Does Licensing Induce Technological Spillovers to Domestic Firms?*

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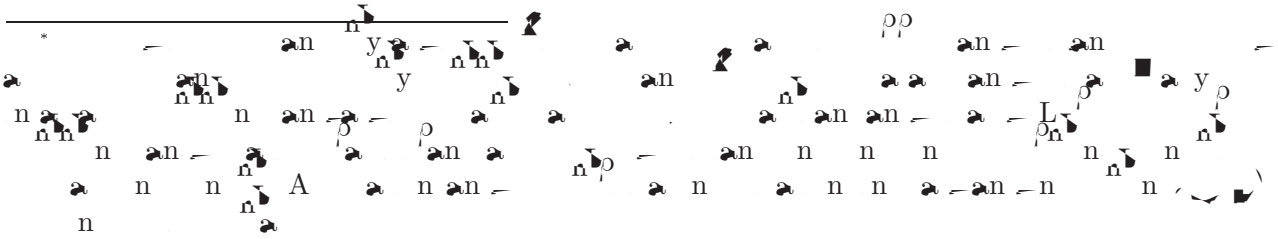

† **E-mail address:** L

Abstract

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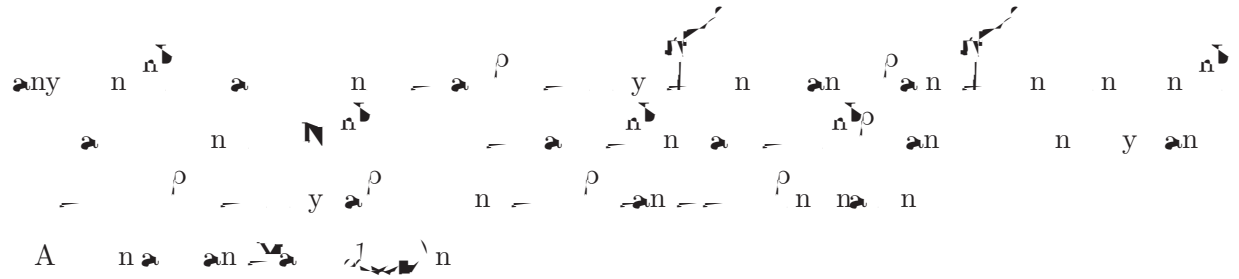
1 Introduction



Japan's economic growth in the postwar period has been characterized by a very rapid growth in productivity, achieved, to a great extent, through massive borrowing of technology from more advanced countries.

1

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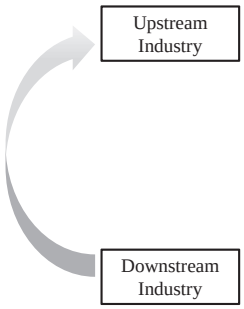
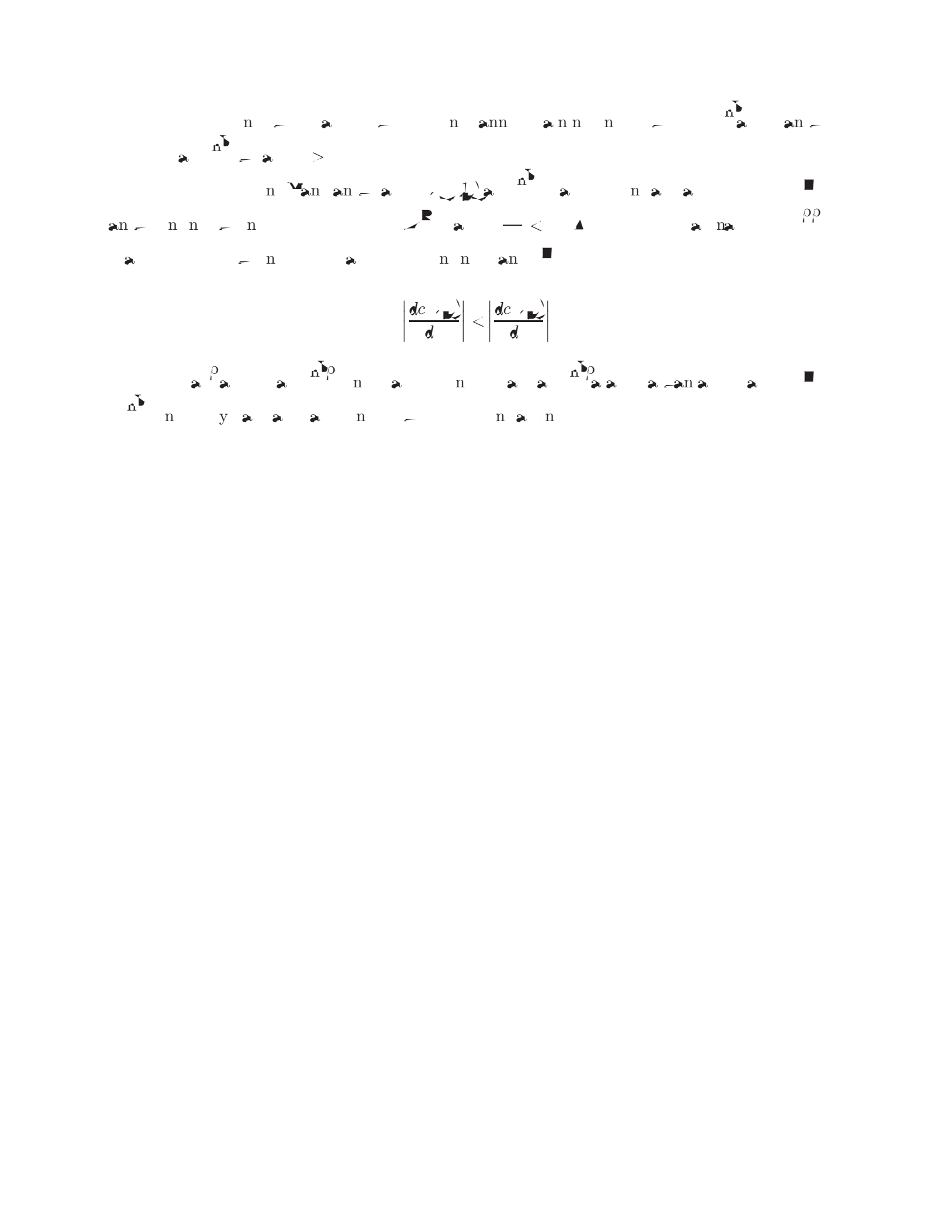
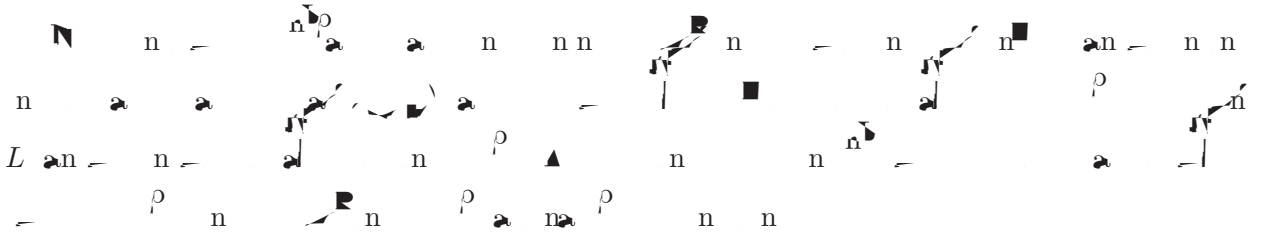
Crown Aluminio



