

Online Data Supplement to Labor Reallocation in Response to Trade Reform*

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Abstract

This empirical supplement to our paper entitled *Labor Reallocation in Response to Trade Reform* presents evidence on the impact of trade reform on labor reallocation, using a comprehensive linked employer-employee data set for Brazil and covering the period 1986-2001.

Tracking individual workers across jobs after Brazil's trade liberalization in the 1990s shows that tariff cuts trigger worker displacements, but neither exporters nor comparative-advantage sectors absorb trade-displaced labor. On the contrary, they separate from significantly more and hire fewer workers than the average employer. Trade liberalization increases transitions to services, unemployment, and out of the labor force. Results are consistent with faster labor productivity growth than sales expansions so that output shifts to more productive firms while labor does not. Higher rates of failed reallocations and longer durations of complete reallocations result, associated with a costly incidence of idle resources.

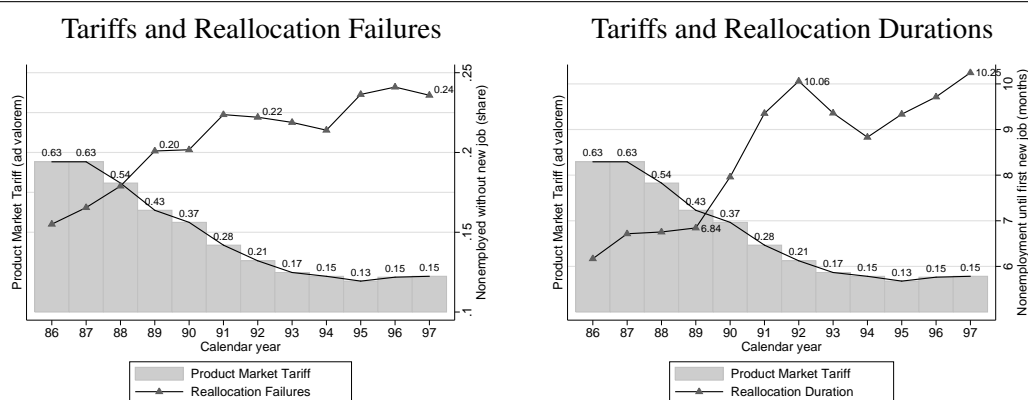
Keywords: International trade; factor reallocation; labor demand and turnover; linked employer-employee data

JEL Classification: F14, F16, J23, J63

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1 Main Statistics of Paper, Nationwide



Sources: RAIS 1986-2001 (1-percent random sample), workers nationwide of any gender or age, separated from a formal-sector job; not re-acciding into a formal-sector job within 48 months (*left graph*) or re-acciding into a formal-sector job within 48 months (*right graph*). Product tariffs from Kume, Piani and Souza (2003), employment weighted at *Nível 50* sector level in 1988.

Figure 1: Tariffs and labor-market performance

Table 1: LABOR MARKET PERFORMANCE AND ECONOMIC OUTCOMES

| | 1986 | 1990 | 1992 | 1994 | 1998 |
|---|-------|-------|-------|-------|-------|
| FAILED REALLOCATIONS WITHIN A YEAR | | | | | |
| Mean failure rate (share of displaced) | .285 | .354 | .441 | .391 | .474 |
| female workers | .387 | .427 | .500 | .451 | .517 |
| young workers | .297 | .361 | .445 | .384 | .446 |
| high-school or college educ. workers | .305 | .350 | .416 | .366 | .435 |
| Change over 1990 | | .000 | .088 | .037 | .120 |
| Idle labor (foregone share of GDP) | | .000 | .024 | .009 | .037 |
| DURATIONS OF SUCCESSFUL REALLOCATIONS WITHIN A YEAR | | | | | |
| Mean duration (in months) | 2.918 | 3.927 | 4.280 | 4.125 | 4.253 |
| female workers | 3.157 | 3.965 | 4.097 | 4.017 | 4.097 |
| young workers | 2.896 | 3.909 | 4.184 | 3.969 | 4.105 |
| high-school or college educ. workers | 2.558 | 3.397 | 3.622 | 3.458 | 3.633 |
| Change over 1990 (one twelfth) | | .000 | .029 | .017 | .027 |
| Idle labor (foregone share of GDP) | | .000 | .008 | .004 | .008 |

Sources: RAIS 1986-1999 (1-percent random sample), workers nationwide of any gender or age, displaced from a formal-sector job; not rehired into a formal-sector job within 12 months (*upper panel*) or rehired into a formal-sector job within 12 months (*lower panel*). PME 1986-1999, share of idle prime-age male metropolitan workers (unemployed or withdrawn from labor force) used for nationwide sample, and *Banco Central do Brasil*, GDP.

Notes: Young workers have ten or less years of potential labor force experience, high-school or college-educated workers have some high-school education. Foregone GDP is the unrealized wage bill, measured as the product of the observed change over 1990 times the number of newly displaced workers during the year times their wage upon displacement. Idle labor is defined as the share of displaced workers in PME with transitions to unemployment or out of the labor force.

Table 2: PRODUCTIVITY VARIATION ACROSS FIRMS AND OVER TIME

| | TFP & Output shares | | | | Labor Prod. & Employment shares | | | | Outp. & Empl. |
|------|---------------------|----------|------|--------------------------------------|---------------------------------|----------|-------|--------------------------------------|--------------------------------------|
| | Cross section | | | Ann. chg. avg. corr. ^a | Cross section | | | Ann. chg. avg. corr. ^a | Ann. chg. avg. corr. ^a |
| | wgtd. | unwgted. | cov. | | wgtd. | unwgted. | cov. | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | |
| 1986 | 1.018 | .924 | .095 | | 1.011 | 1.019 | -.008 | | |
| 1990 | 1.000 | .899 | .101 | .165 | 1.000 | .997 | .003 | -.164 | .182 |
| 1992 | 1.017 | .911 | .105 | .142 | 1.015 | 1.008 | .007 | -.198 | -.093 |
| 1994 | 1.013 | .918 | .096 | .135 | 1.023 | 1.019 | .005 | -.183 | .166 |
| 1998 | 1.035 | .910 | .125 | .148 | 1.073 | 1.043 | .030 | -.170 | .367 |

^aPeriod averages of correlation coefficients (periods 1986-90, 1990-92, 1992-94, 1994-98).

Source: PIA firms 1986-98 (1991 missing); log total factor productivity from Muendler (2004) based on Olley and Pakes (1996) estimation (at *Nível 50*), inferring labor productivity under changing capital stocks and intermediate-input uses.

Note: Cross-sectional productivity decomposition as in Olley and Pakes (1996): $y_t = \bar{y}_t + \sum_i \bar{\Delta}\theta_{it}\bar{\Delta}y_{it}$, where y_t is weighted and \bar{y}_t is unweighted mean log productivity, θ denotes the weights and $\bar{\Delta}$ deviations from cross-section means (rebased to unity in 1990). Annual change correlations (correlation coefficients) relate $\Delta_{t-1}\theta_{i,t}$ and $\Delta_{t-1}y_{i,t}$ as well as employment changes and output changes, where Δ_{t-1} denotes the first difference between t and $t-1$.

Table 3: FOUR-YEAR SECTOR TRANSITIONS AND FAILURES

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Non-traded (6) | Failure (7) | Total (8) |
|---|---------------|--|------------|------------|------------|------------|-------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 28.0 | 6.8 | 2.4 | 5.7 | 3.0 | 30.1 | 24.0 | 100.0 |
| 2nd quintile | | 9.2 | 17.9 | 3.1 | 5.8 | 4.7 | 35.5 | 23.9 | 100.0 |
| 3rd quintile | | 5.3 | 4.9 | 15.4 | 13.0 | 3.2 | 32.7 | 25.6 | 100.0 |
| 4th quintile | | 4.5 | 4.2 | 8.3 | 23.3 | 5.8 | 30.4 | 23.6 | 100.0 |
| 5th quintile | | 3.9 | 4.0 | 2.3 | 9.9 | 24.7 | 32.8 | 22.4 | 100.0 |
| Nontraded | | 2.6 | 2.2 | 1.6 | 3.8 | 2.8 | 58.5 | 28.5 | 100.0 |
| Failure | | 5.7 | 3.0 | 4.1 | 11.5 | 7.3 | 68.4 | .0 | 100.0 |
| Implied stationary distrib. ^b | | 3.4 | 2.6 | 2.0 | 4.5 | 3.3 | 41.3 | 42.8 | 100.0 |
| Impl. stat. distrib. 1990-94 ^b | | 3.7 | 2.7 | 1.8 | 6.5 | 4.4 | 40.9 | 40.0 | 100.0 |
| Impl. stat. distrib. 1994-98 ^b | | 2.2 | 1.7 | 1.8 | 3.5 | 2.3 | 35.6 | 53.0 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

^bFailure adjustment of stationary distribution based on estimate of 4-year nonformal-to-nonformal transitions from PME (for 1986-98 64.9% of nonformal PME workers are in nonformal work status after three annual transitions, replacing the zero from RAIS, 65.3% for 1990-94, and 71.7% for 1994-98).

Sources: RAIS 1986, 1990, 1994 and 1998 (1-percent random sample), workers nationwide of any gender or age; and PME 1986-1999. UN Comtrade 1986-98 for Balassa comparative advantage at subsector *IBGE* level.

Note: Transition frequencies refer to employments in Brazil four years after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector employment anywhere in Brazil within four years, excluding workers with retirement or death, or age 65 or above in past job. The stationary distribution is the normalized left eigenvector of the PME-corrected RAIS transition matrix associated with the eigenvalue of one.

Table 4: SEPARATIONS AND ACCESSIONS

| Sample Estimator | Separations | | | Accessions | | |
|----------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| | RAIS OLS (1) | RAIS FE (2) | RAIS FE-IV (3) | RAIS OLS (4) | RAIS FE (5) | RAIS FE-IV (6) |
| Product Market Tariff | -.091 (.098) | -.187 (.098)* | -.263 (.021)*** | .102 (.052)** | .243 (.122)** | .309 (.021)*** |
| Intm. Input Tariff | .253 (.195) | .297 (.289) | .192 (.032)*** | -.197 (.092)** | -.430 (.352) | -.328 (.032)*** |
| Exporter Status | .006 (.005) | .037 (.003)*** | .067 (.032)** | -.056 (.004)*** | -.048 (.002)*** | -.211 (.031)*** |
| Sector-level covariates | | | | | | |
| FDI Flow (USD billion) | -.011 (.004)*** | -.014 (.005)*** | -.012 (.0006)*** | .007 (.003)** | .009 (.004)** | .009 (.0006)*** |
| Sector real exch. rate | -.109 (.140) | -.116 (.220) | -.151 (.018)*** | .228 (.102)** | .122 (.284) | .066 (.018)*** |
| Herfindahl Index (sales) | -.163 (.059)*** | -.158 (.097) | -.018 (.005)*** | .150 (.075)** | .127 (.095) | -.015 (.005)*** |
| Plant-level covariates | | | | | | |
| Log Employment | -.020 (.002)*** | -.060 (.002)*** | -.063 (.003)*** | -.021 (.002)*** | -.015 (.001)*** | .001 (.003) |
| Worker-level covariates | | | | | | |
| Tenure at plant (in years) | -.139 (.007)*** | .140 (.005)*** | .139 (.001)*** | | | |
| Sqrd. Tenure at plant (sq. yrs.) | .020 (.0008)*** | -.016 (.0009)*** | -.017 (.0002)*** | | | |
| Pot. labor force experience | .00009 (.0001) | .001 (.00008)*** | .001 (.00006)*** | -.006 (.0001)*** | -.001 (.0002)*** | -.001 (.00006)*** |
| Prof. or Manag'l. Occ. | -.084 (.005)*** | -.037 (.003)*** | -.038 (.002)*** | -.154 (.007)*** | -.067 (.004)*** | -.070 (.002)*** |
| Tech'l. or Superv. Occ. | -.076 (.005)*** | -.034 (.004)*** | -.034 (.002)*** | -.142 (.006)*** | -.073 (.004)*** | -.076 (.002)*** |
| Unskilled Wh. Collar Occ. | -.064 (.005)*** | -.035 (.003)*** | -.036 (.002)*** | -.115 (.006)*** | -.066 (.004)*** | -.069 (.002)*** |
| Skilled Bl. Collar Occ. | -.024 (.005)*** | -.003 (.002)** | -.004 (.0009)*** | -.072 (.007)*** | -.064 (.004)*** | -.064 (.0009)*** |
| Worker effects | | yes | yes | | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Observations | 5,338,164 | 5,338,164 | 5,326,737 | 5,303,710 | 5,303,710 | 5,292,404 |
| R^2 (within) | .068 | .056 | | .097 | .033 | |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or acceding into manufacturing job; SECEX 1990-98; and complementary sector data.

Note: Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Reference observations are employments with no reported separation or accession in a given year. Plant-level controls (share of some college, some high school and white-collar occupations) not reported. Sector information at subsector *IBGE* level 1990-93 and CNAE 4-digit level 1994-98. Instruments for the three endogenous variables Product-market tariffs, Intermediate input tariffs and Export Status are PPI in Europe, PPI in North America, non-Brazilian imports to Asia-Pacific, Central and Eastern European, North American, Other Industrialized and Western European countries (at subsector *IBGE* level 1990-98). See Table 5 for the first stage. Standard errors in parentheses (two-way clustering at worker and sector level following Cameron, Gelbach and Miller 2011, except non-clustered IV): * significance at ten, ** five, *** one percent.

Table 5: FIRST-STAGE PREDICTIONS

| Sample Dependent variable | Separations | | | Accessions | | |
|--------------------------------|-----------------------------|------------------------------|------------------------|-----------------------------|------------------------------|------------------------|
| | RAIS Prd. Mkt. Tariff | RAIS Intm. Inp. Tariff | RAIS Exp. Status | RAIS Prd. Mkt. Tariff | RAIS Intm. Inp. Tariff | RAIS Exp. Status |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Instruments | | | | | | |
| World imports APD | -28.577 (.211)*** | -50.974 (.130)*** | .458 (1.501) | -28.002 (.211)*** | -50.841 (.130)*** | 1.412 (1.514) |
| World imports CEE | -488.715 (.542)*** | -326.813 (.333)*** | -60.492 (3.850)*** | -488.616 (.542)*** | -326.072 (.333)*** | -63.142 (3.880)*** |
| World imports NAM | -59.363 (.179)*** | -9.996 (.110)*** | 35.198 (1.270)*** | -58.448 (.179)*** | -10.016 (.110)*** | 40.100 (1.282)*** |
| World imports OIN | 94.904 (.340)*** | 113.853 (.209)*** | 68.189 (2.416)*** | 94.310 (.341)*** | 114.633 (.210)*** | 65.991 (2.443)*** |
| World imports WEU | -100.136 (.243)*** | -88.568 (.149)*** | 39.455 (1.728)*** | -100.563 (.244)*** | -88.352 (.150)*** | 39.466 (1.746)*** |
| PPI Idx. EU, import-weight 95 | -.429 (.002)*** | -.171 (.001)*** | -.185 (.016)*** | -.438 (.002)*** | -.169 (.001)*** | -.209 (.016)*** |
| PPI Idx. NAM, import-weight 95 | .494 (.002)*** | .043 (.001)*** | -.204 (.016)*** | .498 (.002)*** | .049 (.001)*** | -.216 (.016)*** |
| Exogenous covariates | | | | | | |
| FDI Flow (USD billion) | .001 (.00006)*** | .0001 (.00004)*** | -.005 (.0004)*** | .001 (.00006)*** | .0002 (.00004)*** | -.005 (.0005)*** |
| Herfindahl Index (sales) | -.027 (.0005)*** | -.059 (.0003)*** | .007 (.003)** | -.028 (.0005)*** | -.060 (.0003)*** | .014 (.003)*** |
| Log Employment | .0008 (.00002)*** | -.00008 (.00002)*** | .110 (.0002)*** | .0008 (.00002)*** | -.00008 (1.00e-05)*** | .105 (.0002)*** |
| Share: Some High School | -.0003 (.0002) | -.0007 (.0001)*** | .073 (.001)*** | 1.73e-06 (.0002) | -.0007 (.0001)*** | .074 (.001)*** |
| Share: Some College | .001 (.0003)*** | -.006 (.0002)*** | .214 (.002)*** | .0006 (.0003)* | -.006 (.0002)*** | .228 (.002)*** |
| Share: White-collar occ. | .0002 (.0002) | .002 (.0001)*** | .148 (.001)*** | -.0005 (.0002)*** | .002 (.0001)*** | .152 (.001)*** |
| Worker effects | yes | yes | yes | yes | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Observations | 5,326,737 | 5,326,737 | 5,326,737 | 5,292,404 | 5,292,404 | 5,292,404 |
| R^2 (within) | .823 | .883 | .123 | .824 | .883 | .120 |
| F statistic (joint IVs) | 79477.27 | 13104.83 | 102.66 | 81178.72 | 13114.04 | 119.581 |

Sources: WTF (NBER) bilateral import data 1990-98 at subsector *IBGE* level; sector data from various sources at subsector *IBGE* level 1990-93 and CNAE 4-digit level 1994-98; RAIS 1990-98 labor force information; SECEX exporter information 1990-98.

Note: First-stage estimates for column 3 and 6 in Table 4 weighted by worker-sample observations. Imports to foreign destinations are annual sector-weighted shipments from source countries other than Brazil, coefficients rescaled to imports in USD trillion. Additional regressors (not reported) as in Table 4. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 6: SEPARATIONS AND ACCESSIONS: ROBUSTNESS

| Sample Estimator | Separations | | | Accessions | | |
|------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|-----------------------|---------------------------|
| | RAIS-PIA FE (1) | RAIS-PIA FE (2) | RAIS-PIA cLogit (3) | RAIS-PIA FE (4) | RAIS-PIA FE (5) | RAIS-PIA cLogit (6) |
| Product Market Tariff | -.264 (.119)** | -.183 (.097)* | -1.161 (.095)*** | .244 (.141)* | .235 (.119)** | 1.776 (.104)*** |
| Intm. Input Tariff | .415 (.317) | .289 (.288) | 2.556 (.149)*** | -.420 (.369) | -.420 (.349) | -3.307 (.155)*** |
| Exporter Status | .037 (.003)*** | .037 (.003)*** | .234 (.006)*** | -.046 (.002)*** | -.048 (.002)*** | -.358 (.006)*** |
| Share: Jobs at private firms | -.014 (.047) | | | -.086 (.034)** | | |
| Indic.: Outsourceable job | | .006 (.002)*** | | | -.016 (.002)*** | |
| Worker effects | yes | yes | yes | yes | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Observations | 4,747,727 | 5,281,036 | 2,846,694 | 4,725,103 | 5,248,748 | 2,576,206 |
| (Pseudo) R^2 | .056 | .056 | .145 | .033 | .033 | .076 |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or acceding into manufacturing job; PIA 1990-98 random three-firm aggregates; SECEX 1990-98; and complementary sector data.

Note: Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Reference observations are employments with no reported separation or accession in a given year. Additional regressors (not reported) as in Table 4. Sector information at subsector *IBGE* level 1990-93 and *CNAE* 4-digit level 1994-98. Standard errors in parentheses (two-way clustering at worker and sector level following Cameron et al. 2011): * significance at ten, ** five, *** one percent.

Table 7: SEPARATIONS AND ACCESSIONS: ADDITIONAL SPECIFICATIONS

| Sample Estimator | Separations | | | Accessions | | |
|--------------------------|-------------------|-------------------|--------------------|--------------------|-------------------|-------------------|
| | RAIS FE (1) | RAIS FE (2) | RAIS FE (3) | RAIS FE (4) | RAIS FE (5) | RAIS FE (6) |
| Prd. Trff. × Comp. Adv. | -.270 (.117)** | | -.288 (.118)** | .332 (.161)** | | .317 (.153)** |
| Intm. Trff. × Comp. Adv. | .400 (.118)*** | | .415 (.117)*** | -.424 (.188)** | | -.397 (.183)** |
| Prd. Trff. × Exporter | | -.090 (.047)* | -.146 (.042)*** | | -.098 (.101) | -.033 (.086) |
| Intm. Trff. × Exporter | | .209 (.063)*** | .273 (.057)*** | | -.060 (.132) | -.140 (.112) |
| Product Market Tariff | .201 (.137) | -.118 (.107) | .335 (.156)** | -.236 (.164) | .301 (.179)* | -.201 (.180) |
| Intm. Input Tariff | -.294 (.288) | .176 (.288) | -.501 (.289)* | .306 (.287) | -.437 (.391) | .321 (.299) |
| Exporter Status | .038 (.003)*** | .023 (.005)*** | .025 (.005)*** | -.047 (.003)*** | -.017 (.007)** | -.017 (.007)** |
| Worker effects | yes | yes | yes | yes | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Observations | 5,195,376 | 5,338,164 | 5,195,376 | 5,164,959 | 5,303,710 | 5,164,959 |
| R^2 | .057 | .056 | .057 | .033 | .034 | .033 |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or acceding into manufacturing job; SECEX 1990-98; and complementary sector data.

Note: Balassa (1965) revealed comparative advantage measure for the initial year 1990. Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Reference observations are employments with no reported separation or accession in a given year. Additional regressors (not reported) as in Table 4. Sector information at subsector *IBGE* level 1990-93 and *CNAE* 4-digit level 1994-98. Standard errors in parentheses (two-way clustering at worker and sector level following Cameron et al. 2011): * significance at ten, ** five, *** one percent.

Table 8: SEPARATIONS AND ACCESSIONS: WORKER INTERACTIONS

| Sample Estimator | Separations | | | Accessions | | |
|--------------------------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|
| | RAIS FE (1) | RAIS FE (2) | RAIS FE (3) | RAIS FE (4) | RAIS FE (5) | RAIS FE (6) |
| Product Market Tariff | -.178 (.106)* | -.173 (.094)* | -.173 (.096)* | .252 (.133)* | .232 (.099)** | .256 (.122)** |
| Intm. Input Tariff | .296 (.297) | .288 (.284) | .304 (.288) | -.454 (.362) | -.507 (.332) | -.448 (.350) |
| Exporter Status | .037 (.003)*** | .037 (.003)*** | .037 (.003)*** | -.048 (.002)*** | -.047 (.002)*** | -.048 (.002)*** |
| Prd. Trff. × High-sch. or coll. ed. | -.034 (.034) | | | -.021 (.041) | | |
| Intm. Trff. × High-sch. or coll. ed. | -.029 (.045) | | | .118 (.051)** | | |
| Prd. Trff. × Young | | -.100 (.060)* | | | .142 (.200) | |
| Intm. Trff. × Young | | .096 (.073) | | | .162 (.250) | |
| Prd. Trff. × White collar | | | -.058 (.043) | | | -.052 (.040) |
| Intm. Trff. × White collar | | | -.082 (.060) | | | .072 (.063) |
| Worker effects | yes | yes | yes | yes | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Observations | 5,338,164 | 5,338,164 | 5,338,164 | 5,303,710 | 5,303,710 | 5,303,710 |
| R^2 | .056 | .056 | .056 | .033 | .035 | .033 |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or acceding into manufacturing job; PIA 1990-98 random three-firm aggregates; SECEX 1990-98; and complementary sector data.

Note: Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Young workers have ten or less years of potential labor force experience, high-school or college-educated workers have some high-school education. Reference observations are employments with no reported separation or accession in a given year. Additional regressors (not reported) as in Table 4. Sector information at subsector IBGE level 1990-93 and CNAE 4-digit level 1994-98. Standard errors in parentheses (two-way clustering at worker and sector level following Cameron et al. 2011): * significance at ten, ** five, *** one percent.

Table 9: SEPARATIONS, ACCESSIONS AND PRODUCTIVITY

| Sample Estimator | Separations | | | Accessions | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | RAIS-PIA FE (1) | RAIS-PIA FE (2) | RAIS-PIA FE (3) | RAIS-PIA FE (4) | RAIS-PIA FE (5) | RAIS-PIA FE (6) |
| Product Market Tariff | -.174 (.057)*** | -.144 (.057)** | -.148 (.057)*** | .168 (.053)*** | .079 (.046)* | .082 (.046)* |
| Intm. Input Tariff | .260 (.175) | .266 (.230) | .287 (.233) | -.291 (.189) | -.116 (.152) | -.119 (.154) |
| Exporter Status | .010 (.004)** | .009 (.004)** | | -.022 (.003)*** | -.021 (.003)*** | |
| Log LP | | | .014 (.004)*** | | | -.004 (.003) |
| Worker effects | yes | yes | yes | yes | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Sector-year trend | | yes | yes | | yes | yes |
| Observations | 1,860,763 | 1,860,763 | 1,860,763 | 1,845,911 | 1,845,911 | 1,845,911 |
| R^2 | .079 | .079 | .079 | .037 | .039 | .039 |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or acceding into manufacturing job; PIA 1990-98 random three-firm aggregates; SECEX 1990-98; and complementary sector data.

Note: Balassa (1965) revealed comparative advantage measure for the initial year 1990. Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Reference observations are employments with no reported separation or accession in a given year. Additional regressors (not reported) as in Table 4. Sector information at subsector *IBGE* level 1990-93 and *CNAE* 4-digit level 1994-98. Standard errors in parentheses (two-way clustering at worker and sector level following Cameron et al. 2011): * significance at ten, ** five, *** one percent.

Table 10: PRODUCTIVITY

| Dependent variable Estimator | Log Labor Prod. | Log Labor Prod. | Log Capital/Empl. |
|---|---------------------|--------------------|---------------------|
| | FE (1) | FE-IV (2) | FE-IV (3) |
| Product Market Tariff | .084 (.170) | -1.446 (.709)** | -3.160 (1.345)** |
| Intm. Input Tariff | -1.031 (.239)*** | 1.590 (1.104) | 2.406 (2.128) |
| Exporter Status | .044 (.012)*** | .045 (.012)*** | .078 (.021)*** |
| Sector-level covariates | | | |
| FDI Flow (USD billion) | .011 (.009) | .001 (.010) | .021 (.019) |
| Sector real exch. rate | .249 (.288) | -.046 (.321) | -1.700 (.586)*** |
| Herfindahl Index (sales) | .099 (.117) | .272 (.141)* | -.026 (.256) |
| Firm aggregates of plant-level covariates | | | |
| Log Employment | -.133 (.008)*** | -.134 (.008)*** | -.295 (.014)*** |
| Firm aggregates of worker-level covariates | | | |
| Pot. labor force experience | -.002 (.001) | -.001 (.001) | .010 (.002)*** |
| Prof. or Manag'l. Occ. | -.064 (.052) | -.059 (.053) | -.030 (.094) |
| Tech'l. or Superv. Occ. | .015 (.043) | .022 (.044) | -.008 (.078) |
| Unskilled Wh. Collar Occ. | -.024 (.048) | -.022 (.048) | .052 (.087) |
| Skilled Bl. Collar Occ. | .031 (.025) | .030 (.025) | .080 (.045)* |
| Firm effects | yes | yes | yes |
| Year effects | yes | yes | yes |
| Observations | 23,268 | 23,251 | 25,574 |

Sources: PIA 1990-98 firm sample linked to RAIS 1990-98 firm sample (based on 10-percent random worker sample).
Note: Additional regressors (not reported) as in Table 4. Sector information at subsector *IBGE* level 1990-93 and CNAE 4-digit level 1994-98. Instruments for the three endogenous variables Product-market tariffs, Intermediate input tariffs and Export Status are PPI in Europe, PPI in North America, non-Brazilian imports to Asia-Pacific, Central and Eastern European, North American, Other Industrialized and Western European countries (at subsector *IBGE* level 1990-98). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 11: MULTINOMIAL LOGIT ESTIMATION: REALLOCATION

| Transition to: | Manufacturing | | Non-manufacturing | Failure |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|
| | Same sector | Other sector | | |
| | (1) | (2) | (3) | (4) |
| Product Market Tariff | -1.653 (.050)*** | -3.065 (.060)*** | -.478 (.043)*** | -.587 (.042)*** |
| Intm. Input Tariff | 2.348 (.070)*** | 5.458 (.085)*** | .586 (.062)*** | 1.333 (.060)*** |
| Exporter Status | -.014 (.002)*** | .105 (.003)*** | .010 (.002)*** | .016 (.002)*** |
| Sector-level covariates | | | | |
| FDI Flow (USD billion) | -.048 (.003)*** | -.033 (.004)*** | -.051 (.003)*** | -.030 (.002)*** |
| Herfindahl Index (sales) | -1.606 (.079)*** | 1.234 (.086)*** | -.225 (.063)*** | .031 (.063) |
| Plant-level covariates | | | | |
| Log Employment | -.196 (.0007)*** | -.113 (.0008)*** | -.135 (.0006)*** | -.126 (.0006)*** |
| Share: White-collar occ. | .305 (.006)*** | .167 (.008)*** | .650 (.005)*** | .288 (.005)*** |
| Worker-level covariates | | | | |
| Prof. or Manag'l. Occ. | -.271 (.006)*** | -.540 (.007)*** | -.469 (.005)*** | -.220 (.004)*** |
| Tech'l. or Superv. Occ. | -.432 (.005)*** | -.524 (.006)*** | -.265 (.003)*** | -.311 (.004)*** |
| Unskilled Wh. Collar Occ. | -.701 (.005)*** | -.475 (.006)*** | -.129 (.003)*** | -.384 (.004)*** |
| Skilled Bl. Collar Occ. | .151 (.003)*** | -.033 (.003)*** | -.255 (.002)*** | -.172 (.002)*** |
| Year effects | | | yes | |
| Sector effects | | | yes | |
| Obs. | | | 25,435,160 | |
| Pseudo R^2 | | | .057 | |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or remaining in manufacturing job; SECEX 1990-98; and complementary sector data.

Note: Baseline category is no transition (continuous employment with no reported separation in a given year). Multinomial logit estimates of employment transitions. Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Additional regressors (not reported): worker and plant-level workforce education. Sector information at subsector *IBGE* level. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 12: WORK STATUS TRANSITIONS FROM FORMAL EMPLOYMENT

| Covariate (in t) | (in $t+1$) | From formal manufacturing employment in t to: | | | |
|------------------------------|-------------|---|----------------------|---------------------|---------------------|
| | | Informal (1) | Self employed (2) | Unemployed (3) | Withdrawn (4) |
| Product Market Tariff | | .646 (.870) | .319 (.474) | -2.035 (.788)*** | -1.929 (.721)*** |
| Intm. Input Tariff | | -1.417 (1.056) | .835 (.632) | 2.403 (.707)*** | 2.761 (.796)*** |
| Formal empl. for four months | | -1.299 (.040)*** | -1.190 (.067)*** | -.610 (.077)*** | -.882 (.035)*** |
| Age | | -.100 (.013)*** | .152 (.018)*** | -.027 (.015)* | -.171 (.015)*** |
| Sqrd. age | | .001 (.0002)*** | -.002 (.0002)*** | -.0001 (.0002) | .003 (.0002)*** |
| Indic.: Male | | .263 (.064)*** | .578 (.106)*** | .098 (.080) | -1.115 (.055)*** |
| Some High School | | -.065 (.064) | -.195 (.071)*** | .025 (.051) | .008 (.081) |
| Some College | | -.199 (.080)** | -.432 (.089)*** | -.064 (.081) | -.342 (.080)*** |
| College Degree | | -.292 (.081)*** | -.500 (.088)*** | -.361 (.128)*** | -.521 (.096)*** |
| Year effects | | | | yes | |
| Sector effects | | | | yes | |
| Metro area effects | | | | yes | |
| Obs. | | | | 48,353 | |
| Pseudo R^2 | | | | .066 | |

Source: PME 1986-99, household members of any gender and age in metropolitan area, with initial formal manufacturing employment (annual transitions between 4th and 8th interview).

