

Preparing to Export*

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Abstract

This empirical supplement to our paper entitled *Preparing to Export* presents evidence from and beyond the manuscript (Molina and Muendler 2009). We document considerable heterogeneity among Brazilian exporters. Recent starters or switchers differ substantively from continuing exporters in size and export-market penetration. Surprisingly, this heterogeneity is not reflected in the workforce composition regarding observed worker skills or occupations. Using linked employer-employee data, we turn to a typically unknown worker characteristic: a worker's prior experience at other exporters. We show that anticipated export status, predicted with destination-country trade instruments, leads firms to prepare their workforce by hiring workers from other exporters, and that hiring former exporter workers predicts both a wider reach of destinations and a deeper penetration of destinations. This evidence is consistent with the hypothesis that exporters actively prepare for anticipated export-market access and with the idea that few key workers may determine a firm's export success.

Keywords: International trade; exporter behavior; trade and labor market interactions

JEL Classification: F12, F14, F16

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1 Exporter Statistics

Table 1: EXPORT STATUS ORDERING

Export status	Export period			Firm-year observations (1)	Workers per firm (2)	Annual exports (3)
	$t-2$	$t-1$	t			
Non-Exporter for three years						
Permanent non-exporter ^a	0	0	0	1,596,947	12	
Current non-exporter ^a	0	0	0	60,198	66	
Quit Exporting						
Past quitter	1	0	0	9,101	79	
In-out switcher	0	1	0	7,626	76	
Recent quitter	1	1	0	6,569	102	
Start Exporting						
Recent starter	0	0	1	18,420	104	310.7
Re-entrant	1	0	1	3,181	137	231.0
Past starter	0	1	1	12,252	149	923.1
Continuous Exporting						
Non-sustained continuous exporter ^b	1	1	1	6,044	178	561.3
Sustained non-OECD exporter ^b	1	1	1	21,915	232	888.4
Sustained OECD exporter ^b	1	1	1	25,238	552	10,802.7

^aPermanent non-exporters do not export in any sample year; current non-exporters export in at least one sample year.

^bNon-sustained continuous exporters export in three consecutive years but serve no single destination in all three years; sustained non-OECD exporters serve at least one destination (but no 1990-OECD member country) in three consecutive years; sustained OECD exporters serve at least one 1990-OECD member country in all three years.

Source: SECEX 1990 through 2001 (t : 1992-2001), manufacturing firms (subsectors IBGE 2-13).

Notes: Universe of 1,767,491 manufacturing firm-year observations. Exports (fob) in thousands of August-1994 USD.

Table 2: FIRM CHARACTERISTICS BY INDUSTRY

Subsector IBGE	Firm-year observ.	Workers per firm	Share (%) exporters	Workers per exp.	Exports per exp.
Non-metallic mineral products	137,091	18.8	.026	212.5	1,574.7
Metallic products	201,093	24.8	.046	288.4	5,974.8
Machinery, equipment and instruments	73,976	39.4	.152	167.9	1,962.3
Electrical and telecomm. equipment	40,603	51.9	.123	285.8	2,618.3
Transport equipment	39,169	80.9	.103	622.4	13,010.7
Wood products and furniture	234,913	15.2	.042	120.1	1,064.9
Paper and paperboard, and publishing	132,108	23.0	.023	349.9	5,118.3
Rubber, tobacco, leather, and prod. nec.	96,152	25.3	.082	173.1	2,805.6
Chemical and pharmaceutical products	131,110	37.2	.099	206.4	2,100.9
Apparel and textiles	332,926	20.6	.025	314.1	1,290.1
Footwear	48,881	46.5	.099	335.2	2,630.4
Food, beverages, and ethyl alcohol	299,469	34.1	.024	637.2	9,372.6
<i>Total</i>	1,767,491	27.7	.049	278.9	3,598.7

Sources: SECEX and RAIS 1990-2001, manufacturing firms (subsectors IBGE 2-13).

Notes: Employment on December 31st. Exports (fob) in thousands of August-1994 USD.

Table 3: SUMMARY STATISTICS

Variable	All	Ex-	Export Status (t)		
	firms	porters	Continuous	Start	Quit
	(1)	(2)	(3)	(4)	(5)
Foreign-market participation					
Indic.: Exporter (t)	.049	1.000	1.000	1.000	
Indic.: Affiliate of foreign MNE (t)	.0001	.0005	.0007	.0002	.0002
Log # Destinations (t)	.986	.986	1.375	.376	
Log Exports/Destination (t)	3.832	3.832	4.423	2.906	
Anticip. Continuous Exporting ($t+1$)	.038	.674	.918	.280	
Anticip. Start Exporting ($t+1$)	.021	.148		.389	.219
Anticip. Quit Exporting ($t+1$)	.016	.177	.082	.331	.454
Anticip. Non-exporter for three years ($t+1$)	.924				.327
Size					
Employment (t)	28.2	285.4	386.1	127.9	87.2
Net Employment Change ($t-1$ to t)	-.2	-5.5	-13.0	7.2	-6.1
Workforce characteristics					
Share: Unskilled blue-collar occupation (t)	.130	.127	.120	.137	.132
Share: Skilled blue-collar occupation (t)	.631	.576	.573	.580	.560
Share: White-collar occupation (t)	.239	.297	.306	.283	.309
Share: Primary school education (t)	.756	.673	.662	.690	.690
Share: High school education (t)	.207	.232	.234	.229	.228
Share: Tertiary education (t)	.037	.095	.104	.081	.081
Workforce background					
Indic.: Hires from Exporters (in t)	.265	.861	.899	.801	.728
Gross Hires from Exporters (in t)	2.2	25.5	32.8	14.1	9.0