2 Theory Model





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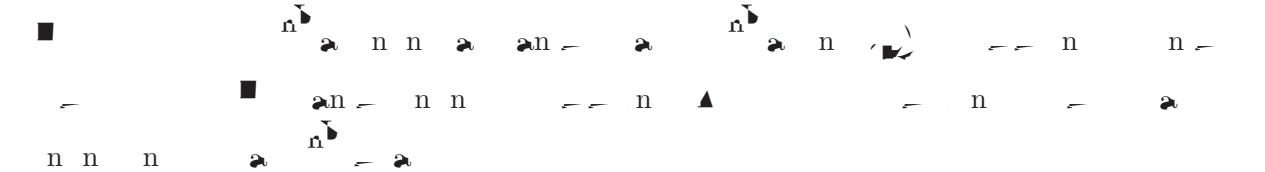

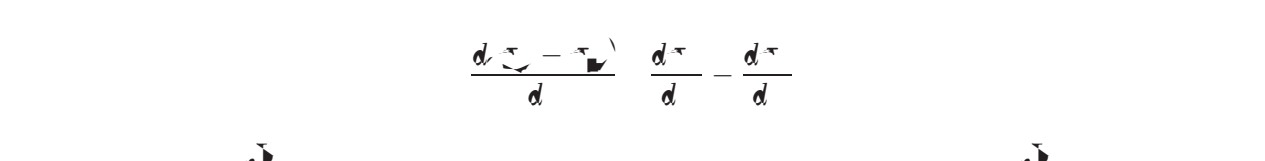

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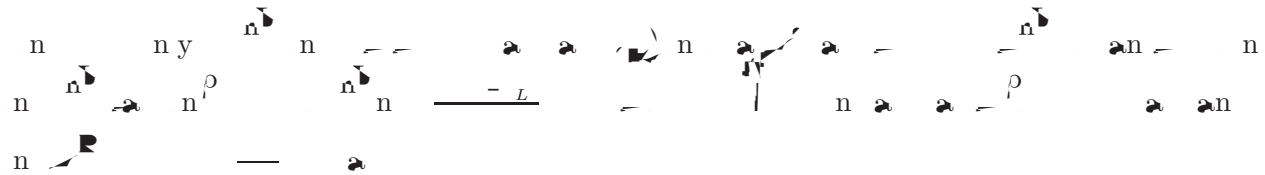

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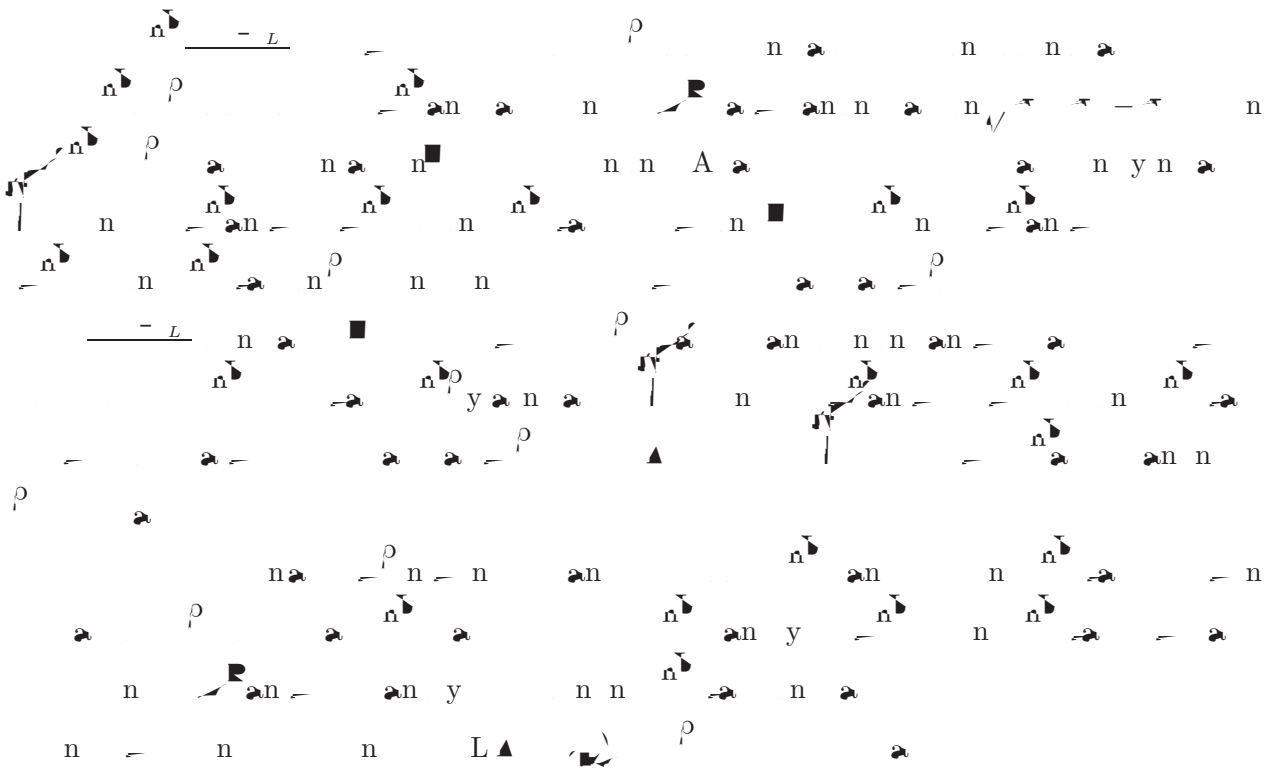

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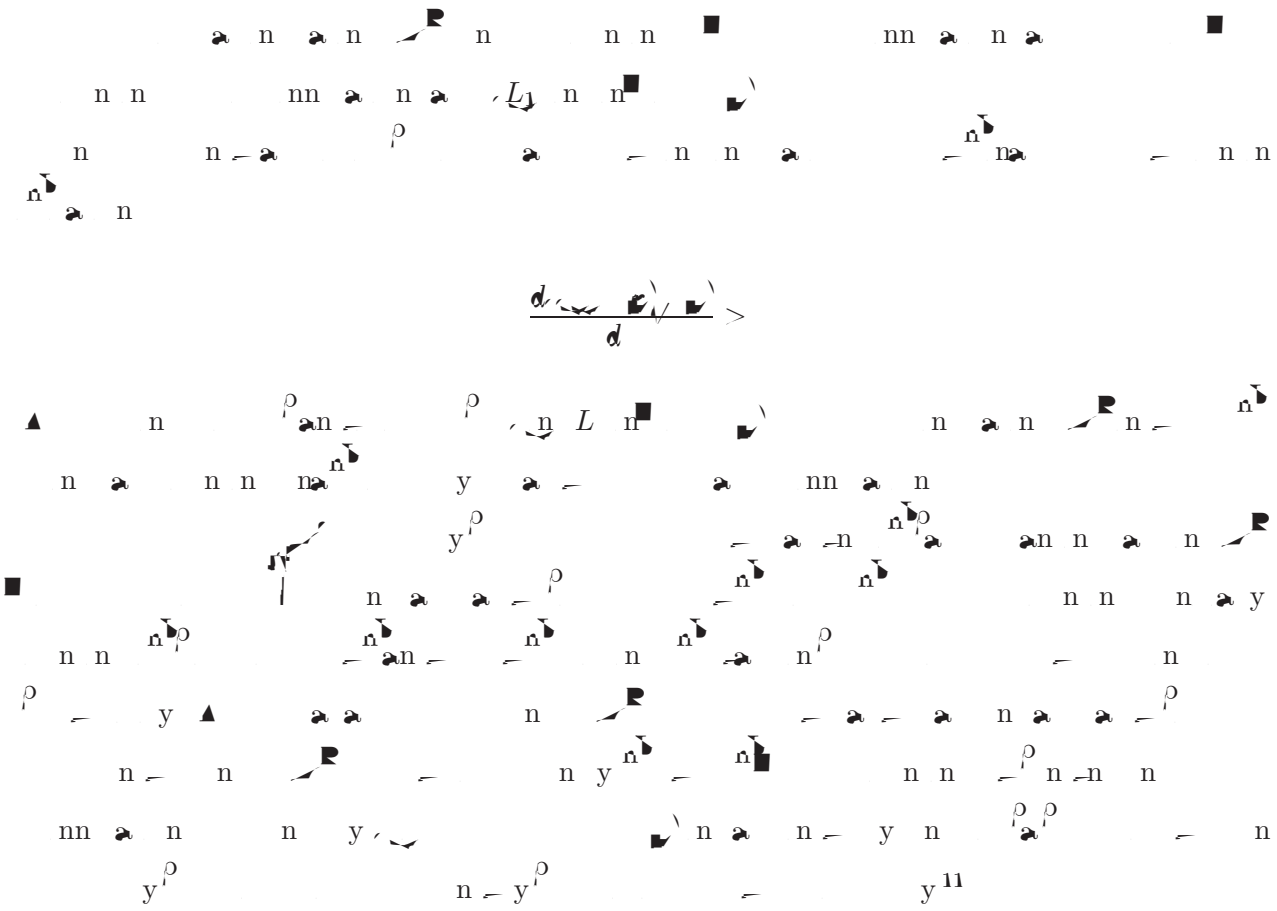