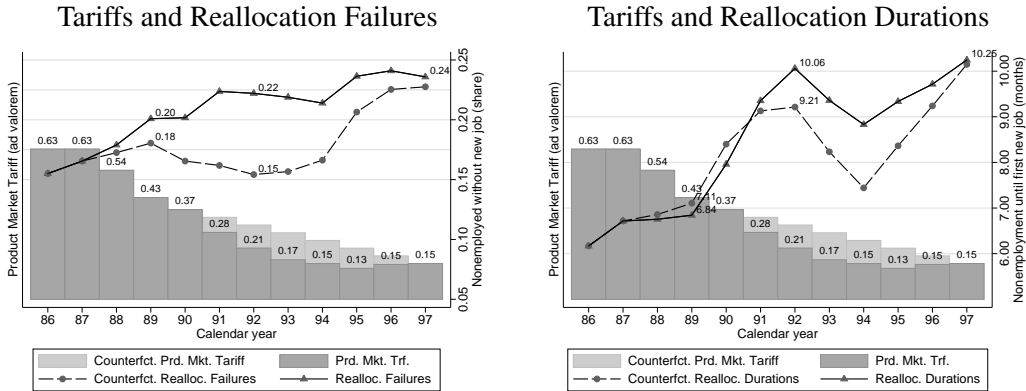
Note: Baseline category is continuation in formal work status. Sector-level variables at level similar to *atividade-80* classification. Further regressors (not reported): Sector real exchange rate, FDI flow, Herfindahl index. Standard errors in parentheses (clustering at sector level): * significance at ten, ** five, *** one percent.

Table 13: SUMMARY STATISTICS

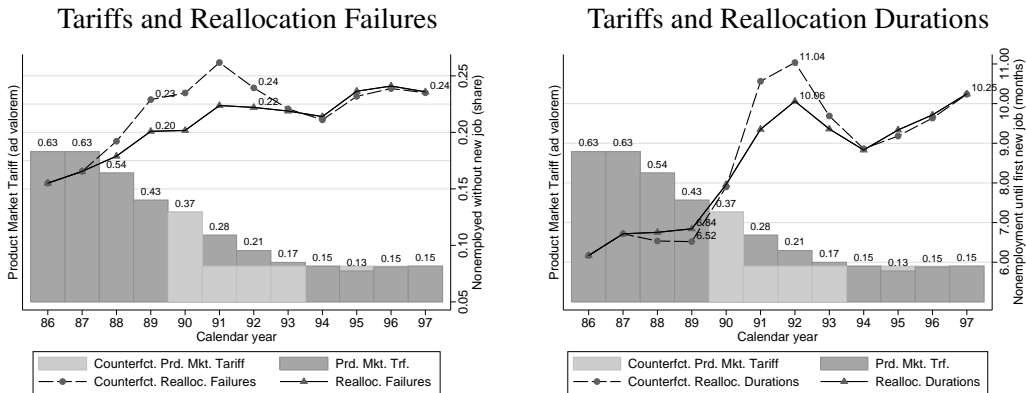
| | All sectors and firms | | 5th comp. adv. quintile | Exporter |
|--------------------------------|-----------------------|----------|----------------------------|----------|
| | Mean | Std.Dev. | Mean | Mean |
| | (1) | (2) | (3) | (4) |
| Outcomes | | | | |
| Indic.: Separation | .237 | .425 | .278 | .197 |
| Quit | .038 | .191 | .048 | .028 |
| Indic.: Accession | .223 | .416 | .282 | .156 |
| Main covariates | | | | |
| Exporter Status | .491 | .500 | .472 | 1.000 |
| Product Market Tariff | .206 | .113 | .181 | .206 |
| Intm. Input Tariff | .155 | .085 | .114 | .153 |
| Balassa Comp. Adv. 1990 | 1.424 | 1.062 | 3.189 | 1.404 |
| Plant-level covariates | | | | |
| Log Employment | 5.129 | 1.970 | 5.546 | 6.238 |
| Log Employment 1998/90 | .939 | | .956 | .924 |
| Log Labor Productivity | 11.202 | .752 | 11.063 | 11.260 |
| Log Labor Productivity 1998/90 | 1.051 | | 1.021 | 1.052 |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, with manufacturing job. Statistics based on separation sample, except for accession indicator (5,338,164 observations in separation, 5,303,710 in accession sample). Sector information at subsector *IBGE* level. *PIA* 1986-98 for labor productivity information.

Piecemeal Reform



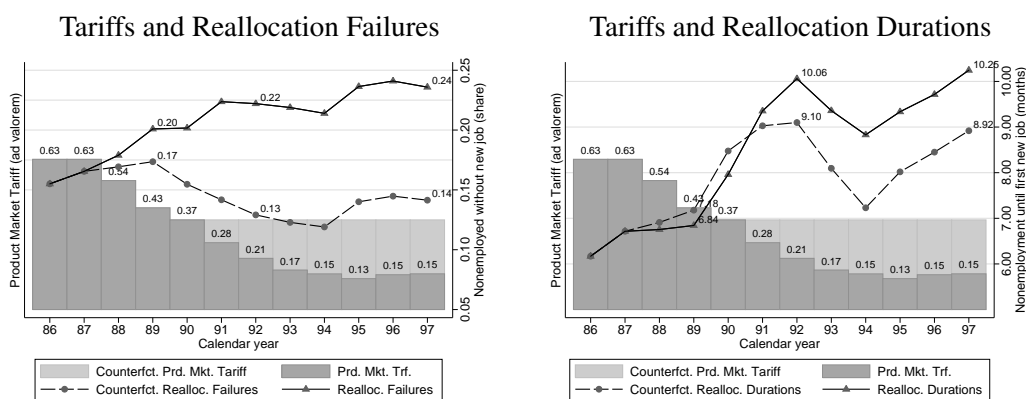
Shock Therapy



Sources: RAIS 1986-2001 (10-percent random sample for estimates), workers nationwide of any gender or age, separated from a formal-sector job; not re-acceding into a formal-sector job within 48 months (*left graphs*) or re-acceding into a formal-sector job within 48 months (*right graphs*). PNAD 1988-1998, household members nationwide age 25 through 64, with or without formal-sector job. Product tariffs from Kume et al. (2003), employment weighted at *Nível 50* sector level in 1988.

Note: Simulated job-finding rates $\hat{F}_s = \hat{A}_s / (\hat{n}_s / e_s)$ from $\hat{A}_t = A_t + \beta^A (\hat{\tau}_t^{\text{ctrfct}} - \tau_t)$ and \hat{n}_s / e_s from ratio of $\hat{n}_s = (\hat{S}_{s-1} - \hat{A}_{s-1}) e_{s-1} + n_{s-1}$ and $\hat{e}_s = (\hat{A}_{s-1} - \hat{S}_{s-1}) e_{s-1} + e_{s-1}$ given simulated relative changes to PNAD nonemployment and employment counts. Simulated finding rate \hat{F}_s then used in the reallocation failure rate $\hat{\phi}_{t,t+T} \equiv \prod_{s=t}^{t+T} (1 - \hat{F}_s)$ and the reallocation duration $\hat{d}_{t,t+T} \equiv \sum_{p=t}^{t+T} p \prod_{s=t}^{p-1} (1 - \hat{F}_s) \hat{F}_p / (1 - \hat{\phi}_{t,T})$.

Figure 2: Counterfactual tariffs and simulated labor-market performance

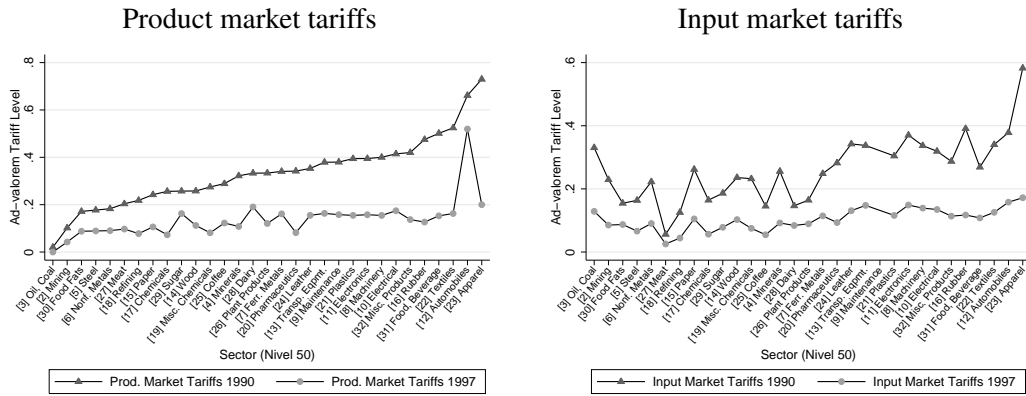


Sources: RAIS 1986-2001 (10-percent random sample for estimates), workers nationwide of any gender or age, separated from a formal-sector job; not re-acceding into a formal-sector job within 48 months (*left graph*) or re-acceding into a formal-sector job within 48 months (*right graph*). Product tariffs from Kume et al. (2003), employment weighted at *Nível 50* sector level in 1988.

Note: Simulated job-finding rates $\hat{F}_s = \hat{A}_s / (n_s / e_s)$ from $\hat{A}_t = A_t + \beta_\tau^A (\tau_{1990} - \tau_t)$ and observed nonemployment-to-employment ratios, used in the reallocation failure rate $\hat{\phi}_{t,t+T} \equiv \prod_{s=t}^{t+T} (1 - \hat{F}_s)$ and the reallocation duration $\hat{a}_{t,t+T} \equiv \sum_{p=t}^{t+T} p \prod_{s=t}^{p-1} (1 - \hat{F}_s) \hat{F}_p / (1 - \hat{\phi}_{t,T})$.

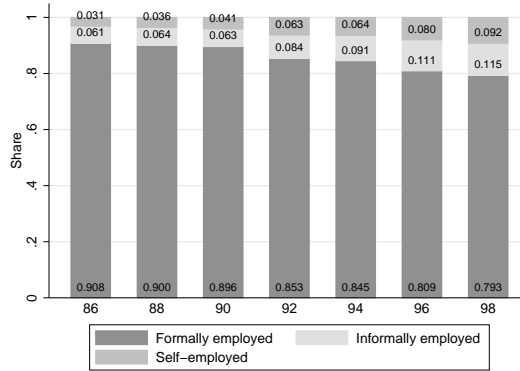
Figure 3: Counterfactual tariffs at 1990 level and simulated labor-market performance

2 Background Statistics, Nationwide



Source: Product tariffs from Kume et al. (2003).
 Note: Sectors at *Nivel 50* ordered by 1990 product tariff.

Figure 4: Manufacturing Tariffs



Sources: *PME* 1986-98, workers of any gender and age employed in manufacturing in a metropolitan area; and complementary data.

Figure 5: Work status of *PME* workers in manufacturing

Table 14: EMPLOYMENT ALLOCATIONS

| percent | Traded: Comp. adv. quintile ^a | | | | | Non-traded | (7) | Total |
|-------------------------------|--|------|------|------|------|------------|-------|----------|
| | 1st | 2nd | 3rd | 4th | 5th | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| FORMAL EMPLOYMENT ALLOCATION | | | | | | | | |
| 1986 | 7.8 | 5.7 | 4.5 | 6.0 | 5.2 | 70.8 | 100.0 | 22,164.3 |
| 1990 | 6.6 | 5.2 | 3.4 | 5.6 | 4.9 | 74.4 | 100.0 | 23,173.5 |
| 1992 | 3.6 | 6.5 | 4.0 | 4.8 | 4.9 | 76.2 | 100.0 | 22,272.8 |
| 1994 | 5.8 | 4.1 | 3.0 | 8.0 | 5.2 | 73.9 | 100.0 | 23,667.2 |
| 1998 | 4.7 | 3.4 | 3.6 | 6.4 | 4.6 | 77.2 | 100.0 | 24,491.6 |
| WORK STATUS DISTRIBUTION 1990 | | | | | | | | |
| Formal | 85.0 | 89.9 | 90.9 | 74.5 | 83.6 | 84.6 | | |
| Informal | 11.3 | 8.9 | 7.1 | 14.5 | 14.6 | 11.4 | | |
| Self-employment | 3.8 | 1.2 | 2.0 | 11.0 | 1.8 | 4.0 | | |
| WORK STATUS DISTRIBUTION 1994 | | | | | | | | |
| Formal | 77.4 | 87.8 | 89.0 | 68.3 | 78.8 | 79.5 | | |
| Informal | 16.7 | 10.0 | 9.6 | 17.5 | 18.3 | 14.9 | | |
| Self-employment | 5.9 | 2.2 | 1.4 | 14.2 | 2.8 | 5.6 | | |

^aBalassa (1965) comparative advantage (5th quintile: strongest advantage).

Sources: RAIS universe 1986, 1990, 1994 and 1998, workers nationwide of any gender or age; and PME 1986-1999, male workers, 25 years or older and employed in manufacturing in a metropolitan area. UN Comtrade 1986 for Balassa comparative advantage at subsector IBGE level.

Note: Total formal employment in thousands of workers.

Table 15: SEPARATIONS AND ACCESSIONS: YEAR EFFECTS

| Sample | Separations | | | Accessions | | |
|----------------|--------------------|--------------------|----------------------|--------------------|-------------------|----------------------|
| | RAIS OLS (1) | RAIS FE (2) | RAIS FE-IV (3) | RAIS OLS (4) | RAIS FE (5) | RAIS FE-IV (6) |
| 1990 | -.050 | -.064 | -.139 (.007)*** | -.012 | .105 (22.788) | .177 (.007)*** |
| 1991 | -.027 | .028 | -.057 (.003)*** | -.048 | .066 (26.410) | .171 (.003)*** |
| 1992 | -.032 | .055 | -.039 (.003)*** | -.099 | .019 (15.804) | .146 (.003)*** |
| 1993 | -.045 | .046 | -.060 (.002)*** | -.045 | .032 (14.635) | .168 (.002)*** |
| 1994 | -.027 (.008)*** | -.098 (.022)*** | -.099 (.001)*** | .068 (.008)*** | .192 (.023)*** | .186 (.002)*** |
| 1995 | .021 (.019) | -.044 (.034) | -.053 (.002)*** | .078 (.014)*** | .157 (.045)*** | .152 (.003)*** |
| 1996 | -.004 (.011) | -.041 (.018)** | -.047 (.001)*** | .046 (.009)*** | .126 (.025)*** | .124 (.002)*** |
| 1997 | .002 (.009) | -.023 (.014)* | -.029 (.001)*** | .036 (.006)*** | .086 (.019)*** | .085 (.001)*** |
| Worker effects | | yes | yes | | yes | yes |
| Sector effects | yes | yes | yes | yes | yes | yes |
| Year effects | yes | yes | yes | yes | yes | yes |
| Observations | 5,338,164 | 5,338,164 | 5,326,737 | 5,303,710 | 5,303,710 | 5,292,404 |
| R^2 (within) | .068 | .056 | | .097 | .033 | |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or acceding into manufacturing job; PIA 1990-98 random three-firm aggregates; and complementary data.

Note: Year effects from estimation in Table 4. Reference year 1998 (omitted). For remaining regressors see Table 4. Standard errors in parentheses (two-way clustering at worker and sector level following Cameron et al. 2011): * significance at ten, ** five, *** one percent.

Table 16: FOUR-YEAR SECTOR TRANSITIONS AND FAILURES

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Non-traded (6) | Failure (7) | Total (8) |
|--|---------------|--|------------|------------|------------|------------|-------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 15.9 | 6.3 | 5.8 | 7.0 | 4.3 | 36.6 | 24.0 | 100.0 |
| 2nd quintile | | 9.9 | 14.8 | 5.4 | 5.3 | 3.7 | 37.0 | 23.8 | 100.0 |
| 3rd quintile | | 5.1 | 3.6 | 26.3 | 5.1 | 3.1 | 32.9 | 23.9 | 100.0 |
| 4th quintile | | 4.5 | 2.6 | 4.8 | 22.1 | 8.9 | 32.6 | 24.4 | 100.0 |
| 5th quintile | | 3.7 | 3.7 | 4.9 | 12.5 | 17.1 | 34.5 | 23.6 | 100.0 |
| Nontraded | | 2.0 | 1.8 | 2.5 | 3.9 | 2.1 | 60.7 | 27.1 | 100.0 |
| Failure | | 3.1 | 3.4 | 7.1 | 9.2 | 5.0 | 72.2 | .0 | 100.0 |
| Implied stationary distrib. ^b | | 2.0 | 1.7 | 3.0 | 4.0 | 2.3 | 33.7 | 53.3 | 100.0 |

^aVollrath (1991) comparative advantage, transition year quintile (5th: strongest advantage).

^bFailure adjustment of stationary distribution based on estimate of 4-year nonformal-to-nonformal transitions from *PME* (for 1986-98 64.9% of nonformal *PME* workers are in nonformal work status after three annual transitions, replacing the zero from *RAIS*).

Sources: *RAIS* 1986, 1990, 1994 and 1998 (1-percent random sample), workers nationwide of any gender or age; and *PME* 1986-1999. UN Comtrade 1986 for Vollrath comparative advantage at subsector IBGE level.

Note: Transition frequencies refer to employments in Brazil four years after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector employment anywhere in Brazil within four years, excluding workers with retirement or death, or age 65 or above in past job. Compared to the Balassa (1965) comparative-advantage measure, the Vollrath (1991) measure assigns industries in similar ways except for one main group of differences: apparel, which is mostly in the lowest first quintile under the Balassa but mostly in the third quintile under Vollrath, non-metallic manufactures, which are mostly third quintile under Balassa (1965) but mostly second under Vollrath (1991), and chemicals, which are mostly second quintile under Balassa (1965) but mostly first under Vollrath (1991).

Table 17: FOUR-YEAR RE-ACCESSIONS AND FAILURES BY SKILL GROUP

| To: | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) |
|----------------------|--|------------|------------|------------|------------|------------------|----------------|
| | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| All workers | 5.0 | 3.8 | 2.7 | 5.8 | 4.4 | 52.2 | 26.1 |
| Female workers | 7.2 | 3.6 | 1.0 | 2.3 | 4.1 | 52.6 | 29.3 |
| Highly educ. workers | 3.5 | 3.7 | 1.5 | 1.9 | 2.0 | 54.0 | 33.3 |
| Young workers | 4.9 | 4.2 | 1.9 | 2.6 | 2.9 | 53.7 | 29.8 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Sources: *RAIS* 1986, 1990, 1994 and 1998 (1-percent random sample), workers nationwide of any gender or age; and *PME* 1986-1999. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE).

Note: Re-accession frequencies refer to employments in Brazil four years after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector employment anywhere in Brazil after four years, excluding workers with retirement or death, or age 65 or above in past job. In our definitions *highly educated workers* have more than eight years of schooling, *young workers* have less than ten years of potential labor-market experience.

Table 18: ANNUAL TRANSITIONS ACROSS FIRMS

| To: From: (in millions) | Transitions 1990-91 | | | Transitions 1996-97 | | |
|----------------------------|---------------------|-------------|--------------|---------------------|-------------|--------------|
| | Nonexp. (1) | Exp. (2) | Total (3) | Nonexp. (4) | Exp. (5) | Total (6) |
| Nonexporter | 1.743 | .142 | 1.885 | 1.600 | .127 | 1.728 |
| Exporter | .204 | .071 | .275 | .200 | .059 | .259 |
| Total | 1.947 | .214 | 2.160 | 1.800 | .187 | 1.986 |

Sources: RAIS 1990-91 and 1996-97 (1-percent random sample), workers nationwide of any gender or age; SECEX 1990-91 and 1996-97.

Note: Job accessions in Brazil within one year after separation. Employments are last employments of year (highest paying job if many), scaled (by 100) to population equivalents.

Table 19: LABOR FORCE CHARACTERISTICS

| | Employment | | | Separations | | | Accessions | | |
|-----------------------------------|----------------|-------------------------------|----------------------|----------------|-------------------------------|----------------------|----------------|-------------------------------|----------------------|
| | Overall (1) | 5th cmp. adv. qntl. (2) | Ex- porter (3) | Overall (4) | 5th cmp. adv. qntl. (5) | Ex- porter (6) | Overall (7) | 5th cmp. adv. qntl. (8) | Ex- porter (9) |
| Worker characteristics | | | | | | | | | |
| Female worker | .34 | .28 | .24 | .29 | .28 | .27 | .30 | .28 | .27 |
| Pot. lab. force exp. ^a | 19.87 | 19.72 | 19.31 | 18.56 | 18.84 | 18.83 | 17.18 | 17.50 | 16.17 |
| Tenure at plant ^a | 1.00 | .66 | 1.20 | .39 | .35 | .63 | | | |
| Middle School or less | .64 | .83 | .66 | .75 | .87 | .76 | .72 | .86 | .74 |
| Some High School | .24 | .13 | .22 | .19 | .10 | .17 | .21 | .11 | .19 |
| Some College | .03 | .01 | .04 | .02 | .009 | .03 | .02 | .009 | .03 |
| College Degree | .09 | .02 | .08 | .04 | .01 | .04 | .04 | .01 | .04 |
| Occupations | | | | | | | | | |
| Prof. or Manag'l. | .14 | .05 | .10 | .08 | .04 | .07 | .08 | .03 | .05 |
| Tech'l. or Superv. | .21 | .08 | .14 | .16 | .07 | .10 | .16 | .06 | .09 |
| Unsk. Wh. Collar | .16 | .09 | .10 | .16 | .08 | .09 | .16 | .08 | .08 |
| Skilled Bl. Collar | .30 | .64 | .50 | .38 | .67 | .58 | .36 | .67 | .58 |
| Unsk. Bl. Collar | .13 | .12 | .10 | .16 | .12 | .14 | .17 | .13 | .16 |
| Job characteristics | | | | | | | | | |
| Jobs at private firms | .74 | .97 | .87 | .87 | .97 | .93 | .85 | .97 | .92 |
| Outsourceable job | .23 | .23 | .26 | .24 | .26 | .25 | .24 | .25 | .23 |
| Obs. (1% sample) | 3,037,277 | 170,400 | 440,582 | 888,597 | 62,905 | 112,394 | 947,579 | 63,439 | 100,091 |

^aIn years.

Sources: RAIS 1990-98 (1-percent random sample), workers nationwide of any gender or age, in any sector.

Note: Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Sector information at subsector IBGE level.

Table 20: EMPLOYMENT BY SECTOR AND EXPERIENCE COHORT

| | 1986 | 1990 | 1994 | 1998 |
|---------------------------|------|------|------|------|
| <i>Inexperienced 1998</i> | | | | |
| 1st Comp adv. Quintile | | | | .052 |
| 2nd Comp adv. Quintile | | | | .040 |
| 3rd Comp adv. Quintile | | | | .027 |
| 4th Comp adv. Quintile | | | | .029 |
| 5th Comp adv. Quintile | | | | .038 |
| Nontraded | | | | .815 |
| <i>Inexperienced 1994</i> | | | | |
| 1st Comp adv. Quintile | | | .056 | .052 |
| 2nd Comp adv. Quintile | | | .043 | .043 |
| 3rd Comp adv. Quintile | | | .017 | .031 |
| 4th Comp adv. Quintile | | | .042 | .029 |
| 5th Comp adv. Quintile | | | .039 | .037 |
| Nontraded | | | .803 | .808 |
| <i>Inexperienced 1990</i> | | | | |
| 1st Comp adv. Quintile | | .064 | .060 | .051 |
| 2nd Comp adv. Quintile | | .052 | .049 | .043 |
| 3rd Comp adv. Quintile | | .023 | .021 | .030 |
| 4th Comp adv. Quintile | | .030 | .039 | .026 |
| 5th Comp adv. Quintile | | .032 | .038 | .034 |
| Nontraded | | .798 | .793 | .816 |
| <i>Inexperienced 1986</i> | | | | |
| 1st Comp adv. Quintile | .071 | .068 | .053 | .042 |
| 2nd Comp adv. Quintile | .053 | .059 | .053 | .042 |
| 3rd Comp adv. Quintile | .028 | .023 | .026 | .030 |
| 4th Comp adv. Quintile | .035 | .042 | .044 | .030 |
| 5th Comp adv. Quintile | .035 | .032 | .035 | .031 |
| Nontraded | .779 | .775 | .790 | .824 |
| <i>Experienced 1986</i> | | | | |
| 1st Comp adv. Quintile | .079 | .072 | .060 | .049 |
| 2nd Comp adv. Quintile | .060 | .056 | .042 | .035 |
| 3rd Comp adv. Quintile | .047 | .040 | .032 | .040 |
| 4th Comp adv. Quintile | .066 | .062 | .099 | .086 |
| 5th Comp adv. Quintile | .059 | .057 | .062 | .052 |
| Nontraded | .688 | .712 | .705 | .738 |

Sources: RAIS 1986, 1990, 1994 and 1998 (1-percent random sample), workers nationwide of any gender or age; and PME 1986-1999. UN Comtrade 1986 for Balassa comparative advantage at subsector IBGE level.

Note: Inexperienced workers have less than 4 years of potential labor force experience. Experienced workers in 1986 have 4 or more years of potential labor force experience in 1986.

Table 21: EMPLOYMENT BY SECTOR AND CURRENT EXPERIENCE

| | 1986 | 1990 | 1994 | 1998 |
|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | <i>Inexperienced 98</i> |
| 1st Comp adv. Quintile | | | | .052 |
| 2nd Comp adv. Quintile | | | | .040 |
| 3rd Comp adv. Quintile | | | | .027 |
| 4th Comp adv. Quintile | | | | .029 |
| 5th Comp adv. Quintile | | | | .038 |
| Nontraded | | | | .815 |
| | | | <i>Inexperienced 94</i> | <i>Experienced 98</i> |
| 1st Comp adv. Quintile | | | .056 | .049 |
| 2nd Comp adv. Quintile | | | .043 | .035 |
| 3rd Comp adv. Quintile | | | .017 | .040 |
| 4th Comp adv. Quintile | | | .042 | .082 |
| 5th Comp adv. Quintile | | | .039 | .050 |
| Nontraded | | | .803 | .743 |
| | | <i>Inexperienced 90</i> | <i>Experienced 94</i> | |
| 1st Comp adv. Quintile | | .064 | .060 | |
| 2nd Comp adv. Quintile | | .052 | .043 | |
| 3rd Comp adv. Quintile | | .023 | .031 | |
| 4th Comp adv. Quintile | | .030 | .095 | |
| 5th Comp adv. Quintile | | .032 | .060 | |
| Nontraded | | .798 | .711 | |
| | <i>Inexperienced 86</i> | <i>Experienced 90</i> | | |
| 1st Comp adv. Quintile | .071 | .072 | | |
| 2nd Comp adv. Quintile | .053 | .056 | | |
| 3rd Comp adv. Quintile | .028 | .040 | | |
| 4th Comp adv. Quintile | .035 | .061 | | |
| 5th Comp adv. Quintile | .035 | .056 | | |
| Nontraded | .779 | .715 | | |
| | <i>Experienced 86</i> | | | |
| 1st Comp adv. Quintile | .079 | | | |
| 2nd Comp adv. Quintile | .060 | | | |
| 3rd Comp adv. Quintile | .047 | | | |
| 4th Comp adv. Quintile | .066 | | | |
| 5th Comp adv. Quintile | .059 | | | |
| Nontraded | .688 | | | |

Sources: RAIS 1986, 1990, 1994 and 1998 (1-percent random sample), workers nationwide of any gender or age; and PME 1986-1999. UN Comtrade 1986 for Balassa comparative advantage at subsector IBGE level.

Note: Inexperienced workers have less than 4 years of potential labor force experience. Experienced workers in each year have 4 or more years of potential labor force experience, so composition is not comparable to inexperienced workers in preceding period (across columns) but is comparable to inexperienced workers in same period (across rows).

Table 22: MULTINOMIAL LOGIT ESTIMATION: REALLOCATION, CONTROLLING FOR DIS-PLACEMENT FIXED EFFECT

| Transition to: | Manufacturing | | Nontraded | Failure |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|
| | Same sector | Other sector | | |
| | (1) | (2) | (3) | (4) |
| Product Market Tariff | -2.711 (.056)*** | -3.946 (.065)*** | -1.127 (.051)*** | -.862 (.051)*** |
| Intm. Input Tariff | 3.604 (.080)*** | 6.484 (.092)*** | 1.146 (.076)*** | 1.272 (.076)*** |
| Exporter Status | .284 (.002)*** | .417 (.003)*** | .409 (.002)*** | .467 (.002)*** |
| Sector-level covariates | | | | |
| FDI Flow (USD billion) | -.112 (.003)*** | -.098 (.004)*** | -.140 (.003)*** | -.136 (.003)*** |
| Herfindahl Index (sales) | -2.080 (.084)*** | .824 (.091)*** | -.974 (.074)*** | -1.141 (.078)*** |
| Plant-level covariates | | | | |
| Log Employment | -.484 (.0007)*** | -.394 (.0009)*** | -.471 (.0007)*** | -.511 (.0007)*** |
| Share: White-collar occ. | .789 (.007)*** | .685 (.008)*** | 1.233 (.006)*** | .905 (.006)*** |
| Worker-level covariates | | | | |
| Prof. or Manag'l. Occ. | -.176 (.006)*** | -.464 (.008)*** | -.343 (.005)*** | -.084 (.005)*** |
| Tech'l. or Superv. Occ. | -.294 (.005)*** | -.417 (.006)*** | -.112 (.004)*** | -.113 (.004)*** |
| Unskilled Wh. Collar Occ. | -.625 (.006)*** | -.428 (.006)*** | -.048 (.004)*** | -.247 (.004)*** |
| Skilled Bl. Collar Occ. | .228 (.003)*** | .048 (.003)*** | -.131 (.003)*** | -.024 (.003)*** |
| Obs. | | 25,435,160 | | |
| Pseudo R^2 | | .303 | | |

Sources: RAIS 1990-98 (10-percent random sample), workers nationwide of any gender or age, separated from or remaining in manufacturing job; and complementary data.

