The emergence of new industries at the regional level in Spain
A proximity approach based on product-relatedness

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c a c b e o e o g o a c e a p o de e a ed co pe ence and a e ee e.g. e eppe , 2002; Bo c a and en ng 200 ; B en o f and c 20 0; B e ge and Can ne 20 0; T anne 20). o e e , p oce g o a d e f ca on ba ed on e a edne a no been n e ga ed y e a ca y n e y ecen y.

ecen d e da go e a. 200 ; a ann and nge 200 ; a ann and da go 20 0) a e de on a ed a e c en nd a c e a e o n y e e affec e f e a e o e nd a c e o co n e o a con de ab e deg ee. T e e c o a a ge e a a co n y need a pec f c e o oca capab e o an f ac e a good. A da go 2009) e p a n , capab e co d be ang b e np , c a b dge , po and g a , o n ang b e , c a ho , n on , o e e x ence o pa c a ne o . f a co n y a ead y a o o e capab e a e needed o p od ce a ne good, a e ba e o beco e co pe e n a good. n con a f e co n y doe no po e e capab e e ed o an f ac e e good be e y d f c o de e op a nd y. ence, e e x ng e o capab e d e e ne c n nd e be ea b e o de e op n e f e.

T e a o pape o p o de e dence f o p oce o b anc ng a e eg ona .e. e b-na ona) a e an e na ona ca e, beca e be e e a e ec an o g c capab e a e an f e ed be een n and e x ng nd e ope a e a y o g no exc e y) a e eg ona ca e. T o o no edge, on y one dy Ne f e e a., 20) a p o ded y e a c e dence f o b anc ng n e a ed ac e a e eg ona ca e. pape a e o con b on o e a e. e a o de e ne a c pa a ca e e na ona e e eg ona ca e) p oce o e a ed d e f ca on o an f e econd, e n e ga e e p oce o e a ed d e f ca on a e eg ona e e by ean o e po x y nde x de e oped by a ann, da go and nge , c de e ne e deg ee o e a edne be een p od c . e e a n o a on o de e ne e e x en o c pan eg on a e N 3 e) a e d e f ed n e a ed p od c n e pe od 988-2008. dy con a e o e d e f y n o nd e a a e e a ed o e e x ng e o nd e . A e x pec ed, e f o nd a p oce o e a ed d e f ca on onge and o e an f e a e eg ona an e na ona ca e. A c , e c a a d e f ca on b ec o a pa -dependen b anc ng p oce a occ a ny a e eg ona, a e an e na ona ca e.

T e c e o e pape a f o . ec on 2 b e y n od ce e e a e on eg ona d e f ca on and e a edne . ec on 3 n od ce e da a, e e odo ogy and e a ab e nc ded. ec on p e en o e de c p e . ec on 5 p e en e a n o co e o e ana y e cond c ed. ec on p e en e an conc on .

2. Regional diversification based on relatedness

n e 980 and 990 , e e a a o a en on f o e deg ee o e a edne be een ec no og e ed n ec o , beca e a be e ed o affec e cope o no edge p o e and ne - nd y ea n ng o enbe g and c a 983; Ca on and an cz 99). C e o nd e e den f ed on e ba o ec no og ca co p e en a e , and a o ay o ea e e ec no og ca e a edne be een nd e e e de e oped and app ed ee e.g. a o n 99 ; T eece e a. 99). Noo eboo 2000) e e ed o e no on o op a cogn e po x y be een econo c agen . a no on, e ean a e cogn e d ance o d ne e be oo a ge o e ho

effec e co n ca on o d occ) no oo a o g a an ee no e y p od c on and o a o d oc - n), beca e bo o d a e n e ac e ea n ng p oce be een agen .

In e 2000 , dea of nd y e a edne a co bned ee p ca obe a on by econo c geog ap e a no edge p o e e e of en geog ap ca y bo nded. One beca e nc ea ng y a a e of e fac a e e en o e a e y of nd e o ec no oog e p e en n a eg on e a ed g po e y affec e cope fo no edge p o e and ea n ng, a oca f n d ffe en b e a ed ac e can p of o e f o a p o e an oca f n n e a ed nd e . Po e 2003) a one of e f o ecogn ze e po ance of pa a e e na e ac o e a ed nd e and nco po a ed dea n o concep of c e . Po e ade e ca a pec a za on n c e of e a ed nd e , no n nd e *per se*, o d be bene c a fo eg ona de e op en .

en en e a . 200) po oned concep of nd y e a edne n e pa a e e na e and eg ona g o 7 e a e. ey efe ed o e e a ed a e y effec ch conce n e e na e a co e fo ad e y of e a ed nd e n a eg on. Co e o e dea of op a cogn e d ance of Nooeboo , e no on of eg ona e a ed a e y cap e e de ca e ba ance be een cogn e p o y and cogn e d ance ac o ec o n a eg on ch enab e no edge o p o e effec e y be een ec o . , e o e a e y ac o e a ed ec o n a eg on, e g e e n be of ec no og ca y e a ed ec o , e o e ea n ng oppo n e e e a e fo oca nd e , e o e n e - ec o a no edge p o e a e e y o a e p ace, and e g e e eg ona pe fo ance. e a , de fo nd e p ca ppo fo e gn f cance of e a ed a e y fo eg ona g o n e Ne e and en en e a ., 200), a y Bo a and a a no 2009; a a o 20 0), ea B a B op and pa o , 20 0) and pa n Bo a e a ., 20).