3 Data

3.1 Firm level data

Encuesta Nacional Industrial Anual

[11] **For a more detailed treatment of the second hypothesis see Castro (2012).**
[12]

International Standard Industrial Classification of All Economic Activities

3.1.1 Data cleaning

Tarapacá Arica y Parinacota Tarapacá Los Rios Los Rios Los Lagos

[13] This could present a problem if the majority of firms are multi-plant; however, as noted by Pavcnik (2002), using a previous version of this dataset, around 90% of the firms have a single plant. For the 2001–2007 period, this figure is around 89%.

[14] See: http://unstats.un.org/unsd/cr/registry/regcst.asp?cl=2 for more detail.

[15] The covered industries are, in terms of ISIC (Rev.3) codes, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36. ISIC (Rev.3) codes of the manufacturing sector ranges from 15 to 36. Industries 16 (tobacco) and 23 (coke, refined petroleum products and nuclear fuel) have no observations in the dataset.

Variable	Mean	Std. Dev.	Min	Max
Capital Stock	1,946	15,532.6	0	953,000
% Domesic Capital	96	19.3	0	100
% Foreign Capital	4	19.3	0	100
Value Added	2,342	19,274.8	0	1,720,000
Sales of Production	3,815	29,328.1	0	1,770,000
Total Wages	375	2,148.9	0	275,000
Gross Production Value	5,449	46,237.2	2	3,480,000
Payments for Licenses and Foreign Assistance	8	151.3	0	11,864
Income due to Exports	1,090	8,654.9	0	401,000
Number of Skilled Workers	13	46.4	0	1,554
Skilled/Unskilled Workers Ratio	1	3.5	0	159
Skilled/Total Workers Ratio	0	0.3	0	1

Note: All monetary values are in 2003 Million Pesos.

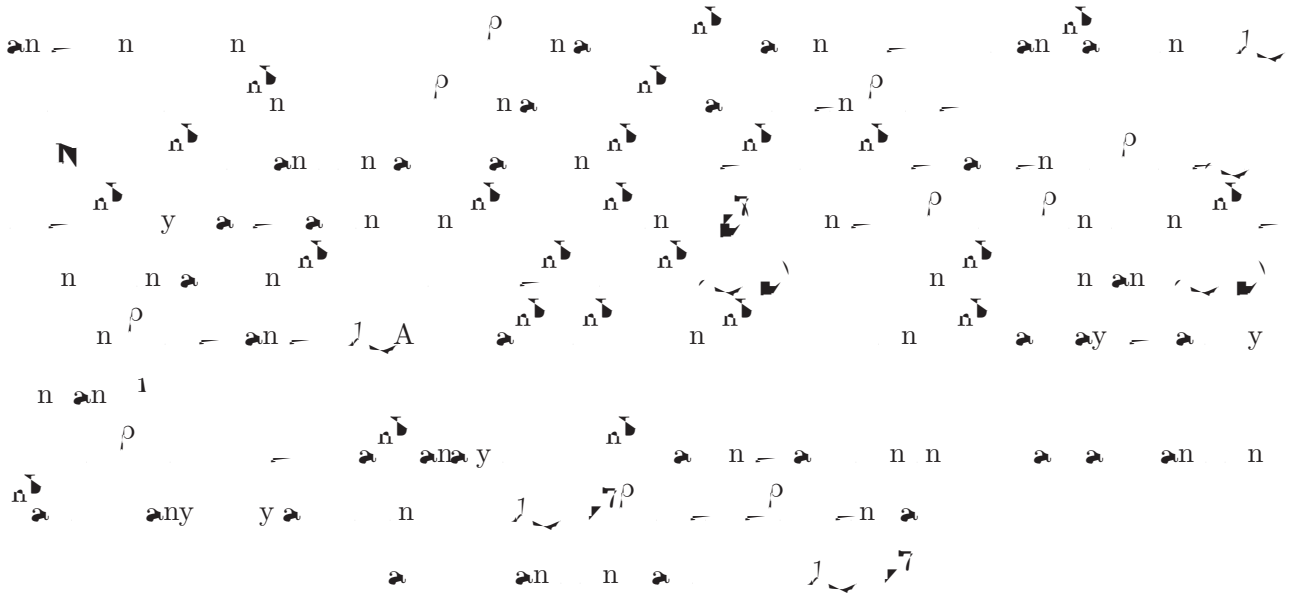
Owner	Freq.	Percent	Cum.
Domestic	31,733	94.62	94.62
Foreign	1,805	5.38	100
Total	33,538	100	

(a) Ownership

Licensing	Freq.	Percent	Cum.
Does Not Pay Licenses	31,897	95.11	95.11
Pays Licenses	1,641	4.89	100
Total	33,538	100	

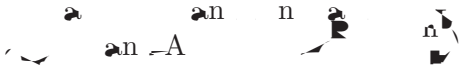
(b) Licensing

Number of Firms
4,000
4,500
5,000
5,500
2001
2002
2003
2004
2005
2006
2007



2001-2007

		Period t+1			
		No Licensing	Licensing	Exit	Total
Period t	No Licensing	75.2%	1.5%	9.4%	86.0%
	Licensing	1.4%	2.6%	0.4%	4.4%
	Enter	9.2%	0.4%	0.0%	9.6%
	Total	85.8%	4.5%	9.7%	100.0%



2001-2004 (BEFORE)					
		Period t+1			
		Domestic	Foreign	Exit	Total
Period t	Domestic	72.4%	0.4%	8.8%	81.5%
	Foreign	0.5%	3.8%	0.4%	4.7%
	Enter	13.1%	0.7%	0.0%	13.8%
	Total	85.9%	4.9%	9.2%	100.0%

2005-2007 (AFTER)					
		Period t+1			
		Domestic	Foreign	Exit	Total
Period t	Domestic	80.5%	0.4%	9.9%	90.8%
	Foreign	0.5%	4.1%	0.6%	5.2%
	Enter	3.9%	0.2%	0.0%	4.1%
	Total	84.8%	4.7%	10.4%	100.0%

(a) Ownership

2001-2004 (BEFORE)					
		Period t+1			
		No Licensing	Licensing	Exit	Total
Period t	No Licensing	71.8%	1.5%	8.9%	82.1%
	Licensing	1.3%	2.4%	0.3%	4.1%
	Enter	13.3%	0.5%	0.0%	13.8%
	Total	86.4%	4.4%	9.2%	100.0%