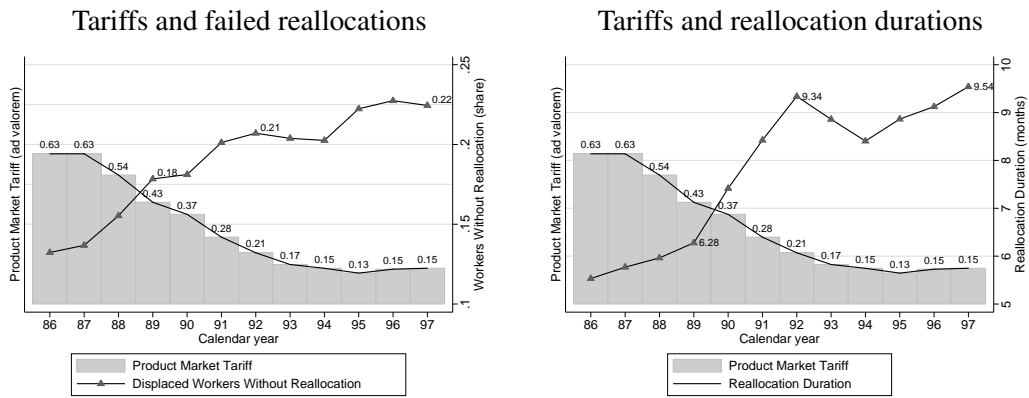
Note: Baseline category is no transition (continuous employment with no reported separation in a given year). Multinomial logit estimates of employment transitions. Separations exclude transfers, deaths, and retirements; accessions exclude transfers. Additional regressors (not reported): estimate of the worker-fixed displacement effect from Table 4 (column 3), worker and plant-level workforce education, sector effects and year effects. Sector information at subsector IBGE level. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

3 Labor Market Statistics

Table 23: SEPARATION AND ACCESSION RATES

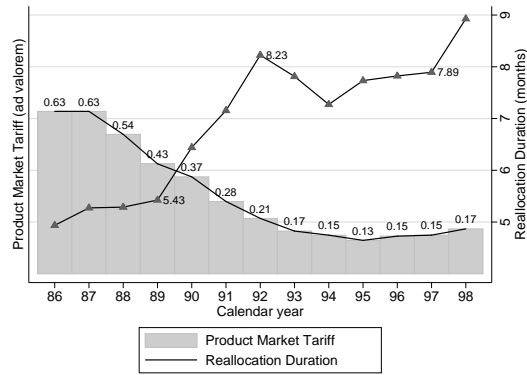
| | Separations | | | | Accessions | | | |
|------|-------------|--------|--------------|--------|------------|--------|--------------|--------|
| | nationwide | | metropolitan | | nationwide | | metropolitan | |
| | Any sec. | Manuf. | Any sec. | Manuf. | Any sec. | Manuf. | Any sec. | Manuf. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 1986 | .315 | .299 | .332 | .301 | .332 | .319 | .348 | .322 |
| 1987 | .319 | .310 | .340 | .318 | .323 | .288 | .340 | .293 |
| 1988 | .303 | .278 | .327 | .283 | .320 | .271 | .341 | .270 |
| 1989 | .295 | .276 | .318 | .286 | .310 | .280 | .332 | .290 |
| 1990 | .318 | .316 | .341 | .325 | .281 | .234 | .300 | .238 |
| 1991 | .302 | .294 | .320 | .305 | .283 | .247 | .303 | .252 |
| 1992 | .278 | .266 | .297 | .269 | .258 | .207 | .276 | .202 |
| 1993 | .264 | .248 | .283 | .247 | .271 | .236 | .285 | .232 |
| 1994 | .277 | .260 | .296 | .259 | .284 | .249 | .298 | .240 |
| 1995 | .310 | .311 | .331 | .310 | .296 | .257 | .316 | .251 |
| 1996 | .286 | .273 | .308 | .275 | .286 | .239 | .305 | .233 |
| 1997 | .285 | .271 | .300 | .269 | .296 | .252 | .307 | .240 |
| 1998 | .283 | .263 | .297 | .269 | .282 | .221 | .289 | .209 |

Source: RAIS 1986-98. Male workers nationwide (1% random sample) and in metropolitan areas only (5% random sample), 25 to 64 years old (in highest paying job if many). Separation and accession rates exclude transfers, deaths, and retirements and are relative to totals of first and last observed employments in a given year.



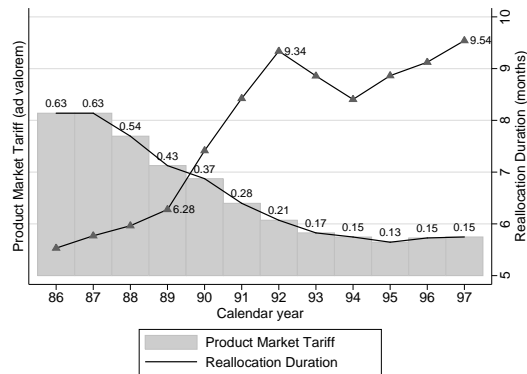
Sources: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job; not rehired into a formal-sector job within 48 months (*left graph*) or rehired into a formal-sector job within 48 months (*right graph*). Product tariffs from Kume et al. (2003), employment weighted at *Nível 50* sector level.

Figure 6: Tariffs and national labor market performance



Sources: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job within 36 months. Product tariffs from Kume et al. (2003), employment weighted at *Nível 50* sector level.

Figure 7: **Product market tariffs and mean duration of formal-sector reallocation within 36 months**



Sources: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job within 48 months. Product tariffs from Kume et al. (2003), employment weighted at *Nível 50* sector level.

Figure 8: **Product market tariffs and mean duration of formal-sector reallocation within 48 months**

3.1 Employment allocation

Table 24: EMPLOYMENT ALLOCATION BY SUBSECTOR

| <i>Sector</i> and subsector IBGE | Employment share | | |
|--|------------------|-------------|-------------|
| | 1986 (1) | 1990 (2) | 1997 (3) |
| <i>Primary</i> | | | |
| 1 Mining and quarrying | .007 | .006 | .004 |
| 25 Agriculture, farming, hunting, forestry and fishing | .015 | .016 | .041 |
| <i>Manufacturing</i> | | | |
| 2 Manufacture of non-metallic mineral products | .016 | .013 | .011 |
| 3 Manufacture of metallic products | .030 | .024 | .021 |
| 4 Manufacture of machinery, equipment and instruments | .020 | .016 | .011 |
| 5 Manufacture of electrical and telecommunications equipment | .016 | .014 | .008 |
| 6 Manufacture of transport equipment | .019 | .016 | .013 |
| 7 Manufacture of wood products and furniture | .019 | .015 | .015 |
| 8 Manufacture of paper and paperboard, and publishing | .014 | .014 | .013 |
| 9 Manufacture of rubber, tobacco, leather, and products n.e.c. | .019 | .016 | .009 |
| 10 Manufacture of chemical and pharmaceutical products | .024 | .022 | .020 |
| 11 Manufacture of apparel and textiles | .042 | .035 | .026 |
| 12 Manufacture of footwear | .012 | .010 | .008 |
| 13 Manufacture of food, beverages, and ethyl alcohol | .040 | .039 | .041 |
| <i>Commerce</i> | | | |
| 16 Retail trade | .106 | .103 | .127 |
| 17 Wholesale trade | .024 | .025 | .027 |
| <i>Services</i> | | | |
| 18 Financial intermediation and insurance | .038 | .034 | .025 |
| 19 Real estate and business services | .074 | .073 | .079 |
| 20 Transport, storage and telecommunications | .050 | .044 | .057 |
| 21 Hotels and restaurants, repair and maintenance services | .101 | .101 | .084 |
| 22 Medical, dental and veterinary services | .014 | .017 | .039 |
| 23 Education | .008 | .009 | .036 |
| <i>Other</i> | | | |
| 14 Electricity, gas and water supply | .013 | .014 | .014 |
| 15 Construction | .045 | .041 | .049 |
| 24 Public administration and social services | .209 | .206 | .224 |
| 26 Activities n.e.c. | .025 | .077 | .001 |
| Total employment (thousands of workers) | 22,164 | 23,174 | 24,104 |

Source: RAIS 1986, 1990 and 1997, universe of workers. Employment on Dec 31. Slight differences to Table 25 are due to random sampling errors.

Table 25: EMPLOYMENT BY SECTOR

| | Agric. (1) | Mining (2) | Manuf. (3) | Comm. (4) | Services (5) | Other (6) | Total ^a (7) |
|---|---------------|---------------|---------------|--------------|-----------------|--------------|---------------------------|
| Allocation of workers, nationwide (RAIS population) | | | | | | | |
| 1990 | .016 | .006 | .234 | .128 | .278 | .338 | 23.174 |
| 1998 | .041 | .004 | .183 | .154 | .320 | .299 | 24.492 |
| Allocation of workers, nationwide | | | | | | | |
| 1990 | .015 | .006 | .238 | .128 | .280 | .333 | 22.844 |
| 1998 | .041 | .004 | .183 | .154 | .320 | .299 | 24.439 |
| Allocation of prime-age male workers, nationwide | | | | | | | |
| 1990 | .019 | .010 | .263 | .111 | .284 | .314 | 10.763 |
| 1998 | .057 | .007 | .207 | .134 | .308 | .286 | 11.640 |
| Allocation of prime-age male workers, metropolitan areas | | | | | | | |
| 1990 | .007 | .007 | .270 | .104 | .309 | .302 | 5.965 |
| 1998 | .017 | .005 | .198 | .125 | .369 | .285 | 6.057 |
| Allocation of prime-age male workers, PME (formal)^b | | | | | | | |
| 1990 | .005 | | .359 | .110 | .394 | .131 | |
| 1998 | .004 | | .301 | .115 | .471 | .109 | |
| Allocation of male workers, metropolitan areas | | | | | | | |
| 1990 | .008 | .007 | .274 | .123 | .308 | .281 | 8.057 |
| 1998 | .017 | .005 | .202 | .145 | .369 | .263 | 7.482 |
| Allocation of male workers, São Paulo city | | | | | | | |
| 1990 | .002 | .002 | .372 | .122 | .288 | .214 | 2.932 |
| 1998 | .004 | .002 | .253 | .151 | .371 | .219 | 2.627 |

^aTotal employment (million workers), scaled to population equivalent.

^bMining included in manufacturing.

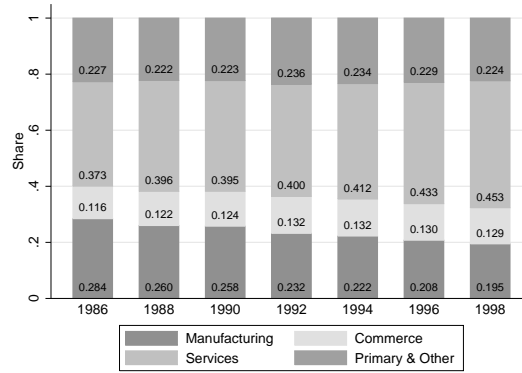
Sources: RAIS 1990 and 1998, employment on Dec 31. Metropolitan information based on 5%, nationwide information on 1% random sample. PME 1990 and 1998 (metropolitan prime-age males with formal employment).

Table 26: EMPLOYMENT BY SECTOR AND FORMALITY STATUS

| | Agric. (1) | Manuf. (2) | Comm. (3) | Services (4) | Other (5) | Total ^a (6) |
|--|---------------|---------------|--------------|-----------------|--------------|---------------------------|
| Allocation nationwide (RAIS universe) | | | | | | |
| 1990 | .016 | .240 | .128 | .278 | .338 | 23,174 |
| 1998 | .041 | .187 | .154 | .320 | .299 | 24,492 |
| Allocation nationwide (RAIS prime-age males) | | | | | | |
| 1990 | .019 | .273 | .111 | .284 | .314 | 10,763 |
| 1998 | .057 | .214 | .134 | .308 | .286 | 11,640 |
| Allocation in metropolitan areas (RAIS prime-age males) | | | | | | |
| 1990 | .007 | .277 | .104 | .309 | .302 | 5,965 |
| 1998 | .017 | .203 | .125 | .369 | .285 | 6,057 |
| Informality in metropolitan areas (PME prime-age males) | | | | | | |
| 1990 | .159 | .063 | .109 | .117 | .298 | |
| 1998 | .232 | .120 | .154 | .169 | .341 | |

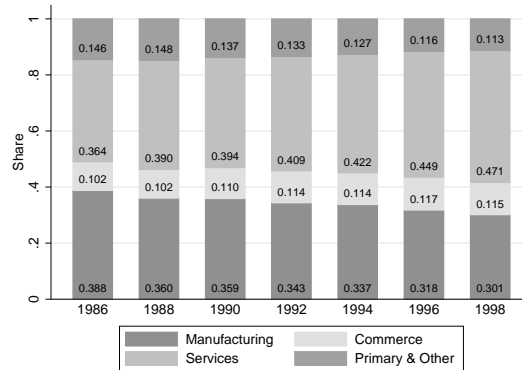
^aTotal employment (thousands of workers), samples scaled to population equivalents.

Sources: RAIS 1990 and 1998, employed on December 31; if indicated, male workers nationwide (1% random sample) and in metropolitan areas (5% random sample), 25 to 64 years old. PME 1990 and 1998, male workers 25 to 64 years old, and employed at September interview. Manufacturing includes mining.



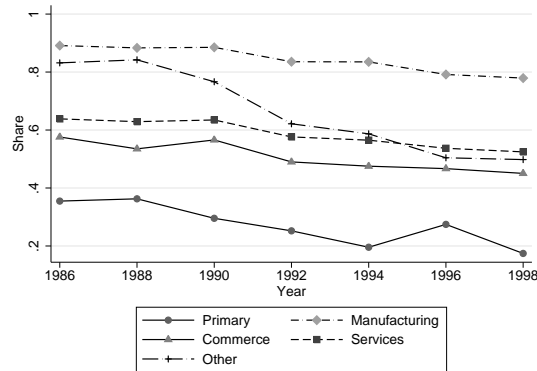
Source: PME 1986-98, male workers, 25 years or older and employed in metropolitan area.

Figure 9: Sector allocation of *PME* workers



Source: PME 1986-98, male workers, 25 years or older and formally employed in metropolitan area.

Figure 10: Sector allocation of *PME* workers with formal employment



Source: PME 1986-98, male workers, 25 years or older and formally employed in metropolitan area.

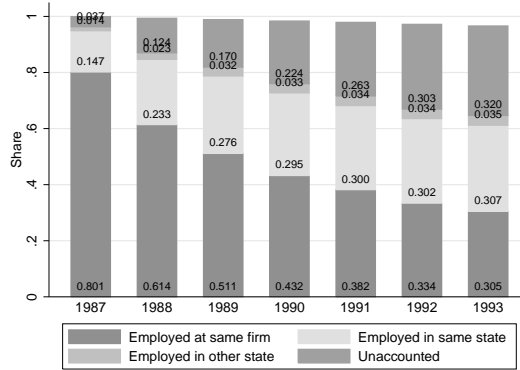
Figure 11: **Formal work status shares by sector**

Table 27: EMPLOYMENT SHARES BY FIRM EXPORTING STATUS AND SECTOR

| | Primary (1) | Manuf. (2) | Comm. (3) | Services (4) | Other (5) | Total (6) |
|---|----------------|---------------|--------------|-----------------|--------------|--------------|
| Allocation of prime-age male workers, nationwide | | | | | | |
| Nonexporter | .882 | .494 | .935 | .937 | .930 | .830 |
| Exporter | .118 | .506 | .065 | .063 | .070 | .170 |
| Allocation of prime-age male workers, metropolitan areas | | | | | | |
| Nonexporter | .760 | .390 | .887 | .913 | .898 | .778 |
| Exporter | .240 | .610 | .113 | .087 | .102 | .222 |

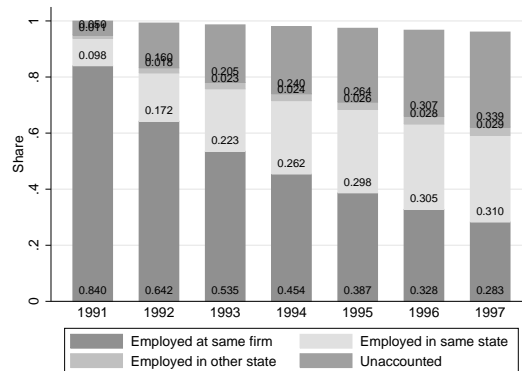
Source: RAIS 1990-2001 and SECEX 1990-2001. Metropolitan worker information based on 5%, and nationwide worker information on 1% random sample. Employment shares refer to last employment of year (highest paying job if many).

3.2 Labor market experience, overall



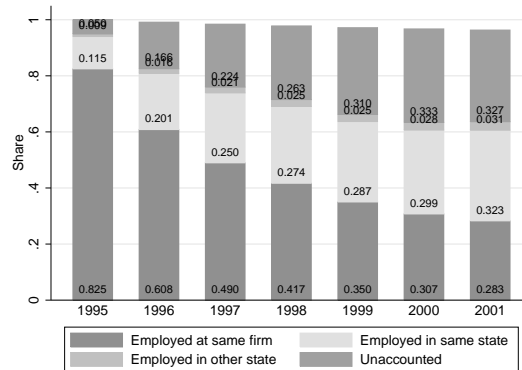
Source: RAIS 1986-93 (1% random sample), workers nationwide, employed on Dec 31, 1986 and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 12: Labor market experience of 1986 workers



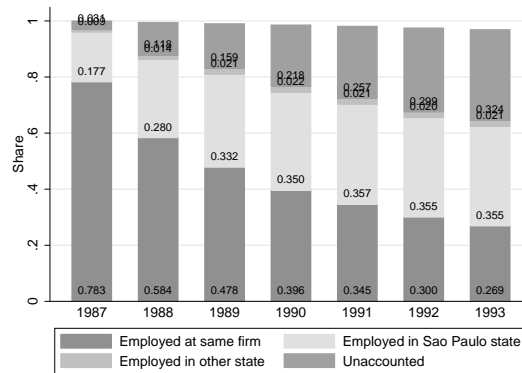
Source: RAIS 1990-97 (1% random sample), workers nationwide, employed on Dec 31, 1990 and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 13: Labor market experience of 1990 workers



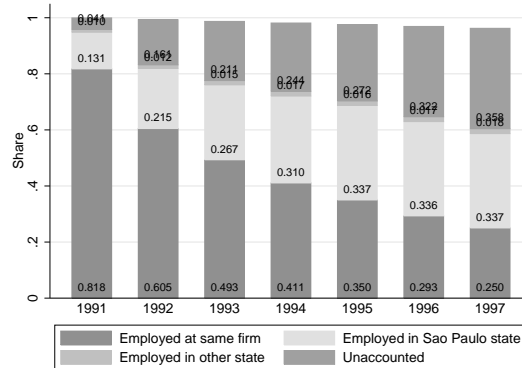
Source: RAIS 1994-2001 (1% random sample), workers nationwide, employed on Dec 31, 1994 and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 14: Labor market experience of 1994 workers



Source: RAIS 1986-93 (1% random sample), workers employed in São Paulo state on Dec 31, 1986 and with municipality information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 15: Labor market experience of 1986 workers, São Paulo state



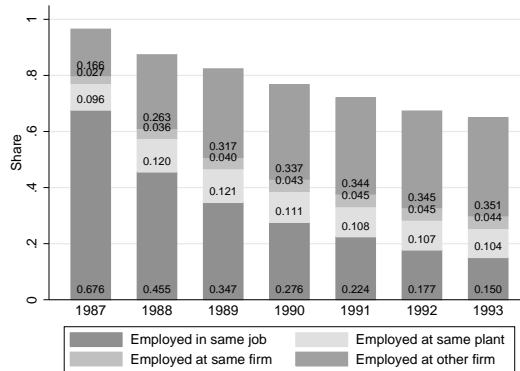
Source: RAIS 1990-97 (1% random sample), workers employed in São Paulo state on Dec 31, 1990 and with municipality information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 16: Labor market experience of 1990 workers, São Paulo state

Table 28: ANNUAL OCCUPATION TRANSITIONS 1986-97

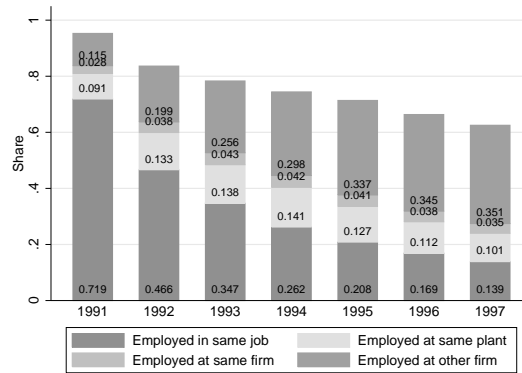
| Year $t + 1$ | Year t | 1986 | 1988 | 1990 | 1992 | 1994 | 1996 |
|------------------------------|----------|------|------|------|------|------|------|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| Employed | | | | | | | |
| in same job | | .858 | .850 | .860 | .859 | .847 | .854 |
| at same plant but in new job | | .019 | .019 | .019 | .021 | .020 | .014 |
| at same firm but new plant | | .006 | .005 | .005 | .006 | .005 | .005 |
| at new firm | | .087 | .090 | .075 | .077 | .090 | .084 |
| Retired | | .001 | .001 | .001 | .001 | .002 | .002 |
| Unaccounted | | .029 | .034 | .039 | .036 | .036 | .041 |

Source: RAIS 1986-97 (1% random sample). Frequencies based on last employment of year (highest paying job if many); continuations at same firm exclude continuations at same establishment.



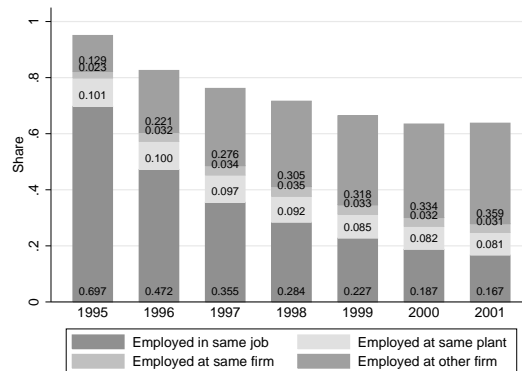
Source: RAIS 1986-93 (1% random sample), workers nationwide, employed on Dec 31, 1986. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job (and exclude unaccounted workers).

Figure 17: Occupational experience of 1986 workers



Source: RAIS 1990-97 (1% random sample), workers nationwide, employed on Dec 31, 1990. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job (and exclude unaccounted workers).

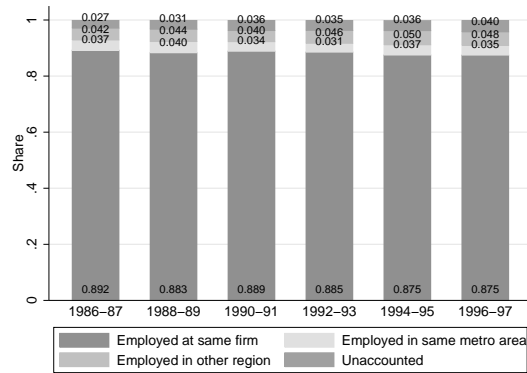
Figure 18: Occupational experience of 1990 workers



Source: RAIS 1994-2001 (1% random sample), workers nationwide, employed on Dec 31, 1994. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job (and exclude unaccounted workers).

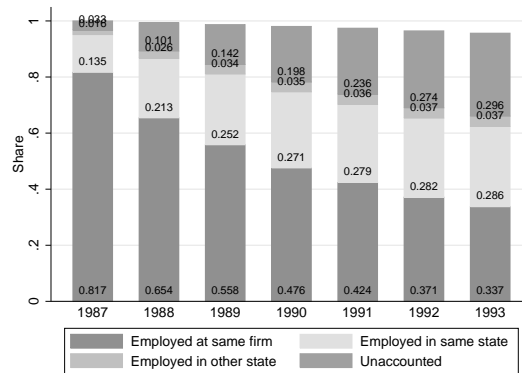
Figure 19: Occupational experience of 1994 workers

3.3 Labor market experience of prime-age male workers nationwide



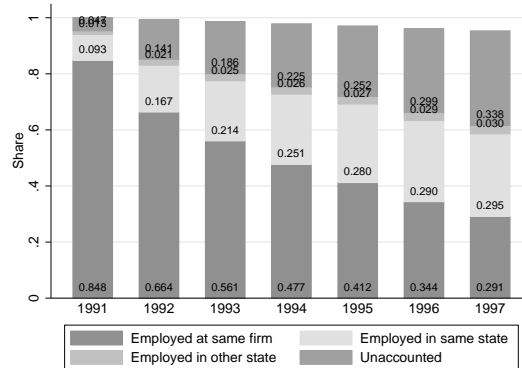
Source: RAIS 1986-97 (1% random sample), male workers, 25 years or older and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 20: Annual employment transitions across states



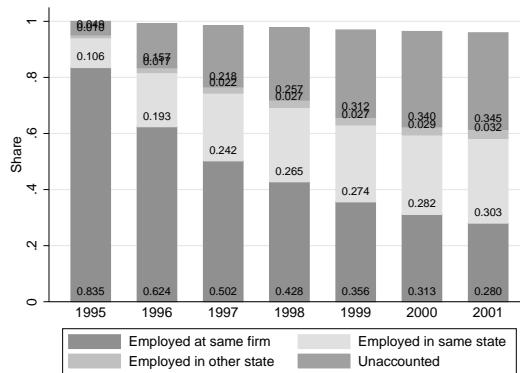
Source: RAIS 1986-93 (1% random sample), male workers, 25 years or older and employed on Dec 31, 1986 and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 21: Labor market experience of 1986 workers



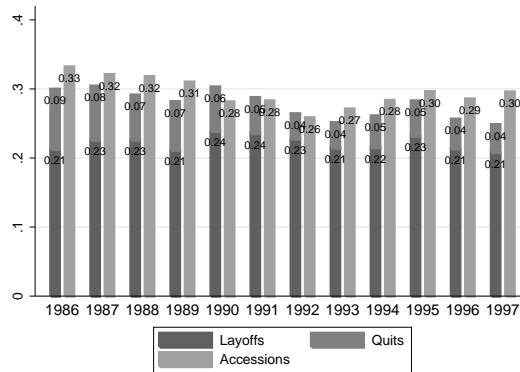
Source: RAIS 1990-97 (1% random sample), male workers, 25 years or older and employed on Dec 31, 1990 and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 22: Labor market experience of 1990 workers



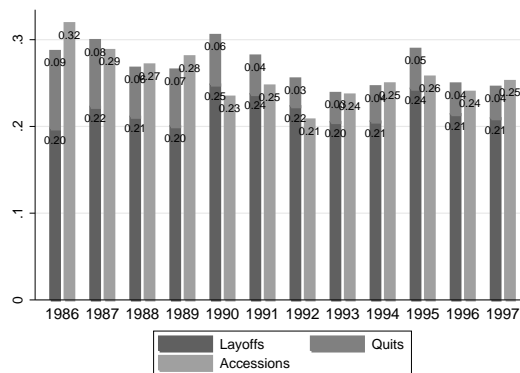
Source: RAIS 1994-2001 (1% random sample), male workers, 25 years or older and employed on Dec 31, 1994 and with regional information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 23: Labor market experience of 1994 workers



Source: RAIS 1986-97 (1% random sample), male workers nationwide, 25 to 64 years old, with employment in any sector (highest paying job if many). Separation and accession rates exclude transfers, deaths, and retirements and are relative to totals of first and last observed employments in a given year.

Figure 24: Separations and accessions in any sector



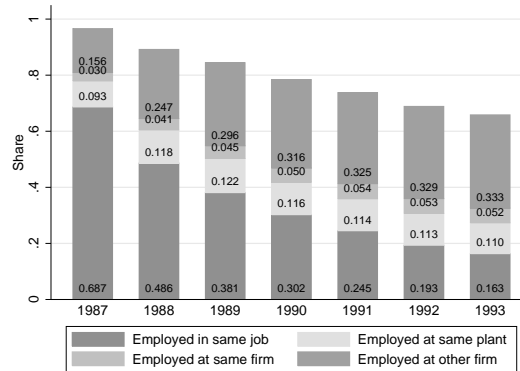
Source: RAIS 1986-97 (1% random sample), male workers nationwide, 25 to 64 years old, with employment in subsector IBGE manufacturing (highest paying job if many). Separation and accession rates exclude transfers, deaths, and retirements and are relative to totals of first and last observed employments in a given year.

Figure 25: Separations and accessions in manufacturing

Table 29: ANNUAL OCCUPATION CONTINUATIONS AND TRANSITIONS 1986-97

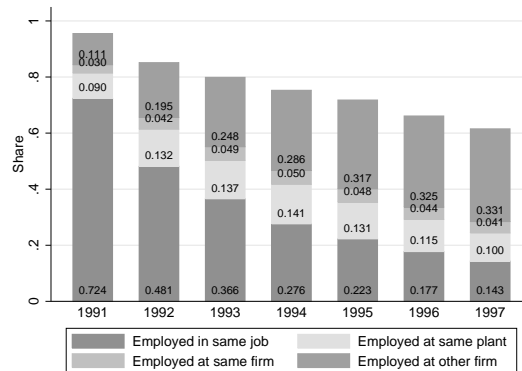
| | Year t | 1986 | 1988 | 1990 | 1992 | 1994 | 1996 |
|---|----------|------|------|------|------|------|------|
| Year $t + 1$ | | (1) | (2) | (3) | (4) | (5) | (6) |
| Employed | | | | | | | |
| in same occupation | | .867 | .859 | .864 | .859 | .850 | .856 |
| at same establishment in new occupation | | .018 | .018 | .019 | .020 | .020 | .013 |
| at same firm but new establishment | | .007 | .006 | .006 | .007 | .006 | .005 |
| at new firm | | .079 | .084 | .074 | .078 | .087 | .083 |

Source: RAIS 1986-97 (1% random sample), male workers, 25 years or older. Frequencies based on last employment of year (highest paying job if many); continuations at same firm exclude continuations at same establishment. Occupations are defined at the CBO 3-digit base-group level with 354 categories, which roughly correspond to the 4-digit ISCO-88 unit-group level.



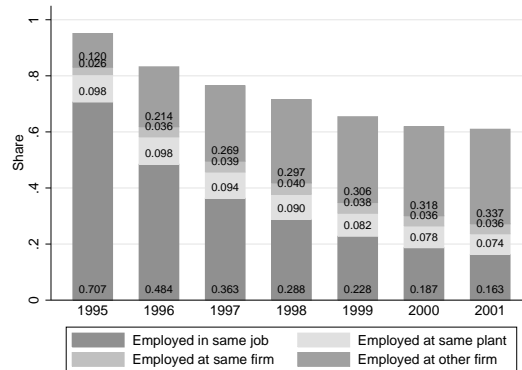
Source: RAIS 1986-93 (1% random sample), male workers, 25 years or older and employed on Dec 31, 1986. Frequencies based on last employment of year (highest paying job if many); continuations at same firm exclude continuations at same establishment. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job (and exclude unaccounted workers).

Figure 26: Occupational experience of 1986 workers



Source: RAIS 1990-97 (1% random sample), male workers, 25 years or older and employed on Dec 31, 1990. Frequencies based on last employment of year (highest paying job if many); continuations at same firm exclude continuations at same establishment. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job (and exclude unaccounted workers).

Figure 27: Occupational experience of 1990 workers



Source: RAIS 1994-2001 (1% random sample), male workers, 25 years or older and employed on Dec 31, 1994. Frequencies based on last employment of year (highest paying job if many); continuations at same firm exclude continuations at same establishment. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job (and exclude unaccounted workers).