Apa f o e fac a e a edne a ong nd e n a eg on ay d e eg ona g o , ay a o d e e en y of o nd e n a eg on. ecen de da go e a . 200 ; a ann and nge 200 ; a ann and da go 20 0) a e a ed a e c en nd a c e of a co n y affec f e ae, beca e e e ng e of capab e n a co n y de e ne c no nd e be fea be o de e op n e nea f e. Acco d ng o a ann and da go 20 0), capab e efe o e p od c e np a a e no n e na ona y adab e. f o e e, f co d ac e o e capab e , and e ab ence a e na ona e e o d no affec e po b e of co n e o de e op ne nd e . Capab e co d be ang b e np , a b dge , po and g ay , o n ang b e , a o , n on , o ne o da go 2009). en a co n y a eady a o of e capab e a a e needed o p o ce a ne good, a e fe ba e o beco e co pe e n a good. In con a , f e co n y doe no po e e capab e e ed o an fac e e good, be e y d ff c o de e op a nd y.

oc ng on f n e po po fo o of co n e o e e, a ann and nge 200) de on a ed a co n e p edo nan y e pand e e po ac e by o g n o 7 p od c a a e e a ed o e c en e po po fo o. In add on, co n e a a e a de ange of e a ed e po p od c a e o e oppo n e o d e f y n o no e a ed e po p od c , and a e o e oppo n e o an econo c g o , n co pa on o poo e co n e . da go e a . 200) po n ed o a e oca on of a co n y n e p od c ap c ca e. a o e p od c a e po oned n e o e den e pa of e p od c - ap e e ey a e e a ed o any o e p od c), e ea o e p od c a e fe n e p od c , and a e oca ed n e pe p e y of e p od c - ap. e oca on of a co n y n e p od c ap en de e he d e f ca on po b e . f a co n y pec a zed n p od c oca ed n e pe p e y of e p od c ap, a e

[illegible] e po b e o dep oy capab e n ne good . n con a [illegible] a co n y pec a zed n a den e pa [illegible] e p od c ap, p e a capab e can be dep oyed n a ge n be [illegible] p od c and, ence, d e [illegible] ca on po b e be a ge .

No deny ng e po ance [illegible] e na on a e ee e.g. Ba e 2003), e e a e e y good ea on o be e a e eg ona .e. e n a a ona) ca e e en o e po an [illegible] o e p oce [illegible] e a ed d e [illegible] ca on. e be e e a any capab e do no o e ea y n co n e , and e e o e eg on need o po e ce an capab e a e oca e e o de e op ne nd e . [illegible] capab e e e [illegible] y ob e, eg on co d ac e o e n o e eg on and ence, e de e op en [illegible] ne nd e o d no be ea y con a ned by e ac [illegible] capab e a e eg ona e e. And beca e capab e do no an [illegible] e ea y n a co n y, e be e e a eg on oca ed n e pe p e y [illegible] e p od c- ap a e o e d [illegible] c e o d e [illegible] y an eg on oca ed n e o e cen a pa [illegible] e p od c- ap.

[illegible] e e a ge e a e n econo c geog ap y a e e e po ance [illegible] eg on- pec c a e [illegible] o eg ona co pe ene o pe 992; Ma en 995; La on 999; Ma e and Ma be g 999; Ma e 20). o pe 995) a ed abo n aded n e dependenc e ' a p ac ce and con en on c de e ne e co pe ene [illegible] eg on n a g oba zed, o d o an nc ea ng e en. Ma be g and Ma e 999) [illegible] e ed o oca zed capab e ' a e a oca ed a pa c a no edge and co pe ence ba e and a o nd ng n ona en on en a acc a e a e eg ona e e. [illegible] e e oca zed capab e ' a e n ang b e a g deg ee [illegible] ac ne [illegible] o a c ca a e [illegible] o eg on beca e ey canno be ea y a ed by o e eg on . o n ance, e a e c a a n ona e ng a e eg ona e e a e e o co e [illegible] a ong [illegible] o y a a e ne e [illegible] o a e on e a e no can ey be de gned ea y o g p b c n e en on e e 2003). [illegible] e e o e, eg on end o e o e a ong pa c a a ec o e , and n e- eg ona a e y a pe en ea e o e e y cap a econo y Bo [illegible] a 200).

e c a a e e eg on- pec c, oca zed capab e a o ope a e a o ce o d e [illegible] ca on. Bo [illegible] a and en en 20) de c be p oce o eg ona d e [illegible] ca on by [illegible] no nd e a e [illegible] o ec no og ca y e a ed nd e n eg on n [illegible] e ng co pe ence a e eco b ned n no econo c ac e a eg ona b anc ng'. [illegible] ey c a a e eg ona ca e c c a e e, beca e e a ed d e [illegible] ca on n o no nd e end o occ o g no edge an [illegible] e ec an e en ep ene p p no [illegible]), [illegible] d e [illegible] ca on, abo ob y and oc a ne o ng, a o [illegible] a e a ong oca b a . [illegible] e e b an a e dence a p no [illegible] ac e con b e ndeed o e p oce o od ec o g ng b o no ec o n a eg on. Long d na ca e- d e o nd e a e de on a ed a e o cce [illegible] en ep ene n no nd e a e o e a e xpo co pe ence ey ac ed n ec no og ca y e a ed nd e eppe and on 2000; Bo [illegible] a and en ng 200 : eppe 200). Labo ob y, a ano e ey ec an o g [illegible] no edge an [illegible] e ed ac o 7 [illegible] and ec o , a o e xpec ed o be a a o o ce o eg ona b anc ng. [illegible] beca e o abo ob y occ a h y b no e xc e y) a e eg ona e e [illegible] n abo a e a ea on 20). o e , e p ca e dence on po ance [illegible] o eg ona b anc ng ye ac ng.

Ca e d e o a ne oca nd e a e deep y oo ed n e a ed ac e n e eg on Be 990; ae e , 2005; Bo [illegible] a and en ng 200 : eppe , 200 : Ba e 20 0). o o no edge, e dy o Ne [illegible] e e a. 20) ye 7 e on y one a a p o ded y e a c e dence a eg on a e o e y o e xpand and d e [illegible] y n o nd e a a e c o e y e a ed o e e x ng ac e . [illegible] ey oo ed a e p obab y o ne nd e

en e ng a eg on, and o a affec ed by e deg ee of ec no og ca e a edne
o e nd e n e eg on. T ey fo o ed e e o on of e nd a c e n 0
ed eg on d ng e pe od 9 9-2002. Ne e a fo nd a a ne nd y o e7
e y o en e a eg on en ec no og ca y e a ed o o e nd e n a eg on.
Ano e n e ng f nd ng a a an e x ng nd y ad a g e p obab y o e x a
eg on en a nd y a no o a ea y, ec no og ca y e a ed o o e nd e
n e eg on. Con e en y, ey fo nd ong and pe en e dence a e e and a of
nd e b ec o a pa -dependen p oce a e eg ona e e .

T pape n e ga e e x en o c ne nd e a e e ged n pa n e pe od
988-200 e a ed o e x ng nd e , and f o, e e e eg ona a e a e N
3 e e) o e po an o p oce of e a ed d e f ca on an e na na ca e.