2005-2007 (AFTER)					
		Period t+1			
		No Licensing	Licensing	Exit	Total
Period t	No Licensing	79.5%	1.5%	10.0%	91.1%
	Licensing	1.6%	2.8%	0.4%	4.8%
	Enter	3.9%	0.2%	0.0%	4.1%
	Total	85.1%	4.5%	10.4%	100.0%

(b) Licensing

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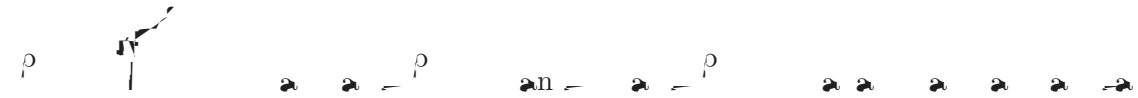
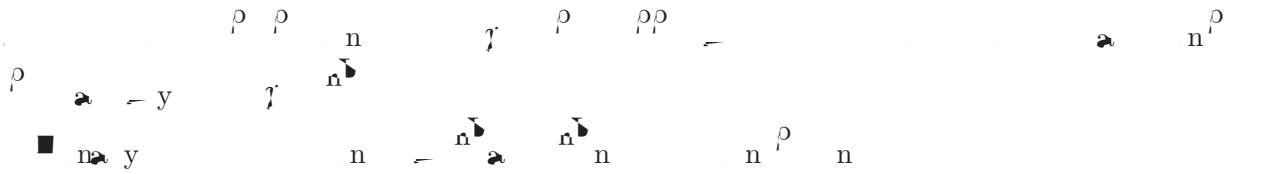
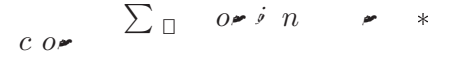


$$\sum_{\square} \tag{1}$$

$$\sum_{\square} \tag{11}$$





4.1.1 Total Factor Productivity (TFP) estimation

[26] **Since there would be an excessive amount of results to p4109(l)3.9itun**

4.2 Econometric issues

[27] **An important thing to note here is that due to econometric constraints, it is not possible to include so many dummies and at the same time calculate the standard errors using clustering at the industry-year level, thus one way to overcome this is to drop all the firms that changed ei**

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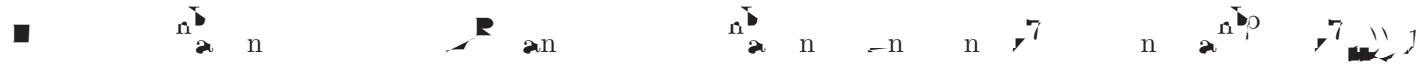
Dependent variable: log (TFP)	No IPR	Fraser IPR	Dummy IPR
Horizontal Spillovers	-1.57	0.05	-0.07
	(1.37)	(0.57)	(0.28)
Backward Spillovers	4.85***	2.66***	1.20***
	(1.13)	(0.72)	(0.46)
Forward Spillovers	-0.70	-1.33	-0.19
	(2.24)	(0.81)	(0.48)
IPR Fraser		-0.54**	
		(0.23)	
IPR Fraser x Horizontal Spillovers		-0.02	
		(0.07)	
IPR Fraser x Backward Spillovers		-0.31***	
		(0.10)	
IPR Fraser x Forward Spillovers		0.23**	
		(0.09)	
Dummy IPR			0.11***
			(0.04)
Dummy IPR x Horizontal Spillovers			-0.09
			(0.21)
Dummy IPR x Backward Spillovers			-0.87***
			(0.29)
Dummy IPR x Forward Spillovers			0.71**
			(0.28)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.26	0.38	0.40
Observations	2,884	8,932	8,932
R-squared	0.01	0.00	0.00
Time, Industry and Region Dummies	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1



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Dependent variable: log (TFP)	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Horizontal Spillovers	3.71*	1.20	1.02	-1.93***
	(2.10)	(1.20)	(0.79)	(0.52)
Backward Spillovers	11.20***	6.46***	0.74	5.91***
	(3.81)	(2.08)	(1.36)	(1.17)
Forward Spillovers	-10.85***	-4.68***	-1.96*	-0.54
	(2.55)	(1.75)	(1.12)	(1.15)
IPR Fraser	-1.20	-0.48	-0.19	-1.26*
	(0.92)	(0.42)	(0.42)	(0.66)
IPR Fraser x Horizontal Spillovers	-0.24	0.07	-0.13	0.21***
	(0.23)	(0.12)	(0.08)	(0.05)
IPR Fraser x Backward Spillovers	-1.41**	-0.79**	-0.13	-0.63***
	(0.56)	(0.31)	(0.17)	(0.14)
IPR Fraser x Forward Spillovers	1.15***	0.19	0.26**	0.35***
	(0.22)	(0.16)	(0.12)	(0.13)
Foreign Ownership	-0.04	0.07	0.12	0.04
	(0.19)	(0.10)	(0.18)	(0.06)
Market presence	-0.43**	-0.14**	0.07	-0.03
	(0.17)	(0.07)	(0.05)	(0.05)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.12	0.41	0.81	0.76
Observations	1,818	2,240	2,355	2,519
R-squared	0.03	0.02	0.01	-0.01
Time, Industry and Region Dummies	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Dependent variable: log (TFP)	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Horizontal Spillovers	2.62*	1.54*	0.48	-0.95***
	(1.37)	(0.82)	(0.50)	(0.36)
Backward Spillovers	4.52**	2.79***	-0.02	3.10**
	(1.94)	(0.94)	(0.98)	(1.23)
Forward Spillovers	-5.35***	-3.73***	-0.81	0.98
	(1.90)	(1.20)	(0.76)	(1.30)
Dummy IPR	0.19	0.20***	0.11	0.12
	(0.16)	(0.08)	(0.08)	(0.09)
Dummy IPR x Horizontal Spillovers	-0.76	0.17	-0.42*	0.62***
	(0.63)	(0.33)	(0.24)	(0.15)
Dummy IPR x Backward Spillovers	-4.07***	-2.23**	-0.37	-1.88***
	(1.57)	(0.89)	(0.49)	(0.40)
Dummy IPR x Forward Spillovers	3.35***	0.59	0.83**	cs 08 -9.26367
0.00 0.00 0.00				
0.12 0.41 0.81	0.76			
R,818 squared 2,240 2,519	0.03	0.02	0.01	-0.01

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Dependent variable: log (TFP)	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Horizontal Spillovers	-1.48	3.47***	0.67	-1.11
	(1.06)	(0.58)	(1.17)	(0.97)
Backward Spillovers	6.14***	2.03*	-0.54	2.52*
	(1.59)	(1.19)	(1.05)	(1.32)
Forward Spillovers	0.30	-7.48***	-1.09	0.82
	(1.56)	(1.52)	(1.57)	(1.37)
IPR Fraser	-1.01*	-0.06	-0.13	-0.94**
	(0.53)	(0.33)	(0.27)	(0.39)
IPR Fraser x Horizontal Spillovers	0.06	-0.19**	-0.02	0.06
	(0.10)	(0.07)	(0.13)	(0.12)
IPR Fraser x Backward Spillovers	-0.61***	-0.16	-0.02	-0.34*
	(0.22)	(0.17)	(0.15)	(0.17)
IPR Fraser x Forward Spillovers	0.17	0.32	0.19	0.13
	(0.15)	(0.20)	(0.17)	(0.15)
Foreign Ownership	0.20***	0.09	-0.01	0.05
	(0.04)	(0.15)	(0.13)	(0.09)
Market presence	-0.26	-0.13	-0.03	-0.01
	(0.17)	(0.10)	(0.04)	(0.05)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.25	0.41	0.45	0.03
Observations	2,039	2,006	2,273	2,614
R-squared	0.01	0.00	0.00	0.01
Time, Industry and Region Dummies	YES	YES	YES	YES