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: 1,557,474 regression sample observations (employment change based on 1,277,201 observations of firms with consecutive-year presence). Export status as defined in Table 1. Current exporters (column 2) include firms with continuous exporting (column 3) or that start exporting (column 4) but not firms that recently quit exporting (column 5). Workforces on December 31st. Exports (fob) and annualized December wages in thousands of August-1994 USD.

Table 4: EXPORTER PREMIA

Firm characteristic	Export Status			<i>t</i> -tests of null-hypothesis	
	Continuous (1)	Start (2)	Quit (3)	(1)=(2)	(2)=(3)
Pay					
Log Annual Wage	.821 (.003)	.552 (.003)	.522 (.004)	≠	≠
Residual Log Annual Wage	.726 (.003)	.489 (.003)	.458 (.004)	≠	≠
Workforce composition					
Share: Primary school education	-.081 (.001)	-.057 (.001)	-.045 (.002)	≠	≠
Share: High school education	.016 (.0008)	.013 (.001)	.005 (.001)		≠
Share: Tertiary education	.065 (.0006)	.043 (.0008)	.041 (.001)	≠	
Share: Unsk. blue-collar occupation	-.012 (.0009)	.003 (.001)	.004 (.001)	≠	
Share: Skilled blue-collar occupation	-.057 (.001)	-.054 (.002)	-.072 (.002)		≠
Share: White-collar occupation	.069 (.001)	.052 (.001)	.068 (.002)	≠	≠
Workforce background					
Log Gross Hires from Exporters	1.996 (.007)	1.267 (.007)	.962 (.008)	≠	≠

Sources: SECEX and RAIS 1992-2001, manufacturing firms (subsectors IBGE 2-13).

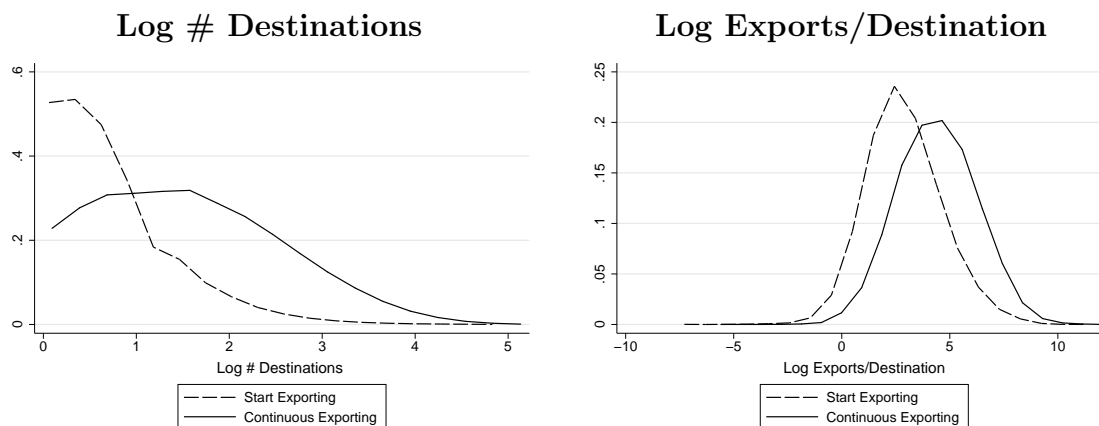
Notes: Premia are coefficients from linear regressions of the firm characteristic on export status dummies, controlling for sector and year effects (but not the firms' sizes) in the universe of 1,767,491 manufacturing firm-year observations. Export status as defined in Table 1. The omitted baseline category is non-exporters for three years. Workforces on December 31st. Annualized December wages in thousands of August-1994 USD, residual log wage from a linear regression on reported workforce composition variables. Log number of gross hires from exporters set to missing if zero. Robust standard errors in parentheses. In columns 4 and 5, rejections of the null hypothesis of equality are reported for *t* tests at one percent significance.