3. Data and methodology

T e f ep o a e o de e op a e a edne nd ca o , n o de o n e ga e e deg ee of
e a edne be een ne and e x ng nd e . W a o ea a e of ec no og ca
e a edne be een nd e a e been de e oped and app ed ee e.g. a o n 99 ; Teece
e a. 99 ; o e 200 ; en en e a., 200 ; Ne e 2009). e e e po x y nde x of
da go e a 200) o de e ne e e x en o c o p od c a e a a e of
capab e . o c a, M nondo and Na a o 20) a e de on a ed a e e a edne
nd ca o ba ed on e po x y p od c nde x by da go e a . de e ed be e e
conce n ng e e a on p be een e a ed a e y and eg ona g o an a e na e
ea a e , e e con en ona e x an e ea e of e a ed a e y en en e a., 200) and
e c e ba ed e x-po ea a e of e a edne de e oped by o e 200). T app oac
co e c o e o e e ea a ed e a edne ea a e de e oped by Ne e and en on enn ng
2008). T ey de e oped an nd ca o of n e - nd y e a edne ba ed on co-occ ence
ana y of p od c a be ong o d e en nd e n e po fo o o f an ac ng)
p an, c a o den y e e x ence of econo e of cope be een nd e .

T e po x y nde x of da go e a 200) a e e of o, of en co n e a e
co pa a e ad an age n o good ando y. o o ng Baa a, a co n y a
co pa a e ad an age, en e a e of a p od c n expo age an e a e of
a p od c n o d expo . f co n e a a e co pa a e ad an age n good A a o
a e co pa a e ad an age n p od c B, p e a e p od c A and B de and e
a e capab e and, ence, a e c o e o eac o e . To ca c a e p o x y be een eac
pa of p od c *i* and *j*, f e de e ne e e co n e a e e ea ed co pa a e
ad an age n p od c *i*. T o do o, e d de p od c *i* a e n co n y' expo by p od c *i*
a e n o d expo . f a o o abo e e con de a e co n y a e ea ed
co pa a e ad an age. econd, e ca c a e e p obab y o a ng co pa a e
ad an age n p od c *i*, d d ng e n be of co n e a a e co pa a e ad an age n
p od c *i* by e n be of co n e n e a pe. T d, e ca c a e e o h p obab y of
a ng co pa a e ad an age n p od c *i* and p od c *j*, d d ng e n be of co n e
a a e co pa a e ad an age n p od c *i* and n p od c *j* by e n be of co n e n
e a pe. o , e ca c a e e p obab y o a ng co pa a e ad an age n p od c *i*
cond ona on a ng co pa a e ad an age n p od c *j*. Cond ona p obab y
ca c a ed d d ng e o n p obab y of a ng co pa a e ad an age n p od c *i* and
p od c *j* by e p obab y of a ng co pa a e ad an age h p od c *j*. o o ng e a e
ep , e a o ca c a e e p obab y of a ng co pa a e ad an age n p od c *j*

cond ona on a ng co pa a e ad an age n p od c *i*. ence, o ea pa p od c *i*, *j*), e end- p o cond ona p obab e : e p obab y o a ng co pa a e ad an age n p od c *l* cond ona on a ng co pa a e ad an age n p od c *j*, and e p obab y o a ng co pa a e ad an age n p od c *j*, cond ona on a ng co pa a e n p od c *i*

e an o dy e e e po nc a pod c e c e o e po an a e na ona pod c e c e nde e nng e e egence o ne nd e a e po nc a e e N -3).[2] n o de o e ypo e , e need o ca c ae o ea e o den y: a po nce- e e den y and a co n y- e e den y. T e den y nde ea e o a ne pod c o e po nc a pod c e c e, e ea e econd den y nde ea e o a ne pod c o e na ona pod c e c e. econd, e e non-pa a e c and pa a e c ec n e o e e po nce- e e den y pay a age o e an co n y- e e den y n e xpa nng e e egence o ne nd e . To ca c ae po nce- e e den y, o ng e a on 2), po x y ea e ae co b ned p o nce ' co pa a e ad an age da a. No e a den y o a ne pod c a e ac o p o nce , depend ng on c pod c e po nce a co pa a e ad an age. To ca c ae co n y- e e den y, e o g o co b ne po x y ea e da a on pa n' co pa a e ad an age. o e , nde x, c o d be e a e o a p o nce , a a on . o n y one p o nce ad co pa a e ad an age n e pod c a o nd a ne pod c e den y ca c ae d a e po nce e e and e den y ca c ae d a e co n y e e o d be e a e. n ca e, e pa a e c and non-pa a e c ec n e canno de e ne e e po nce- e e den y o co n y- e e den y o e po an n d ng e e egence o ne nd e . To o e co e co nea y and epa a e e capab e a a e pe en a e po nce- e e o e capab e a a e a a ab e n e e o pa n, o ea p o nce, e ca c ae a e e -o- pan den y. To ca c ae den y e add- p e e xpo o a pan p o nce e xce e one a be ng ana yzed, and de e ne e pod c n c e e -o- pan a co pa a e ad an age. T en, e co b ne co pa a e ad an age da a p o x y da a o ca c ae a po nce- pec c e -o- pan den y. A e e no co nea y be ween e e -o- pan den y and p o nce e e den y, non-pa a e c and pa a e c ec n e can no d c na e e e e a a ab y o capab e a e po nce e e o e po an a e a a ab y o capab e n e e o e co n y n o e ng e e egence o ne nd e .

e ea ed co pa a e ad an age o ea p od c a ca c ae d ba ed on e xpo o pan p o nce o e pe od 988-2008 o e pan ecc n ene a de Ad ana - Agenc a T b a a da aba e. T e e da a ae n e Co b ned No enc a e 8-d g c a ca on. T e e needed o be an o ed o C e 2. -d g , o a e c a ca on ed o ca c ae e po x nde e .

A e o be o e, Ne e e a 20) a e o p o de y e a c e dence o e occ ence o eg ona b anc ng. dy d e n a ea o e pec . T e a o dy e e e eg ona b anc ng o e po an a e eg ona ca e an e na ona ca e. o a p po e, e e e ec o e aedne a bo geog ap ca e aneo y. n add on o eg ona na ona co pa on, e co-occ ence ea e ed n o pape d e en o a ed by Ne e e a. 20). e e a age poo o co n e o b d e po x y ea e , e e co-occ ence da a b by Ne e e a a e ba ed on da a oh eden on y. econd, e n be o p od c o c co-occ ence ca c a ed age n o dy .e.) an n e ed dy .e.). na y, Ne e e a. do no con o e pa a e co pe e n e p od c 7 ey co- an ac e. n o dy, e a e e ab ed a e ea ed co pa a e ad an age e o d, n o de o con de a e co-occ ence e en a e e an and gn can one.