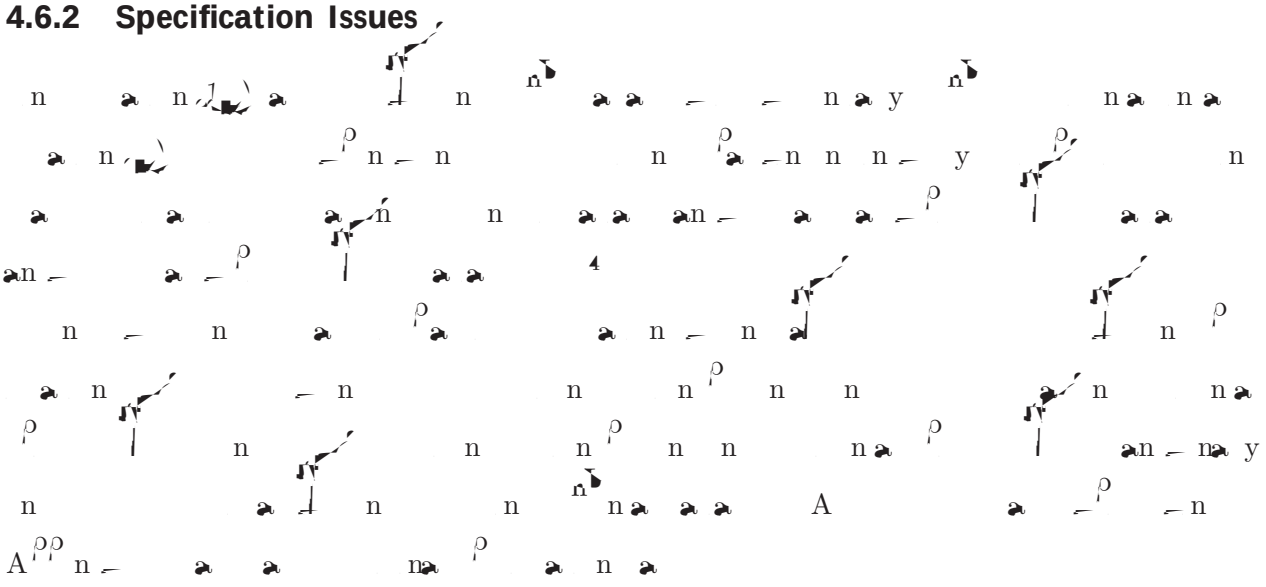
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

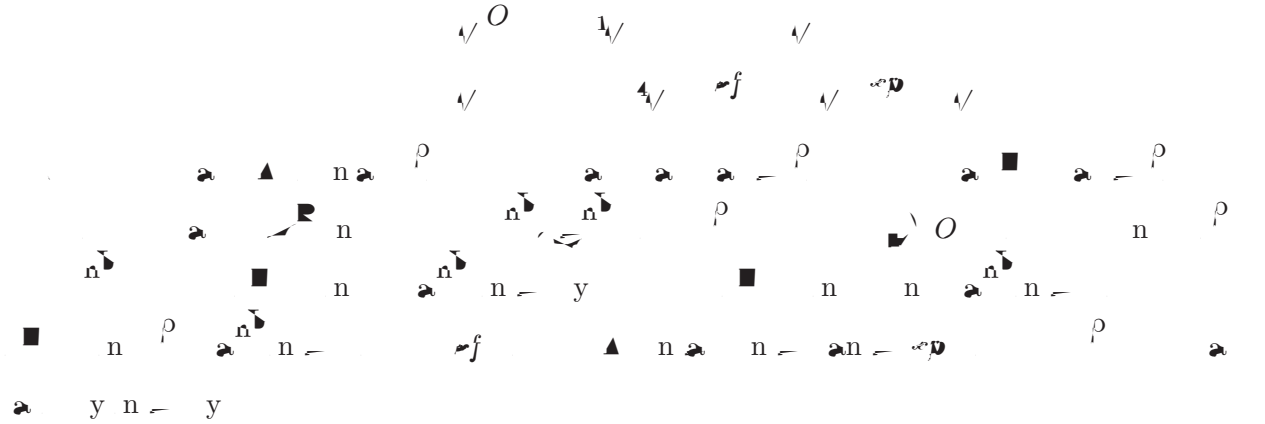
4.6 Robustness tests

4.6.1 Issues with firms exiting the market

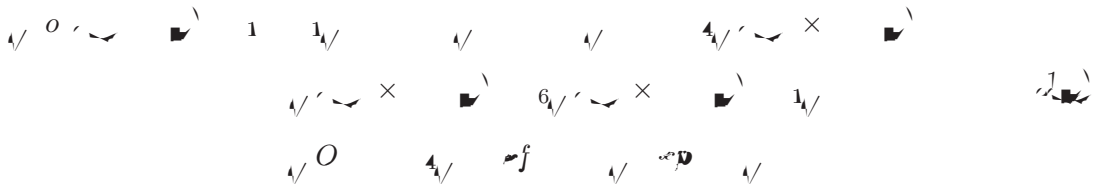
Dependent variable: log (TFP)	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Horizontal Spillovers	-1.17	2.59***	0.64	-0.84
	(0.73)	(0.33)	(0.68)	(0.53)
Backward Spillovers	3.27***	1.21*	-0.69	1.10
	(0.96)	(0.69)	(0.61)	(0.86)
Forward Spillovers				