Figure 28: Occupational experience of 1994 workers

Table 30: INDUSTRY AND OCCUPATION BASED LOG DEMAND SHIFTS, 1986-2001

| (in %) | Between Industry | | | Within Industry | | | Overall Industry-Occupation | | | | | |
|---------------------------------|------------------|-------|-------|-----------------|-------|-------|-----------------------------|-------|-------|-------|-------|-------|
| | 86-90 | 90-97 | 97-01 | 86-01 | 86-90 | 90-97 | 97-01 | 86-01 | 86-90 | 90-97 | 97-01 | 86-01 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| <i>Economy wide</i> | | | | | | | | | | | | |
| Illiterate or Primary Dropout | -0.1 | 4.7 | -0.1 | 4.5 | -2.2 | -0.2 | -1.0 | -3.3 | -2.3 | 4.5 | -1.1 | 1.1 |
| Primary School Graduate | -2.1 | -0.1 | -1.7 | -3.9 | -1.4 | 0.5 | -1.5 | -2.4 | -3.6 | 0.4 | -3.2 | -6.4 |
| Middle School Graduate | -1.9 | -0.9 | -0.5 | -3.3 | -0.1 | 1.5 | -1.2 | 0.1 | -2.0 | 0.6 | -1.8 | -3.1 |
| High School Graduate | 0.3 | -1.7 | -0.8 | -2.3 | 1.1 | 0.9 | 0.2 | 2.2 | 1.4 | -0.9 | -0.6 | -0.1 |
| College Graduate | 3.3 | 0.4 | 2.9 | 6.6 | 1.3 | -2.4 | 2.5 | 1.4 | 4.6 | -2.0 | 5.4 | 8.1 |
| <i>Traded-goods sectors</i> | | | | | | | | | | | | |
| Illiterate or Primary Dropout | -3.0 | 3.7 | -1.7 | -0.9 | -0.7 | -0.2 | -0.2 | -1.1 | -3.7 | 3.6 | -1.9 | -2.0 |
| Primary School Graduate | -3.8 | -2.0 | -2.4 | -8.2 | -0.4 | 0.2 | -0.6 | -0.7 | -4.2 | -1.8 | -3.0 | -9.0 |
| Middle School Graduate | -3.9 | -4.0 | -2.6 | -10.6 | 0.0 | 0.3 | -0.5 | -0.2 | -3.9 | -3.8 | -3.1 | -10.7 |
| High School Graduate | -3.7 | -4.4 | -2.4 | -10.5 | 0.5 | -0.1 | 0.2 | 0.7 | -3.2 | -4.5 | -2.1 | -9.8 |
| College Graduate | -3.6 | -4.6 | -2.1 | -10.4 | 0.5 | -0.5 | 1.4 | 1.4 | -3.1 | -5.1 | -0.7 | -8.9 |
| <i>Nontraded-output sectors</i> | | | | | | | | | | | | |
| Illiterate or Primary Dropout | 3.6 | 0.4 | 1.9 | 5.9 | -1.5 | 0.1 | -0.7 | -2.2 | 2.1 | 0.4 | 1.2 | 3.7 |
| Primary School Graduate | 2.8 | 2.7 | 1.5 | 7.0 | -1.0 | 0.3 | -0.9 | -1.6 | 1.9 | 2.9 | 0.6 | 5.4 |
| Middle School Graduate | 2.3 | 3.3 | 2.3 | 7.9 | -0.2 | 1.2 | -0.7 | 0.3 | 2.1 | 4.6 | 1.6 | 8.3 |
| High School Graduate | 3.2 | 1.9 | 1.2 | 6.3 | 0.6 | 0.9 | 0.0 | 1.5 | 3.9 | 2.8 | 1.2 | 7.8 |
| College Graduate | 5.2 | 3.3 | 3.9 | 12.4 | 0.8 | -1.8 | 1.4 | 0.4 | 6.0 | 1.5 | 5.3 | 12.8 |

Source: RAIS 1986-2001 (1% random sample), male workers, 25 years or older. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Overall and between-industry demand shift measures for education group k are of the form $\Delta D_k = \sum_j \alpha_{jk} (\Delta E_j / E_k)$, where α_{jk} is the average share for group k of employment in sector j over the period 1986-2001, E_j is the share of aggregate employment in sector j , and E_k is the average share of total employment of group k over the period 1986-2001 Katz and Murphy (1992). Reported numbers are of the form $\log(1 + \Delta D_k)$. In the overall measure j indexes 130 industry-occupation cells; in the between-industry measure, j indexes 26 industries (14 traded and 12 nontraded goods sectors). The within-industry index for group k is the difference of the overall and between-industry measures. Employment is measured in efficiency units.

Table 31: BETWEEN AND WITHIN INDUSTRY AND OCCUPATION SHIFTS IN RELATIVE EMPLOYMENT, 1986-2001

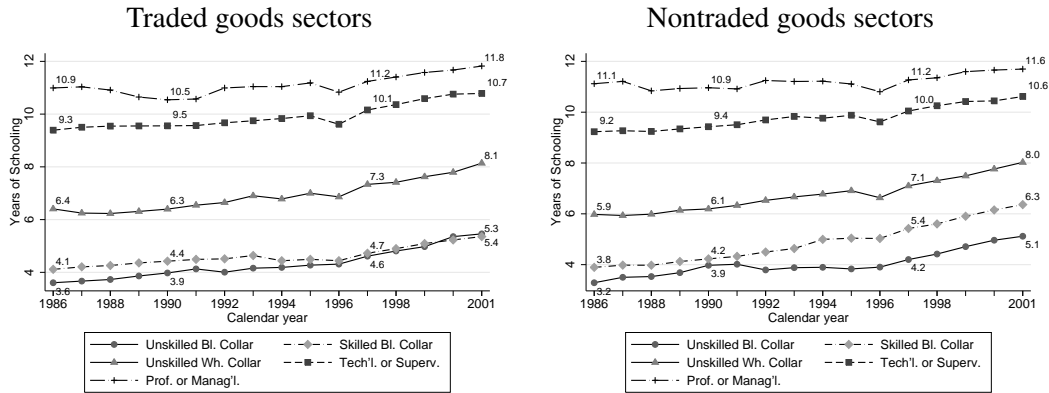
| | Industry | | Industry-occupation | | Overall |
|-------------------------------|----------|--------|---------------------|--------|---------|
| | between | within | between | within | |
| | (1) | (2) | (3) | (4) | (5) |
| Illiterate or Primary Dropout | .073 | -.084 | .049 | -.061 | -.011 |
| Primary School Graduate | -.018 | .012 | -.036 | .030 | -.006 |
| Middle School Graduate | -.016 | .045 | -.014 | .044 | .030 |
| High School Graduate | -.007 | .039 | .011 | .021 | .032 |
| College Graduate | .094 | -.055 | .106 | -.066 | .040 |

Source: RAIS 1986-2001 (1% random sample), male workers, 25 years or older. Percentage changes in relative employment Katz and Murphy (1992), based on 25 subsector IBGE (Table 157) and 5 occupation categories (Table 160).

Table 32: BETWEEN AND WITHIN INDUSTRY AND OCCUPATION SHIFTS IN RELATIVE EMPLOYMENT, 1990-1998

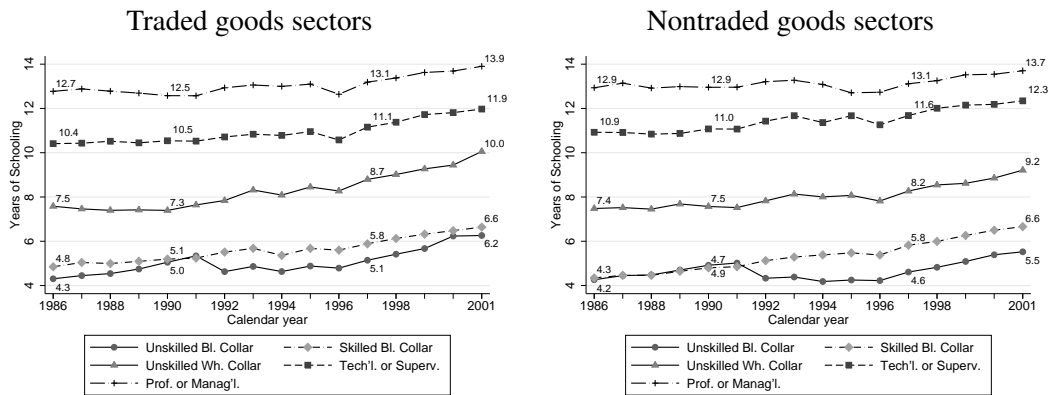
| | Industry | | Industry-occupation | | Overall |
|-------------------------------|----------|--------|---------------------|--------|---------|
| | between | within | between | within | |
| | (1) | (2) | (3) | (4) | (5) |
| Illiterate or Primary Dropout | .053 | -.072 | .054 | -.073 | -.019 |
| Primary School Graduate | -.011 | .0003 | .013 | -.023 | -.010 |
| Middle School Graduate | -.017 | .030 | .011 | .002 | .013 |
| High School Graduate | -.024 | .032 | -.001 | .010 | .008 |
| College Graduate | .114 | -.102 | .091 | -.080 | .011 |

Source: RAIS 1990-98 (1% random sample), male workers, 25 years or older. Percentage changes in relative employment Katz and Murphy (1992), based on 25 subsector IBGE (Table 157) and 5 occupation categories (Table 160).



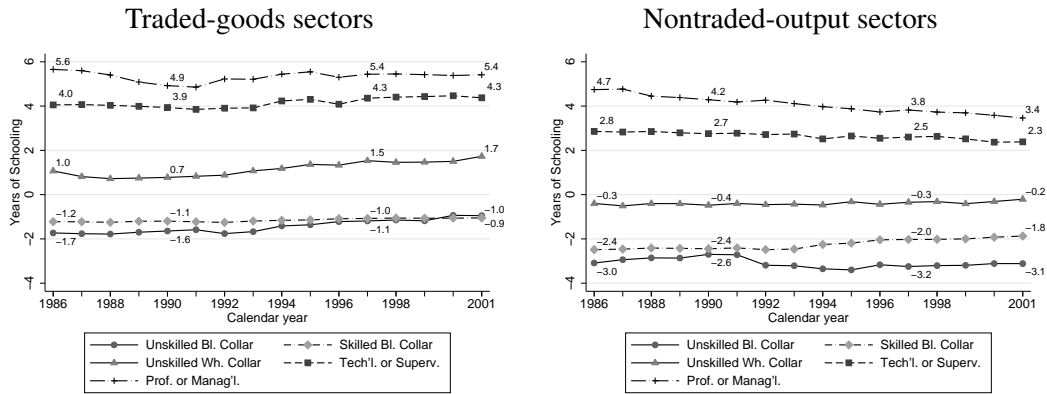
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Mean years of schooling weighted by worker numbers.

Figure 29: Schooling intensity of occupations



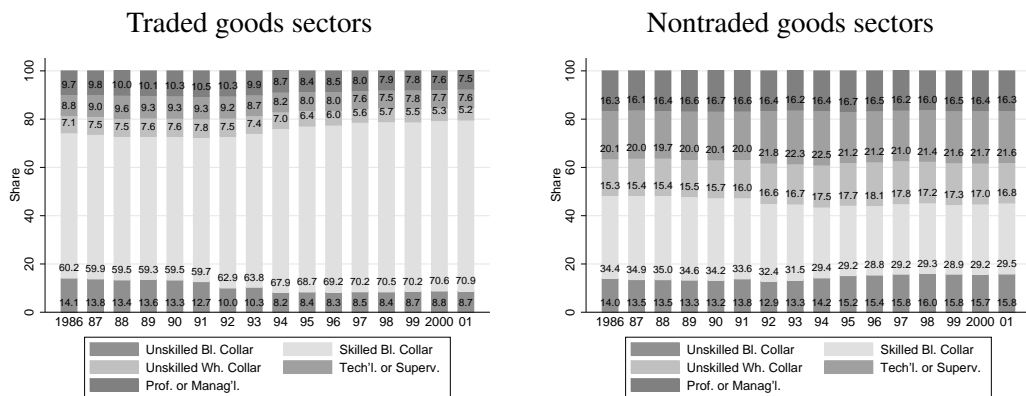
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Mean years of schooling weighted by labor efficiency units.

Figure 30: Schooling intensity of occupations, efficiency unit weighted



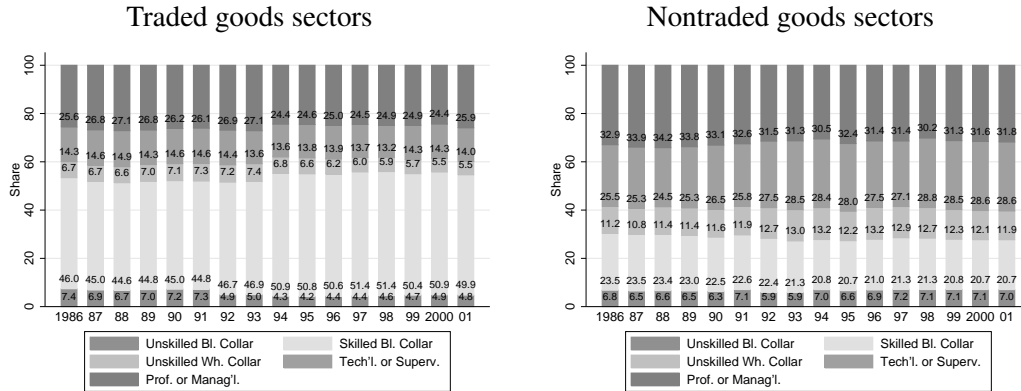
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded-goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded-output industries are all other sectors. Mean years of schooling weighted by worker numbers within occupations, less mean years of schooling weighted by worker numbers across all occupations.

Figure 31: **Difference between schooling intensity of occupations and annual mean schooling level**



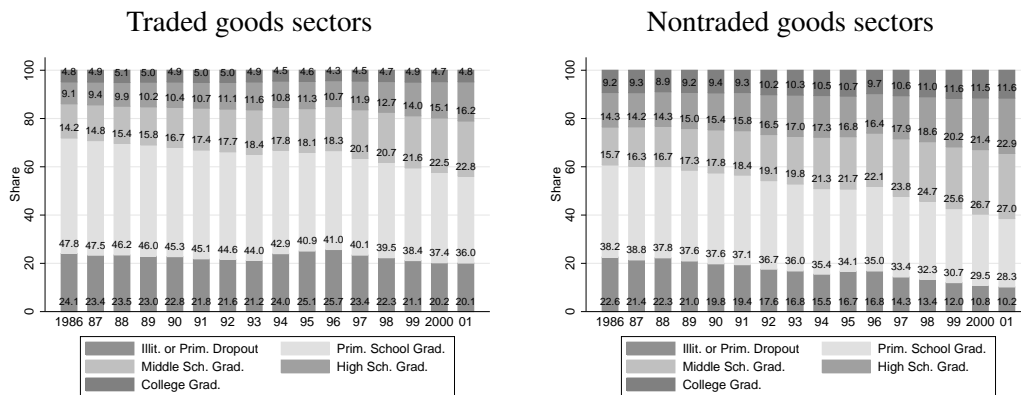
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on worker numbers.

Figure 32: **Occupational workforce composition**



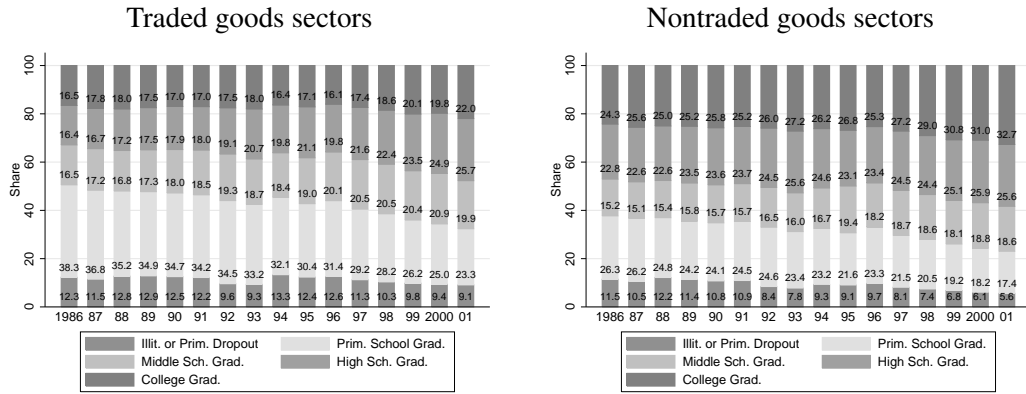
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on labor efficiency units.

Figure 33: Occupational workforce composition in efficiency units



Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on worker numbers.

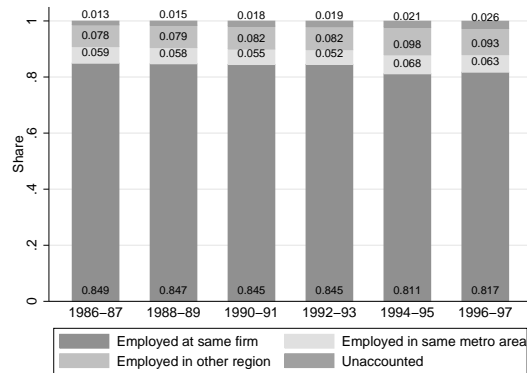
Figure 34: Workforce composition by education category



Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on labor efficiency units.

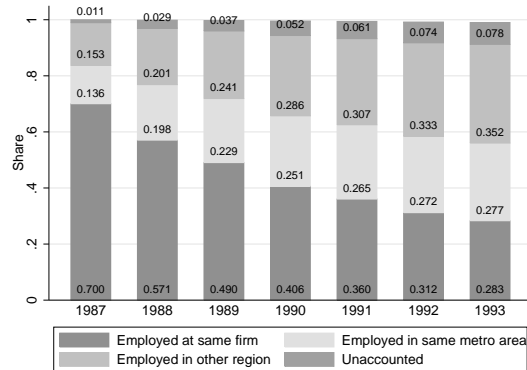
Figure 35: Workforce composition by education category in efficiency units

3.4 Labor market experience of prime-age male workers in metropolitan areas



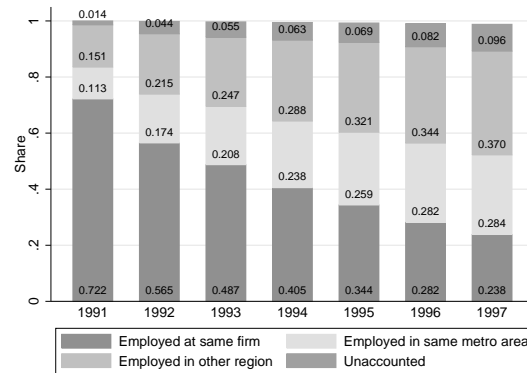
Source: RAIS 1986-97 (5% random sample), male workers, 25 years or older, employed in metropolitan area and with municipality information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 36: Annual employment transitions across municipalities



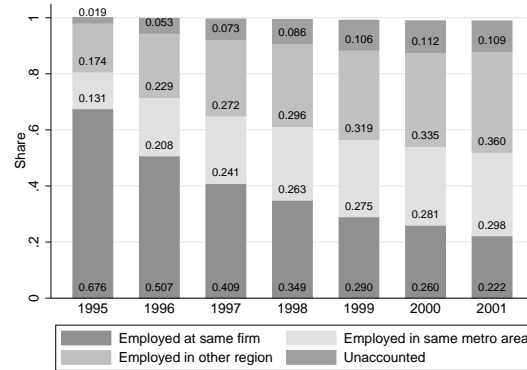
Source: RAIS 1986-93 (5% random sample), male workers, 25 years or older, employed in metropolitan area on Dec 31, 1986 and with municipality information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 37: Labor market experience of 1986 workers



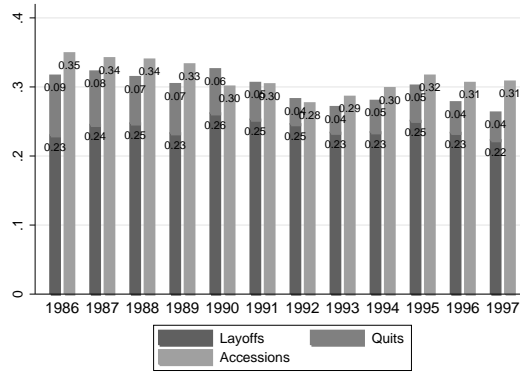
Source: RAIS 1990-97 (5% random sample), male workers, 25 years or older, employed in metropolitan area on Dec 31, 1990 and with municipality information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 38: Labor market experience of 1990 workers



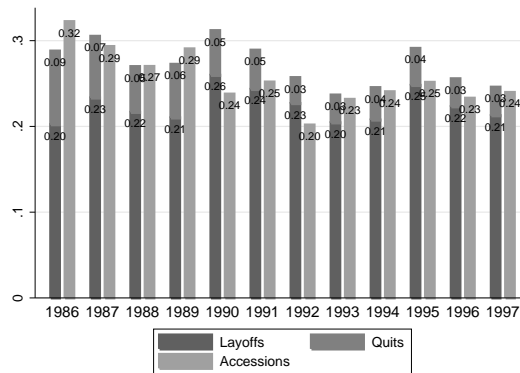
Source: RAIS 1994-2001 (5% random sample), male workers, 25 years or older, employed in metropolitan area on Dec 31, 1994 and with municipality information on employer. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job.

Figure 39: Labor market experience of 1994 workers



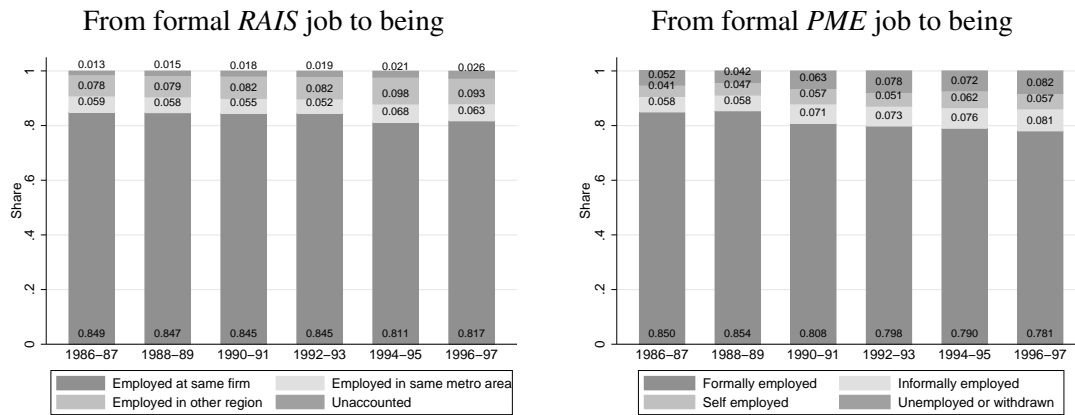
RAIS 1986-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment in any sector (highest paying job if many). Separation and accession rates exclude transfers, deaths, and retirements and are relative to totals of first and last observed employments in a given year.

Figure 40: Separations and accessions in any sector



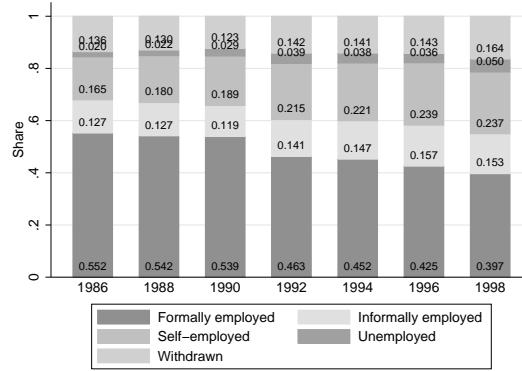
RAIS 1986-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment in subsector IBGE manufacturing (highest paying job if many). Separation and accession rates exclude transfers, deaths, and retirements and are relative to totals of first and last observed employments in a given year.

Figure 41: Separations and accessions in manufacturing



Source (left graph): RAIS 1986-97 (5% random sample), male workers, 25 years or older and employed in metropolitan area. Frequencies based on last employment of year (highest paying job if many); continuations at same firm include regional transfers. Frequencies exclude workers with prior retirement or death, or age 65 or above in earlier job. Source (right graph): PME 1986-97, male workers, 25 years or older and employed in metropolitan area (annual transitions between 4th and 8th interview).

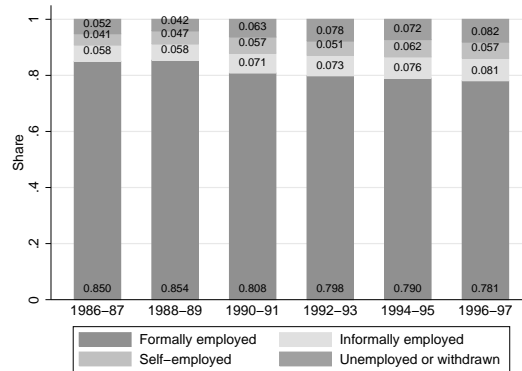
Figure 42: Annual labor market and work status transitions, 1986-97



Source: PME 1986-98, male workers, 25 years or older and employed in metropolitan area.

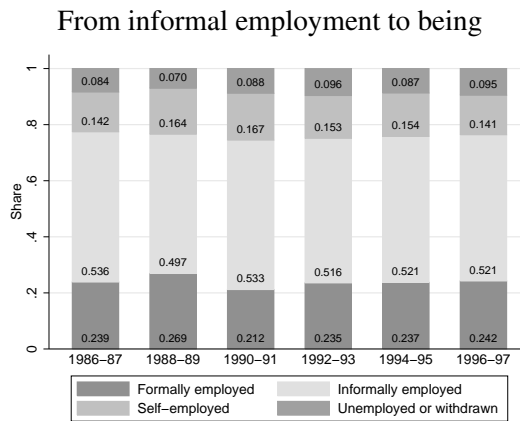
Figure 43: Work status of PME workers

From formal manufacturing employment to being



Source: PME 1986-97, male workers, 25 years or older and formally employed in metropolitan area manufacturing in initial year (annual transitions between 4th and 8th interview).

Figure 44: Annual work status transitions from formal manufacturing employment, 1986-97



Source: PME 1986-97, male workers, 25 years or older and informally employed in metropolitan area in initial year (annual transitions between 4th and 8th interview).

Figure 45: Annual work status transitions from informal employment, 1986-97

Table 33: INDUSTRY AND OCCUPATION BASED LOG DEMAND SHIFTS, 1986-2001

| | Between Industry | | | Within Industry | | | Overall Industry-Occupation | | | | | |
|--------------------------------|------------------|--------------|--------------|-----------------|--------------|--------------|-----------------------------|--------------|--------------|---------------|---------------|---------------|
| | 86-90 (1) | 90-97 (2) | 97-01 (3) | 86-01 (4) | 86-90 (5) | 90-97 (6) | 97-01 (7) | 86-01 (8) | 86-90 (9) | 90-97 (10) | 97-01 (11) | 86-01 (12) |
| in percentages | | | | | | | | | | | | |
| <i>All sectors</i> | | | | | | | | | | | | |
| Illiterate or Primary Dropout | -0.3 | 2.0 | -2.8 | -1.1 | -1.8 | 0.5 | -1.3 | -2.6 | -2.1 | 2.5 | -4.0 | -3.6 |
| Primary School Graduate | -1.8 | -1.7 | -3.1 | -6.6 | -1.4 | 1.0 | -2.9 | -3.3 | -3.2 | -0.7 | -6.0 | -9.9 |
| Middle School Graduate | -1.5 | -0.4 | -1.0 | -2.9 | -0.5 | 1.8 | -2.0 | -0.6 | -1.9 | 1.4 | -2.9 | -3.5 |
| High School Graduate | -0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.8 | 0.6 | 1.9 | 0.4 | 0.9 | 0.9 | 2.3 |
| College Graduate | 2.7 | 1.0 | 3.8 | 7.5 | 1.5 | -2.9 | 3.4 | 2.1 | 4.2 | -1.9 | 7.3 | 9.6 |
| <i>Traded goods sectors</i> | | | | | | | | | | | | |
| Illiterate or Primary Dropout | -3.6 | -2.0 | -3.7 | -9.3 | -0.7 | -0.9 | -0.7 | -2.3 | -4.3 | -2.9 | -4.3 | -11.6 |
| Primary School Graduate | -4.0 | -4.9 | -3.5 | -12.5 | -0.6 | 0.1 | -1.0 | -1.5 | -4.6 | -4.9 | -4.5 | -14.0 |
| Middle School Graduate | -3.8 | -5.3 | -3.3 | -12.4 | -0.3 | 0.3 | -0.7 | -0.7 | -4.1 | -5.1 | -4.0 | -13.2 |
| High School Graduate | -3.5 | -5.1 | -2.8 | -11.4 | 0.1 | 0.2 | 0.5 | 0.8 | -3.4 | -4.9 | -2.3 | -10.6 |
| College Graduate | -3.4 | -5.4 | -2.5 | -11.3 | 1.1 | -0.1 | 1.7 | 2.6 | -2.3 | -5.6 | -0.8 | -8.7 |
| <i>Nontraded goods sectors</i> | | | | | | | | | | | | |
| Illiterate or Primary Dropout | 3.2 | 3.9 | 0.9 | 7.9 | -1.1 | 1.3 | -0.6 | -0.4 | 2.0 | 5.2 | 0.2 | 7.5 |
| Primary School Graduate | 3.1 | 4.3 | 1.2 | 8.7 | -0.8 | 1.0 | -1.8 | -1.5 | 2.4 | 5.3 | -0.6 | 7.1 |
| Middle School Graduate | 2.7 | 5.3 | 2.6 | 10.6 | -0.2 | 1.5 | -1.2 | 0.2 | 2.6 | 6.8 | 1.4 | 10.8 |
| High School Graduate | 3.0 | 4.6 | 2.8 | 10.4 | .4 | 0.6 | 0.1 | 1.1 | 3.4 | 5.2 | 3.0 | 11.5 |
| College Graduate | 5.0 | 4.8 | 5.4 | 15.2 | .7 | -2.5 | 2.0 | 0.1 | 5.6 | 2.4 | 7.3 | 15.3 |

Source: RAIS 1986-2001 (5% random sample), male workers, 25 years or older, employed in metropolitan area. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Overall and between-industry demand shift measures for education group k are of the form $\Delta D_k = \sum_j \alpha_{jk}(\Delta E_j/E_k)$, where α_{jk} is the average share for group k of employment in sector j over the period 1986-2001, E_j is the share of aggregate employment in sector j , and E_k is the average share of total employment of group k over the period 1986-2001 (Katz and Murphy (1992)). Reported numbers are of the form $\log(1 + \Delta D_k)$. In the overall measure j indexes 130 industry-occupation cells; in the between-industry measure, j indexes 26 industries (14 traded and 12 nontraded goods sectors). The within-industry index for group k is the difference of the overall and between-industry measures. Employment is measured in efficiency units.

Table 34: BETWEEN AND WITHIN INDUSTRY AND OCCUPATION SHIFTS IN RELATIVE EMPLOYMENT, 1986-2001

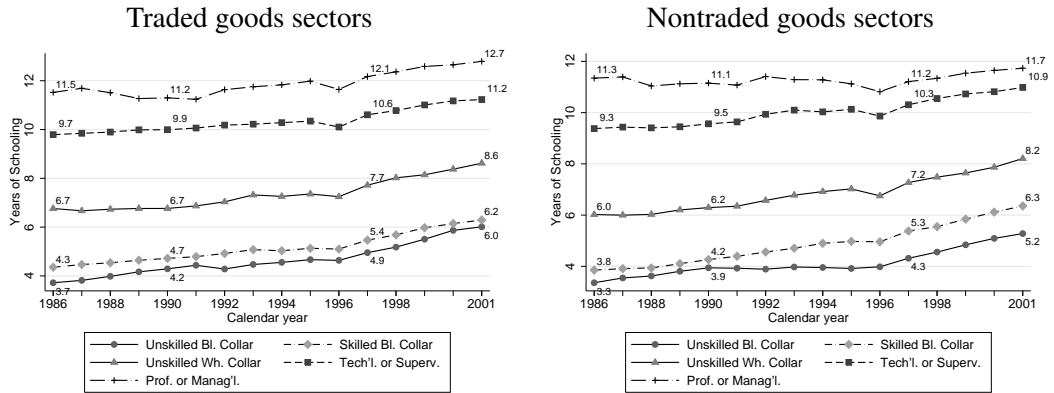
| | Industry | | Industry-occupation | | Overall |
|-------------------------------|----------|--------|---------------------|--------|---------|
| | between | within | between | within | |
| | (1) | (2) | (3) | (4) | (5) |
| Illiterate or Primary Dropout | .008 | -.028 | -.011 | -.008 | -.019 |
| Primary School Graduate | -.049 | .036 | -.077 | .064 | -.013 |
| Middle School Graduate | -.015 | .040 | -.021 | .045 | .024 |
| High School Graduate | .017 | .013 | .033 | -.004 | .029 |
| College Graduate | .097 | -.058 | .117 | -.078 | .038 |

Source: RAIS 1986-97 (5% random sample), male workers, 25 years or older, employed in metropolitan area. The between demand shift measures for education group k are of the form $\Delta D_k = \sum_j \alpha_{jk} (\Delta E_j / E_k)$, where α_{jk} is the average share for group k of employment in sector j over the period 1986-2001, E_j is the share of aggregate employment in sector j , and E_k is the average share of total employment of group k over the period 1986-2001 Katz and Murphy (1992). In column 1, j indexes 26 subsector IBGE industries (Table 157). In column 3, j indexes 130 industry-occupation cells using 5 occupation categories (Table 160). In column 5, the overall relative employment change measure is of the form $\Delta D_k = \Delta E_k / E_k$. In columns 2 and 4, the within demand shift measures for group k are the differences of the overall (column 5) and between measures (columns 1 and 3). Employment is measured in efficiency units. Employment is measured in efficiency units.

