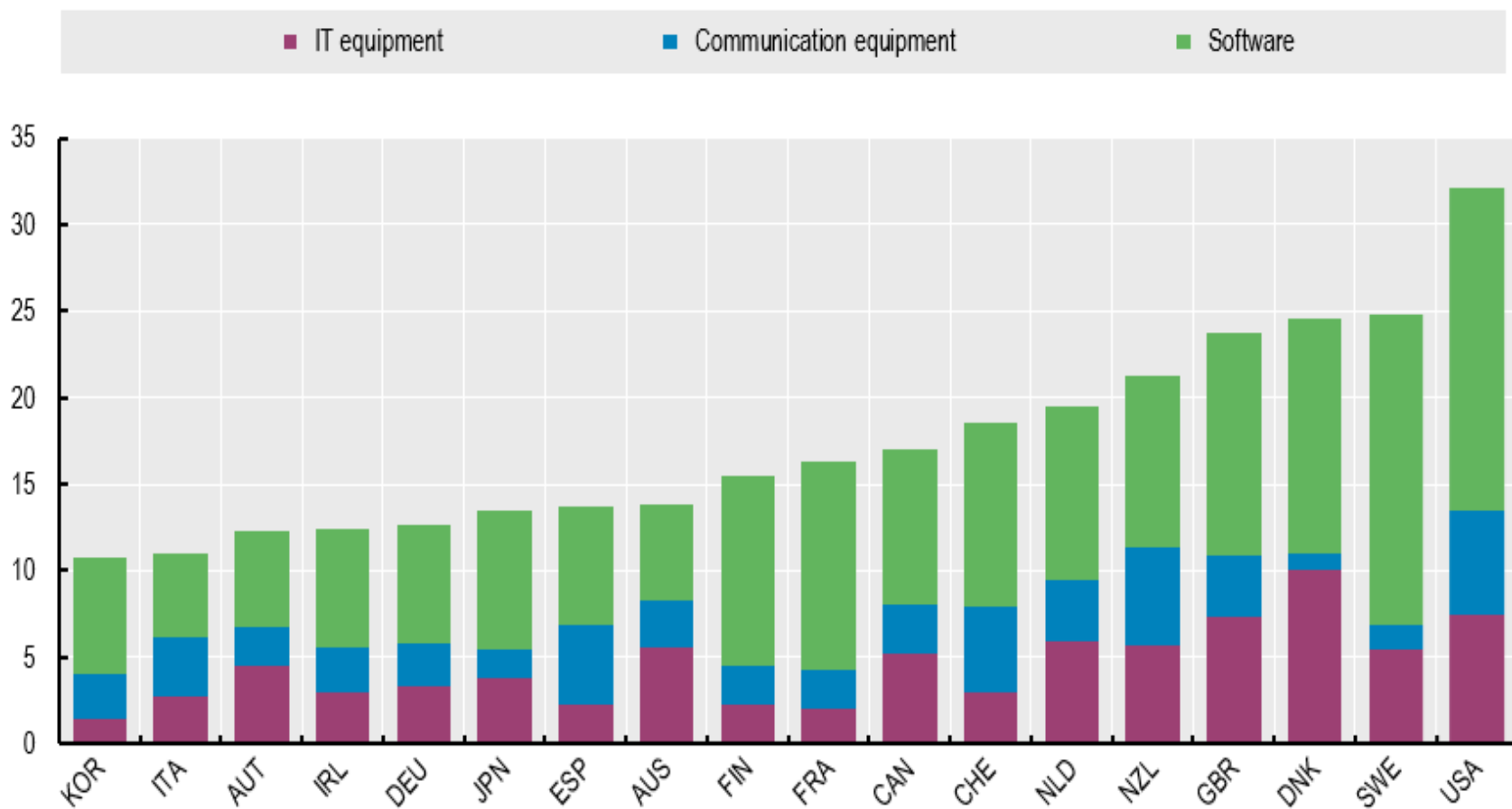


4) Results



5) Conclusions & Policy Implications

Figure 1. Shares of ICT investment in non-residential gross fixed capital formation





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- ICT is one of

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- Does ICT increase firm's productivity?
 - Does this effect depend on the

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- Contribute to the knowledge on the relation between ICT use and trade-induced technical change – focusing on a developing country.
 - Novel firm-level data panel for Mexico.
 - Test previous empirical results regarding ICT use and productivity for the case of a developing country.