Table 5: EXPORTER PREMIA CONDITIONAL ON LOG FIRM SIZE

Firm characteristic	Export Status			<i>t</i> -tests	
	Continuous (1)	Start (2)	Quit (3)	of null-hypothesis (1)=(2) (2)=(3)	
Earnings					
Log Annual Wage	.440 (.003)	.307 (.003)	.316 (.004)	≠	
Residual Log Annual Wage	.351 (.003)	.248 (.003)	.256 (.003)	≠	
Workforce composition					
Share: Unsk. blue-collar occupation	-.021 (.001)	-.003 (.001)	-.001 (.002)	≠	
Share: Skilled blue-collar occupation	-.081 (.001)	-.070 (.002)	-.085 (.002)	≠	≠
Share: White-collar occupation	.102 (.001)	.073 (.001)	.086 (.002)	≠	≠
Share: Primary school education	-.111 (.001)	-.076 (.001)	-.061 (.002)	≠	≠
Share: High school education	.047 (.0009)	.034 (.001)	.021 (.001)	≠	≠
Share: Tertiary education	.064 (.0006)	.042 (.0008)	.040 (.001)	≠	
Workforce background					
Log Gross Hires from Exporters	1.215 (.006)	.764 (.006)	.545 (.007)	≠	≠

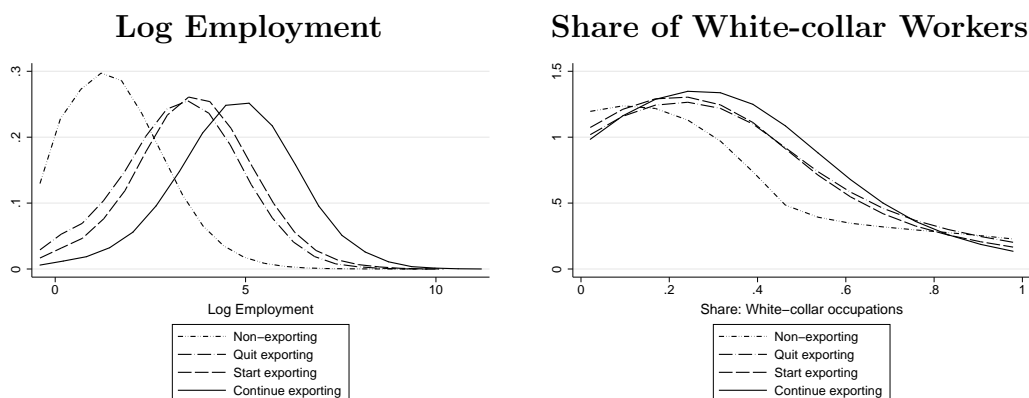
Sources: SECEX and RAIS 1992-2001, manufacturing firms (subsectors IBGE 2-13).

Notes: Premia are coefficients from linear regressions of the firm characteristic on export status dummies, controlling for the firms' log employment, sector and year effects in the universe of 1,767,491 manufacturing firm-year observations. Export status as defined in Table 1. The omitted baseline category is non-exporters for three years. Workforces on December 31st. Annualized December wages in thousands of August-1994 USD, residual log wage from a linear regression on educational and occupational workforce composition variables. Log number of gross hires from exporters set to missing if zero. Robust standard errors in parentheses. In columns 4 and 5, rejections of the null hypothesis of equality are reported for *t* tests at one percent significance.



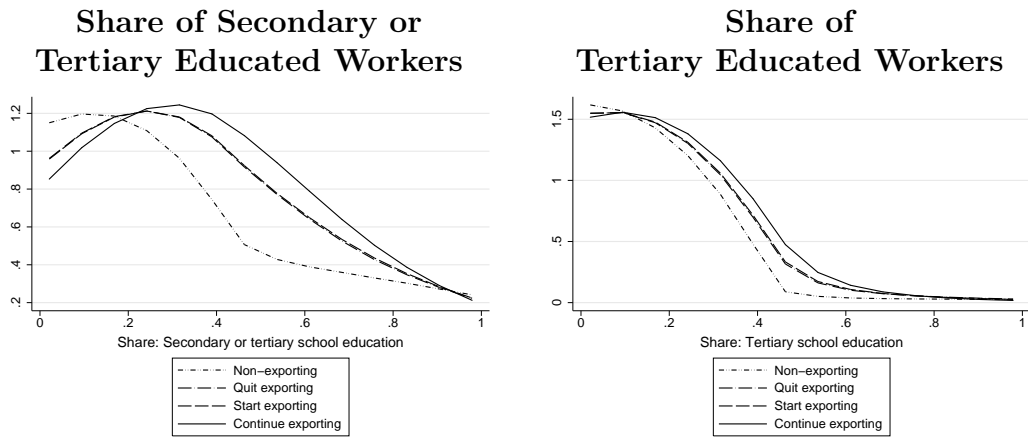
Source: SECEX 1990-2001, manufacturing firms (subsectors IBGE 2-13).
 Note: Export status as defined in Table 1. Exports (fob) in August-1994 USD. Epanechnikov kernels with bandwidths of .5 (# destinations) and .2 (exports/destination).