Table 35: BETWEEN AND WITHIN INDUSTRY AND OCCUPATION SHIFTS IN RELATIVE EMPLOYMENT, 1990-1998

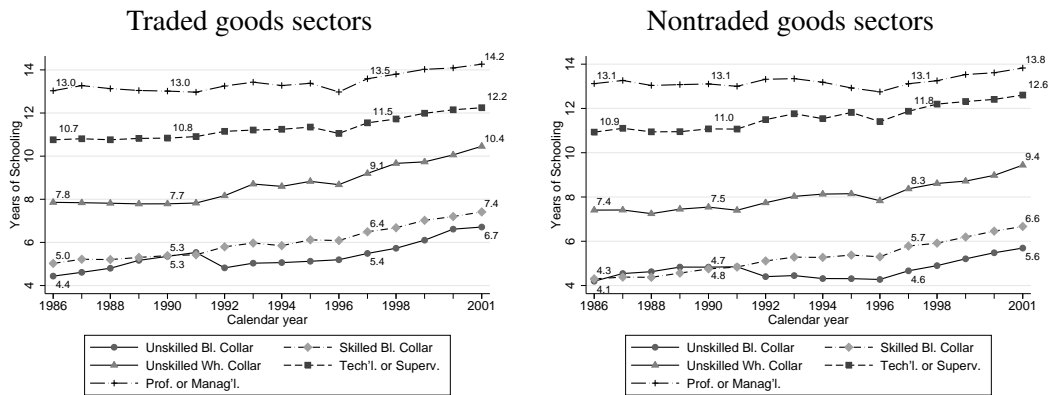
| | Industry | | Industry-occupation | | Overall |
|-------------------------------|----------|--------|---------------------|--------|---------|
| | between | within | between | within | |
| | (1) | (2) | (3) | (4) | (5) |
| Illiterate or Primary Dropout | .022 | -.046 | .024 | -.048 | -.024 |
| Primary School Graduate | -.027 | .013 | -.022 | .008 | -.014 |
| Middle School Graduate | -.014 | .024 | .002 | .008 | .010 |
| High School Graduate | -.004 | .011 | .036 | -.030 | .007 |
| College Graduate | .029 | -.020 | .030 | -.020 | .009 |

Source: RAIS 1986-97 (5% random sample), male workers, 25 years or older, employed in metropolitan area. The between demand shift measures for education group k are of the form $\Delta D_k = \sum_j \alpha_{jk} (\Delta E_j / E_k)$, where α_{jk} is the average share for group k of employment in sector j over the period 1986-2001, E_j is the share of aggregate employment in sector j , and E_k is the average share of total employment of group k over the period 1986-2001 Katz and Murphy (1992). In column 1, j indexes 26 subsector IBGE industries (Table 157). In column 3, j indexes 130 industry-occupation cells using 5 occupation categories (Table 160). In column 5, the overall relative employment change measure is of the form $\Delta D_k = \Delta E_k / E_k$. In columns 2 and 4, the within demand shift measures for group k are the differences of the overall (column 5) and between measures (columns 1 and 3). Employment is measured in efficiency units. Employment is measured in efficiency units.



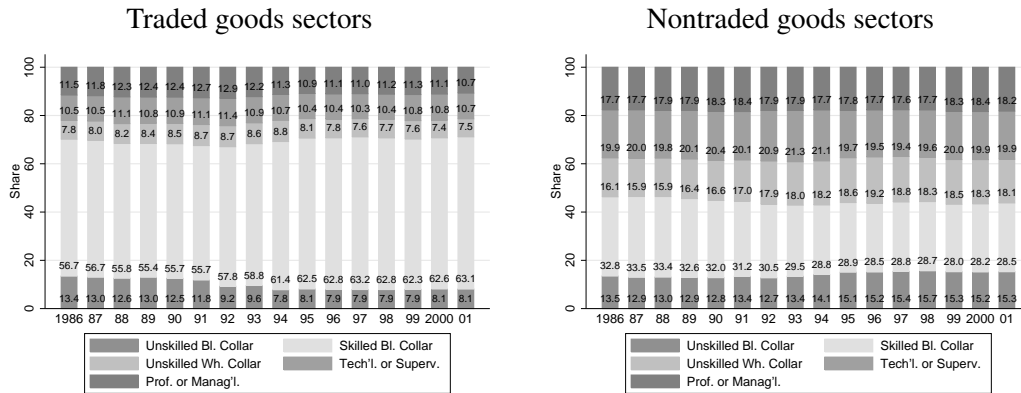
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Mean years of schooling weighted by worker numbers.

Figure 46: Schooling intensity of occupations



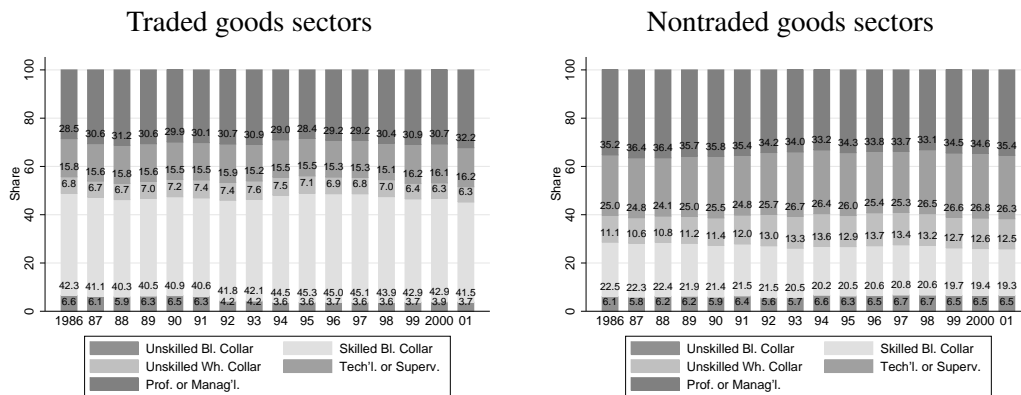
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Mean years of schooling weighted by labor efficiency units.

Figure 47: Schooling intensity of occupations, efficiency unit weighted



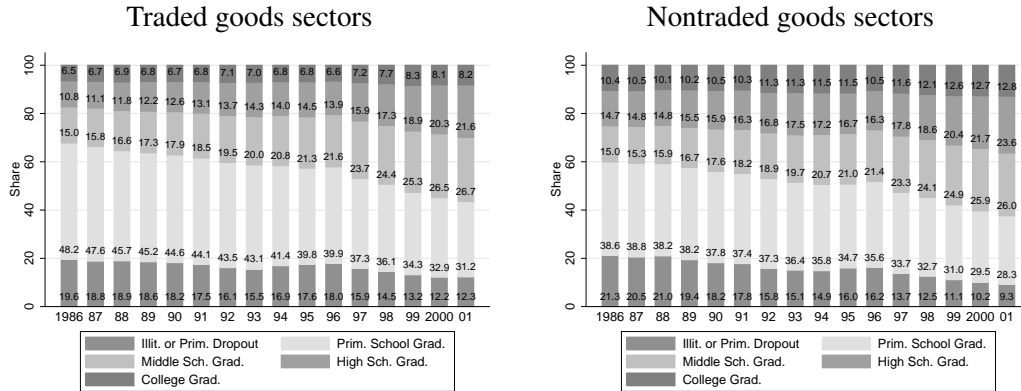
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on worker numbers.

Figure 48: Occupational workforce composition



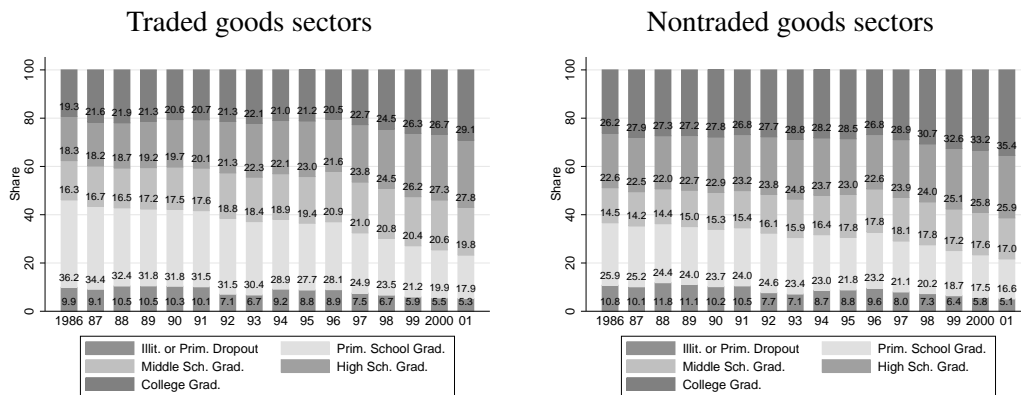
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on labor efficiency units.

Figure 49: Occupational workforce composition in efficiency units



Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on worker numbers.

Figure 50: Workforce composition by education category



Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with employment on December 31st. Traded goods sectors are agriculture, mining and manufacturing (subsectors IBGE 1-13 and 25), nontraded goods are all other sectors. Shares based on labor efficiency units.

Figure 51: Workforce composition by education category in efficiency units

4 Reallocation Durations

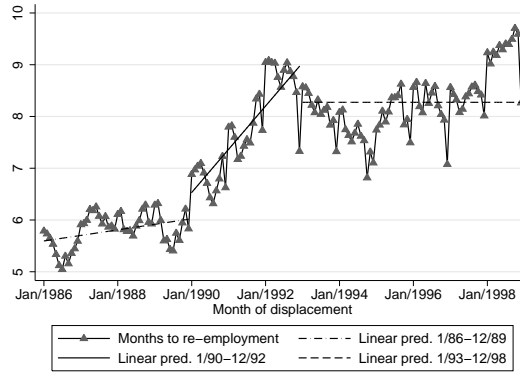
Table 36: FORMAL-SECTOR REALLOCATION TIME SPANS 1990-97

| | Mean 1990-97 | | 1990 | | 1997 | |
|---------------------------------|--------------|--------|--------|-------|--------|-------|
| | nation | metro | nation | metro | nation | metro |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| within | | | | | | |
| same month | .146 | .597 | .163 | .615 | .138 | .576 |
| 1 year | .627 | .353 | .663 | .351 | .614 | .361 |
| 1 to 2 years | .134 | .031 | .101 | .021 | .135 | .037 |
| 2 to 3 years | .058 | .012 | .045 | .008 | .065 | .015 |
| 3 to 4 years | .035 | .007 | .027 | .005 | .048 | .011 |
| <i>Total (thsd)^a</i> | 29,660 | 21,878 | 4,195 | 3,113 | 3,682 | 2,630 |

^aTotal reallocation (thousand workers), scaled to population equivalent.

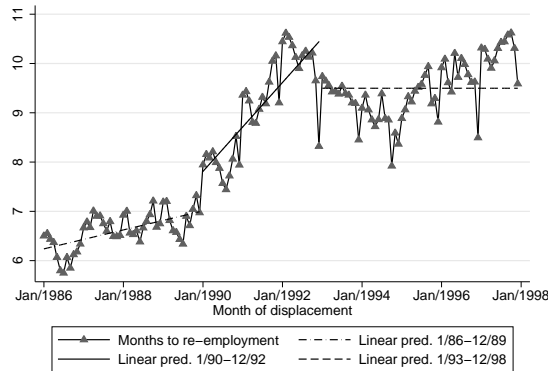
Source: RAIS 1990-2001. Male workers nationwide (1% random sample) or in metropolitan areas only (5% random sample), 25 to 64 years old (in highest paying job if many), displaced from a formal-sector job between 1990 and 1997 and rehired into a formal-sector job within 48 months (regression samples with subsector IBGE and CNAE sector information).

4.1 Reallocation durations nationwide



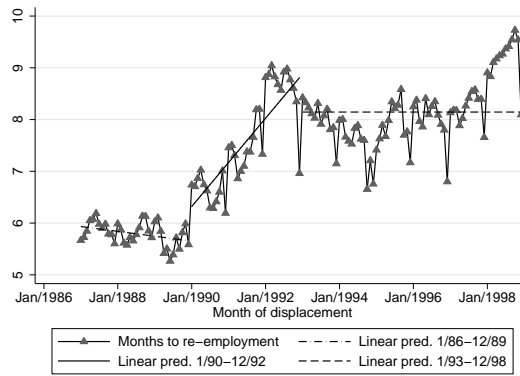
Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and rehired into a formal-sector job within 36 months.

Figure 52: Mean duration of formal-sector reallocation within 36 months



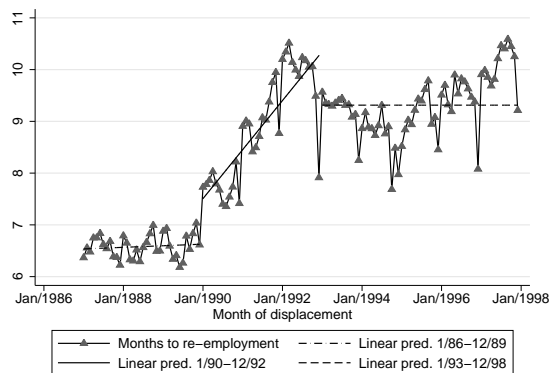
Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and rehired into a formal-sector job within 48 months.

Figure 53: Mean duration of formal-sector reallocation within 48 months



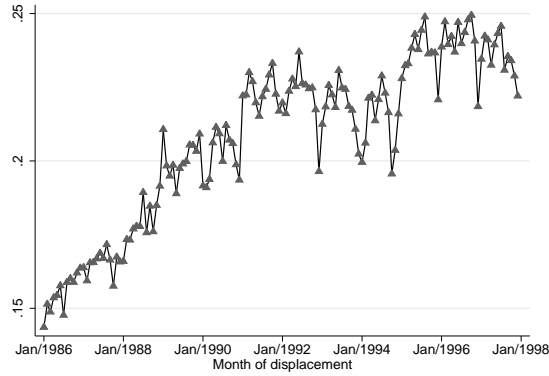
Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and rehired into a formal-sector job at a plant with no sample absence within 36 months.

Figure 54: **Mean duration of formal-sector reallocation to a plant with no sample absence within 36 months**



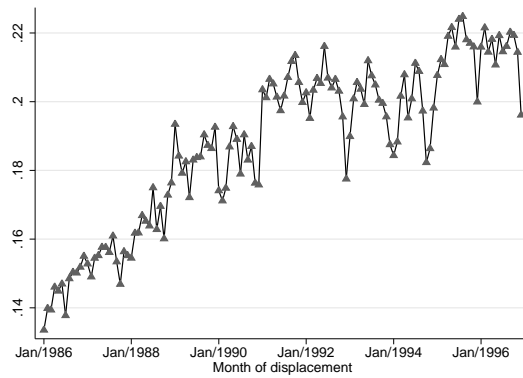
Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and rehired into a formal-sector job at a plant with no sample absence within 48 months.

Figure 55: **Mean duration of formal-sector reallocation to a plant with no sample absence within 48 months**



Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and not rehired into a formal-sector job within 48 months.

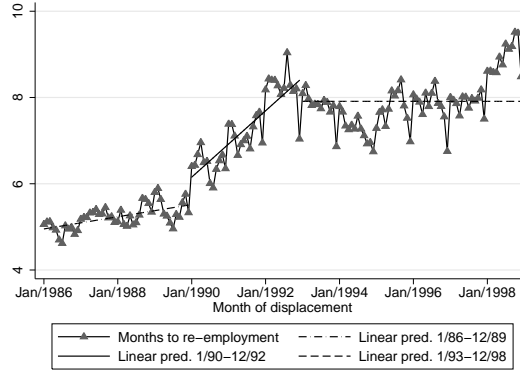
Figure 56: **Share of displaced workers without formal-sector reallocation within 48 months**



Source: RAIS 1986-2001 (1% random sample), workers nationwide, displaced from a formal-sector job and not rehired into a formal-sector job within 60 months.

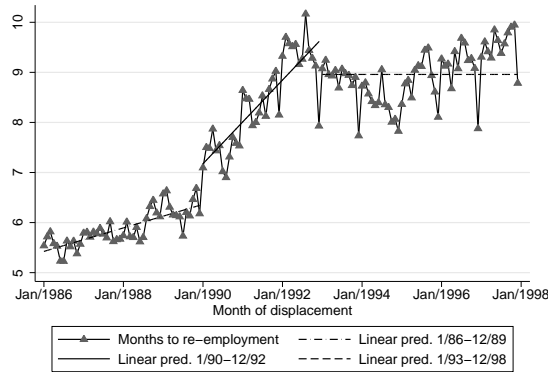
Figure 57: **Share of displaced workers without formal-sector reallocation within 60 months**

4.2 Reallocation durations for prime-age male workers nationwide



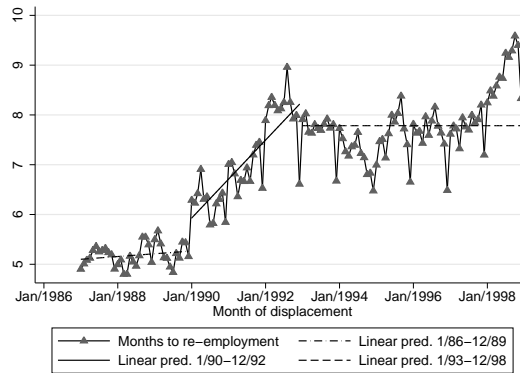
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job within 36 months.

Figure 58: Mean duration of formal-sector reallocation within 36 months



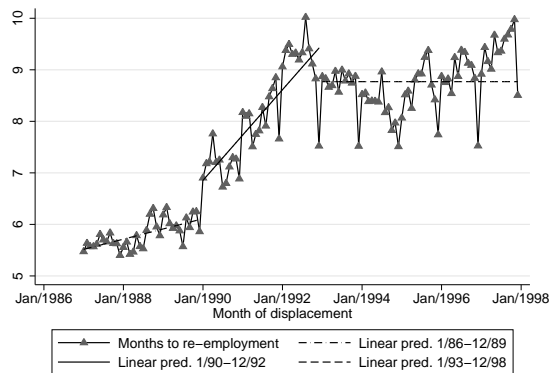
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job within 48 months.

Figure 59: Mean duration of formal-sector reallocation within 48 months



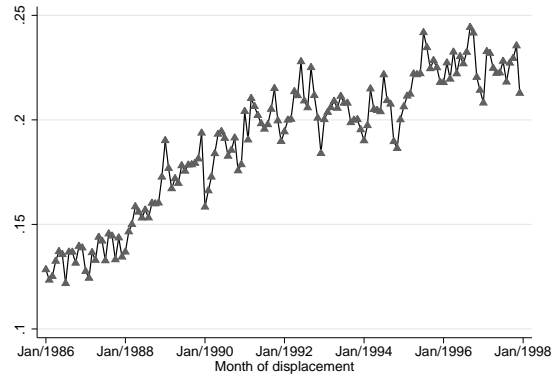
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job at a plant with no sample absence within 36 months.

Figure 60: **Mean duration of formal-sector reallocation to a plant with no sample absence within 36 months**



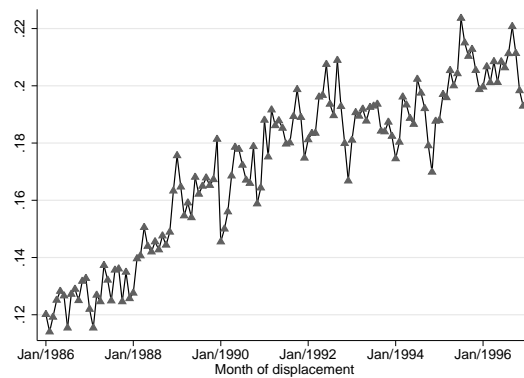
Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job at a plant with no sample absence within 48 months.

Figure 61: **Mean duration of formal-sector reallocation to a plant with no sample absence within 48 months**



Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 48 months.

Figure 62: **Share of displaced workers without formal-sector reallocation within 48 months**



Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 60 months.

Figure 63: **Share of displaced workers without formal-sector reallocation within 60 months**

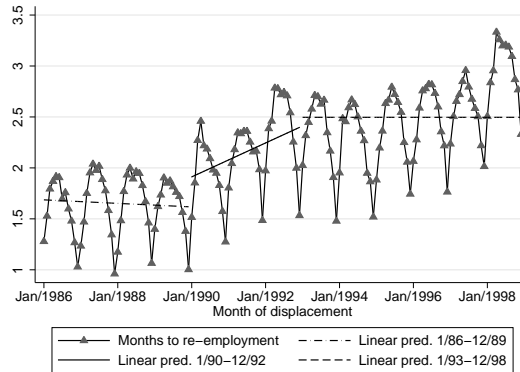
Table 37: FORMAL-SECTOR REALLOCATION TIME SPANS 1990-97

| Reallocation | 1990 (1) | 1991 (2) | 1992 (3) | 1993 (4) | 1994 (5) | 1995 (6) | 1996 (7) | 1997 (8) | Mean (9) |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| within | | | | | | | | | |
| same month | .163 | .154 | .136 | .140 | .148 | .144 | .139 | .138 | .146 |
| 1 year | .663 | .625 | .608 | .620 | .643 | .619 | .616 | .614 | .627 |
| 1 to 2 years | .101 | .126 | .150 | .153 | .124 | .143 | .150 | .135 | .134 |
| 2 to 3 years | .045 | .058 | .072 | .056 | .053 | .062 | .057 | .065 | .058 |
| 3 to 4 years | .027 | .036 | .033 | .030 | .032 | .033 | .038 | .048 | .035 |
| <i>Total (thsd)^a</i> | 4,195 | 3,809 | 3,385 | 3,280 | 3,572 | 4,093 | 3,645 | 3,682 | 29,660 |

^aTotal reallocation (thousand workers), scaled to population equivalent.

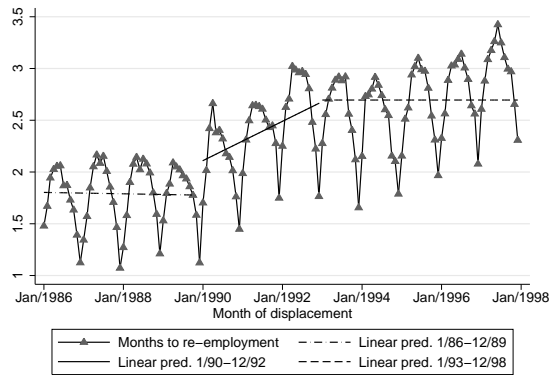
Source: RAIS 1990-2001. Male workers nationwide (1% random sample), 25 to 64 years old (in highest paying job if many), displaced from a formal-sector job between 1990 and 1997 and rehired into a formal-sector job within 48 months (regression sample with subsector IBGE information).

4.3 Reallocation durations for prime-age male workers in metropolitan areas



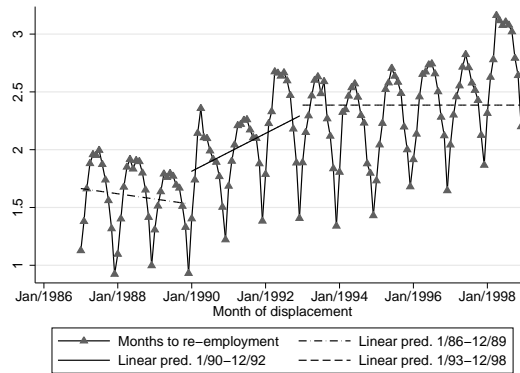
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job within 36 months.

Figure 64: Mean duration of formal-sector reallocation within 36 months



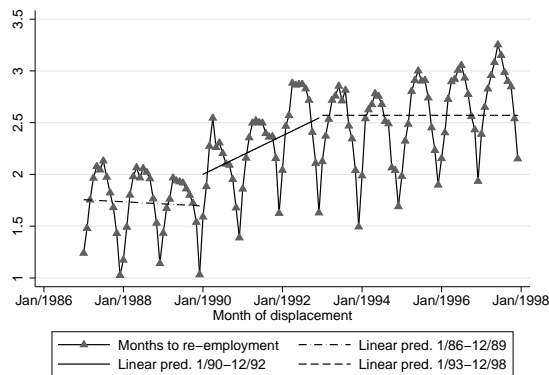
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job within 48 months.

Figure 65: Mean duration of formal-sector reallocation within 48 months



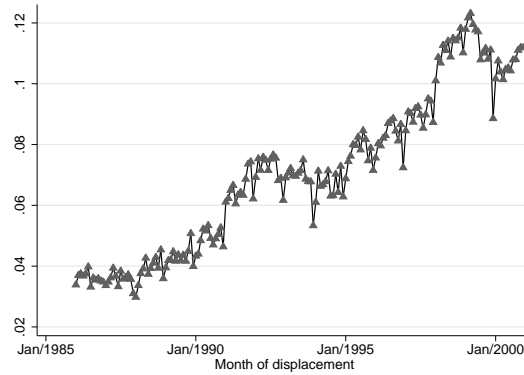
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job at a plant with no sample absence within 36 months.

Figure 66: **Mean duration of formal-sector reallocation to a plant with no sample absence within 36 months**



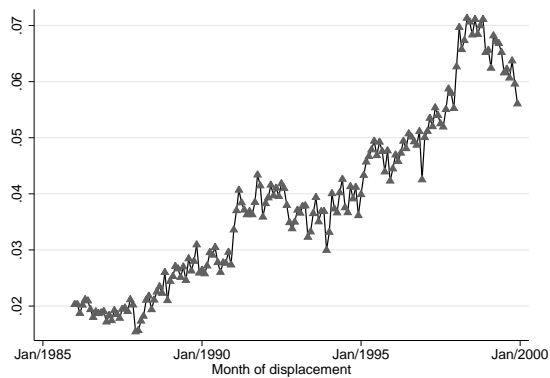
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and rehired into a formal-sector job at a plant with no sample absence within 48 months.

Figure 67: **Mean duration of formal-sector reallocation to a plant with no sample absence within 48 months**



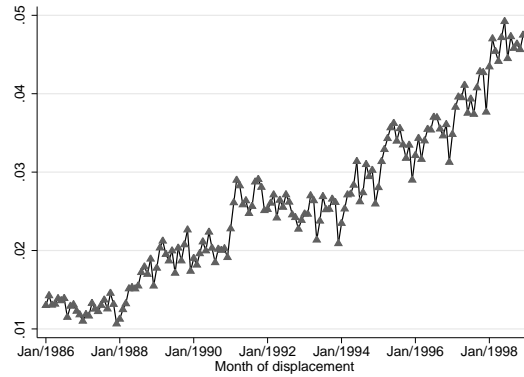
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 12 months.

Figure 68: **Share of displaced workers without formal-sector reallocation within 12 months**



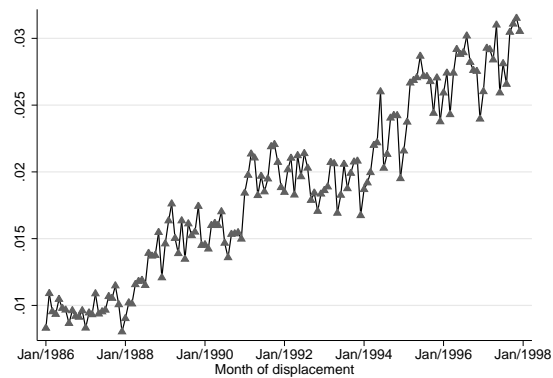
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 24 months.

Figure 69: **Share of displaced workers without formal-sector reallocation within 24 months**



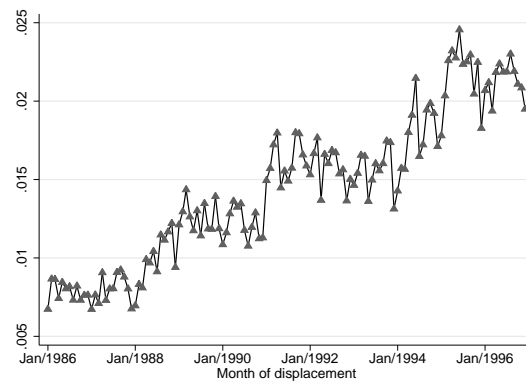
Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 36 months.

Figure 70: **Share of displaced workers without formal-sector reallocation within 36 months**



Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 48 months.

Figure 71: **Share of displaced workers without formal-sector reallocation within 48 months**



Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old, displaced from a formal-sector job and not rehired into a formal-sector job within 60 months.

Figure 72: **Share of displaced workers without formal-sector reallocation within 60 months**

Table 38: FORMAL-SECTOR REALLOCATION TIME SPANS 1990-97

| Reallocation | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Mean |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| within | | | | | | | | | |
| same month | .615 | .606 | .602 | .600 | .596 | .593 | .584 | .576 | .597 |
| 1 year | .351 | .348 | .344 | .349 | .358 | .354 | .359 | .361 | .353 |
| 1 to 2 years | .021 | .028 | .034 | .034 | .029 | .033 | .035 | .037 | .031 |
| 2 to 3 years | .008 | .012 | .014 | .011 | .011 | .013 | .014 | .015 | .012 |
| 3 to 4 years | .005 | .007 | .006 | .006 | .006 | .007 | .007 | .011 | .007 |
| <i>Total (thsd)^a</i> | 3,113 | 2,836 | 2,514 | 2,418 | 2,604 | 3,040 | 2,722 | 2,630 | 21,878 |

^aTotal reallocation (thousand workers), scaled to population equivalent.

Source: RAIS 1990-2001. Male workers in metropolitan areas (5% random sample), 25 to 64 years old (in highest paying job if many), displaced from a formal-sector job between 1990 and 1997 and rehired into a formal-sector job within 48 months (regression sample with subsector IBGE information).