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- ICT increases productivity but only when companies have incentives to use it properly.
 - Competition provides the right incentives.
 - Only firms that face higher competition from China are the ones showing positive effects of ICT on productivity.



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ICT-use measures

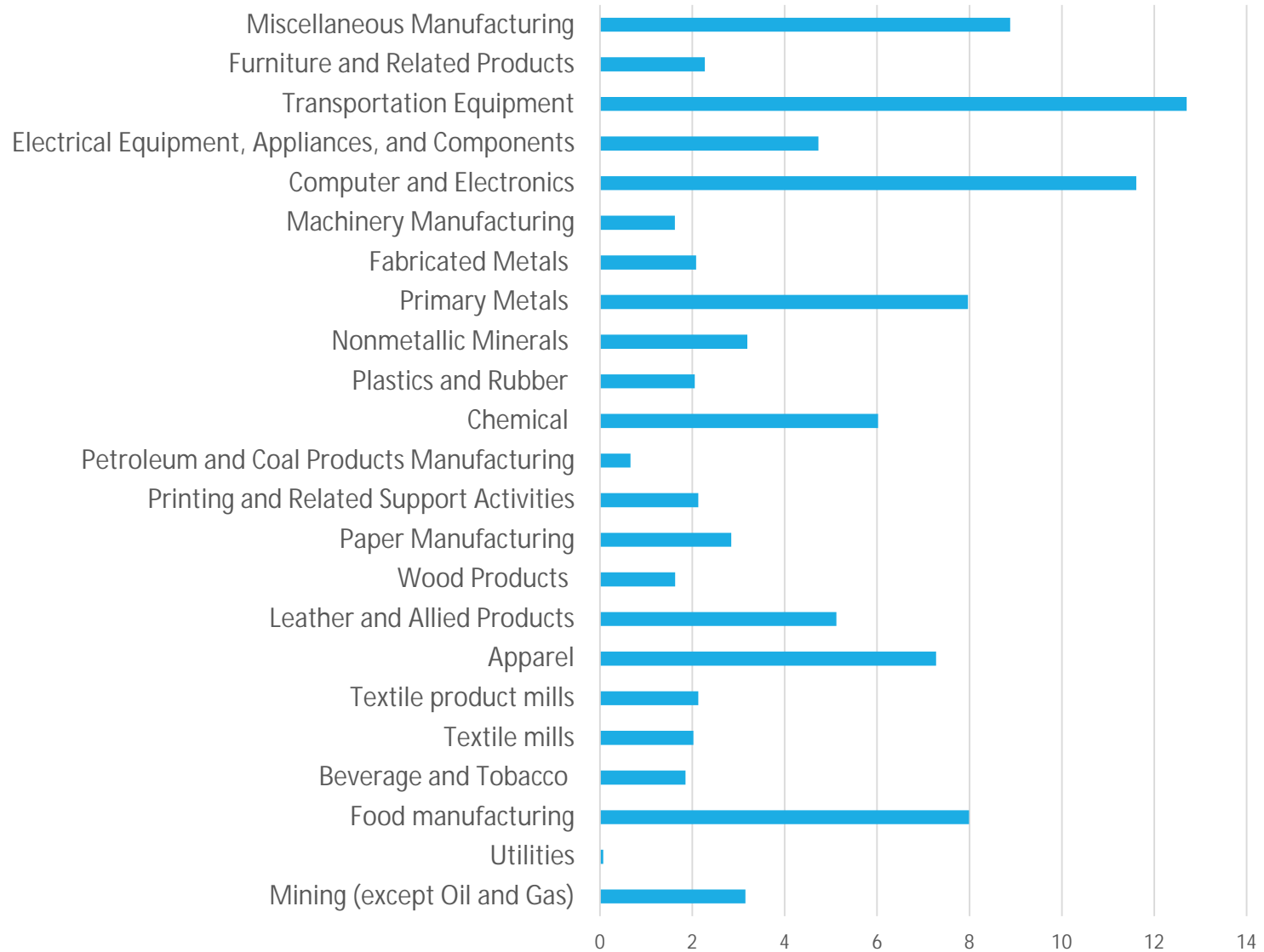
- 1) Computers per worker
- 2) *Share of labor with computer*
- 3) *Share of labor with internet*

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- 87% of the firms in our sample are big firms.
 - 40% of the firms were older than 27 years in 2012.