Figure 1: Density Estimates of Destinations and Exports per Destination



Sources: SECEX and RAIS 1992-2001, manufacturing firms (subsectors IBGE 2-13).
 Note: Export status as defined in Table 1. Workforces on December 31st. Epanechnikov kernels with bandwidths .4 (employment) and .2 (white-collar occupations).

Figure 2: Density Estimates of Sizes and White-collar Shares



Sources: SECEX and RAIS 1992-2001, manufacturing firms (subsectors IBGE 2-13).

Note: Export status as defined in Table 1. Workforces on December 31st. Epanechnikov kernels with bandwidth .2.

Figure 3: Density Estimates of Education Shares

2 Exporter Turnover

Table 6: EXPORTERS AND EXPORTS BY ENTRY COHORT

	Cohort										<i>Total</i>
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	Number of exporters										
1992	15,116										15,116
1993	9,623	4,005									13,628
1994	8,598	2,206	3,492								14,296
1995	7,544	1,530	1,552	2,807							13,433
1996	6,751	1,253	1,180	1,426	2,787						13,397
1997	6,178	1,067	942	1,057	1,382	3,049					13,675
1998	5,642	951	803	882	1,054	1,605	3,043				13,980
1999	5,210	896	765	776	911	1,258	1,643	3,709			15,168
2000	4,926	835	716	699	811	1,102	1,322	2,070	3,535		16,016
2001	4,655	773	677	650	730	980	1,149	1,606	1,899	4,144	17,263
	Exports (billion USD)										
1992	38.08										38.08
1993	37.79	0.76									38.55
1994	41.71	1.14	0.69								43.55
1995	43.17	1.17	1.21	0.96							46.51
1996	42.95	1.36	1.21	1.19	1.04						47.75
1997	46.30	1.81	1.28	1.52	1.46	0.62					52.98
1998	43.33	1.25	1.53	1.01	1.40	1.66	0.95				51.13
1999	38.47	1.30	1.38	1.02	1.19	1.71	1.63	1.30			48.00
2000	41.40	1.85	1.39	1.17	1.44	2.40	1.94	1.88	1.61		55.06
2001	41.52	1.58	1.30	1.42	1.35	3.20	2.28	2.15	2.23	1.19	58.22

Sources: SECEX 1990 through 2001, and RAIS 1992 through 2001. Manufacturing and mining firms (subsector IBGE 1-13).

Note: The 1992 cohort contains all exporters in that year, all subsequent cohorts show export-market entrants with no previous exporting experience since 1992, similar to Brooks (2006). Exports (fob) in Billions of August-1994 USD.

Table 7: NUMBER OF DESTINATIONS BY ENTRY COHORT

	Cohort									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1992	4									
1993	5	2								
1994	6	2	1							
1995	6	2	2	2						
1996	6	3	2	2	2					
1997	6	3	3	3	2	1				
1998	6	3	3	3	3	2	2			
1999	7	3	3	3	3	3	3	2		
2000	7	3	3	3	3	3	3	2	2	
2001	7	4	4	4	4	4	3	3	2	2

Source: SECEX 1990 through 2001. Manufacturing and mining firms (subsectors IBGE 1-13).

Note: The 1992 cohort contains all exporters in that year, all subsequent cohorts show export-market entrants with no previous exporting experience since 1992, similar to Brooks (2006).

Table 8: ANNUAL EXPORT STATUS TRANSITIONS IN MANUFACTURING

(in percent)	Non- exp. ^a (1)	Past quitter (2)	In-Out switcher (3)	Recent quitter (4)	Recent starter (5)	Re- entrant (6)	Past starter (7)	Cont. exporter ^b (8)	Sustained non-OECD ^b (9)	Sust. OECD ^b (10)	Total (11)
Non-Exporter^a	99.0	.0	.0	.0	1.0	.0	.0	.0	.0	.0	100.0
Quit Exporting											
Past quitter	83.8	.0	.0	.0	16.2	.0	.0	.0	.0	.0	100.0
In-Out switcher	.0	78.2	.0	.0	.0	21.8	.0	.0	.0	.0	100.0
Recent quitter	.0	70.0	.0	.0	.0	30.0	.0	.0	.0	.0	100.0
Start Exporting											
Recent starter	.0	.0	38.9	.0	.0	.0	61.1	.0	.0	.0	100.0
Re-entrant	.0	.0	37.8	.0	.0	.0	62.2	.0	.0	.0	100.0
Past starter	.0	.0	.0	23.3	.0	.0	.0	19.4	38.1	19.1	100.0
Continuous Exp.											
Non-sust. cont. exp. ^b	.0	.0	.0	23.0	.0	.0	.0	42.4	24.8	9.7	100.0
Sust. non-OECD exp. ^b	.0	.0	.0	8.9	.0	.0	.0	5.1	80.4	5.6	100.0
Sust. OECD exp. ^b	.0	.0	.0	4.1	.0	.0	.0	2.0	4.0	89.9	100.0
<i>Total</i>	92.6	.6	.5	.5	1.1	.2	.8	.4	1.6	1.7	100.0

^aPermanent non-exporters (that do not export in any sample year) and current non-exporters (that export in at least one sample year).