4.6.2 Specification Issues





4.6.2.1 No foreign presence

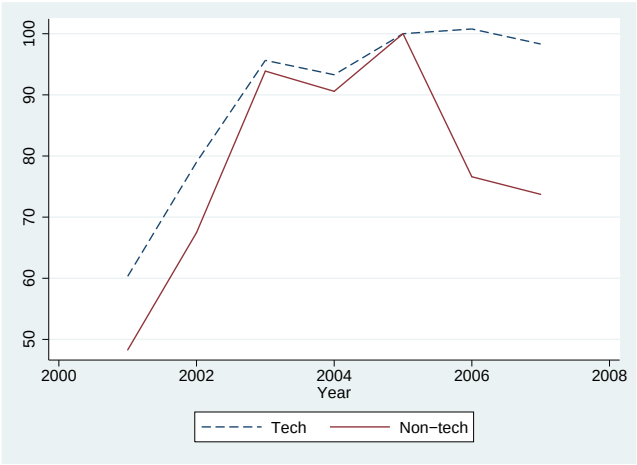


4.6.2.4 Different use of IV

5 FDI vs. Licensing

5.1 Empirical approach

5.1.1 Generating test and comparison groups

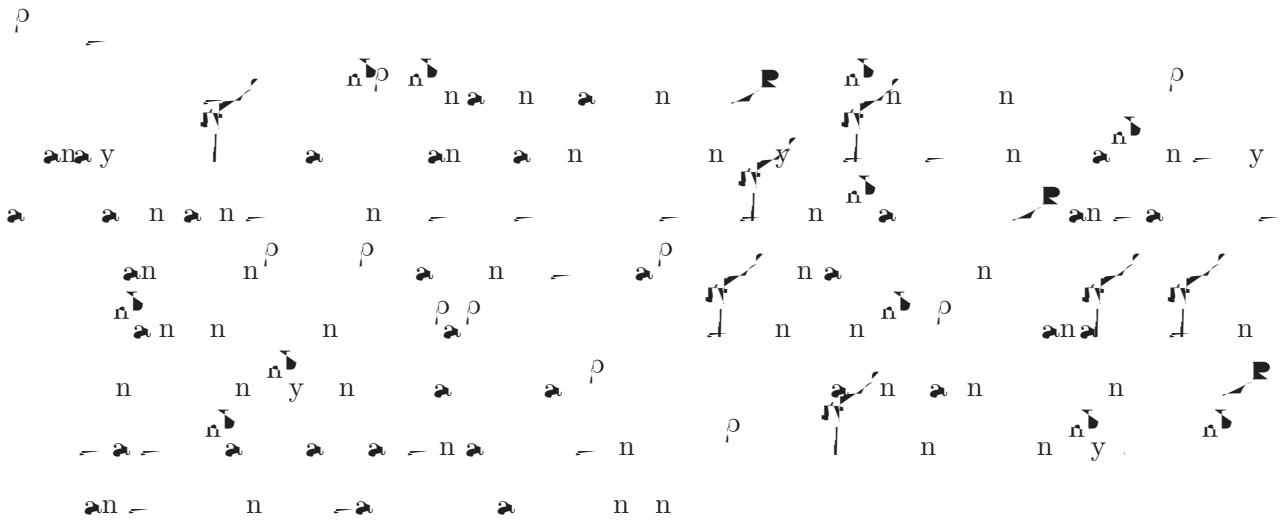


5.3 Results

VARIABLES	(1) fdikstock	(2) fdikstock	(3) license	(4) license
Fraser IPR x Tech		-0.03***		122.30**
		(0.01)		(62.16)
Dummy IPR x Tech	-0.09***		346.16**	
	(0.02)		(163.63)	
Exchange Rate	-0.00	-0.00	17.09**	17.54**
	(0.00)	(0.00)	(7.49)	(7.61)
Inflation	0.00	0.00	-41.82*	-44.10*
	(0.01)	(0.01)	(22.18)	(23.51)
Size	0.06***	0.06***	-87.19*	-84.53*
	(0.02)	(0.02)	(49.49)	(49.36)
Market	0.12**	0.13**	-29.32	-34.52
	(0.06)	(0.06)	(115.01)	(116.35)
Dummy IPR	0.01		143.12	
	(0.03)		(97.60)	
Fraser IPR		0.00		49.50
		(0.01)		(34.33)
Observations	714	714	714	714
R-squared	0.80	0.80	0.90	0.90
Time Trend	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6 Conclusions



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The American Economic Review

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The Review of Economics and Statistics

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n a **Review of Economic Studies**

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Appendices

A Descriptive statistics

ISIC rev.3 at 2-digit level	Observations	Description
15	10,764	Manufacture of food products and beverages
17	1,656	Manufacture of textiles
18	1,773	Manufacture of wearing apparel; dressing and dyeing of fur
19	883	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
20	2,320	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
21	1,026	Manufacture of paper and paper products
22	1,716	Publishing, printing and reproduction of recorded media
24	2,033	Manufacture of chemicals and chemical products
25	2,144	Manufacture of rubber and plastics products
26	1,816	Manufacture of other non-metallic mineral products
28	2,473	Manufacture of fabricated metal products, except machinery and equipment
29	1,844	Manufacture of machinery and equipment n.e.c.
31	499	Manufacture of electrical machinery and apparatus n.e.c.
33	205	Manufacture of medical, precision and optical instruments, watches and clocks
34	482	Manufacture of motor vehicles, trailers and semi-trailers
35	296	Manufacture of other transport equipment
36	1,608	Manufacture of furniture; manufacturing n.e.c.

B Spillovers

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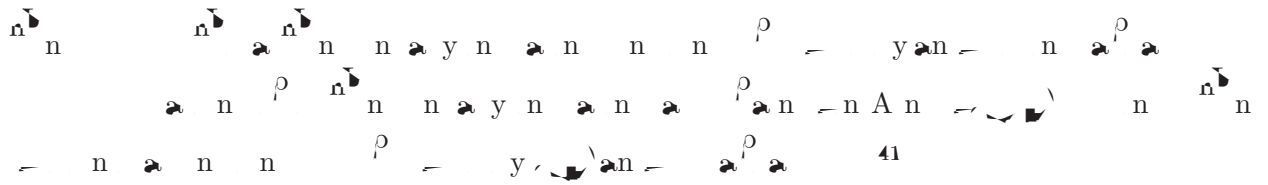
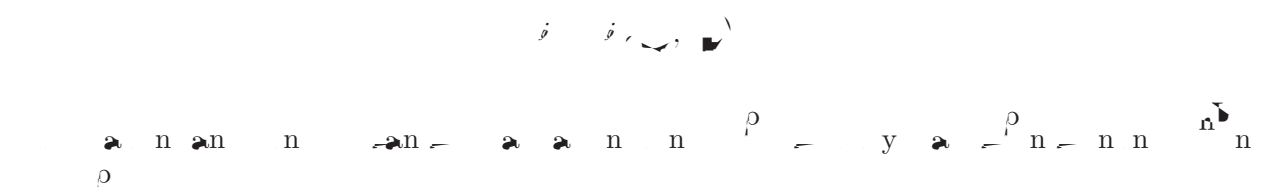
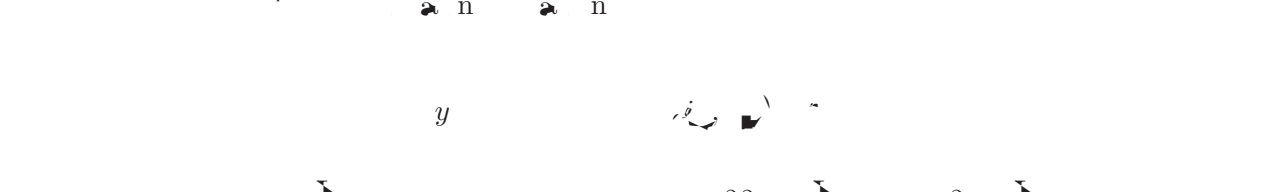
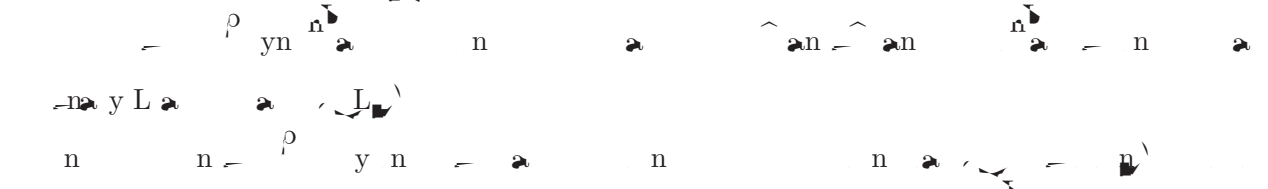
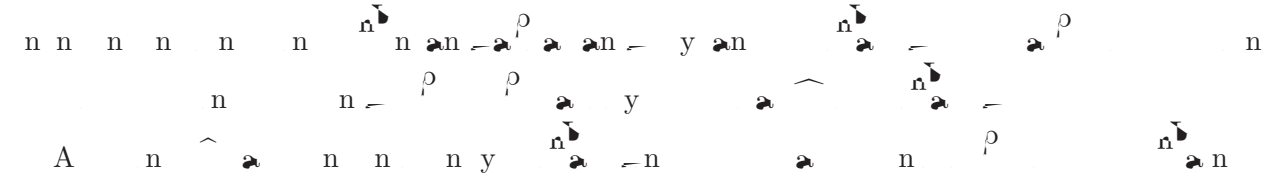
C.3.1 Inde numbers