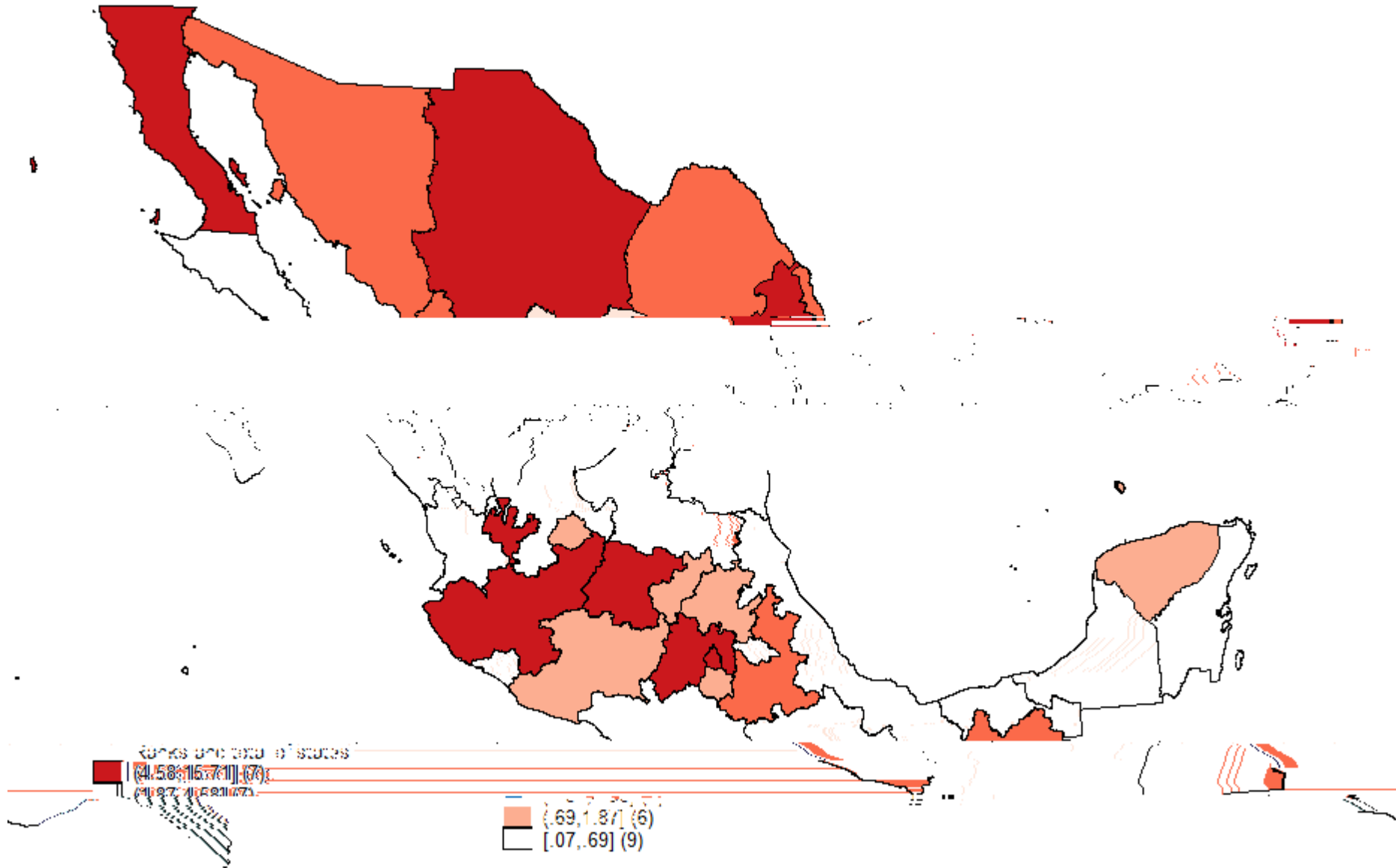
Table 1. Summary statistics 2012

Variable	Sample				Whole			
	Mean	sd	p10	p90	Mean	sd	p10	p90

Firms in our sample are from sectors...