^bNon-sustained continuous exporters export in three consecutive years but serve no single destination in all three years; sustained non-OECD exporters serve at least one destination (but no 1990-OECD member country) in three consecutive years; sustained OECD exporters serve at least one 1990-OECD member country in all three years.

Sources: SECEX 1990 through 2001, and RAIS 1992 through 2001. Manufacturing firms (subsectors IBGE 2-13).

Note: For export status definitions see Table 1.

3 Predictions of Export Status and Hiring Choices

Table 9: LOGIT PREDICTION OF FUTURE EXPORT-MARKET PARTICIPATION

Predictor (t)	Exporter ($t+1$)			
	(1)	(2)	(3)	(4)
Log Employment	.673 (.005)*	.574 (.006)*	.550 (.007)*	.505 (.008)*
Share: High school education	.248 (.027)*	.246 (.031)*	.245 (.030)*	.251 (.031)*
Share: Tertiary education	.818 (.047)*	.735 (.054)*	.732 (.054)*	.757 (.054)*
Share: Skilled blue-collar occ.	-.223 (.026)*	-.198 (.028)*	-.198 (.028)*	-.158 (.029)*
Share: Other white-collar occ.	-.046 (.050)	-.054 (.057)	-.039 (.056)	-.099 (.058)
Share: Techn. or supervis. occ.	-.028 (.041)	.078 (.046)	.080 (.046)	-.109 (.060)
Share: Profess. or manag'l. occ.	.597 (.058)*	.506 (.069)*	.507 (.068)*	.274 (.079)*
Indic.: Exporter	3.326 (.025)*	3.148 (.027)*	3.147 (.027)*	4.495 (.037)*
Log # Destinations	.579 (.018)*	.698 (.020)*	.694 (.020)*	.729 (.018)*
Log Exports/Destination	.175 (.007)*	.193 (.007)*	.189 (.007)*	.199 (.007)*
Indic.: Affiliate of foreign MNE	-.352 (.483)	-.287 (.492)	-.299 (.492)	-.317 (.449)
Rel. Employment Chg. ($t-1$ to t per t)		.009 (.005)	.010 (.005)	.013 (.006)
Indic.: Hires from Exporters		.709 (.017)*	.674 (.018)*	1.234 (.023)*
Log Gross Hires from Exp.			.056 (.009)*	.110 (.009)*
Indic.: High-skill firm				.287 (.028)*
Indic.: High-skill firm \times Indic.: Hires from Exporter				-1.661 (.034)*
Indic.: High-skill firm \times Indic.: Exporter				-.464 (.030)*
Observations	1,557,474	1,277,201	1,277,201	1,277,201
Pseudo R^2	.622	.624	.629	.629
Predicted probability \hat{P}	.048	.051	.051	.051

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: Logit regressions, controlling for sector and year effects. Binary present and future exporter indicators represent firms that start exporting and that continue exporting. Workforces on December 31st. Exports (fob) in thousands of August-1994 USD. Log number of destinations and log exports per destination set to zero for non-exporters. Log number of gross hires from exporters set to zero if zero hires. High-skill firms are firms with a share of technical/supervisory and professional/managerial occupations in the top quartile of firm-year observations. Robust standard errors in parentheses (asterisk marks significance at the one percent level).

Table 10: PREDICTORS OF FUTURE EXPORT-MARKET PARTICIPATION CONDITIONAL ON FIRM-FIXED EFFECTS

Predictor (t)	Exporter ($t+1$)	
	Cond'l logit	OLS-FE
Log Employment	.876 (.023)*	.014 (.0003)*
Share: High school education	.210 (.069)*	.002 (.0006)*
Share: Tertiary education	.322 (.108)*	.002 (.001)
Share: Skilled blue-collar occ.	.006 (.073)	.002 (.0008)*
Share: Other white-collar occ.	.212 (.136)	-.0002 (.001)
Share: Techn. or supervis. occ.	.298 (.132)	-.0001 (.002)
Share: Profess. or manag'l. occ.	.260 (.164)	-.006 (.002)
Indic.: Exporter	-.131 (.044)*	-.012 (.007)
Log # Destinations	.691 (.028)*	.102 (.003)*
Log Exports/Destination	.213 (.009)*	.044 (.002)*
Indic.: Affiliate of foreign MNE	-.165 (.563)	-.015 (.027)
Rel. Employment Chg. ($t-1$ to t per t)	-.013 (.005)*	.0006 (.0002)*
Indic.: Hires from Exporters	-.063 (.030)	-.005 (.0005)*
Log Gross Hires from Exp.	.009 (.013)	.011 (.0008)*
Indic.: High-skill firm	.177 (.041)*	.004 (.0008)*
Indic.: High-skill firm \times Indic.: Hires from Exporter	.098 (.041)	.058 (.006)*
Indic.: High-skill firm \times Indic.: Exporter	-.236 (.037)*	-.033 (.006)*
Observations	98,731	1,277,201
R^2 (pseudo, within)	.117	.063
Predicted probability \hat{P}	.262	.051