5 Comparative Advantage, Labor-Market Rigidity, Trade Protection, and Productivity

Table 39: TRADEABLE GOODS SECTORS

| Sector (<i>Nível 50</i>) | Comp. Adv. 1990 (1) | ERP 1990 (2) | Capital/ worker 1990 (3) | Ann. LP chg. 1990-98 (4) | Prv. job sh. chg. 1995-98 (5) |
|--|------------------------------|--------------------|-----------------------------------|-----------------------------------|--|
| <i>5th quintile</i> | | | | | |
| 30 Food fats and oils processing and refining | 12.427 | .209 | 57.380 | .064 | -.031 |
| 2 Mining of minerals (excl. combustibles) | 7.526 | .029 | | | .103 |
| 27 Meat processing (incl. slaughter) | 4.769 | .506 | 10.856 | .034 | .021 |
| 29 Sugar processing | 4.309 | .347 | 28.357 | .019 | -.003 |
| 25 Coffee processing | 3.481 | .468 | 13.238 | .067 | .057 |
| 26 Plant product processing (incl. tobacco) | 3.326 | .507 | 17.866 | .030 | .024 |
| <i>4th quintile</i> | | | | | |
| 5 Iron and steel products manufacturing | 2.912 | .191 | 166.399 | .083 | .015 |
| 24 Footwear, leather and fur products manuf. | 2.306 | .364 | 6.011 | .049 | .046 |
| 31 Other food products and beverages manuf. | 2.062 | .697 | 16.733 | .051 | .024 |
| 6 Nonferrous metal products manufacturing | 1.923 | .146 | 70.420 | .118 | .043 |
| 1 Agriculture, fishing, hunting and forestry | 1.643 | | | | .045 |
| 7 Metal products manufacturing n.e.c. | 1.426 | .405 | 13.891 | .075 | .035 |
| <i>3rd quintile</i> | | | | | |
| 4 Nonmetallic mineral products manufact. | 1.122 | .360 | 24.980 | .093 | .044 |
| 14 Wood products and furniture manufact. | .939 | .273 | 13.071 | .061 | .036 |
| 16 Rubber products manufacturing | .903 | .524 | 14.036 | .081 | .034 |
| 17 Non-petrochemical chemicals manufact. | .883 | .351 | 53.970 | .032 | .038 |
| 13 Vehicle parts and other transp. eqpt. manf. | .802 | .409 | 20.386 | .148 | .014 |
| <i>2nd quintile</i> | | | | | |
| 12 Automobiles, trucks and buses manufact. | .746 | .989 | 23.712 | .183 | .005 |
| 18 Petrochem. products manuf. and refining | .741 | .311 | 132.787 | .079 | .193 |
| 21 Plastics products manufacturing | .708 | .466 | 16.619 | .073 | .040 |
| 15 Paper and pulp manufact., publishing | .635 | .224 | 59.306 | .121 | .041 |
| 22 Textiles manufacturing | .616 | .689 | 13.683 | .069 | .035 |
| 19 Miscellaneous chemical products manufact. | .610 | .316 | 34.430 | .077 | .019 |
| <i>1st quintile</i> | | | | | |
| 23 Apparel and apparel accessories manufact. | .539 | .870 | 5.955 | .161 | .035 |
| 8 Machinery and comm. installations manuf. | .507 | .450 | 18.714 | .124 | .041 |
| 11 Electronic eqpt. and communic. app. manf. | .453 | .417 | 14.717 | .237 | .007 |
| 10 Electrical eqpt. and components manufact. | .432 | .496 | 14.907 | .201 | .032 |
| 20 Pharmaceutical products manufacturing | .294 | .372 | 18.330 | .075 | .068 |
| 28 Dairy products processing | .012 | .661 | 14.297 | .022 | .039 |
| 3 Petroleum and gas extraction, coal mining | .011 | -.241 | | | -.202 |

Sources: UN Comtrade 1990; product tariffs from Kume et al. (2003); *PIA* firms 1990-98; *RAIS* employer-employee records 1995-98. Balassa (1965) comparative advantage of sector i in year t : $BADV_{i,t} \equiv (X_{i,t}^{\text{Brazil}} / \sum_k X_{k,t}^{\text{Brazil}}) / (X_{i,t}^{\text{World}} / \sum_k X_{k,t}^{\text{World}})$, where $X_{i,t}$ are exports. Effective rate of protection (ERP): $(\tau_{i,t}^Y - \tau_{i,t}^M \alpha_{i,t}) / (1 - \alpha_{i,t})$, where $\tau_{i,t}^Y$ is product tariff, $\tau_{i,t}^M$ input tariff, and $\alpha_{i,t}$ is value added. Capital-labor ratio in thousand 8/1994 BRL (equiv. to 8/94 USD) per worker. Annual labor productivity (LP) change: $(LP_{i,t} / LP_{i,t-8})^{1/8} - 1$ (inferring labor productivity at changing capital stocks from Olley and Pakes (1996) log total factor productivity estimates). Private job share change: $s_{i,t} - s_{i,t-3}$, where $s_{i,t}$ is share of jobs at privately-owned plants in total jobs.

Table 40: SUBSECTOR IBGE AND *Nível 50* COMPARISON

| Subsector IBGE <i>Nível 50</i> | Comp. Adv. | | Quintile | |
|---|--------------|--------------|----------|----------|
| | 1990 | 97 | 90 | 97 |
| 1 Mining and quarrying | .976 | .846 | 3 | 3 |
| 2 Mining of minerals | 7.526 | 7.366 | 5 | 5 |
| 3 Extraction of petroleum and gas, mining of coal | .011 | .024 | 1 | 1 |
| 2 Manufacture of non-metallic mineral products | .994 | 1.047 | 3 | 3 |
| 4 Manufacture of nonmetallic mineral products | 1.122 | 1.242 | 3 | 3 |
| 3 Manufacture of metallic products | 1.696 | 1.498 | 4 | 4 |
| 5 Manufacture of iron and steel products | 2.912 | 2.170 | 4 | 4 |
| 6 Manufacture of nonferrous metal products | 1.923 | 1.669 | 4 | 4 |
| 7 Manufacture of metal products n.e.c. | 1.426 | 1.267 | 4 | 3 |
| 4 Manufacture of machinery, equipment and instruments | .461 | .575 | 1 | 1 |
| 8 Manufacture of machinery and commercial equipment | .507 | .650 | 1 | 2 |
| 5 Manufacture of electrical and telecomm. equipment | .523 | .611 | 1 | 2 |
| 10 Manufacture of electrical equipment and components | .432 | .467 | 1 | 1 |
| 11 Manufacture of electronic and communication equipment | .453 | .487 | 1 | 1 |
| 6 Manufacture of transport equipment | 1.044 | .967 | 4 | 3 |
| 12 Manufacture of automobiles, trucks and buses | .746 | 1.020 | 2 | 3 |
| 13 Manufacture of vehicle parts and transportation eqpmt. | .802 | .775 | 3 | 2 |
| 7 Manufacture of wood products and furniture | .871 | 1.251 | 3 | 4 |
| 14 Manufacture of wood products and furniture | .939 | 1.522 | 3 | 4 |
| 8 Manufacture of paper and paperboard, and publishing | .632 | .517 | 2 | 1 |
| 15 Manufacture of paper and pulp, and publishing | .635 | .519 | 2 | 2 |
| 9 Manufacture of rubber, leather and products n.e.c. | .624 | .807 | 2 | 2 |
| 16 Manufacture of rubber products | .903 | 1.062 | 3 | 3 |
| 32 Manufacture of miscellaneous other products n.e.c. | .834 | .731 | 3 | 2 |
| 10 Manufacture of chemical and pharmaceutical products | .662 | .613 | 2 | 2 |
| 17 Manufacture of non-petrochemical chemicals | .883 | .900 | 3 | 3 |
| 18 Manufacture of petrochemical products and petroleum | .741 | .518 | 2 | 1 |
| 19 Manufacture of miscellaneous chemical products | .610 | .786 | 2 | 3 |
| 20 Manufacture of pharmaceutical products and detergents | .294 | .344 | 1 | 1 |
| 21 Manufacture of plastics products | .708 | .691 | 2 | 2 |
| 11 Manufacture of apparel and textiles | .621 | .452 | 1 | 1 |
| 22 Manufacture of textiles | .616 | .650 | 2 | 2 |
| 23 Manufacture of apparel and apparel accessories | .539 | .205 | 1 | 1 |
| 12 Manufacture of footwear | 3.051 | 2.562 | 5 | 5 |
| 24 Manufacture of footwear and leather and fur products | 2.306 | 2.386 | 4 | 4 |
| 13 Manufacture of food, beverages, and ethyl alcohol | 3.224 | 3.443 | 5 | 5 |
| 25 Processing of coffee | 3.481 | 2.833 | 5 | 5 |
| 26 Processing of plant products | 3.326 | 3.496 | 5 | 5 |
| 27 Processing of meat, including slaughter | 4.769 | 5.783 | 5 | 5 |
| 28 Processing of dairy products | .012 | .045 | 1 | 1 |
| 29 Processing of sugar | 4.309 | 10.085 | 5 | 5 |
| 30 Processing and refining of food fats and oils | 12.427 | 10.151 | 5 | 5 |
| 31 Manufacture of other food products and beverages | 2.062 | 1.852 | 4 | 4 |
| 25 Agriculture, hunting, forestry and fishing | 1.419 | 2.025 | 4 | 4 |
| 1 Agriculture, fishing, hunting and forestry | 1.643 | 2.468 | 4 | 4 |

Source: UN Comtrade 1990. Balassa (1965) comparative advantage of sector i in year t : $BADV_{i,t} \equiv (X_{i,t}^{\text{Brazil}} / \sum_k X_{k,t}^{\text{Brazil}}) / (X_{i,t}^{\text{World}} / \sum_k X_{k,t}^{\text{World}})$, where $X_{i,t}$ are exports (5th quintile: strongest adv.).

Table 41: SUBSECTOR IBGE AND CNAE COMPARISON

| Subsector IBGE CNAE (2-digit) level | Comp. Adv. | | Quintile | |
|---|--------------|--------------|----------|----------|
| | 1990 | 97 | 90 | 97 |
| 1 Mining and quarrying | .976 | .846 | 3 | 3 |
| 10 Coal Mining | .015 | .027 | 1 | 1 |
| 11 Petroleum and Gas Extraction | .0005 | .002 | 1 | 1 |
| 13 Metallic Mineral Mining | 11.316 | 11.023 | 5 | 5 |
| 14 Nonmetallic Mineral Mining | .853 | .801 | 3 | 3 |
| 2 Manufacture of non-metallic mineral products | .994 | 1.047 | 3 | 3 |
| 26 Nonmetallic Mineral Product Manufacturing | .950 | 1.124 | 4 | 4 |
| 3 Manufacture of metallic products | 1.696 | 1.498 | 4 | 4 |
| 27 Metals Production and Basic Processing | 2.362 | 1.941 | 5 | 4 |
| 28 Metal Product Manufacturing (excluding machinery) | 1.445 | 1.264 | 5 | 4 |
| 4 Manufacture of machinery, equipment and instruments | .461 | .575 | 1 | 1 |
| 29 Machinery and Equipment Manufacturing | .540 | .652 | 2 | 3 |
| 30 Office Machinery and Data Processing Equipment Manuf. | .142 | .114 | 1 | 1 |
| 33 Medical, Therapeutic and Optical Equipment Manufact. | .273 | .225 | 1 | 2 |
| 5 Manufacture of electrical and telecomm. equipment | .523 | .611 | 1 | 2 |
| 31 Electrical Machinery, Equipment and Supplies Manuf. | .466 | .481 | 2 | 2 |
| 32 Electronic Component and Comm. Apparatus Manufacturing | .318 | .205 | 2 | 1 |
| 6 Manufacture of transport equipment | 1.044 | .967 | 4 | 3 |
| 34 Motor Vehicle Manufacturing | .674 | .997 | 3 | 3 |
| 35 Other Transportation Equipment Manufacturing | .995 | .884 | 4 | 3 |
| 7 Manufacture of wood products and furniture | .871 | 1.251 | 3 | 4 |
| 20 Wood Products Manufacturing | .931 | 1.672 | 4 | 4 |
| 36 Furniture and Miscellaneous Manufacturing | .436 | .611 | 2 | 2 |
| 8 Manufacture of paper and paperboard, and publishing | .632 | .517 | 2 | 1 |
| 21 Pulp, Paper and Paper Products Manufacturing | 1.261 | 1.400 | 4 | 4 |
| 22 Publishing, Printing and Reproduction of Recording | .262 | .173 | 1 | 1 |
| 9 Manufacture of rubber, leather and products n.e.c. | .624 | .807 | 2 | 2 |
| 16 Tobacco Product Manufacturing | .805 | 4.208 | 3 | 5 |
| 25 Rubber and Plastics Product Manufacturing | .944 | 1.079 | 4 | 4 |
| 37 Recycling | .231 | .433 | 1 | 2 |
| 10 Manufacture of chemical and pharmaceutical products | .662 | .613 | 2 | 2 |
| 23 Coal Products Manufacturing and Petroleum Refining | .718 | .352 | 3 | 2 |
| 24 Chemical Products Manufacturing | .652 | .697 | 3 | 3 |
| 11 Manufacture of apparel and textiles | .621 | .452 | 1 | 1 |
| 17 Textile Products Manufacturing | .715 | .651 | 3 | 3 |
| 18 Apparel Manufacturing | .556 | .221 | 2 | 1 |
| 12 Manufacture of footwear | 3.051 | 2.562 | 5 | 5 |
| 19 Leather Processing and Leather Products Manufacturing | 2.523 | 2.646 | 5 | 5 |
| 13 Manufacture of food, beverages, and ethyl alcohol | 3.224 | 3.443 | 5 | 5 |
| 15 Food and Beverage Manufacturing | 3.213 | 3.428 | 5 | 5 |
| 25 Agriculture, hunting, forestry and fishing | 1.419 | 2.025 | 4 | 4 |
| 1 Crop and Plant Growing and Animal Farming | 2.004 | 3.023 | 5 | 5 |
| 2 Forestry and Logging | 1.185 | 2.258 | 4 | 5 |
| 5 Fishing | .453 | .251 | 2 | 2 |

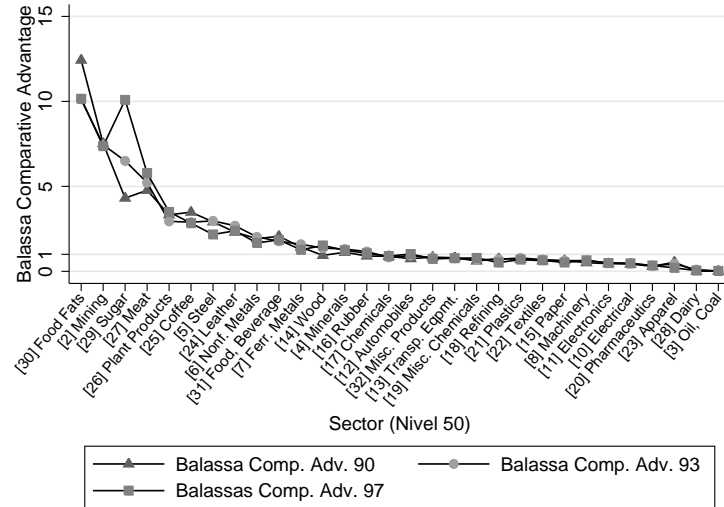
Source: UN Comtrade 1990. Balassa (1965) comparative advantage of sector i in year t : $BADV_{i,t} \equiv (X_{i,t}^{\text{Brazil}} / \sum_k X_{k,t}^{\text{Brazil}}) / (X_{i,t}^{\text{World}} / \sum_k X_{k,t}^{\text{World}})$, where $X_{i,t}$ are exports (5th quintile: strongest adv.).

Table 42: TRADEABLE GOODS SECTORS

| | Comp. adv. | Exp. ind. | Tariff | | Imp. pen. |
|--|---------------|--------------|--------|------|--------------|
| | | | Prd. | Inp. | |
| | (1) | (2) | (3) | (4) | (5) |
| 1 Mining & quarrying | .861 | .407 | | | |
| 2 Manufacture of non-metallic mineral products | 1.120 | .288 | .294 | .252 | .019 |
| 3 Manufacture of metallic products | 1.697 | .540 | .228 | .205 | .046 |
| 4 Manufacture of machinery, equipment, instruments | .551 | .615 | .323 | .302 | .110 |
| 5 Manufacture of electrical & telecom. equipment | .576 | .669 | .367 | .325 | .168 |
| 6 Manufacture of transport equipment | 1.041 | .785 | .458 | .345 | .103 |
| 7 Manufacture of wood products & furniture | 1.064 | .291 | .228 | .224 | .011 |
| 8 Manufacture of pulp & paper, and publishing | .608 | .386 | .238 | .243 | .037 |
| 9 Manufacture of rubber, leather and prod. n.e.c. | .696 | .593 | .412 | .369 | .064 |
| 10 Manufacture of chemical & pharmaceutical prod. | .731 | .592 | .244 | .198 | .079 |
| 11 Manufacture of apparel & textiles | .533 | .534 | .470 | .401 | .037 |
| 12 Manufacture of footwear | 3.318 | .670 | .328 | .307 | .066 |
| 13 Manufacture of food, beverages, & ethyl alcohol | 3.012 | .411 | .273 | .188 | .021 |
| 25 Agriculture, hunting, forestry & fishing | 1.553 | .083 | | | |

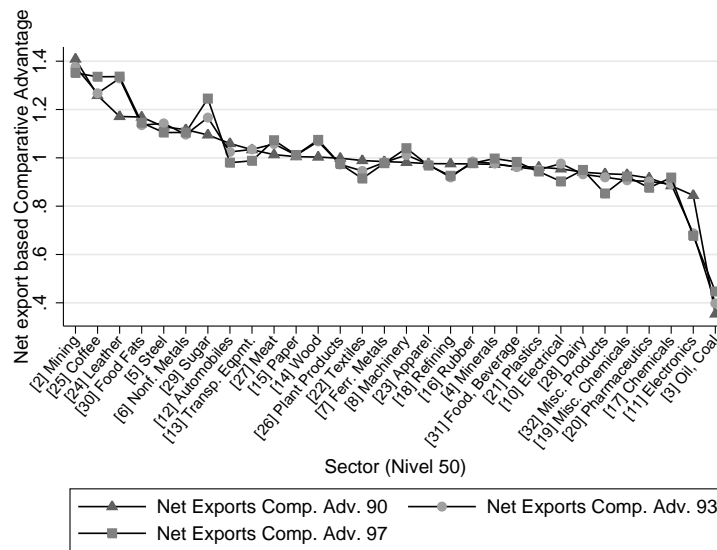
Sources: UN Comtrade 1986-98; *SECEX* 1990-98 exporter status (weighted by nationwide *RAIS* jobs of prime-age male workers); product 1986-98 tariffs from Kume et al. (2003) (weighted with IBGE input-output matrix for input tariffs); import penetration 1986-98 from Ramos and Zonenschain (2000).

5.1 Comparative advantage



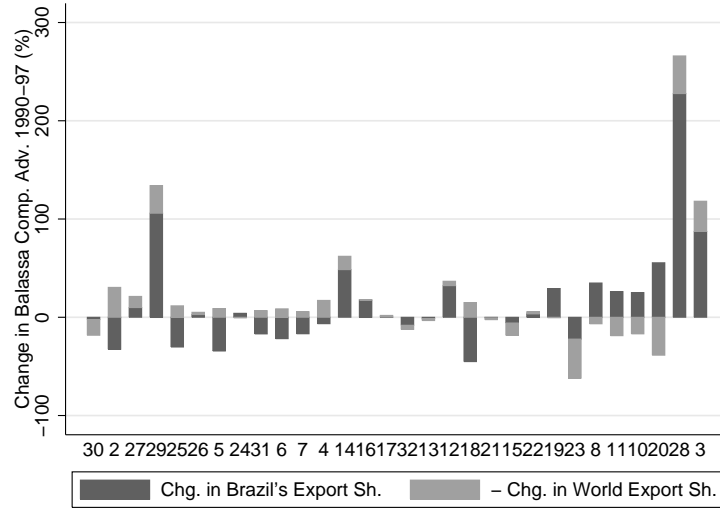
Sources: UN Comtrade 1986-98. Sectors at *Nivel 50* ranked by Balassa comparative advantage FE (for sector definitions see Table 39, p. 80). Estimates of Balassa comparative advantage fixed effects (FE) from sector-fixed effects regression on output tariffs, input tariffs and year indicators (Table 44 column 2, p. 91).

Figure 73: **Balassa Comparative Advantage**



Sources: IFS (IMF) and IBGE national accounts Ramos and Zonenschain (2000). Estimates of net-exports based comparative advantage fixed effects (FE) from sector-fixed effects regression on output tariffs, input tariffs and year indicators (Table 45 column 2, p. 92). Sectors at *Nível 50* ranked by net-exports based comparative advantage FE (for sector definitions see Table 39, p. 80).

Figure 74: Net-exports Based Comparative Advantage



Sources: Own calculations of Balassa comparative advantage, based on UN Comtrade 1990-97. Balassa (1965) comparative advantage of sector i in year t is

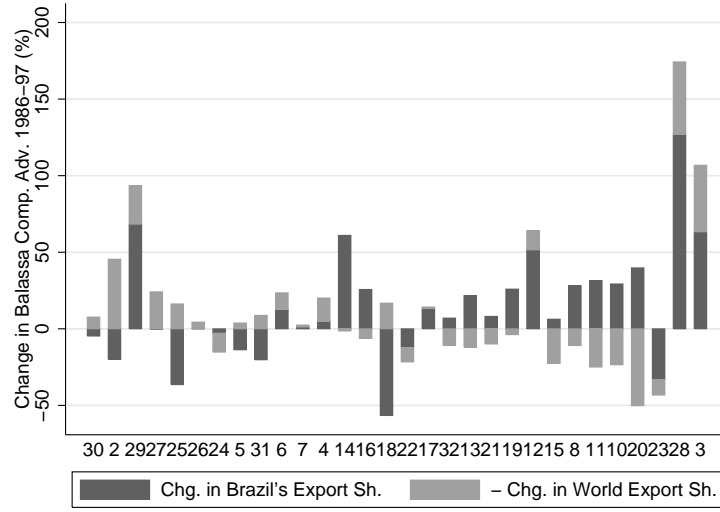
$$BADV_{i,t} \equiv \frac{X_{i,t}^{Brazil} / \sum_k X_{k,t}^{Brazil}}{X_{i,t}^{World} / \sum_k X_{k,t}^{World}},$$

where $X_{i,t}$ are exports. Relative change of Brazil component (numerator) is weighted average of pure contribution and the part not explained by world component (denominator):

$$\frac{1}{2} \frac{S_{i,t}^{Brazil} - S_{i,t-1}^{Brazil}}{S_{i,t-1}^{Brazil}} + \frac{1}{2} \left(\frac{BADV_{i,t} - BADV_{i,t-1}}{BADV_{i,t-1}} - \frac{S_{i,t}^{World} - S_{i,t-1}^{World}}{S_{i,t-1}^{World}} \right),$$

where $S_{i,t}^j \equiv X_{i,t}^j / \sum_k X_{k,t}^j$. Relative change of world component is complement. Sectors at *Nível 50* ranked by Balassa comparative advantage 1990 (for sector definitions see Table 39).

Figure 75: Balassa Comparative Advantage Changes 1990-97



Sources: Own calculations of Balassa comparative advantage, based on UN Comtrade 1986-97. Balassa (1965) comparative advantage of sector i in year t is

$$BADV_{i,t} \equiv \frac{X_{i,t}^{Brazil} / \sum_k X_{k,t}^{Brazil}}{X_{i,t}^{World} / \sum_k X_{k,t}^{World}},$$

where $X_{i,t}$ are exports. Relative change of Brazil component (numerator) is weighted average of pure contribution and the part not explained by world component (denominator):

$$\frac{1}{2} \frac{S_{i,t}^{Brazil} - S_{i,t-1}^{Brazil}}{S_{i,t-1}^{Brazil}} + \frac{1}{2} \left(\frac{BADV_{i,t} - BADV_{i,t-1}}{BADV_{i,t-1}} - \frac{S_{i,t}^{World} - S_{i,t-1}^{World}}{S_{i,t-1}^{World}} \right),$$

where $S_{i,t}^j \equiv X_{i,t}^j / \sum_k X_{k,t}^j$. Relative change of world component is complement. Sectors at *Nível 50* ranked by Balassa comparative advantage 1986 (for sector definitions see Table 39).

Figure 76: **Balassa Comparative Advantage Changes 1986-97**

5.2 Labor-market rigidity

Table 43: LABOR MARKET RIGIDITY COMPARISONS

| | Rigidity and Difficulty Indices | | | | Firing costs ^a |
|--|---------------------------------|----------------|-------------------|---------------------|---------------------------|
| | Hiring difficulty | Hours rigidity | Firing difficulty | Employment rigidity | |
| | (1) | (2) | (3) | (4) | |
| Brazil | 67.0 | 80.0 | 70.0 | 72.0 | 165.0 |
| Trade partners | | | | | |
| <i>weighted by trade volume^b</i> | | | | | |
| 1990 | 25.2 | 42.0 | 22.7 | 29.9 | 43.3 |
| 1997 | 28.1 | 45.3 | 24.4 | 32.4 | 47.6 |
| <i>weighted by source-country imports</i> | | | | | |
| 1990 | 23.2 | 42.9 | 21.7 | 29.1 | 46.8 |
| 1997 | 27.2 | 44.3 | 23.6 | 31.6 | 46.0 |
| <i>weighted by destination-country exports</i> | | | | | |
| 1990 | 26.4 | 41.5 | 23.4 | 30.3 | 41.2 |
| 1997 | 29.1 | 46.4 | 25.2 | 33.4 | 49.5 |

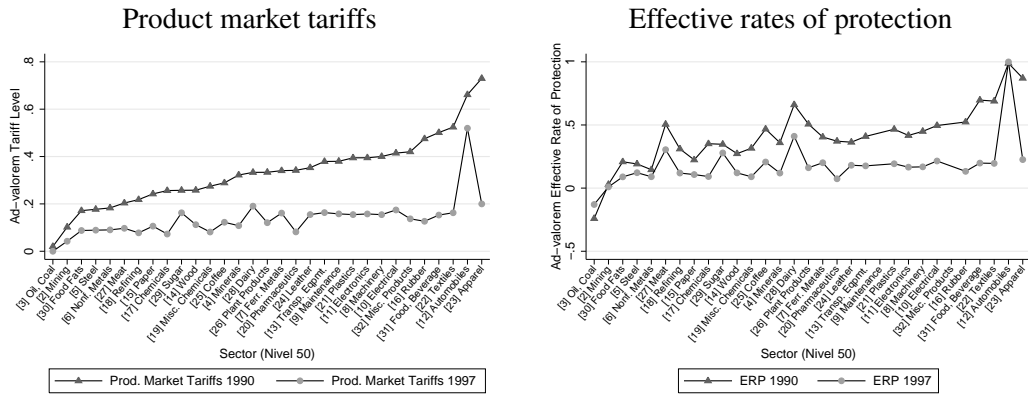
^aIn weekly wage equivalents.

^bCountry sum of exports from and imports to Brazil.

Source: Botero, Djankov, La Porta, Lopez de Silanes and Shleifer (2004) labor market rigidity measures.

Note: A higher index and a higher rank indicate a more rigid labor market. Trade partner averages weighted by *WTF* (NBER) bilateral trade data for 1990 and 1997.

5.3 Tariff schedules



Source: Product tariffs from Kume et al. (2003) and input-output matrices (IBGE). Sectors at *Nível 50* ordered by 1990 product tariff (for sector definitions see Table 40, p. 81). The effective rate of protection is $ERP \equiv (\tau_P - \alpha \tau_I)/(1 - \alpha)$, where τ_P are product and τ_I intermediate-input tariffs, using sectoral value-added from *PIA* as a share α of sales.

Figure 77: Manufacturing tariffs and effective rates of protection

5.4 Comparative advantage and tariff correlations

Table 44: BALASSA COMPARATIVE ADVANTAGE AND TARIFF CORRELATIONS

| $BADV_{i,t}$ | Sector FE | | OLS | |
|---|-------------------|--------------------|--------------------|-----------------------|
| | 1986-98 (1) | 1990-98 (2) | 1986-98 (3) | 1990-98 (4) |
| Product Market Tariff | -1.271 (1.324) | .178 (1.326) | -1.587 (1.713) | -2.929 (2.058) |
| Intm. Input Tariff | 2.332 (1.331)* | .402 (2.163) | -3.864 (2.132)* | -14.130 (3.409)*** |
| Const. | 1.265 (.578)** | 1.777 (.621)*** | 4.833 (.771)*** | 4.293 (.564)*** |
| Obs. | 390 | 270 | 390 | 270 |
| R^2 (within for FE regressions) | .080 | .026 | .067 | .142 |
| p -value: Joint test for zero year indicators | .262 | .850 | .560 | .391 |

Sources: Balassa comparative advantage based on UN Comtrade 1986-98, *ad-valorem* tariffs based on Kume et al. (2003), combined with input-output matrices (IBGE) for input tariffs. Controlling for year effects (joint χ^2 test). Balassa (1965) comparative advantage of sector i in year t is

$$BADV_{i,t} \equiv \frac{X_{i,t}^{\text{Brazil}} / \sum_k X_{k,t}^{\text{Brazil}}}{X_{i,t}^{\text{World}} / \sum_k X_{k,t}^{\text{World}}}$$

where $X_{i,t}$ are exports. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

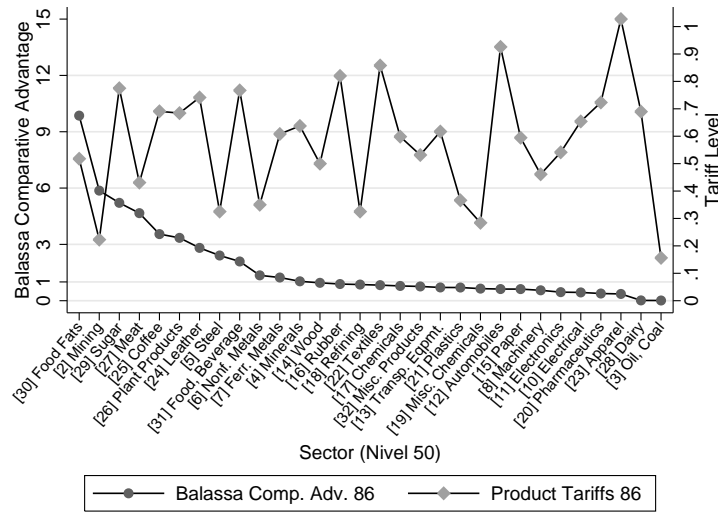
Table 45: NET-EXPORTS BASED COMPARATIVE ADVANTAGE AND TARIFF CORRELATIONS

| $NXADV_{i,t}$ | Sector FE | | OLS | |
|---|-------------------|-------------------|--------------------|---------------------|
| | 1986-98 (1) | 1990-98 (2) | 1986-98 (3) | 1990-98 (4) |
| Product Market Tariff | .053 (.059) | .236 (.076)*** | .484 (.125)*** | .503 (.140)*** |
| Intm. Input Tariff | -.015 (.059) | -.087 (.124) | -.602 (.155)*** | -1.341 (.231)*** |
| Const. | .978 (.037)*** | .944 (.040)*** | 1.048 (.056)*** | 1.070 (.036)*** |
| Obs. | 387 | 267 | 387 | 267 |
| R^2 (within for FE regressions) | .005 | .055 | .042 | .116 |
| p -value: Joint test for zero year indicators | 1 | .807 | 1 | .875 |

Sources: Comparative advantage and *ad-valorem* tariffs based on input-output matrices and national accounting data from Ramos and Zonenschain (2000), and on nominal product tariff data from Kume et al. (2003). Controlling for year effects (joint χ^2 test). Comparative advantage is relative net exports of sector i in year t :

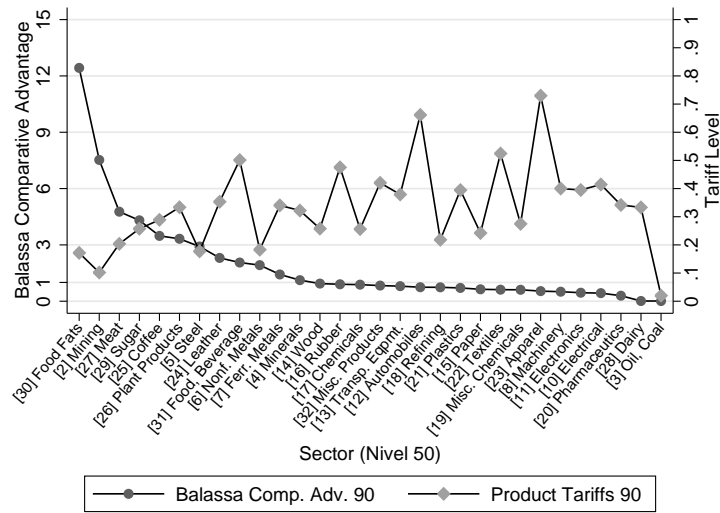
$$NXADV_{i,t} \equiv 1 + \frac{X_{i,t} - M_{i,t}}{Y_{i,t}},$$

where $M_{i,t}$ are imports, $X_{i,t}$ are exports and $Y_{i,t}$ is output. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.