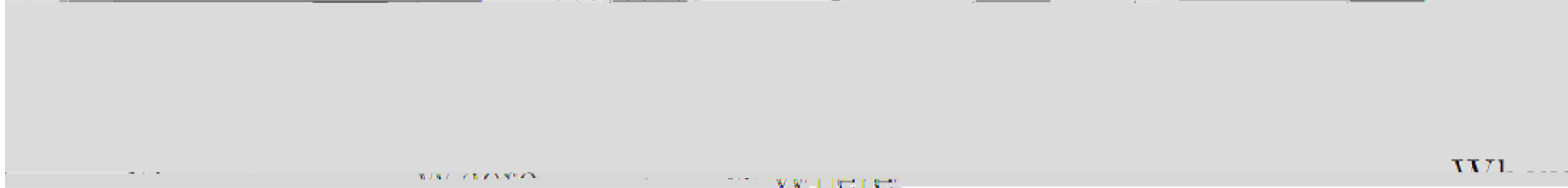


And are located in...

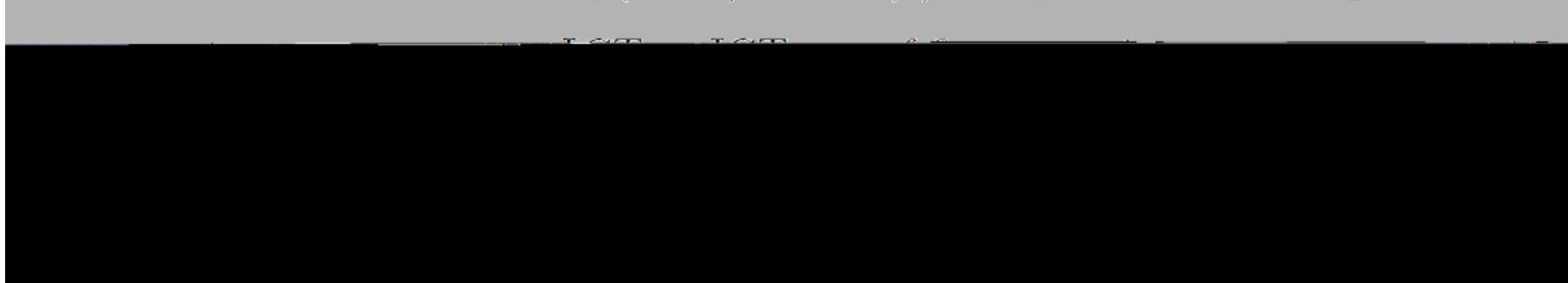


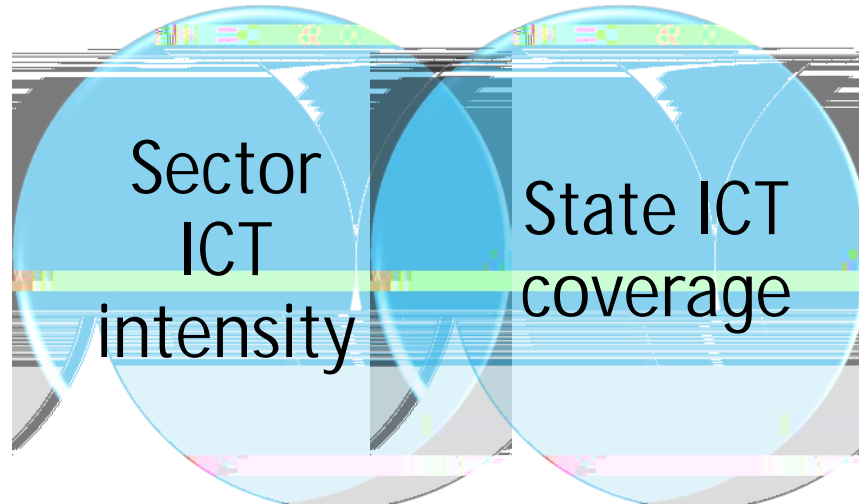
Source: Authors' calculations using data from ENTIC, INEGI

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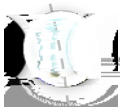




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Table 2. IV estimates of the effect of ICT use on firm-level productivity