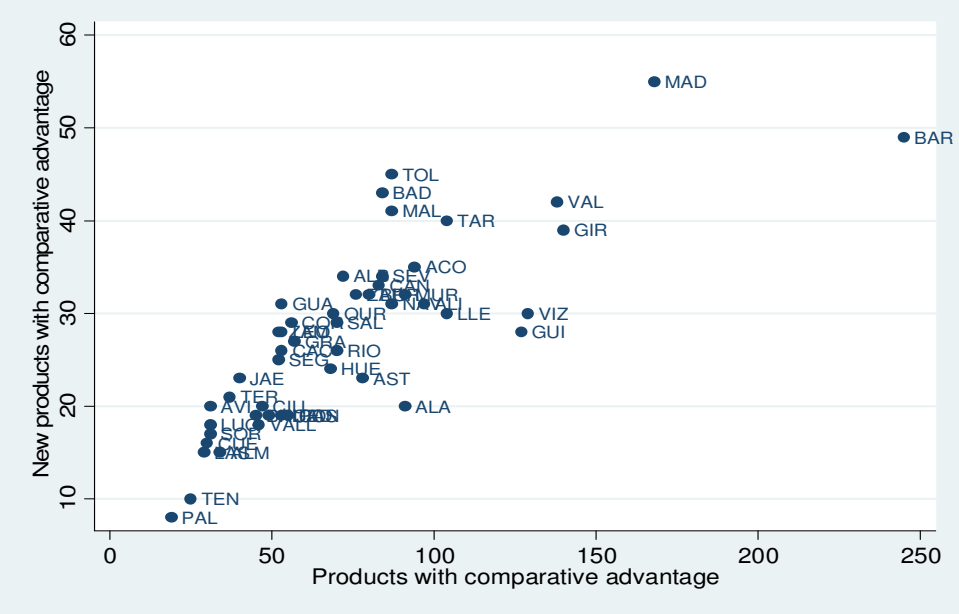
[2] pa n d ded n 50 p o nce and o a ono o c e Ce a and Me a). e o e p e ence o e a and e e ab e da a, e a e e c ded e e o pan a no o c e o e a p e.

4. The relationship between density and entry of new products in Spanish regions

In ec on, e e xp o e e a on p be een den y and e e gence of ne p od c n pan p o nce . e ana yze e a on p be een e n be of p od c n c pan p o nce a e co pa a e ad an age and e n be of ne p od c n c pan p o nce a e de e oped co pa a e ad an age. A e xp a ned be o e, e con de a a po nce a co pa a e ad an age n a p od c / e e ea ed co pa a e ad an age nde x one o abo e one. e e a 5-yea ndo / o e ana y . T e n be of p od c co pa a e ad an age an a e age of e yea 988, 993, 998, 2003 and 2008. To ca c a e e n be of ne p od c , e a e age e n be of p od c n c po nce d d no a e co pa a e ad an age n e yea 988, 993, 998 and 2003 b de e oped co pa a e ad an age / e yea a e .

A can be een n g e , e e a c ea po e e a on p be een e n be of p od c n c a po nce a co pa a e ad an age and e n be of ne p od c n c a p o nce de e op co pa a e ad an age / e yea a e . o e xa p e, e can ob e e a Ba ce ona and Mad d, e pan p o nce e a ge n be of p od c co pa a e ad an age 2 5 and 8 e pec e y) a e e p o nce a de e op co pa a e ad an age n e a ge n be of p od c 9 and 55 e pec e y). n con a e pan p o nce e o e n be of p od c co pa a e ad an age, .e. a enc a and Tene e 9 and 25 e pec e y), a o de e oped co pa a e ad an age n e o e n be of p od c 8 and 0 e pec e y).

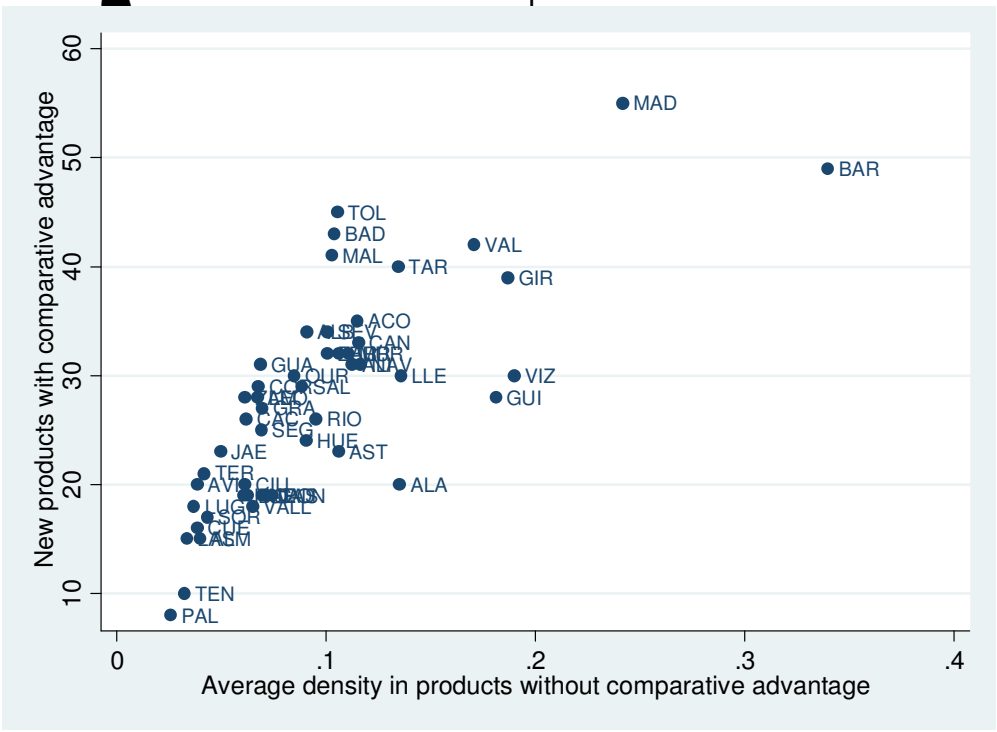
g e . e a on p be een p od c co pa a e ad an age a e *t* and ne p od c co pa a e ad an age a e *t+5* n pan p o nce 988-2008 a e age; 5-yea n e a)