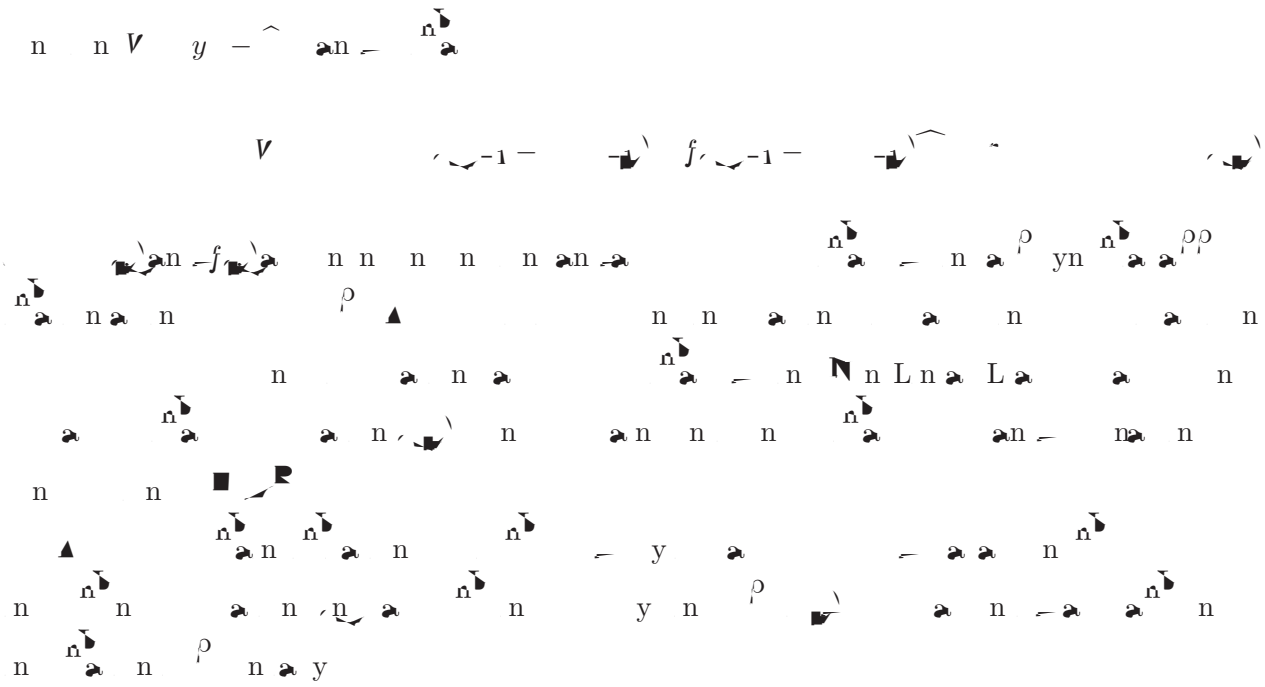




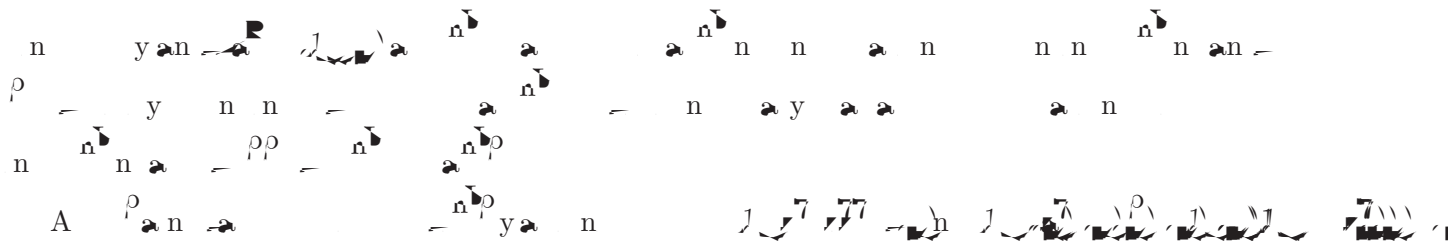




[41] **For ease of exposition I will only include one variable that represents labor, although in this study I use skilled and unskilled labor as two di□erent inputs.**



C.3.3 Levinsohn and Petrin



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Method	Indy556(0.91)-2																
	15	17	18	19	20	21	22	24	25	26	28	29	31	33	34	35	36
OLS																	
No of Obs.	10764	1656	1773	883	2320	1026	1716	2033	2144	1816	2473	1844	499	205	482	296	1608
lnskilled	0.49	0.43	0.40	0.45	0.28	0.63	0.45	0.51	0.36	0.51	0.37	0.48	0.38	0.40	0.64	0.47	0.54
lnunskilled	0.41	0.40	0.41	0.41	0.09	0.29	0.33	0.19	0.30	0.23	0.33	0.37	0.34	0.27	0.48	0.33	0.51
lnkstock	0.30	0.27	0.33	0.39	0.46	0.32	0.38	0.38	0.40	0.24	0.35	0.28	0.30	0.40	0.37	0.33	0.21
RTS	1.20	1.10	1.15	1.25	0.83	1.24	1.16	1.07	1.06	0.97	1.06	1.13	1.02	1.08	1.49	1.13	1.26
TORNQVIST INDEX																	
No. of Obs.	8,400	1,295	1,365	681	1,793	818	1,338	1,598	1,672	1,406	1,903	1,414	388	163	366	222	1,211
lnskilled	0.16	0.13	0.15	0.14	0.08	0.07	0.17	0.08	0.08	0.11	0.14	0.38	0.09	0.14	0.13	0.13	0.13
lnunskilled	0.22	0.21	0.19	0.26	0.40	0.11	0.12	0.13	0.34	0.17	0.18	0.14	0.16	0.15	0.22	1.18	0.20
lnkstock	0.62	0.66	0.66	0.60	0.52	0.82	0.71	0.80	0.58	0.72	0.68	0.47	0.75	0.71	0.65	-0.31	0.67
RTS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
OP Manually																	
No. of Obs.	4477	696	578	302	1088	500	755	1170	1064	748	1044	765	219	95	173	134	543
lnskilled	0.27	0.33	0.21	0.25	0.11	0.17	0.26	0.39	0.23	0.33	0.26	0.36	0.28	0.40	0.44	0.28	0.37
lnunskilled	0.18	0.28	0.24	0.30	0.05	0.05	0.20	0.17	0.19	0.17	0.23	0.30	0.28	0.26	0.36	0.24	0.38
lnkstock	0.12	0.15	0.24	0.07	0.13	0.03	0.28	0.13	0.22	0.09	0.17	0.06	0.06	0.32	0.29	0.11	0.08
RTS	0.56	0.76	0.69	0.62	0.29	0.25	0.74	0.68	0.63	0.59	0.65	0.72	0.62	0.99	1.09	0.62	0.84
Olley and Pakes																	
No of Obs.	5604	851	729	388	1354	618	956	1468	1342	961	1312	969	283	121	218	177	709
lnskilled	0.16	0.20	0.16	0.12	0.10	0.31	0.36	0.15	0.21	0.04	0.23	0.03	0.28	0.29	0.21	0.22	0.26
lnunskilled	0.27	0.33	0.21	0.25	0.10	0.18	0.26	0.38	0.23	0.33	0.26	0.36	0.28	0.40	0.45	0.29	0.38
lnkstock	0.18	0.28	0.24	0.30	0.06	0.06	0.19	0.16	0.19	0.17	0.23	0.29	0.29	0.27	0.35	0.22	0.38
RTS	0.61	0.81	0.61	0.67	0.26	0.55	0.81	0.69	0.63	0.55	0.72	0.68	0.84	0.97	1.01	0.73	1.02
Levinsohn and Petrin																	
No of Obs.	10733	1654	1771	875	2317	1025	1709	1953	2143	1777	2469	1834	499	205	482	296	1607
lnskilled	0.22	0.34	0.24	0.32	0.14	0.20	0.26	0.46	0.25	0.23	0.27	0.40	0.29	0.38	0.54	0.41	0.38
lnunskilled	0.17	0.31	0.23	0.29	0.07	0.11	0.20	0.17	0.21	0.09	0.24	0.29	0.25	0.18	0.36	0.28	0.37
lnkstock	0.14	0.16	0.17	0.14	0.14	0.07	0.19	0.17	0.23	0.09	0.18	0.11	0.26	0.38	0.26	0.16	0.14
RTS	0.53	0.81	0.64	0.75	0.35	0.38	0.65	0.80	0.69	0.41	0.69	0.80	0.80	0.94	1.16	0.84	0.88
Ackerberg, Caves, and Fraser																	
No of Obs.	8400	1295	1365	681	1793	818	1338	1598	1672	1406	1903	1414	388	163	366	222	1212
lnskilled	0.35	0.48	0.42	0.28	0.40	0.56	0.42	0.54	0.36	0.42	0.36	0.54	0.19	0.47	0.47	0.62	0.46
lnunskilled	0.34	0.64	0.35	0.39	0.29	0.56	0.29	0.21	0.32	0.30	0.34	0.49	0.05	0.42	0.52	0.34	0.56
lnkstock	0.13	0.16	0.22	0.15	0.13	0.06	0.20	0.15	0.21	0.16	0.21	0.10	0.18	0.18	0.16	0.14	0.12
RTS	0.81	1.28	1.00	0.82	0.81	1.18	0.91	0.90	0.90	0.88	0.91	1.14	0.42	1.06	1.14	1.11	1.13