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: Logit and linear regressions, controlling for firm, sector and year effects. Present and future exporter indicators represent firms that start exporting and that continue exporting. Workforces on December 31st. Exports (fob) in thousands of August-1994 USD. Log number of destinations and log exports per destination set to zero for non-exporters. Log number of gross hires from exporters set to zero if zero hires. High-skill firms are firms with a share of technical/supervisory and professional/managerial occupations in the top quartile of firm-year observations. Robust standard errors in parentheses (asterisk marks significance at the one-percent level). Linear probability model predicts 26,137 instances of negative exporting probability.

Table 11: PREDICTIONS OF DESTINATION NUMBER AND EXPORTS PER DESTINATION

Predictor (t unless noted otherwise)	Log # Destinations ($t+1$)		Log Exports/Dest. ($t+1$)	
	(1)	(2)	(3)	(4)
Log # Destinations ($t+1$)			.105 (.012)***	.104 (.012)***
Log Exports/Destination ($t+1$)	.025 (.003)***	.025 (.003)***		
Log Employment	.180 (.008)***	.176 (.008)***	.291 (.017)***	.290 (.017)***
Rel. Empl. Chg. ($t-1$ to t per t)	-.002 (.003)	-.002 (.003)	-.006 (.003)**	-.006 (.003)**
Indic.: Hires from Exporters	-.009 (.010)		-.007 (.021)	
Log Gross Hires from Exp.	.007 (.004)*		.013 (.008)*	
Indic.: Hires from Start Exp.		.011 (.008)		.028 (.015)*
Log Gross Hires from Start Exp.		-.009 (.004)**		-.008 (.009)
Indic.: Hires from Cont. Exp.		.001 (.011)		.015 (.026)
Log Gross Hires from Cont. Exp.		.016 (.004)***		.015 (.008)*
Indic.: High-skill firm	.023 (.011)**	.024 (.011)**	.004 (.023)	.004 (.023)
Indic.: High-sk. firm \times Indic.: Hires fr. Exp.		-.017 (.014)		-.031 (.031)
Obs.	50,395	50,395	50,395	50,395
R^2 (within)	.033	.034	.030	.030

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: Linear regressions, controlling for firm, sector and year effects. Workforces on December 31st. Exports (fob) in thousands of August-1994 USD. Log number of gross hires from exporters set to zero if zero hires. High-skill firms are firms with a share of technical/supervisory and professional/managerial occupations in the top quartile of firm-year observations. Additional workforce and MNE control variables as in Table 13. Robust standard errors in parentheses (asterisk marks significance at the one percent level).

Table 12: FOREIGN DEMAND AND FUTURE EXPORT-MARKET PARTICIPATION

Instrument (t)	Exporter	Export Status ($t+1$)		
	($t+1$)	Continuous	Start	Quit
	(1)	(2)	(3)	(4)
Foreign Import Demand at sector level (IV)				
Non-Brazil Imports in OIN	-.188 (.040)*	-.117 (.028)*	-.072 (.037)	.070 (.032)
Non-Brazil Imports in WEU	.045 (.010)*	.012 (.007)	.032 (.009)*	-.030 (.008)*
Non-Brazil Imports in NAM	-.043 (.013)*	.012 (.009)	-.055 (.012)*	-.002 (.010)
Observations	1,277,201	1,277,201	1,277,201	1,277,201
R^2 (within)	.042	.216	.081	.201
F statistic	18.01	6.06	14.06	11.24
Foreign Import Demand at sector level \times Export Status at firm level (IV \times Exp.)				
Non-Brazil Imports WW \times Cont. Exp.	-.079 (.002)*	-.031 (.002)*	-.048 (.002)*	.035 (.002)*
Non-Brazil Imports WW \times Start Exp.	-.063 (.002)*	-.008 (.002)*	-.055 (.002)*	.032 (.002)*
Non-Brazil Imports WW \times Quit Exp.	-.021 (.002)*	-.007 (.002)*	-.014 (.002)*	-.019 (.002)*
Observations	1,277,201	1,277,201	1,277,201	1,277,201
R^2 (within)	.043	.217	.082	.202
F statistic	494.44	123.25	314.79	286.54

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: Linear regressions, controlling for firm, sector and year effects. Binary future exporter indicator represents firms that start exporting at $t+1$ or that continue exporting at $t+1$; future and current export status as defined in Table 1. Non-Brazilian imports in Other Industrialized countries (OIN), Western European countries (WEU), North American countries (NAM excluding Mexico), and worldwide (WW excluding Latin America and Caribbean). Additional regressors: current export status, workforce characteristics and MNE indicator as in Table 13. Standard errors in parentheses (not clustered because firms not nested within sectors; asterisk marks significance at the one percent level).