T e e on e e e a on p be een e e o a ab e e xp a ned by e a e age den y a o nd e p od c o co pa a e ad an age. A o n n g e 2, e e a ong po e e a on p be een e a e age den y n e p od c o

co pa a e ad an age and e n be o ne p od c n c a po nce de e op co pa a e ad an age e yea a e.[3]

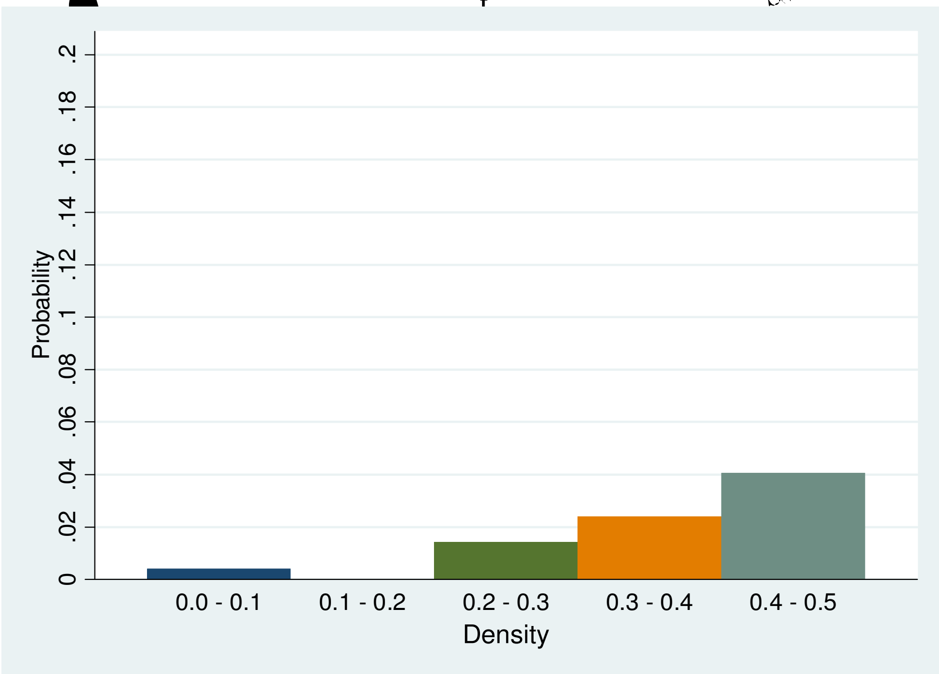
g e 2. T e e a on p bew een e a e age den y n p od c o co pa a e ad an age a e *t* and ne p od c co pa a e ad an age a e *t*+5 n pan p o nce 988-2008 a e age; 5-yea n e a)



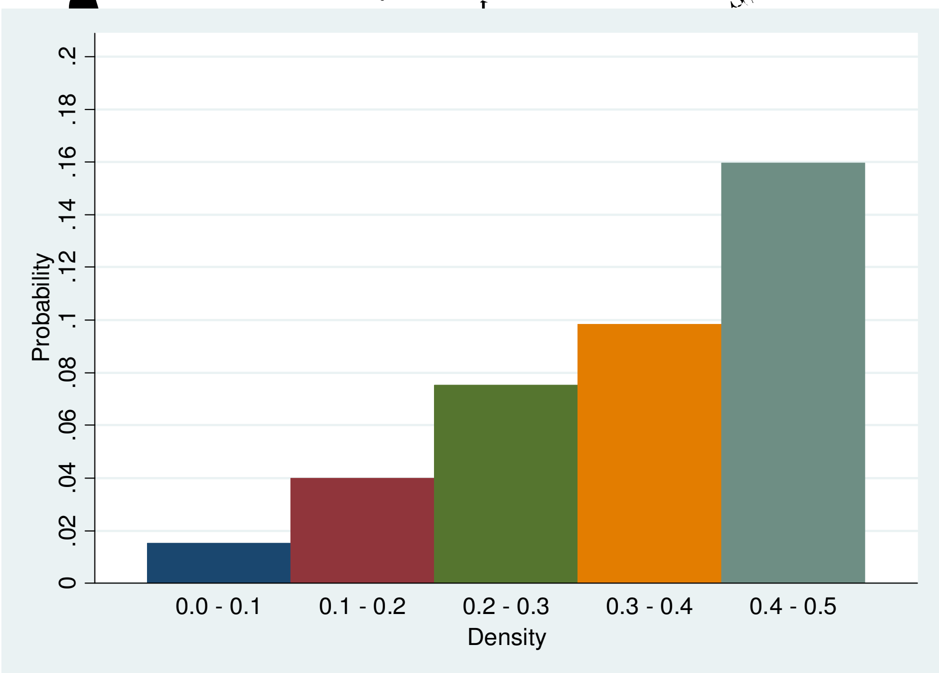
T en, e ana yzed e e e p obab y o an on ng n o a ne p od c nc ea e den y. e pe o ed epa a e ana y e o den y ca c a ed a e co n y e e and den y ca c a ed a e po hce e e. A e xp a ned be o e, e e xpec p o nce- e e den y o a e a a ge pac an co n y- e e den y n de e n ng e p obab y o pan p o nce o an on n o ne p od c. g e 3 a and 3 b p e en e p obab y o an on ng n o a ne p od c o d e en den y ange. A be o e, e e da a o e pe od 988-2008, d ded n e yea n e a. No e a n bo g ap e a x den y ange 0.5, a e e no p od c a a ge den y ne e n e co n y- e e nd ca o no n e po nce- e e nd ca o. T e g e o a e p obab y o de e op co pa a e ad an age n a ne p od c nc ea e gen y den y. o e xa pe, e oo a po nce- e e den y n g e 3b, a pan p o nce a a o x e o e p obab y o an on n o a ne p od c den y be een 0. and 0.5, an den y be een 0.0 and 0.. e a o ob e e a e p obab y a ay a ge o den y ca c a ed a e po nce e e an o den y ca c a ed a e co n y e e. T e gge a e p e ence of capab e a e po nce e e a a ge pac on e p obab y o de e op ng co pa a e ad an age n a ne p od c an e p e ence of capab e a e co n y e e.