		(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable is sales/worker							
		2.246*	3.458*	3.367*	3.296*	3.296*	2.912*
		(0.992)	(1.262)	(1.295)	(1.258)	(1.258)	(1.275)
or with internet		2.200*	2.787**	3.259**	3.257**	3.258**	Share of labor
		(1.225)	(1.054)	(1.251)	(1.208)	(1.258)	
		4.323**	4.517**	Share of labor with computer	3.644**	3.828**	4.487**
		(1.730)	(1.852)		(1.682)	(1.636)	(1.78)
		Control			Controls		
		No	Yes	Yes	Yes	Age	
		No	No	No	No	Yes	Firm size
collar workers		No	No	No	Yes	Yes	Share of white-c
		No	No	No	No	Yes	Exports/ sales
		No	No	No	No	Yes	FDI share
		1430	1430	1430	1430	1430	N

Table 3 .IV estimates of the effect of ICT use on firm-level productivity

a) Low Chinese competition

	(1)	(2)	(3)	(4)	(5)
ICT use	0.000	0.000	0.000	0.000	0.000
Control variables					
Constant	0.000	0.000	0.000	0.000	0.000
Observations	1000	1000	1000	1000	1000
R-squared	0.000	0.000	0.000	0.000	0.000

Controls

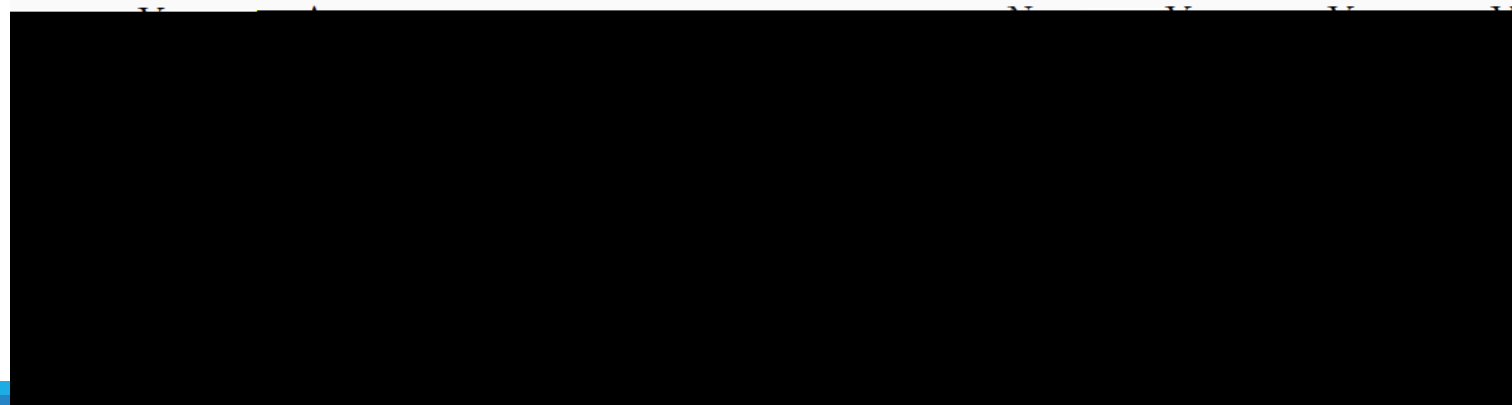
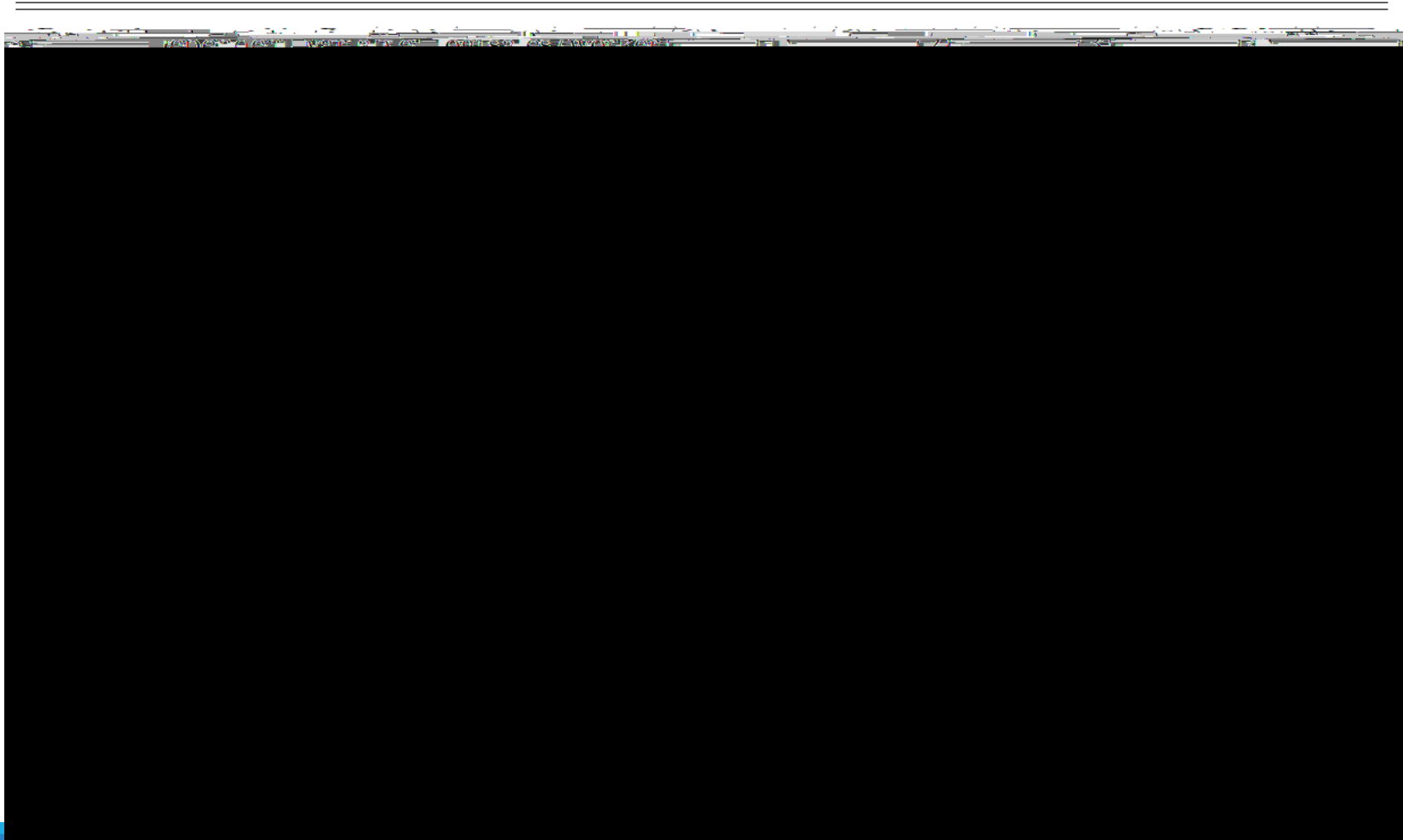