Table 13: HIRES FROM EXPORTERS

Predictor (t unless noted otherwise)	Log [1 + Hires from Exporters] (t)				
	no IV		IV		IV \times Exp.
	OLS	Firm FE	OLS	Firm FE	Firm FE
	(1)	(2)	(3)	(4)	(5)
Anticip. Exp. ($t+1$), <i>instr. in (3)-(5)</i>	.326 (.003)*	.106 (.003)*	9.647 (1.646)*	3.833 (.645)*	2.814 (.104)*
Indic.: Continue Exporting	.837 (.004)*	.317 (.005)*	-6.613 (1.316)*	-.186 (.087)	-.048 (.016)*
Indic.: Start Exporting	.639 (.004)*	.272 (.004)*	-4.572 (.920)*	-.383 (.114)*	-.204 (.019)*
Indic.: Quit Exporting	.523 (.004)*	.212 (.004)*	-.932 (.257)*	.472 (.045)*	.401 (.009)*
Rel. Empl. Chg. ($t-1$ to t per t)	-.008 (.0002)*	-.003 (.0002)*	-.018 (.002)*	-.005 (.0005)*	-.004 (.0003)*
Log Employment	.297 (.0004)*	.266 (.0008)*	.168 (.023)*	.194 (.013)*	.214 (.002)*
Share: High school education	.009 (.002)*	.007 (.002)*	-.028 (.008)*	-.001 (.004)	.001 (.003)
Share: Tertiary education	.046 (.004)*	-.023 (.004)*	-.111 (.029)*	-.029 (.007)*	-.028 (.006)*
Share: Skilled blue-collar occ.	-.017 (.002)*	-.004 (.003)	-.024 (.005)*	-.014 (.005)*	-.011 (.004)*
Share: Other white-collar occ.	-.056 (.003)*	-.061 (.005)*	-.035 (.009)*	-.052 (.008)*	-.055 (.007)*
Share: Techn. or supervis. occ.	.098 (.004)*	.040 (.005)*	.096 (.010)*	.042 (.008)*	.041 (.006)*
Share: Profess. or manag'l. occ.	.170 (.005)*	.029 (.007)*	.140 (.015)*	.055 (.012)*	.048 (.009)*
Indic.: Affiliate of foreign MNE	.059 (.042)	.032 (.044)	.195 (.114)	.098 (.071)	.080 (.059)
Indic.: High-skill firm	-.106 (.002)*	-.052 (.002)*	-.125 (.006)*	-.067 (.004)*	-.063 (.003)*
Indic.: High-sk. firm \times Indic.: Exp.	-.265 (.004)*	-.087 (.005)*	-.121 (.028)*	.080 (.030)*	.034 (.008)*
Observations	1,277,201	1,277,201	1,277,201	1,277,201	1,277,201
R^2 (overall)	.530	.499		.346	.392

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: Linear regressions, controlling for sector and year effects. Specifications 2, 4 and 5 control for firm effects in addition. Specifications 3, 4 and 5 use instrumented binary future exporter indicator (column 1 of Table 12 for specifications 4 and 5). Binary future exporter indicator represents firms that start exporting at $t+1$ or that continue exporting at $t+1$; current export status as defined in Table 1. Workforces on December 31st. High-skill firms are firms with a share of technical/supervisory and professional/managerial occupations in the top quartile of firm-year observations. Standard errors in parentheses (asterisk marks significance at the one percent level).

Table 14: HIRES FROM EXPORTERS FOR ALTERNATIVE OUTCOME DEFINITIONS

Predictor	Measure of Hires from Exporters (t)			
	no IV		IV	
	OLS (1)	Firm FE (2)	OLS (3)	Firm FE (4)
Measure: Log [1 + Hires from Exporters] (t)				
Anticip. Exporter ($t+1$), <i>instrumented in (3)-(4)</i>	.326 (.003)*	.106 (.003)*	9.647 (1.646)*	3.833 (.645)*
Anticip. Exporter ($t+2$), <i>instrumented in (3)-(4)</i>	.352 (.003)*	.145 (.003)*	1.216 (.083)*	1.654 (.075)*
Measure: Log Hires from Exporters (t)				
Anticip. Exporter ($t+1$), <i>instrumented in (3)-(4)</i>	.353 (.003)*	.123 (.003)*	9.642 (1.635)*	3.396 (.579)*
Measure: Hires from Exporters (t)				
Anticip. Exporter ($t+1$), <i>instrumented in (3)-(4)</i>	2.938 (.047)*	1.528 (.035)*	36.393 (10.275)*	12.491 (4.877)
Measure: Indic. of Hires from Exporters (t)				
Anticip. Exporter ($t+1$), <i>instrumented in (3)-(4)</i>	.071 (.002)*	.008 (.002)*	3.335 (.680)*	2.008 (.424)*

Sources: SECEX and RAIS 1990-2001 (t : 1992-2000), manufacturing firms (subsectors IBGE 2-13).