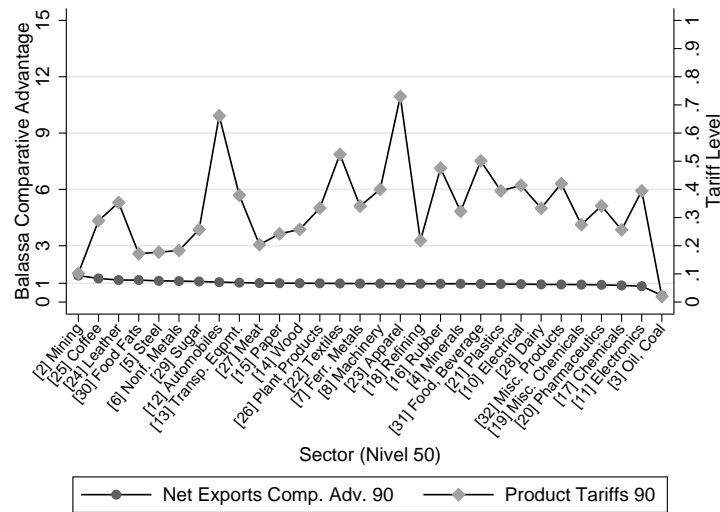
Sources: UN Comtrade 1986 for Balassa comparative advantage and product tariffs 1986 from Kume et al. (2003). Sectors at *Nivel 50* ranked by Balassa comparative advantage in 1986 (for sector definitions see Table 39, p. 80).

Figure 78: Balassa Comparative Advantage and Product Tariffs 1986



Sources: UN Comtrade 1990 for Balassa comparative advantage and product tariffs 1990 from Kume et al. (2003). Sectors at *Nivel 50* ranked by Balassa comparative advantage in 1990 (for sector definitions see Table 39, p. 80).

Figure 79: **Balassa Comparative Advantage and Product Tariffs 1990**



Sources: IFS (IMF) and IBGE national accounts Ramos and Zonenschain (2000) for net-exports based comparative advantage, and on product tariffs 1990 from Kume et al. (2003). Sectors at *Nivel 50* ranked by net-exports based comparative advantage in 1990 (for sector definitions see Table 39, p. 80).

Figure 80: **Net-exports Based Advantage and Product Tariffs 1990**

5.5 Productivity decompositions

Table 46: PRODUCTIVITY CHANGE AND MARKET SHARES

| | TFP (output shares) | | | | | Labor Productivity (empl. shares) | | | | |
|------|---------------------|-------|------|-------|-------|-----------------------------------|-------|-------|-------|------|
| | total | shift | cov. | entry | exit | total | shift | cov. | entry | exit |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| 1987 | .018 | -.042 | .065 | -.017 | .012 | .053 | .091 | -.019 | -.026 | .008 |
| 1988 | .085 | .029 | .046 | -.001 | .010 | -.079 | -.049 | -.017 | -.021 | .009 |
| 1989 | -.025 | -.122 | .084 | -.017 | .031 | .026 | .057 | -.044 | -.024 | .036 |
| 1990 | -.241 | -.297 | .066 | -.032 | .021 | -.123 | -.074 | -.035 | -.034 | .021 |
| 1992 | .146 | .043 | .075 | -.015 | .043 | .159 | .190 | -.058 | -.016 | .043 |
| 1993 | .048 | -.042 | .072 | -.012 | .031 | .118 | .122 | -.032 | -.007 | .035 |
| 1994 | -.076 | -.139 | .053 | -.011 | .022 | -.024 | .002 | -.039 | -.009 | .022 |
| 1995 | .015 | -.021 | .033 | -.007 | .011 | .056 | .100 | -.045 | -.008 | .009 |
| 1996 | .144 | .026 | .100 | -.002 | .019 | .298 | .310 | -.039 | -.002 | .029 |
| 1997 | .019 | -.008 | .033 | -.007 | .000 | .118 | .144 | -.029 | -.007 | .010 |
| 1998 | .016 | .012 | .022 | -.007 | -.012 | .064 | .098 | -.041 | -.001 | .007 |

Source: PIA firms 1986-98 (1991 missing); log total factor productivity estimates from Muendler (2004) based on Olley and Pakes (1996) estimation (at *Nível 50*), inferring labor productivity at changing capital stocks. Alternative productivity change decomposition, similar to Haltiwanger (1997): $\Delta y_t = \sum_{i \in C} [\theta_{i,t-1} \Delta y_{it} + \Delta \theta_{i,t} (y_{i,t-1} - y_{t-1})] + \sum_{i \in C} \Delta \theta_{i,t} \Delta y_{it} + \sum_{i \in N} \theta_{it} (y_{it} - y_{t-1}) + \sum_{i \in X} -\theta_{i,t-1} (y_{i,t-1} - y_{t-1})$, where y_t is mean log productivity and Δ denotes annual change. Second decomposition term is raw (covariance) moment.

Table 47: PRODUCTIVITY CROSS-SECTIONS AND ANNUAL CHANGES

| | TFP and Output shares | | | | Labor Prod. and Employment shares | | | |
|------|-----------------------|---------|------|-----------|-----------------------------------|---------|-------|-----------|
| | Cross section | | | Ann. chg. | Cross section | | | Ann. chg. |
| | wgtd. | unwgtd. | cov. | raw cov. | wgtd. | unwgtd. | cov. | raw cov. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 1986 | 1.018 | .924 | .095 | | 1.011 | 1.019 | -.008 | |
| 1987 | 1.020 | .931 | .089 | .065 | 1.016 | 1.023 | -.007 | -.019 |
| 1988 | 1.030 | .913 | .117 | .046 | 1.009 | 1.002 | .007 | -.017 |
| 1989 | 1.027 | .916 | .112 | .084 | 1.011 | 1.008 | .004 | -.044 |
| 1990 | 1.000 | .899 | .101 | .066 | 1.000 | .997 | .003 | -.035 |
| 1992 | 1.017 | .911 | .105 | .075 | 1.015 | 1.008 | .007 | -.058 |
| 1993 | 1.022 | .921 | .101 | .072 | 1.026 | 1.017 | .009 | -.032 |
| 1994 | 1.013 | .918 | .096 | .053 | 1.023 | 1.019 | .005 | -.039 |
| 1995 | 1.015 | .915 | .100 | .033 | 1.029 | 1.022 | .006 | -.045 |
| 1996 | 1.031 | .903 | .129 | .100 | 1.056 | 1.031 | .025 | -.039 |
| 1997 | 1.034 | .908 | .126 | .033 | 1.067 | 1.038 | .029 | -.029 |
| 1998 | 1.035 | .910 | .125 | .022 | 1.073 | 1.043 | .030 | -.041 |

Source: PIA firms 1986-98 (1991 missing); log total factor productivity estimates from Muendler (2004) based on Olley and Pakes (1996) estimation (at *Nível 50*), inferring labor productivity at changing capital stocks. Cross-sectional productivity decomposition as in Olley and Pakes (1996): $y_t = \bar{y}_t + \sum_i \bar{\Delta}\theta_{it}\bar{\Delta}y_{it}$, where y_t is weighted and \bar{y}_t is unweighted mean log productivity and $\bar{\Delta}$ denotes deviations from cross-section means (rebased to unity in 1990). Annual productivity change correlation $\sum_{i \in C} \Delta\theta_{i,t}\Delta y_{i,t}$ (raw covariance) from Haltiwanger (1997) decomposition, where Δ denotes annual change (not rebased).

Table 48: PRODUCTIVITY CHANGE AND MARKET SHARES

| | TFP (output shares) | | | | | Labor Productivity (empl. shares) | | | | |
|------|---------------------|--------|--------|-------|-------|-----------------------------------|--------|--------|-------|------|
| | total | within | reall. | entry | exit | total | within | reall. | entry | exit |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| 1987 | .018 | .016 | .006 | -.017 | .012 | .053 | .069 | .002 | -.026 | .008 |
| 1988 | .085 | .009 | .067 | -.001 | .010 | -.079 | -.058 | -.009 | -.021 | .009 |
| 1989 | -.025 | -.085 | .047 | -.017 | .031 | .026 | .018 | -.005 | -.024 | .036 |
| 1990 | -.241 | -.231 | .001 | -.032 | .021 | -.123 | -.112 | .003 | -.034 | .021 |
| 1992 | .146 | .053 | .065 | -.015 | .043 | .159 | .155 | -.023 | -.016 | .043 |
| 1993 | .048 | .060 | -.031 | -.012 | .031 | .118 | .107 | -.017 | -.007 | .035 |
| 1994 | -.076 | -.086 | -.000 | -.011 | .022 | -.024 | -.006 | -.031 | -.009 | .022 |
| 1995 | .015 | -.032 | .043 | -.007 | .011 | .056 | .062 | -.007 | -.008 | .009 |
| 1996 | .144 | -.070 | .196 | -.002 | .019 | .298 | .074 | .197 | -.002 | .029 |
| 1997 | .019 | .036 | -.011 | -.007 | .000 | .118 | .108 | .008 | -.007 | .010 |
| 1998 | .016 | .040 | -.006 | -.007 | -.012 | .064 | .079 | -.021 | -.001 | .007 |

Source: PIA firms 1986-98 (1991 missing); log total factor productivity estimates from Muendler (2004) based on Olley and Pakes (1996) estimation (at *Nível 50*), inferring labor productivity at changing capital stocks. Productivity change decompositions as in Haltiwanger (1997): $\Delta y_t = \sum_{i \in C} \theta_{i,t-1} \Delta y_{it} + \sum_{i \in C} \Delta \theta_{i,t} (y_{i,t-1} - y_{t-1} + \Delta y_{it}) + \sum_{i \in N} \theta_{it} (y_{it} - y_{t-1}) + \sum_{i \in X} -\theta_{i,t-1} (y_{i,t-1} - y_{t-1})$, where y_t is mean log productivity and Δ denotes annual change.

Table 49: PRODUCTIVITY CROSS-SECTIONS

| | TFP (output shares) | | | Labor Productivity (empl. shares) | | |
|------|---------------------|-------------------|-------------------|-----------------------------------|-------------------|-------------------|
| | weighted (1) | unweighted (2) | covariance (3) | weighted (4) | unweighted (5) | covariance (6) |
| 1986 | 1.000 | .907 | .093 | 1.000 | 1.008 | -.008 |
| 1987 | 1.002 | .914 | .088 | 1.005 | 1.012 | -.007 |
| 1988 | 1.011 | .897 | .114 | .998 | .991 | .007 |
| 1989 | 1.009 | .899 | .110 | 1.000 | .997 | .003 |
| 1990 | .982 | .883 | .099 | .989 | .986 | .003 |
| 1992 | .998 | .895 | .103 | 1.003 | .997 | .006 |
| 1993 | 1.003 | .905 | .099 | 1.014 | 1.006 | .008 |
| 1994 | .995 | .901 | .094 | 1.012 | 1.007 | .005 |
| 1995 | .997 | .899 | .098 | 1.017 | 1.011 | .006 |
| 1996 | 1.013 | .886 | .126 | 1.044 | 1.019 | .025 |
| 1997 | 1.015 | .892 | .123 | 1.055 | 1.026 | .029 |
| 1998 | 1.017 | .894 | .123 | 1.061 | 1.031 | .030 |

Source: PIA firms 1986-98 (1991 missing); log total factor productivity estimates from Muendler (2004) based on Olley and Pakes (1996) estimation (at *Nível 50*), inferring labor productivity at changing capital stocks. Productivity decomposition as in Olley and Pakes (1996): $y_t = \bar{y}_t + \sum_i \Delta\theta_{it}\Delta y_{it}$, where y_t is weighted and \bar{y}_t is unweighted mean log productivity and Δ denotes deviations from cross-section means (rebased to unity in 1986).

6 Labor Reallocation

6.1 Reallocation transitions for prime-age male workers nationwide

Table 50: FOUR-YEAR SECTOR TRANSITIONS AND FAILED RE-ACCESSIONS

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 23.7 | 7.5 | 3.2 | 8.8 | 2.9 | 30.9 | 23.0 | 100.0 |
| 2nd quintile | | 8.5 | 20.2 | 3.1 | 6.4 | 4.2 | 33.9 | 23.7 | 100.0 |
| 3rd quintile | | 4.0 | 4.1 | 17.2 | 12.8 | 2.4 | 31.6 | 27.9 | 100.0 |
| 4th quintile | | 3.8 | 3.7 | 9.1 | 25.2 | 5.2 | 29.3 | 23.7 | 100.0 |
| 5th quintile | | 2.3 | 3.0 | 2.3 | 12.9 | 23.5 | 33.4 | 22.5 | 100.0 |
| Nontraded | | 1.7 | 1.7 | 1.8 | 4.5 | 2.6 | 57.8 | 29.9 | 100.0 |
| Failure | | 3.7 | 3.0 | 5.2 | 15.0 | 7.1 | 66.1 | .0 | 100.0 |
| Total | | 3.8 | 3.3 | 4.3 | 11.0 | 5.5 | 56.2 | 16.0 | 100.0 |
| Stationary | | 3.4 | 3.1 | 4.0 | 9.7 | 4.9 | 52.9 | 21.9 | 100.0 |
| Stationary, failure adj. | | 2.5 | 2.3 | 2.9 | 7.0 | 3.6 | 38.2 | 43.5 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Sources: RAIS 1986, 1990, 1994 and 1998 (1% random sample), male workers nationwide, 25 to 64 years old; and PME 1986-1999. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Transition frequencies refer to employments in Brazil four years after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector employment anywhere in Brazil after four years, excluding workers with retirement or death, or age 65 or above in past job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of 4-year failure-to-failure transitions from PME (63.6% of non-formal PME workers are in non-formal work status after three annual transitions, replacing the zero from RAIS).

Table 51: CONTINUATIONS AND YEAR-OVER-YEAR TRANSITIONS, 1986-2001

| From: | To: (in %) | Primary | Manuf. | Comm. | Services | Other | Total |
|---------------|---------------|---------|--------|-------|----------|-------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| Primary | | 85.7 | 4.8 | 1.5 | 4.0 | 4.0 | 100.0 |
| Manufacturing | | 1.1 | 89.1 | 2.4 | 4.4 | 3.0 | 100.0 |
| Commerce | | .7 | 4.5 | 84.8 | 6.2 | 3.9 | 100.0 |
| Services | | .8 | 3.3 | 2.5 | 87.2 | 6.2 | 100.0 |
| Other | | 1.1 | 2.2 | 1.7 | 6.3 | 88.6 | 100.0 |
| Total | | 5.3 | 24.7 | 12.3 | 28.9 | 28.8 | 100.0 |

Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old. Frequencies include continuations at same firm and job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 52: YEAR-OVER-YEAR TRANSITIONS, 1986-2001

| From: | To: (in %) | Primary (1) | Manuf. (2) | Comm. (3) | Services (4) | Other (5) | Total (6) |
|---------------|---------------|----------------|---------------|--------------|-----------------|--------------|--------------|
| Primary | | 48.3 | 15.3 | 5.5 | 14.2 | 16.8 | 100.0 |
| Manufacturing | | 5.1 | 44.2 | 10.2 | 23.9 | 16.5 | 100.0 |
| Commerce | | 2.5 | 14.0 | 41.5 | 26.5 | 15.6 | 100.0 |
| Services | | 2.8 | 12.0 | 10.1 | 51.8 | 23.4 | 100.0 |
| Other | | 3.2 | 8.3 | 5.7 | 23.4 | 59.3 | 100.0 |
| <i>Total</i> | | 6.1 | 18.3 | 12.5 | 31.9 | 31.2 | 100.0 |

Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old. Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 53: CONTINUATIONS AND YEAR-OVER-YEAR TRANSITIONS ACROSS FIRMS AND SECTORS, 1990-2001

| From: (in millions) | To: | Continuations or Transitions | | | Transitions | | |
|---|-----|------------------------------|-----------------|--------------|----------------|-----------------|--------------|
| | | Nonexp. (1) | Exporter (2) | Total (3) | Nonexp. (4) | Exporter (5) | Total (6) |
| Transitions Within or Across Sectors | | | | | | | |
| Nonexporter | | 100.845 | 4.488 | 105.333 | 9.915 | .780 | 10.695 |
| Exporter | | 4.183 | 19.293 | 23.476 | 1.163 | .440 | 1.603 |
| Transitions Within Sector only | | | | | | | |
| Nonexporter | | 62.318 | 2.511 | 64.828 | .397 | .023 | .420 |
| Exporter | | 1.986 | 13.777 | 15.763 | .031 | .026 | .057 |

Source: RAIS 1990-2001 (1% random sample), male workers nationwide, 25 to 64 years old; SECEX 1990-2001. Right panels present job accessions in Brazil within one year after separation; left panels include continuations at same firm. Employments are last employments of year (highest paying job if many), scaled (by 100) to population equivalents.

Table 54: YEAR-OVER-YEAR TRANSITIONS ACROSS FIRMS AND SECTORS, 1990-91 AND 1996-97

| From: (in millions) | To: | Transitions 1990-91 | | | Transitions 1996-97 | | |
|---------------------|-----|---------------------|-------------|--------------|---------------------|-------------|--------------|
| | | Nonexp. (1) | Exp. (2) | Total (3) | Nonexp. (4) | Exp. (5) | Total (6) |
| Nonexporter | | .816 | .058 | .874 | .795 | .060 | .855 |
| Exporter | | .099 | .030 | .129 | .106 | .031 | .137 |
| <i>Total</i> | | .915 | .087 | 1.003 | .901 | .091 | .992 |

Source: RAIS 1990-91 and 1996-97 (1% random sample), male workers nationwide, 25 to 64 years old; SECEX 1990-91 and 1996-97. Job accessions in Brazil within one year after separation. Employments are last employments of year (highest paying job if many), scaled (by 100) to population equivalents.

Table 55: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1986-2001

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 14.6 | 7.4 | 3.1 | 6.2 | 2.8 | 35.3 | 30.7 | 100.0 |
| 2nd quintile | | 6.5 | 14.2 | 3.3 | 4.6 | 3.3 | 35.7 | 32.5 | 100.0 |
| 3rd quintile | | 3.2 | 3.6 | 14.2 | 7.1 | 2.8 | 34.5 | 34.5 | 100.0 |
| 4th quintile | | 2.1 | 2.1 | 2.7 | 26.3 | 5.5 | 28.3 | 33.2 | 100.0 |
| 5th quintile | | 1.9 | 2.7 | 1.7 | 11.2 | 19.5 | 32.5 | 30.4 | 100.0 |
| Nontraded | | 1.3 | 1.5 | 1.3 | 3.3 | 1.8 | 57.9 | 32.9 | 100.0 |
| Failure | | 3.0 | 3.1 | 3.4 | 11.3 | 5.0 | 74.1 | .0 | 100.0 |
| Total | | 2.6 | 2.7 | 2.7 | 8.4 | 4.0 | 60.6 | 19.1 | 100.0 |
| Stationary | | 2.3 | 2.5 | 2.3 | 7.4 | 3.6 | 57.1 | 24.8 | 100.0 |
| Stationary, failure adj. | | 1.2 | 1.3 | 1.2 | 3.9 | 1.9 | 30.3 | 60.1 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old; and PME 1986-1999. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Transition frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of annual failure-to-failure transitions from PME (78.1% of non-formal PME workers are in non-formal work status after an annual transition, replacing the zero from RAIS).

Table 56: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1986-98

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 10.2 | 3.1 | 3.4 | 4.0 | 7.6 | 32.2 | 39.4 | 100.0 |
| 2nd quintile | | 4.0 | 8.5 | 6.0 | 5.9 | 4.6 | 35.6 | 35.4 | 100.0 |
| 3rd quintile | | 3.0 | 6.6 | 9.4 | 6.4 | 5.4 | 32.1 | 37.2 | 100.0 |
| 4th quintile | | 2.7 | 3.2 | 4.0 | 11.0 | 9.0 | 30.0 | 40.2 | 100.0 |
| 5th quintile | | 2.8 | 1.6 | 1.8 | 5.2 | 25.5 | 23.2 | 39.9 | 100.0 |
| Nontraded | | 1.5 | 1.3 | 1.2 | 2.1 | 3.0 | 52.3 | 38.5 | 100.0 |
| Failure | | 4.1 | 3.0 | 3.1 | 6.3 | 12.7 | 70.7 | .0 | 100.0 |
| Total | | 3.0 | 2.4 | 2.5 | 4.6 | 8.9 | 55.8 | 22.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-98 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Transition frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job.

Table 57: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 12.5 | 9.4 | 4.9 | 3.1 | 2.9 | 30.9 | 36.4 | 100.0 |
| 2nd quintile | | 8.3 | 10.9 | 3.1 | 2.8 | 2.9 | 34.4 | 37.6 | 100.0 |
| 3rd quintile | | 3.0 | 2.6 | 14.2 | 4.4 | 2.9 | 34.4 | 38.5 | 100.0 |
| 4th quintile | | 4.6 | 2.8 | 5.6 | 9.9 | 4.2 | 39.2 | 33.7 | 100.0 |
| 5th quintile | | 1.7 | 2.9 | 1.5 | 3.6 | 17.9 | 35.8 | 36.6 | 100.0 |
| Nontraded | | 1.6 | 1.8 | 1.5 | 2.3 | 2.0 | 54.9 | 35.9 | 100.0 |
| Failure | | 3.2 | 4.1 | 4.4 | 5.0 | 5.3 | 78.0 | .0 | 100.0 |
| Total | | 2.9 | 3.3 | 3.2 | 3.7 | 4.0 | 59.7 | 23.2 | 100.0 |
| Stationary | | 2.6 | 3.0 | 2.9 | 3.4 | 3.6 | 57.9 | 26.5 | 100.0 |
| Stationary, failure adj. | | 1.3 | 1.5 | 1.4 | 1.7 | 1.8 | 28.7 | 63.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (1% random sample), male workers nationwide, 25 to 64 years old; and PME 1990-1991. UN Comtrade 1990-91 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of annual failure-to-failure transitions from PME (79.3% of non-formal PME workers are in non-formal work status after the 1990-91 transition, replacing the zero from RAIS).

Table 58: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 9.3 | 3.3 | 2.8 | 4.5 | 6.9 | 28.7 | 44.5 | 100.0 |
| 2nd quintile | | 3.2 | 10.1 | 8.5 | 6.1 | 5.1 | 31.9 | 35.1 | 100.0 |
| 3rd quintile | | 4.1 | 5.7 | 8.3 | 5.7 | 5.0 | 30.5 | 40.7 | 100.0 |
| 4th quintile | | 2.3 | 2.9 | 4.4 | 11.1 | 5.5 | 26.3 | 47.6 | 100.0 |
| 5th quintile | | 3.2 | 1.2 | 2.1 | 4.1 | 20.1 | 23.5 | 45.9 | 100.0 |
| Nontraded | | 1.6 | 1.2 | 1.3 | 1.7 | 2.9 | 48.1 | 43.1 | 100.0 |
| Failure | | 4.4 | 3.3 | 3.5 | 5.4 | 11.2 | 72.2 | .0 | 100.0 |
| Total | | 3.1 | 2.5 | 2.7 | 4.0 | 7.4 | 53.7 | 26.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1990-91 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job.

Table 59: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 19.9 | 4.3 | 1.2 | 4.0 | 2.1 | 29.2 | 39.3 | 100.0 |
| 2nd quintile | | 1.9 | 13.9 | 2.8 | 4.4 | 2.3 | 31.2 | 43.6 | 100.0 |
| 3rd quintile | | 1.2 | 2.1 | 13.5 | 3.9 | 2.1 | 30.1 | 47.1 | 100.0 |
| 4th quintile | | 1.1 | 1.3 | 1.2 | 31.5 | 5.5 | 19.9 | 39.4 | 100.0 |
| 5th quintile | | 1.8 | 1.6 | 1.1 | 19.0 | 17.6 | 28.7 | 30.2 | 100.0 |
| Nontraded | | .9 | 1.2 | .9 | 2.7 | 1.7 | 55.9 | 36.8 | 100.0 |
| Failure | | 2.9 | 2.8 | 2.6 | 13.4 | 6.2 | 72.1 | .0 | 100.0 |
| Total | | 2.2 | 2.2 | 1.9 | 9.8 | 4.5 | 57.0 | 22.5 | 100.0 |
| Stationary | | 1.9 | 2.0 | 1.6 | 8.9 | 3.9 | 54.6 | 27.2 | 100.0 |
| Stationary, failure adj. | | .9 | .9 | .8 | 4.1 | 1.8 | 25.4 | 66.1 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (1% random sample), male workers nationwide, 25 to 64 years old; and PME 1996-1997. UN Comtrade 1996-97 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of annual failure-to-failure transitions from PME (80.7% of non-formal PME workers are in non-formal work status after the 1996-97 transition, replacing the zero from RAIS).

Table 60: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| | 1st quintile | 10.5 | 2.6 | 3.0 | 3.8 | 11.7 | 25.7 | 42.7 | 100.0 |
| | 2nd quintile | 5.5 | 5.8 | 4.5 | 7.3 | 4.0 | 30.0 | 42.8 | 100.0 |
| | 3rd quintile | 1.6 | 6.1 | 6.3 | 6.7 | 3.2 | 26.0 | 50.0 | 100.0 |
| | 4th quintile | 1.7 | 4.2 | 2.4 | 9.9 | 11.0 | 25.1 | 45.7 | 100.0 |
| | 5th quintile | 3.0 | 1.0 | .8 | 1.9 | 32.8 | 18.0 | 42.4 | 100.0 |
| | Nontraded | 1.6 | 1.2 | .7 | 1.5 | 2.6 | 48.8 | 43.6 | 100.0 |
| | Failure | 4.3 | 2.9 | 2.9 | 4.5 | 15.6 | 69.7 | .0 | 100.0 |
| | Total | 3.1 | 2.2 | 1.9 | 3.3 | 10.7 | 52.2 | 26.5 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1996-97 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job.

Table 61: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS, 1986-2001

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| | 1st quintile | 21.0 | 10.6 | 4.4 | 8.9 | 4.1 | 51.0 | 100.0 |
| | 2nd quintile | 9.6 | 21.1 | 4.8 | 6.8 | 4.8 | 52.9 | 100.0 |
| | 3rd quintile | 4.9 | 5.4 | 21.8 | 10.9 | 4.3 | 52.8 | 100.0 |
| | 4th quintile | 3.1 | 3.1 | 4.0 | 39.3 | 8.2 | 42.3 | 100.0 |
| | 5th quintile | 2.8 | 3.9 | 2.5 | 16.1 | 28.0 | 46.8 | 100.0 |
| | Nontraded | 2.0 | 2.2 | 2.0 | 4.8 | 2.7 | 86.3 | 100.0 |
| | Total | 3.3 | 3.6 | 3.2 | 9.3 | 4.9 | 75.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1986-2001 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 62: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS, 1986-98

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 16.8 | 5.1 | 5.6 | 6.7 | 12.6 | 53.2 | 100.0 |
| 2nd quintile | | 6.2 | 13.1 | 9.2 | 9.1 | 7.1 | 55.2 | 100.0 |
| 3rd quintile | | 4.7 | 10.4 | 15.0 | 10.2 | 8.7 | 51.0 | 100.0 |
| 4th quintile | | 4.4 | 5.3 | 6.6 | 18.4 | 15.1 | 50.1 | 100.0 |
| 5th quintile | | 4.7 | 2.6 | 3.0 | 8.6 | 42.4 | 38.7 | 100.0 |
| Nontraded | | 2.5 | 2.1 | 1.9 | 3.5 | 4.9 | 85.0 | 100.0 |
| Total | | 3.7 | 3.3 | 3.4 | 5.6 | 10.1 | 73.8 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-98 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1986-98 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 63: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 19.6 | 14.7 | 7.7 | 4.9 | 4.5 | 48.5 | 100.0 |
| 2nd quintile | | 13.3 | 17.5 | 4.9 | 4.5 | 4.7 | 55.1 | 100.0 |
| 3rd quintile | | 5.0 | 4.2 | 23.1 | 7.1 | 4.7 | 55.9 | 100.0 |
| 4th quintile | | 7.0 | 4.2 | 8.4 | 14.9 | 6.4 | 59.1 | 100.0 |
| 5th quintile | | 2.7 | 4.6 | 2.3 | 5.7 | 28.3 | 56.4 | 100.0 |
| Nontraded | | 2.4 | 2.8 | 2.3 | 3.6 | 3.2 | 85.7 | 100.0 |
| Total | | 4.3 | 4.4 | 4.0 | 4.7 | 5.0 | 77.5 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1990-91 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 64: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 16.8 | 5.9 | 5.1 | 8.1 | 12.5 | 51.6 | 100.0 |
| 2nd quintile | | 4.9 | 15.6 | 13.1 | 9.4 | 7.8 | 49.2 | 100.0 |
| 3rd quintile | | 6.9 | 9.7 | 14.0 | 9.7 | 8.4 | 51.4 | 100.0 |
| 4th quintile | | 4.3 | 5.5 | 8.4 | 21.2 | 10.4 | 50.1 | 100.0 |
| 5th quintile | | 5.9 | 2.1 | 3.9 | 7.6 | 37.1 | 43.4 | 100.0 |
| Nontraded | | 2.9 | 2.1 | 2.4 | 3.1 | 5.1 | 84.6 | 100.0 |
| Total | | 4.2 | 3.4 | 4.1 | 5.4 | 8.8 | 74.1 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1990-91 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 65: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 32.8 | 7.1 | 2.0 | 6.6 | 3.4 | 48.1 | 100.0 |
| 2nd quintile | | 3.4 | 24.7 | 4.9 | 7.7 | 4.0 | 55.2 | 100.0 |
| 3rd quintile | | 2.2 | 4.0 | 25.5 | 7.3 | 4.0 | 56.9 | 100.0 |
| 4th quintile | | 1.8 | 2.2 | 2.0 | 51.9 | 9.1 | 32.9 | 100.0 |
| 5th quintile | | 2.5 | 2.3 | 1.5 | 27.2 | 25.3 | 41.2 | 100.0 |
| Nontraded | | 1.5 | 1.9 | 1.4 | 4.2 | 2.6 | 88.4 | 100.0 |
| Total | | 2.8 | 2.9 | 2.3 | 11.8 | 5.3 | 74.9 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1996-97 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

Table 66: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 14.5 | 6.3 | 5.5 | 7.9 | 6.8 | 59.0 | 100.0 |
| 2nd quintile | | 7.7 | 8.8 | 6.6 | 9.9 | 4.8 | 62.1 | 100.0 |
| 3rd quintile | | 4.1 | 8.1 | 11.4 | 10.9 | 5.6 | 60.0 | 100.0 |
| 4th quintile | | 3.6 | 9.6 | 5.8 | 12.9 | 6.6 | 61.5 | 100.0 |
| 5th quintile | | 5.4 | 3.9 | 2.6 | 6.0 | 31.3 | 50.9 | 100.0 |
| Nontraded | | 3.8 | 3.1 | 2.4 | 4.0 | 3.5 | 83.2 | 100.0 |
| <i>Total</i> | | 4.6 | 4.2 | 3.5 | 5.4 | 5.9 | 76.4 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (1% random sample), male workers nationwide, 25 to 64 years old. UN Comtrade 1996-97 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in Brazil within one year after separation, based on last employment of year (highest paying job if many).