Table 3. IV estimates of the effect of ICT use on firm-level productivity
b) High Chinese competition



Source: Authors' calculations using data from ENTIC, INEGI

Table 4. IV regression ICT use on firm-level productivity

	(1)	(2)	(3)	(4)	(5)	(6)
Computers per worker	1.452	1.057			0.309	1.458
	(0.839)	(1.327)	(1.329)	(1.377)		
ln sales per worker	10.50***	10.50***	10.92***	10.84***	10.84***	10.84***
	(3.937)	(3.937)	(4.030)	(4.008)	(3.937)	(3.937)
China's concentration of computers			-1.667	-1.713	-1.699	-1.694
			(0.914)	(0.914)	(0.914)	(0.914)
or with internet			-1.311	-0.721	-0.700	-0.993
			(2.104)	(2.502)	(2.104)	(2.104)
Share of labor						

Table 5. IV regression ICT use on firm-level productivity

	(1)	(2)	(3)	(4)	Dependent variable: $\log(\text{sales}/\text{worker})$	
worker	0.240	0.500	0.210	0.300	Computers per	
			(0.678)	(0.720)	(0.716)	(0.731)

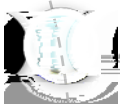




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- We find that ICT use increases productivity but only when firms face competition.
 - More effective use of ICT in order to cope with the pressure of Chinese competition.
 - Willingness to make organizational changes to

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- Are these high levels of investment in ICT going to increase significantly firms' productivity?
 - No, unless we generate the appropriate incentives through competition.
 - Back to the basic
 - ICT investments are highly complementary to policies that increase competition in the market.