C.4 Robustness tests

Dependent variable: log (TFP)	No IPR	Fraser IPR	Dummy IPR
Horizontal Spillovers	0.02	-0.25	-0.21
	(0.96)	(0.46)	(0.24)
Backward Spillovers	4.15**	3.37***	1.41***
	(1.80)	(0.58)	(0.44)
Forward Spillovers	-2.52**	-1.22*	-0.06
	(1.20)	(0.73)	(0.39)
IPR Fraser		-0.58***	
		(0.22)	
IPR Fraser x Horizontal Spillovers		0.01	
		(0.06)	
IPR Fraser x Backward Spillovers		-0.40***	
		(0.05)	
IPR Fraser x Forward Spillovers		0.23**	
		(0.09)	
Dummy IPR			0.11***
			(0.04)
Dummy IPR x Horizontal Spillovers			-0.00
			(0.17)
Dummy IPR x Backward Spillovers			-1.10***
			(0.15)
Dummy IPR x Forward Spillovers			0.70**
			(0.28)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.21	0.65	0.65
Observations	2,884	8,932	8,932
R-squared	0.00	0.00	0.00

Dependent variable: log (TFP)	No IPR	Fraser IPR	Dummy IPR
Backward Spillovers	4.26***	2.66***	1.13***
	(1.30)	(0.55)	(0.41)
Forward Spillovers	-2.84***	-1.33***	-0.30
	(0.79)	(0.48)	(0.29)
IPR Fraser		-0.53**	
		(0.22)	
IPR Fraser x Backward Spillovers		-0.31***	
		(0.07)	
IPR Fraser x Forward Spillovers		0.21***	
		(0.07)	
Dummy IPR			0.10***
			(0.03)
Dummy IPR x Backward Spillovers			-0.90***
			(0.21)
Dummy IPR x Forward Spillovers			0.61***
			(0.20)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.63	0.62	0.63
Observations	2,884	8,932	8,932
R-squared	0.01	0.00	0.00
Time, Industry and Region Dummies	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Dependent variable: log (TFP)	No IPR	Fraser IPR	Dummy IPR
Backward Spillovers	2.43	2.12***	0.93**
	(1.90)	(0.67)	(0.42)
Forward Spillovers	-2.26*	-1.56***	-0.51*
	(1.16)	(0.50)	(0.26)
IPR Fraser		-0.56***	
		(0.21)	
IPR Fraser x Backward Spillovers		-0.25***	
		(0.09)	
IPR Fraser x Forward Spillovers		0.22***	
		(0.07)	
Dummy IPR			0.13***
			(0.03)
Dummy IPR x Backward Spillovers			-0.71***
			(0.25)
Dummy IPR x Forward Spillovers			0.63***
			(0.20)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.12	0.63	0.62
Observations	2,409	7,227	7,227
R-squared	0.00	0.01	0.01
Time, Industry and Region Dummies	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Dependent variable: log (TFP)	No IPR	Fraser IPR	Dummy IPR
Backward Spillovers	4.26***	3.13***	1.13***
	(1.23)	(0.44)	(0.41)
Forward Spillovers	-2.57***	-1.56***	-0.30
	(0.73)	(0.47)	(0.29)
IPR Fraser		-0.51**	
		(0.20)	
IPR Fraser x Backward Spillovers		-0.39***	
		(0.04)	
IPR Fraser x Forward Spillovers		0.25***	
		(0.06)	
Dummy IPR			0.10***
			(0.03)
Dummy IPR x Backward Spillovers			-0.90***
			(0.21)
Dummy IPR x Forward Spillovers			0.61***
			(0.20)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.31	0.78	0.62
Observations	2,884	8,932	8,932
R-squared	0.00	0.00	0.00
Time, Industry and Region Dummies	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Dependent variable: log (TFP)	No IPR	Fraser IPR	Dummy IPR
Backward Spillovers	3.65**	2.79***	1.08***
	(1.57)	(0.55)	(0.36)
Forward Spillovers	-2.67***	-1.85***	-0.56**
	(0.95)	(0.46)	(0.25)
IPR Fraser		-0.53***	
		(0.20)	
IPR Fraser x Backward Spillovers		-0.35***	
		(0.06)	
IPR Fraser x Forward Spillovers		0.27***	
		(0.06)	
Dummy IPR			0.14***
			(0.04)
Dummy IPR x Backward Spillovers			-0.98***
			(0.18)
Dummy IPR x Forward Spillovers			0.76***
			(0.17)
Kleibergen-Paap LM Statistic (under-identification test)	0.00	0.00	0.00
Hansen J Statistic (over-identification test)	0.38	0.63	0.62
Observations	2,409	7,227	7,227
R-squared	0.00	0.01	0.01
Time, Industry and Region Dummies	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

D FDI Vs. Licensing

Table D.1: Descriptive Statistics (Low-Tech vs. High-Tech Firms)

Variable	Low-Tech Firms (31,300 firms)				High-Tech Firms (2,308 firms)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Capital Stock	1509.42	9322.24	0	680,000	8057.26	48590.63	0	95
% Domesic Capital	96.73	16.63	0	100	79.89	38.39	0	
% Foreign Capital	3.26	16.59	0	100	20.11	38.39	0	
Value Added	1758.89	8594.42	0	470,000	10496.43	66820.67	0.51	1,72
Sale of Production	2934.43	11245.13	0	367,000	16126	105000.00	0	1,77
Total Wages	331.84	1793.99	0	275,000	978.91	4879.48	1.87	20
Gross Production Value	4078.29	15670.79	2.28	504,000	24622.16	168000.00	6.17	3,4
Licenses and Foreign Assistance	4.12	72.84	0	5,578	63	515.47	0	1
Income Due to Exports	945.39	6913.39	0	311,000	3118.39	21210.31	0	4
Number of Skilled Workers	12.36	43.71	0	1,554	23.08	74.04	0	1
Skilled/Unskilled Workers Ratio	0.64	3.39	0	159	0.98	5.03	0	
Skilled/Total Workers Ratio	0.24	0.3	0	1	0.24	0.29	0	