[3] A e NB da aba e end n 2000, e e yea 2000 p o x y nde xe o ca c a e yea 2003 den e. T e ncond ona p obab y o de e op ng co pa a e ad an age n a ne p od c 2. pe cen T e ncond ona p obab y o ee p ng co pa a e ad an age n a p od c 8.3 pe cen

g. 3a obab y o an on ng n o ne p od c o pan p o nce . Co n y- e e den y e od 988-2008; 5-yea n e a)



g. 3b obab y o an on ng n o ne p od c o pan p o nce . o nce- e e den y e od 988-2008; 5-yea n e a)

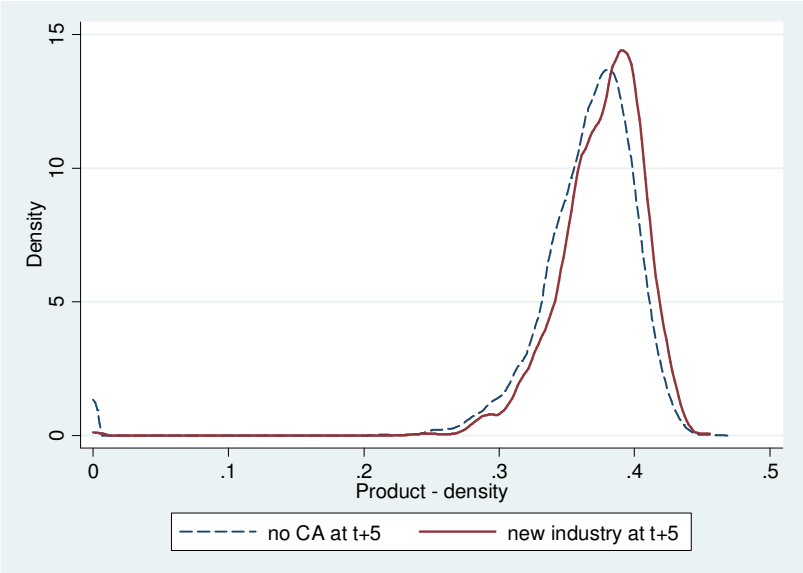


h e e an a e na e ay o dy e e g e den y ac a e e e e gence o ne nd e . con o co pa ng e d b on a ong den y o p od c a e a n o co pa a e ad an age e d b on a ong den y o p od c a de e op co pa a e ad an age. A e p obab y o an on ng n o ne p od c e den y, e e expec e b o p od c a e a ned o co pa a e ad an age o be

concen ated a o e den y e e , and e a o y of p od c a de e op co pa a e ad an age o be concen ated a g e den y e e . Ta , e e pec e d b on of p od c a de e op co pa a e ad an age o be o e g o ed b on of p od c a do ho de e op co pa a e ad an age. Mo eo e , a e p e ence of capab e a e p o nce e e a e o e po an o de e op co pa a e ad an age an e p e ence of capab e n e e of e co n y, e e pec e epa a on be een e d b on c e o be o e p ono nced o den y ca c a ed a e p o nce e e an o den y ca c a ed a e co n y e e . To e e e ypo e e , n g e a and g e b, e co pa e e p obab y den y of nc on of p od c a e a ned, o co pa a e ad an age da ed ned - no CA a +5) e p obab y den y of nc on of p od c a de e oped co pa a e ad an age o d he - ne nd y a +5). e o zon a a ea e e den y a o nd p od c a ad no de e oped co pa a e ad an age a e *t*. n g e a den y e e o co n y- e e den y and n g e b o p o nce- e e den y. e e ca a ea e e p obab y a a p od c a ce an den y e e .

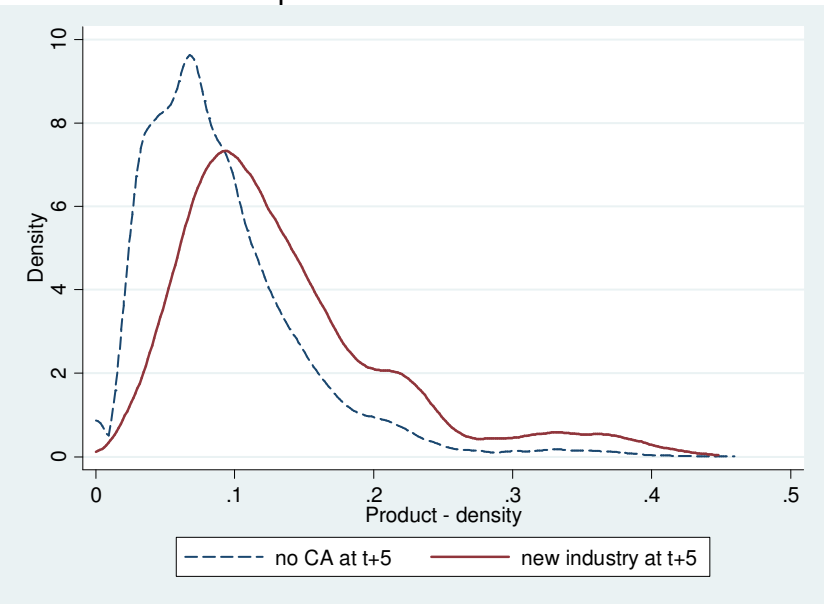
A e pec ed, e nd a o den y e e , e a e of p od c a e a ned, o co pa a e ad an age a age an e a e of p od c a de e oped co pa a e ad an age. o e e, en g e p od c den y e e a e ea ed, e e e e e ca e.[5] e a o ob e e a e d e ence be een e p obab y c e o be o e p ono nced en den y ca c a ed a e p o nce e e g e b) an en den y ca c a ed a e co n y e e g e a). t a o n e e g o no e a an on ng n ne p od c appen a o den y e e n g e b an n g e a. e g po n o a a e en on be o e, e capab e needed o de e op ne nd e a e an e ed o e ea y h p o nce , an o e e of e co n y o e p o nce. on y en e e e of capab e n e e of e co n y e y g a e an e of capab e o e e of e co n y o e p o nce o e e y.