Notes: Linear regressions, controlling for sector and year effects. Specifications 2 and 4 control for firm effects in addition. 1,277,201 observations, except for anticipated exporting two years into the future with 1,106,690 observations. Specifications 3 and 4 use instrumented binary future exporter indicator (column 1 of Table 12 for specification 4). Binary future exporter indicator represents firms that start exporting at $t+1$ or that continue exporting at $t+1$. Additional regressors: current export status as defined in Table 1, workforce and MNE control variables as in Table 13. Standard errors in parentheses (asterisk marks significance at the one percent level).

Table 15: HIRES FROM EXPORTERS AND ANTICIPATED EXPORT STATUS

	Log [1 + Hires from Exporters] (<i>t</i>)				
	no IV		IV		IV × Exp.
	OLS (1)	Firm FE (2)	OLS (3)	Firm FE (4)	Firm FE (5)
Antic. Cont. Exp. (<i>t</i> +1), <i>instr. in</i> (3)-(5)	.347 (.006)*	.180 (.005)*	-34.124 (92.514)	-5.257 (5.701)	4.704 (.504)*
Antic. Start Exp. (<i>t</i> +1), <i>instr. in</i> (3)-(5)	.342 (.004)*	.095 (.004)*	20.719 (30.987)	7.221 (2.460)*	4.332 (.342)*
Antic. Quit Exp. (<i>t</i> +1), <i>instr. in</i> (3)-(5)	.046 (.005)*	.040 (.004)*	-11.230 (74.078)	12.528 (3.523)*	3.266 (.383)*
Observations	1,277,201	1,277,201	1,277,201	1,277,201	1,277,201
R^2 (overall)	.530	.499		.005	.332

Sources: SECEX and RAIS 1990-2001 (*t*: 1992-2000), manufacturing firms (subsectors IBGE 2-13).

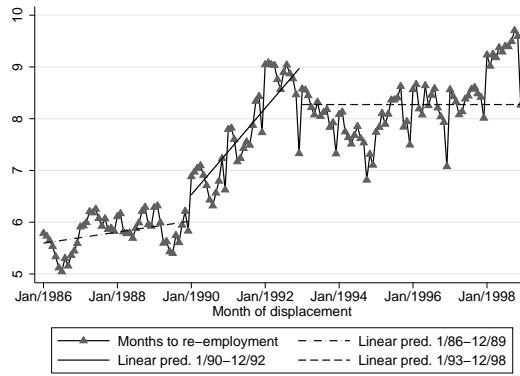
Notes: Linear regressions, controlling for sector and year effects. Specifications 2, 4 and 5 control for firm effects in addition. Specifications 3, 4 and 5 use instrumented future export status (columns 2 through 4 of Table 12 for specifications 4 and 5). Future and current export status as defined in Table 1. Additional workforce and MNE control variables as in Table 13. Standard errors in parentheses (asterisk marks significance at the one percent level).

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Table 16: EMPLOYMENT BY OCCUPATION AND EDUCATIONAL ATTAINMENT

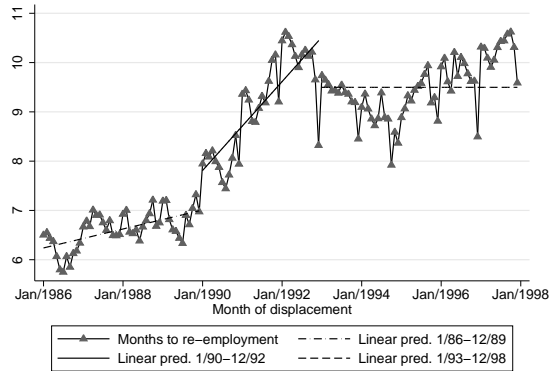
Occupation	Schooling			<i>Total</i>
	Primary	Secondary	Tertiary	
Unskilled blue-collar	.085	.015	.0008	.101
Skilled blue-collar	.510	.116	.007	.633
Other white-collar	.045	.027	.009	.081
Technical or supervisory	.035	.053	.021	.109
Professional or managerial	.020	.020	.036	.076
<i>Total</i>	.695	.232	.073	1.000

Sources: RAIS 1992-2001 (one-percent random sample), manufacturing firms (subsectors IBGE 2-13).
Note: Workforces on December 31st.



Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and rehired into a formal-sector job within 36 months.

Figure 4: Mean duration of formal-sector reallocation within 36 months



Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and rehired into a formal-sector job within 48 months.

Figure 5: Mean duration of formal-sector reallocation within 48 months

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