g e a. obab y den y of nc on o ne p od c p obab y den y of nc on o p od c no co pa a e ad an age. en y ca c a ed a e co n y e e pe od 988-2008; 5-yea n e a)



[5] Bo n g e a and n g e b, e - e o e a y of a e age den y be een p od c a e a ned o co pa a e ad an age and p od c a de e oped co pa a e ad an age a ong y e ec ed.

g e b. P obab y den y nc on o ne p od c p obab y den y nc on o p od c no co pa a e ad an age. en y ca c a ed a e p o nce e e pe od 988-2008; 5-yea n e a)



5. Econometric analyses

To e o a y e e p o nce- e e den y p ay a a ge o e an co n y- e e den y n de e op ng co pa a e ad an age n ne p od c , o ng a ann and nge 200). e e a e e o ng econo e c e a on:

7

e a e e a on a nea p obab y-L ode . A n e p e o de c p e ana y e , e pe od o ana y 988-2008) d ded n e yea n e a .

Tab e p e en e e o e econo e c ana y e . e e a e e a on one den y a ab e Co n and 2) and bo den y a ab e Co n 3). To ac a e co pa ab y, e den y a ab e no a zed by b ac ng e ean and d ng by e anda d de a on. n a ee e a on , e nd a a ng co pa a e ad an age a e beg nn ng o e pe od a e con de ab y e p obab y o a ng co pa a e ad an age a e end o e pe od. Mo eo e , a e xpec ed, e nd a den y ca c a ed a e po nce e e a a age pac on e e o on o co pa a e ad an age an den y ca c a ed a e co n y e e. en e a ed one by one, e den y coe c en ca c a ed a e p o nce e e 0.032) o e a ge an e coe c en ca c a ed a e co n y e e 0.008). e n od ce bo den e n e e a on Co n 3), e nd a e den y coe c en ca c a ed a e p o nce e e 0.033) o e an ce a ge an e coe c en ca c a ed a e co n y e e 0.0 6). n e ng o ob e e a e coe c en o den y a e co n y e e e en bo den e en e aneo y n e e a on. T e e e con a e eg ona p od c e c e p ay a a ge o e an e co n y p od c e c e n de e n ng e e e gence o ne nd e a e oca e . T gge a eg on o d po e ce an capab e a e eg ona e e o en e de e op en o ne nd e .

Tab e . eg e on e on e de e nan o a ng co pa a e ad an age n e e

	)	2)	3)
Co pa a e ad an age	0.(2 *** ' 0.0 3)	0.(3*** ' 0.0 3)	0.(2*** ' 0.0 2)
Y en y a co n y e e	0.008* 0.003)		0.0 5*** 0.003)
Y en y a p o nce e e		0.032*** 0.00)	0.033*** 0.00)
Ad . - a ed	0. (3	0. ((	0. ((
b .	8,5 5	8,5 5	8,5 5

No e: P o nce c e ed anda d e o n pa en e e . A eg e on nc de p o nce+pe od and p od c +pe od d e . ***, **, * a ca y gn f can a %, 5% and 0% e pec e y.

o o ng a ann and nge 200), e pe f o ed an add ona ana y o d ng e e o e a den y p ay n de e op ng7co pa a e ad an age n ne p od c f o con b on n eep ng co pa a e ad an age n c en p od c . T e e a ed e a on e f o o ng:

$$x_{i,p,c+s} = \alpha + \gamma x_{i,p,c} + \alpha_c^0(1 - x_{i,p,c})d_{i,p,c}^c + \alpha_c^0(x_{i,p,c})d_{i,p,c}^c + \alpha_p^0(1 - x_{i,p,c})d_{i,p,c}^p + \alpha_p^0(x_{i,p,c})d_{i,p,c}^p + \beta_{i,c} + \beta_{p,c} + u_{p,c} \quad (4)$$

To a od e n ence o o e , e e o ed f o e a pe ob e a on be o e pe cen e and abo e e 99 pe cen e n bo den y ca c a ed a e po nce e e and den y ca c a ed a e co n y e e. To con o f o po b e e o n e eco d ng o e xpo da a, e a o e xc ded o e ob e a on n c p o nce *p* e xpo o 8-d g p od c *i*, e e ze o n yea *t*, b e ea ed co pa a e ad an age f o e a e p od c and p o nce, a o abo e n yea *t+5*.

No , α_c^n cap e e pac of co n y- e e den y n de e op ng co pa a e ad an age n ne p od c , e ea α_c^o cap e e pac of co n y- e e den y n eep ng co pa a e ad an age n p od c *i*. And α_p^n cap e e pac of p o nce- e e den y n de e op ng co pa a e ad an age n ne p od c , e ea α_p^o cap e e pac of p o nce- e e den y n eep ng co pa a e ad an age n p od c *i*.

A o n n Tab e 2, e den y coe c en on c en p od c c a ge an e den y coe c en on ne p od c . e gge a den y p ay a a ge o e n eep ng co pa a e ad an age n c en p od c an de e op ng co pa a e ad an age n ne p od c . e nd a p o nce- e e den y a a c a ge pac an co n y- e e den y n de e n ng e e gence o ne nd e . e p o nce- e e coe c en ee e a ge an e co n y- e e coe c en en den e a e n od ced one by one. Mo eo e , e co n y- e e coe c en no a ca y gn can en den y coe c en en e aneo y e p o nce- e e coe c en a o ce a a ge a e co n y- e e coe c en e a o nd a p o nce- e e deh p ay a a ge o e an co n y- e e den y n eep ng co pa a e ad an age n c en p od c .

Tab e 2. eg e on e on e pac of den y n o ng o ne p od c and eep ng co pa a e ad an age on c en p od c

	)	2)	3)
Co pa a e ad an age	0. *** 0.0 3)	0.59 *** 0.0)	0.583*** 0.0)
en y on ne p od c . Co n y	0.00(0.003)		0.0 *** 0.003)
en y on c en p od c . Co n y	0.03 ** 0.0)		0.052*** 0.0 0)
en y on ne p od c . o nce		0.02(*** 0.002)	0.02 *** 0.002)
en y on c en p od c . o nce		0.0(5*** 0.0 9)	0.0(8*** 0.0 8)
Ad . - a ed	0. (	0. (8	0. (9
b .	8,5 5	8,5 5	8,5 5

No e: o nce-c e ed anda d e o n pa en e e . A eg e on nc de geog ap ca p o nce+pe od and p od c+pe od d e . ***, **, * a ca y gn can a %, 5% and 0% e pec e y.

To ana yze e ob ne of o e , e pe o o e add ona econo e c e a on .

a Be na d and en en 200) po n o en e agged dependan a ab e nc ded n e g and- de of e econo e c e a on e ea ed co pa a e ad an age), e x ed-e ec ode ay ead o ncon en e e , e pec a y o e agged a ab e coe c en . o o e co e p ob e e ee a ed a MM ode . ode e a y e of e a on n d e ence and n e e and e agged e e and e ag o e - d e ence of e endogeno a ab e a n en n e e e a on e pec e y, n add on o a o ng o x ed e ec . A o n n Tab e A n e Append x, e a e n

ec o g e b o ne ec o o g en ep ene p, and a ne f n ne nd e a e a g e a a e en e en ep ene o g na e f o e a ed nd e eppe , 200 ; Bo c a and en ng 200 . a a o o o e o e ec an e a e y ne xp o ed. A a o c a enge o f e ea c o de e ne c o e e ec an d e p oce o eg ona b anc ng.

Ano e e e ec on o e e a edne nd ca o o dy eg ona d e f ca on. e ade e o e po x y pod c nd ca o de e oped by da go and o e . e d e a e ed d e en app oac e , e e Ne e a. 20 dy on n e - nd y e a edne c a ba ed on co-occ ence ana y o p od c a be ong d e en nd e n e po o o an ac ng) p an . Ano e good a e na e ay be e - e a edne ea e de oped by Ne e and en on enn ng 2008) o a e e o e n en y o abo f o be een nd e o ace and den y e a ed nd e . o a e e o a e na e ea e o nd y e a edne ay p o de o e ob ne c ec o e f nd ng o nd e e, b co d a o ed g on po b e a e na e o e a edne a ay be co p e en a y o eac o e n ead o be ng a e na e ea e).

n pape , e e xp o ed e e x en o c e en y o a ne nd y depend on a a e y o) nd e o c e a ed. o ng o, e e o o e d eh on a g be con de ed c c a n e p oce o eg ona d e f ca on, c a n ona o , a ong o e a n , 2005). no c ea o a o d o o n o dy, nce e o nd c a ong e a on p be een d e f ca on and e a edne a e eg ona e e, a e a a e na ona ca e. a ng a d a o d be g y e e ah o e xp o e e n ence o n on and n ona c ange o enab e e de e op en o h nd e a e eg ona e e.

T b ng o po b e po cy p ca on a can be d a n o o dy. o e e, e a e o be ca o e e, beca e e a e no n e ga ed e pac o any go e n en n e eh on on e de e op en o co pa a e ad an age n ne p od c . Ne e e e , o dy gge a o e capab e o d be de e oped oca y o a e e p obab y o de e op ng ne nd e a e eg ona e e. n a con e o d be e o a ge po cy n e en on a e eg ona e e, beca e a a e e e e e an a e o d e f y cce f y a e p e en o d b ng a ep o ad n e de gn o po cy p og a a a e a g e p obab y o cce , de p e a e np ed c ab y a pa and pa ce o e de e op en o ne g o pa n eg on Bo c a, 20).

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anne 20)

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Table A . Robustness analysis. GMM estimation

	)	2)	3)	)	5)	)
Co pa a e ad an age	0.3 9*** 0.0)	0.3 *** 0.0)	0.3 5*** 0.0)	0. 8*** 0.008)	0.38 *** 0.0)	0.5 8*** 0.009)
en y a e co n y e e	0.0 9*** 0.002)		0.00 0.002)			
en y a e po nce e e		0.0 *** 0.003)	0.0 9*** 0.003)			
en y on ne p od c . Co n y				0.0 *** 0.00)		-0.0 5*** 0.002)
en y on c en p od c . Co n y				0.053*** 0.0)		0.00 0.0)
en y on ne p od c . Po nce					0.032*** 0.003)	0.0 *** 0.003)
en y on c en p od c . Po nce					0. *** 0.009)	0. 50*** 0.0 0)
b e a on	85 5	85 5	85 5	85 5	85 5	85 5

No e: Robust standard e o n pa en e e . ***, **, * a ca y gn f can a %, 5% and 0% e pec e y.

Table A2. Robustness analysis II: Repeated comparative advantage index

	(1)	(2)	(3)
Comparative advantage	0.[illegible]0[illegible]*** (0.020)	0.[illegible]03*** (0.020)	0.[illegible]02*** (0.020)
Density at the country level	0.039* (0.0[illegible]8)		0.[illegible]3*** (0.07[illegible]5)
Density at the province level		0.[illegible]5[illegible]*** (0.02[illegible])	0.[illegible]*** (0.02[illegible])
Adj. R-squared	0.[illegible]2	0.[illegible]	0.[illegible]
Obs.	[illegible]500	[illegible]500	[illegible]500

Note: Robust standard errors in parentheses. All regressions include province+period and product+period dummies. ***, **, * are statistically significant at 1%, 5% and 10% respectively.

T ab e A3. ob ne anay e . e ea ed co pa a e o d e a 0.5

	)	2)	3)	)	5)	)
e ea ed co pa a e ad an age	0. *** 0.0 2)	0. 02*** 0.0 2)	0. 0 *** 0.0 2)	0. 0*** 0.0 2)	0.58 *** 0.0)	0.5 *** 0.0)
en y a e co n y e e	0.0 0.008)		0.023*** 0.00)			
en y a e p o nce e e		0.0 *** 0.005)	0.0 8*** 0.00)			
en y on ne p od c . Co n y				0.009 0.00)		0.022*** 0.003)
en y on c en p od c . Co n y				0.02 0.0 9)		0.0 0*** 0.0 2)
en y on ne p od c . o nce					0.039*** 0.003)	0.0 2*** 0.003)
en y on c en p od c . o nce					0.0 3*** 0.0 8)	0.0 8*** 0.0)
Ad . - a ed	0. 8	0. 82	0. 83	0. 8	0. 8	0. 8
b e a on	3	3	3	3	3	3

No e: o nce-c e ed anda d e o n pa en e e . A eg e on nc de geog ap ca p o nce+pe od and p od c +pe od d e . ***, **, * a ca y gn can a %, 5% and 0% e pec e y.