6.2 Reallocation transitions for prime-age male workers in metropolitan areas

Table 67: FOUR-YEAR SECTOR TRANSITIONS AND FAILED RE-ACCESSIONS

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 21.0 | 10.8 | 3.6 | 8.3 | 2.2 | 43.1 | 11.0 | 100.0 |
| 2nd quintile | | 9.1 | 24.1 | 3.8 | 5.9 | 2.8 | 43.9 | 10.4 | 100.0 |
| 3rd quintile | | 7.3 | 6.1 | 13.8 | 12.4 | 2.5 | 45.0 | 12.8 | 100.0 |
| 4th quintile | | 7.9 | 7.8 | 10.9 | 15.5 | 3.1 | 43.1 | 11.7 | 100.0 |
| 5th quintile | | 4.5 | 6.4 | 3.3 | 7.2 | 19.2 | 47.2 | 12.2 | 100.0 |
| Nontraded | | 3.8 | 4.1 | 2.4 | 4.0 | 2.3 | 68.6 | 14.9 | 100.0 |
| Failure | | 4.4 | 4.0 | 3.8 | 9.8 | 6.5 | 71.5 | .0 | 100.0 |
| Total | | 6.1 | 6.6 | 4.0 | 6.6 | 3.5 | 61.4 | 11.9 | 100.0 |
| Stationary | | 5.5 | 6.1 | 3.7 | 6.2 | 3.5 | 62.9 | 12.2 | 100.0 |
| Stationary, failure adj. | | 4.6 | 5.0 | 3.0 | 5.1 | 2.8 | 51.8 | 27.7 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986, 1990, 1994 and 1998 (5% random sample), male workers in metropolitan area, 25 to 64 years old; and PME 1986-1999. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Transition frequencies refer to employments in same metropolitan area four years after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector employment anywhere in Brazil after four years, excluding workers with retirement or death, or age 65 or above in past job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of 4-year failure-to-failure transitions from PME (63.6% of non-formal PME workers are in non-formal work status after three annual transitions, replacing the zero from RAIS).

Table 68: CONTINUATIONS AND YEAR-OVER-YEAR TRANSITIONS, 1986-2001

| From: | To: (in %) | Primary | Manuf. | Comm. | Services | Other | Total |
|---------------|---------------|---------|--------|-------|----------|-------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| Primary | | 80.2 | 6.0 | 2.0 | 6.5 | 5.2 | 100.0 |
| Manufacturing | | .4 | 89.3 | 2.2 | 5.0 | 3.1 | 100.0 |
| Commerce | | .3 | 5.8 | 81.4 | 8.0 | 4.5 | 100.0 |
| Services | | .3 | 3.7 | 2.2 | 88.5 | 5.3 | 100.0 |
| Other | | .4 | 2.7 | 1.6 | 6.3 | 89.0 | 100.0 |
| Total | | 1.6 | 27.4 | 9.6 | 32.7 | 28.7 | 100.0 |

Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old. Frequencies include continuations at same firm and job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 69: YEAR-OVER-YEAR TRANSITIONS, 1986-2001

| From: | To: (in %) | Primary (1) | Manuf. (2) | Comm. (3) | Services (4) | Other (5) | Total (6) |
|---------------|---------------|----------------|---------------|--------------|-----------------|--------------|--------------|
| Primary | | 31.2 | 16.7 | 7.3 | 21.7 | 23.0 | 100.0 |
| Manufacturing | | 1.7 | 42.4 | 10.8 | 27.7 | 17.4 | 100.0 |
| Commerce | | 1.4 | 17.2 | 34.8 | 29.9 | 16.8 | 100.0 |
| Services | | 1.3 | 15.7 | 10.8 | 50.2 | 21.9 | 100.0 |
| Other | | 1.9 | 12.8 | 8.2 | 28.5 | 48.6 | 100.0 |
| Total | | 2.2 | 22.0 | 13.0 | 35.6 | 27.2 | 100.0 |

Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old. Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 70: CONTINUATIONS AND YEAR-OVER-YEAR TRANSITIONS ACROSS FIRMS AND SECTORS, 1990-2001

| From: | To: (in millions) | Continuations or Transitions | | | Transitions | | |
|---|----------------------|------------------------------|-----------------|--------------|----------------|-----------------|--------------|
| | | Nonexp. (1) | Exporter (2) | Total (3) | Nonexp. (4) | Exporter (5) | Total (6) |
| Transitions Within or Across Sectors | | | | | | | |
| | Nonexporter | 18.245 | 1.217 | 19.462 | 1.455 | .165 | 1.620 |
| | Exporter | 1.073 | 5.218 | 6.291 | .247 | .095 | .342 |
| Transitions Within Sector only | | | | | | | |
| | Nonexporter | 13.130 | .743 | 13.872 | .345 | .026 | .371 |
| | Exporter | .564 | 4.239 | 4.803 | .037 | .036 | .073 |

Source: RAIS 1990-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old; SECEX 1990-2001. Right panels present job accessions in same metropolitan area within one year after separation; left panels include continuations at same firm. Employments are last employments of year (highest paying job if many), scaled (by 20) to population equivalents.

Table 71: YEAR-OVER-YEAR TRANSITIONS ACROSS FIRMS AND SECTORS, 1990-91 AND 1996-97

| From: | To: (in millions) | Transitions 1990-91 | | | Transitions 1996-97 | | |
|-------|----------------------|---------------------|-----------------|--------------|---------------------|-----------------|--------------|
| | | Nonexp. (1) | Exporter (2) | Total (3) | Nonexp. (4) | Exporter (5) | Total (6) |
| | Nonexporter | .123 | .014 | .137 | .137 | .014 | .151 |
| | Exporter | .024 | .008 | .031 | .023 | .008 | .031 |

Source: RAIS 1990-91 and 1996-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old; SECEX 1990-91 and 1996-97. Job accessions in same metropolitan area within one year after separation. Employments are last employments of year (highest paying job if many), scaled (by 20) to population equivalents.

Table 72: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1986-2001

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 13.4 | 10.5 | 3.4 | 6.5 | 2.8 | 46.0 | 17.3 | 100.0 |
| 2nd quintile | | 8.7 | 15.5 | 3.9 | 5.7 | 3.3 | 45.3 | 17.6 | 100.0 |
| 3rd quintile | | 5.5 | 7.1 | 12.2 | 7.0 | 3.5 | 47.4 | 17.3 | 100.0 |
| 4th quintile | | 4.9 | 4.9 | 4.0 | 16.4 | 4.8 | 44.3 | 20.9 | 100.0 |
| 5th quintile | | 3.4 | 4.7 | 2.4 | 8.7 | 18.2 | 44.1 | 18.5 | 100.0 |
| Nontraded | | 2.6 | 2.9 | 1.9 | 3.3 | 2.1 | 65.0 | 22.2 | 100.0 |
| Failure | | 3.4 | 3.9 | 2.9 | 8.1 | 4.4 | 77.4 | .0 | 100.0 |
| Total | | 3.8 | 4.5 | 2.7 | 5.3 | 3.3 | 62.1 | 18.3 | 100.0 |
| Stationary | | 3.6 | 4.2 | 2.6 | 5.3 | 3.3 | 63.2 | 17.9 | 100 |
| Stationary, failure adj. | | 2.2 | 2.5 | 1.6 | 3.2 | 2.0 | 38.6 | 49.9 | 100 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old; and PME 1986-1999. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Transition frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of annual failure-to-failure transitions from PME (78.1% of non-formal PME workers are in non-formal work status after an annual transition, replacing the zero from RAIS).

Table 73: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1986-98

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 11.4 | 5.5 | 5.6 | 5.0 | 4.5 | 47.7 | 20.3 | 100.0 |
| 2nd quintile | | 5.2 | 10.2 | 7.9 | 6.8 | 4.4 | 46.1 | 19.4 | 100.0 |
| 3rd quintile | | 4.4 | 7.5 | 10.1 | 7.5 | 5.3 | 46.5 | 18.7 | 100.0 |
| 4th quintile | | 4.6 | 5.8 | 6.7 | 9.3 | 6.0 | 45.9 | 21.8 | 100.0 |
| 5th quintile | | 3.5 | 3.1 | 4.8 | 5.6 | 19.0 | 39.9 | 24.1 | 100.0 |
| Nontraded | | 2.8 | 2.5 | 2.6 | 3.0 | 2.8 | 62.0 | 24.3 | 100.0 |
| Failure | | 3.9 | 3.3 | 3.5 | 5.6 | 8.3 | 75.4 | .0 | 100.0 |
| | | 3.6 | 3.6 | 3.8 | 4.3 | 4.9 | 59.7 | 20.1 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1986 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Transition frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job.

Table 74: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 11.4 | 12.7 | 4.1 | 4.2 | 3.1 | 43.4 | 21.0 | 100.0 |
| 2nd quintile | | 10.9 | 12.4 | 4.6 | 3.9 | 2.6 | 46.4 | 19.2 | 100.0 |
| 3rd quintile | | 4.5 | 4.8 | 8.8 | 5.6 | 3.7 | 52.9 | 19.5 | 100.0 |
| 4th quintile | | 10.0 | 5.7 | 9.7 | 6.7 | 2.3 | 47.7 | 18.0 | 100.0 |
| 5th quintile | | 4.5 | 6.1 | 3.3 | 4.5 | 12.0 | 49.9 | 19.8 | 100.0 |
| Nontraded | | 3.7 | 3.3 | 2.6 | 2.5 | 2.3 | 64.2 | 21.5 | 100.0 |
| Failure | | 4.0 | 5.1 | 3.3 | 3.8 | 5.0 | 78.9 | .0 | 100.0 |
| Total | | 5.3 | 5.2 | 3.7 | 3.3 | 3.0 | 61.1 | 18.4 | 100.0 |
| Stationary | | 4.7 | 4.7 | 3.3 | 3.2 | 3.1 | 63.4 | 17.5 | 100.0 |
| Stationary, failure adj. | | 2.8 | 2.8 | 2.0 | 1.9 | 1.9 | 38.0 | 50.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (5% random sample), male workers in metropolitan area, 25 to 64 years old; and PME 1990-1991. UN Comtrade 1990-91 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of annual failure-to-failure transitions from PME (79.3% of non-formal PME workers are in non-formal work status after the 1990-91 transition, replacing the zero from RAIS).

Table 75: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 8.8 | 3.8 | 5.6 | 7.0 | 3.6 | 51.0 | 20.1 | 100.0 |
| 2nd quintile | | 5.3 | 8.4 | 8.2 | 8.7 | 2.6 | 46.6 | 20.3 | 100.0 |
| 3rd quintile | | 5.4 | 7.0 | 10.2 | 6.8 | 5.0 | 44.3 | 21.2 | 100.0 |
| 4th quintile | | 5.1 | 4.9 | 7.6 | 7.4 | 3.5 | 43.2 | 28.3 | 100.0 |
| 5th quintile | | 3.7 | 2.9 | 6.1 | 6.9 | 14.4 | 36.3 | 29.6 | 100.0 |
| Nontraded | | 2.9 | 2.7 | 3.0 | 2.6 | 2.3 | 62.0 | 24.4 | 100.0 |
| Failure | | 3.5 | 3.5 | 3.4 | 5.9 | 8.7 | 75.1 | .0 | 100.0 |
| Total | | 3.8 | 3.6 | 4.3 | 4.3 | 4.1 | 59.0 | 20.9 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1990-91 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job.

Table 76: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Failure (7) | Total (8) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|----------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | | |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 13.0 | 7.7 | 2.2 | 5.8 | 1.5 | 49.0 | 20.8 | 100.0 |
| 2nd quintile | | 3.1 | 16.5 | 3.0 | 5.0 | 3.0 | 46.1 | 23.3 | 100.0 |
| 3rd quintile | | 2.3 | 2.8 | 12.3 | 4.3 | 1.8 | 51.6 | 25.1 | 100.0 |
| 4th quintile | | 2.8 | 2.5 | 2.5 | 21.8 | 3.3 | 40.9 | 26.1 | 100.0 |
| 5th quintile | | 2.4 | 3.1 | 1.7 | 9.4 | 17.6 | 46.9 | 18.7 | 100.0 |
| Nontraded | | 2.2 | 2.4 | 1.7 | 3.1 | 2.2 | 64.1 | 24.3 | 100.0 |
| Failure | | 3.3 | 3.6 | 2.3 | 8.6 | 4.6 | 77.6 | .0 | 100.0 |
| Total | | 2.9 | 3.5 | 2.2 | 5.4 | 3.2 | 62.1 | 20.7 | 100.0 |
| Stationary | | 2.8 | 3.3 | 2.2 | 5.6 | 3.2 | 63.3 | 19.8 | 100.0 |
| Stationary, failure adj. | | 1.5 | 1.8 | 1.2 | 3.0 | 1.7 | 34.5 | 56.2 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old; and PME 1996-1997. UN Comtrade 1996-97 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job. The stationary distribution is the normalized left eigenvector of the RAIS transition matrix associated with the eigenvalue of one; the failure adjusted stationary distribution is the eigenvector based on an estimate of annual failure-to-failure transitions from PME (80.7% of non-formal PME workers are in non-formal work status after the 1996-97 transition, replacing the zero from RAIS).

Table 77: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS AND FAILED ACCESSIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded | Failure | Total |
|---------------------------------|---------------|--|-----|-----|-----|------|-----------|---------|-------|
| | | 1st | 2nd | 3rd | 4th | 5th | | | |
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Traded: Comp. adv. ^a | | | | | | | | | |
| 1st quintile | | 11.6 | 5.1 | 4.4 | 6.4 | 5.5 | 47.5 | 19.6 | 100.0 |
| 2nd quintile | | 5.8 | 6.6 | 4.9 | 7.4 | 3.6 | 46.4 | 25.3 | 100.0 |
| 3rd quintile | | 3.0 | 6.2 | 8.4 | 8.1 | 4.1 | 44.3 | 25.9 | 100.0 |
| 4th quintile | | 2.6 | 7.1 | 4.0 | 9.5 | 4.8 | 45.3 | 26.7 | 100.0 |
| 5th quintile | | 3.6 | 2.6 | 1.7 | 4.1 | 21.3 | 34.3 | 32.4 | 100.0 |
| Nontraded | | 2.6 | 2.2 | 1.7 | 2.8 | 2.5 | 58.5 | 29.8 | 100.0 |
| Failure | | 3.8 | 2.4 | 3.4 | 5.0 | 9.9 | 75.5 | .0 | 100.0 |
| Total | | 3.4 | 2.9 | 2.6 | 4.0 | 5.0 | 57.3 | 24.9 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1996-97 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many). Failed accessions are separations followed by no formal-sector accessions anywhere in Brazil within a year, excluding workers with prior retirement or death, or age 65 or above in earlier job.

Table 78: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS, 1986-2001

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded | Total |
|---------------------------------|---------------|--|------|------|------|------|-----------|-------|
| | | 1st | 2nd | 3rd | 4th | 5th | | |
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 16.2 | 12.7 | 4.2 | 7.9 | 3.4 | 55.6 | 100.0 |
| 2nd quintile | | 10.6 | 18.8 | 4.7 | 7.0 | 4.0 | 55.0 | 100.0 |
| 3rd quintile | | 6.6 | 8.6 | 14.8 | 8.4 | 4.2 | 57.3 | 100.0 |
| 4th quintile | | 6.1 | 6.1 | 5.0 | 20.7 | 6.1 | 56.0 | 100.0 |
| 5th quintile | | 4.1 | 5.8 | 3.0 | 10.6 | 22.4 | 54.1 | 100.0 |
| Nontraded | | 3.4 | 3.8 | 2.4 | 4.2 | 2.7 | 83.6 | 100.0 |
| Total | | 5.0 | 5.8 | 3.4 | 6.2 | 4.0 | 75.7 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-2001 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1986-2001 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 79: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS, 1986-98

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 14.3 | 6.9 | 7.0 | 6.3 | 5.6 | 59.9 | 100.0 |
| 2nd quintile | | 6.4 | 12.6 | 9.8 | 8.5 | 5.4 | 57.3 | 100.0 |
| 3rd quintile | | 5.5 | 9.1 | 12.5 | 9.2 | 6.4 | 57.3 | 100.0 |
| 4th quintile | | 5.9 | 7.5 | 8.6 | 11.8 | 7.6 | 58.7 | 100.0 |
| 5th quintile | | 4.6 | 4.0 | 6.3 | 7.4 | 25.0 | 52.8 | 100.0 |
| Nontraded | | 3.6 | 3.3 | 3.4 | 3.9 | 3.7 | 81.9 | 100.0 |
| Total | | 4.7 | 4.7 | 5.0 | 5.3 | 5.6 | 74.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1986-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1986-98 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 80: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 14.3 | 16.2 | 5.2 | 5.4 | 3.9 | 55.0 | 100.0 |
| 2nd quintile | | 13.5 | 15.6 | 5.6 | 4.8 | 3.2 | 57.2 | 100.0 |
| 3rd quintile | | 5.7 | 6.0 | 11.0 | 7.0 | 4.7 | 65.7 | 100.0 |
| 4th quintile | | 12.2 | 6.9 | 11.8 | 8.2 | 2.8 | 58.1 | 100.0 |
| 5th quintile | | 5.5 | 7.6 | 4.2 | 5.5 | 15.2 | 61.9 | 100.0 |
| Nontraded | | 4.8 | 4.2 | 3.3 | 3.2 | 2.9 | 81.7 | 100.0 |
| Total | | 7.0 | 6.5 | 4.7 | 4.1 | 3.5 | 74.2 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1990-91 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 81: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS, 1990-91

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 11.0 | 4.8 | 7.1 | 8.8 | 4.5 | 63.8 | 100.0 |
| 2nd quintile | | 6.6 | 10.6 | 10.2 | 10.9 | 3.3 | 58.4 | 100.0 |
| 3rd quintile | | 6.8 | 8.7 | 13.0 | 8.7 | 6.4 | 56.4 | 100.0 |
| 4th quintile | | 7.1 | 6.8 | 10.7 | 10.1 | 4.7 | 60.5 | 100.0 |
| 5th quintile | | 5.3 | 4.1 | 8.6 | 9.8 | 20.3 | 51.9 | 100.0 |
| Nontraded | | 3.9 | 3.6 | 4.0 | 3.4 | 3.0 | 82.1 | 100.0 |
| Total | | 5.0 | 4.7 | 5.9 | 5.4 | 4.4 | 74.6 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1990-91 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1990-91 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 82: YEAR-OVER-YEAR TRADE SECTOR TRANSITIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 16.5 | 9.7 | 2.8 | 7.3 | 1.9 | 61.8 | 100.0 |
| 2nd quintile | | 4.1 | 21.5 | 3.9 | 6.6 | 3.9 | 60.0 | 100.0 |
| 3rd quintile | | 3.0 | 3.7 | 16.7 | 5.7 | 2.3 | 68.7 | 100.0 |
| 4th quintile | | 3.8 | 3.4 | 3.4 | 29.7 | 4.3 | 55.4 | 100.0 |
| 5th quintile | | 3.0 | 3.9 | 2.1 | 11.6 | 21.7 | 57.7 | 100.0 |
| Nontraded | | 2.9 | 3.2 | 2.3 | 4.1 | 2.9 | 84.6 | 100.0 |
| Total | | 3.7 | 4.6 | 2.9 | 6.5 | 3.9 | 78.4 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1996-97 for Balassa comparative advantage; defined at two-digit sector level (Subsector IBGE). Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

Table 83: YEAR-OVER-YEAR CNAE TRADE SECTOR TRANSITIONS, 1996-97

| From: | To: (in %) | Traded: Comp. adv. quintile ^a | | | | | Nontraded (6) | Total (7) |
|---------------------------------|---------------|--|------------|------------|------------|------------|------------------|--------------|
| | | 1st (1) | 2nd (2) | 3rd (3) | 4th (4) | 5th (5) | | |
| Traded: Comp. adv. ^a | | | | | | | | |
| 1st quintile | | 14.5 | 6.3 | 5.5 | 7.9 | 6.8 | 59.0 | 100.0 |
| 2nd quintile | | 7.7 | 8.8 | 6.6 | 9.9 | 4.8 | 62.1 | 100.0 |
| 3rd quintile | | 4.1 | 8.1 | 11.4 | 10.9 | 5.6 | 60.0 | 100.0 |
| 4th quintile | | 3.6 | 9.6 | 5.8 | 12.9 | 6.6 | 61.5 | 100.0 |
| 5th quintile | | 5.4 | 3.9 | 2.6 | 6.0 | 31.3 | 50.9 | 100.0 |
| Nontraded | | 3.8 | 3.1 | 2.4 | 4.0 | 3.5 | 83.2 | 100.0 |
| <i>Total</i> | | 4.6 | 4.2 | 3.5 | 5.4 | 5.9 | 76.4 | 100.0 |

^aBalassa (1965) comparative advantage, transition year quintile (5th: strongest advantage).

Source: RAIS 1996-97 (5% random sample), male workers in metropolitan area, 25 to 64 years old. UN Comtrade 1996-97 for Balassa comparative advantage; defined at plant's four-digit CNAE sector affiliation in 1995. Frequencies are job accessions in same metropolitan area within one year after separation, based on last employment of year (highest paying job if many).

6.3 Reallocation transitions for prime-age male workers in São Paulo state

Table 84: YEAR-OVER-YEAR SECTOR TRANSITIONS OF MALE WORKERS DISPLACED FROM TRADED GOODS SECTORS IN 1990 OR 1996

| (in %) | To: | Manufacturing Comparative advantage quintile ^a | | | | | Agric. | Comm. | Cnstr. | Srvcs. |
|----------------------------|-----|--|-------|-------|-------|-------|--------|-------|--------|--------|
| | | 1st | 2nd | 3rd | 4th | 5th | | | | |
| | | (1) | (2) | (3) | (4) | (5) | | | | |
| From: | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Transitions 1990-91 | | | | | | | | | | |
| Manufacturing ^a | | | | | | | | | | |
| 1st quintile | | 22.67 | 9.65 | 8.06 | 6.98 | 1.91 | 1.93 | 6.36 | 7.55 | 34.90 |
| 2nd quintile | | 4.12 | 30.19 | 7.97 | 8.02 | 2.63 | 1.36 | 6.14 | 7.41 | 32.15 |
| 3rd quintile | | 3.17 | 6.89 | 41.91 | 5.56 | 2.21 | 1.05 | 4.09 | 6.02 | 29.09 |
| 4th quintile | | 3.64 | 7.25 | 6.99 | 36.95 | 2.18 | 2.68 | 4.78 | 5.71 | 29.83 |
| 5th quintile | | 2.72 | 6.72 | 6.88 | 6.86 | 31.00 | .91 | 3.93 | 10.54 | 30.44 |
| Agriculture | | 2.72 | 3.01 | 3.36 | 9.08 | 1.09 | 50.51 | .77 | 6.93 | 22.54 |
| Total (all sectors) | | 3.23 | 6.94 | 8.41 | 7.42 | 2.57 | 2.73 | 8.19 | 16.46 | 44.05 |
| Transitions 1996-97 | | | | | | | | | | |
| Manufacturing ^a | | | | | | | | | | |
| 1st quintile | | 44.73 | 7.57 | 6.04 | 7.26 | 1.77 | 6.26 | 12.65 | 6.67 | 7.04 |
| 2nd quintile | | 3.57 | 49.64 | 7.38 | 7.89 | 1.82 | 2.92 | 14.41 | 5.78 | 6.60 |
| 3rd quintile | | 2.80 | 8.10 | 50.30 | 8.02 | 2.09 | 2.90 | 10.97 | 6.44 | 8.36 |
| 4th quintile | | 1.86 | 5.68 | 4.14 | 53.04 | 1.67 | 17.30 | 7.86 | 3.69 | 4.76 |
| 5th quintile | | 4.60 | 6.64 | 6.25 | 9.91 | 46.34 | 3.66 | 9.16 | 7.04 | 6.41 |
| Agriculture | | 1.46 | 5.77 | 4.17 | 7.04 | 2.19 | 65.33 | 4.85 | 5.15 | 4.05 |
| Total (all sectors) | | 4.59 | 10.84 | 9.28 | 12.62 | 3.24 | 7.56 | 24.92 | 16.70 | 10.25 |

^aRevealed comparative advantage quintile (5: strongest advantage) in 1990.

Source: Displaced male workers in RAIS (São Paulo state) with employment on December 31st 1990 or 1996. Percentages count only displaced workers who are reabsorbed by December 31st 1991 or 1997.

6.4 Labor market performance

Table 85: Labor Market Performance at the Annual Horizon

| | 1986 | 1990 | 1992 | 1994 | 1998 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| FAILED REALLOCATIONS (SHARES) | | | | | |
| All workers | .248 (.002)*** | .323 (.002)*** | .410 (.002)*** | .369 (.002)*** | .459 (.002)*** |
| Young workers | .235 (.009)*** | .303 (.010)*** | .354 (.011)*** | .326 (.011)*** | .366 (.010)*** |
| Primary-schooled workers | .244 (.002)*** | .322 (.002)*** | .414 (.003)*** | .372 (.003)*** | .471 (.003)*** |
| College educated workers | .258 (.009)*** | .315 (.009)*** | .350 (.010)*** | .337 (.010)*** | .387 (.009)*** |
| DURATION OF SUCCESSFUL REALLOCATIONS WITHIN A YEAR (IN MONTHS) | | | | | |
| All workers | 2.776 (.016)*** | 3.808 (.019)*** | 4.206 (.023)*** | 4.108 (.021)*** | 4.220 (.022)*** |
| Young workers | 2.226 (.074)*** | 3.135 (.087)*** | 3.460 (.105)*** | 3.262 (.098)*** | 3.367 (.091)*** |
| Primary-schooled workers | 2.865 (.017)*** | 3.946 (.020)*** | 4.384 (.025)*** | 4.306 (.023)*** | 4.483 (.026)*** |
| College educated workers | 1.691 (.066)*** | 2.429 (.078)*** | 2.423 (.084)*** | 2.250 (.081)*** | 2.282 (.078)*** |
| Newly displaced workers (in millions) | 4.902 | 5.123 | 4.265 | 4.476 | 4.743 |
| Wage (multiples of minimum wage) | 3.65 | 4.90 | 4.41 | 4.93 | 5.13 |

Source: RAIS 1986-1999 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job; not rehired into a formal-sector job within 12 months (upper panel) or rehired into a formal-sector job within 12 months (lower panel). Young workers have potential labor market experience of 10 years or less, primary-schooled workers have some primary schooling, college educated workers have some college education.

Table 86: Labor Market Performance and Economic Outcomes

| | 1986 | 1990 | 1992 | 1994 | 1998 |
|---|-------|-------|-------|-------|-------|
| FAILED REALLOCATIONS WITHIN A YEAR | | | | | |
| Mean failure rate (share of displaced) | .248 | .323 | .410 | .369 | .459 |
| young workers | .235 | .303 | .354 | .326 | .366 |
| college-educated workers | .258 | .315 | .350 | .337 | .387 |
| Change over 1990 | | .000 | .086 | .046 | .136 |
| Idle labor (foregone share of GDP) | | .000 | .014 | .006 | .024 |
| DURATIONS OF SUCCESSFUL REALLOCATIONS WITHIN A YEAR | | | | | |
| Mean duration (in months) | 2.776 | 3.808 | 4.206 | 4.108 | 4.220 |
| young workers | 2.226 | 3.135 | 3.460 | 3.262 | 3.367 |
| college-educated workers | 1.691 | 2.429 | 2.423 | 2.250 | 2.282 |
| Change over 1990 (one twelfth) | | .000 | .033 | .025 | .034 |
| Idle labor (foregone share of GDP) | | .000 | .005 | .003 | .006 |

Sources: RAIS 1986-1999 (1% random sample), male workers nationwide, 25 to 64 years old, displaced from a formal-sector job; not rehired into a formal-sector job within 12 months (*upper panel*) or rehired into a formal-sector job within 12 months (*lower panel*). PME 1986-1999, share of idle workers (unemployed or withdrawn from labor force), and Banco Central do Brasil, GDP. We define young workers to have ten or less years of potential labor force experience, and college-educated workers to have some college education. Foregone GDP is the unrealized wage bill, measured as the product of the observed change over 1990 times the number of newly displaced workers during the year times their wage upon displacement. Idle labor is defined as the share of displaced workers with transitions to unemployment or out of the labor force.

7 Regression Results

Table 87: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, 1990-98

| | Separations | | | Accessions | | |
|-------------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| | nationwide | | metro | nationwide | | metro |
| | IBGE | CNAE | IBGE | IBGE | CNAE | IBGE |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .139 (.036)*** | .0004 (.014) | .085 (.057) | -.059 (.032)* | .007 (.014) | .081 (.057) |
| Comp. Adv. × Prd. Trff. | .197 (.200) | .328 (.087)*** | .463 (.315) | .290 (.162)* | -.019 (.083) | -.021 (.306) |
| Exporter Status | .481 (.048)*** | .396 (.054)*** | .435 (.076)*** | -.360 (.045)*** | -.375 (.051)*** | -.415 (.080)*** |
| Exporter × Prd. Trff. | -1.070 (.213)*** | -.910 (.244)*** | -1.009 (.322)*** | -.424 (.195)** | -.322 (.219) | -.290 (.336) |
| Product Market Tariff | -.427 (.532) | -.029 (.308) | -.023 (.810) | .966 (.474)** | .519 (.260)** | 1.183 (.820) |
| Intm. Input Tariff | 3.253 (.768)*** | 1.070 (.575)* | 1.597 (1.172) | -2.490 (.672)*** | -1.908 (.482)*** | -1.448 (1.177) |
| Import Penetration | 1.091 (.393)*** | .211 (.336) | -.321 (.570) | .033 (.364) | .254 (.307) | -1.588 (.615)*** |
| Obs. | 145,417 | 124,994 | 43,129 | 112,978 | 96,686 | 32,221 |
| Pseudo R^2 | .151 | .162 | .079 | .041 | .053 | .061 |

Source: RAIS 1990-98, male workers nationwide (1% random sample) or in metropolitan areas (5% random sample), 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE or CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

**7.1 Work status transitions of prime-age male workers
in metropolitan areas**

Table 88: WORK STATUS TRANSITIONS FROM FORMAL EMPLOYMENT

| Covariate (in t) | (in $t+1$) | From formal manufacturing employment in t to: | | | |
|---------------------------------|-------------|---|----------------------|---------------------|---------------------|
| | | Informal (1) | Self employed (2) | Unemployed (3) | Withdrawn (4) |
| No sector-fixed effects | | | | | |
| Product Market Tariff | | -2.842 (.799)*** | -4.016 (.803)*** | -2.080 (.906)** | -.129 (.850) |
| Intm. Input Tariff | | 1.823 (.974)* | 4.250 (.973)*** | 1.849 (1.102)* | 1.089 (1.037) |
| Formal empl. for four months | | -1.679 (.072)*** | -1.307 (.078)*** | -.736 (.103)*** | -1.032 (.090)*** |
| Pot. labor force experience | | -.039 (.014)*** | .038 (.016)** | -.009 (.018) | .031 (.015)** |
| Sqrd. potential lab. force exp. | | .0006 (.0002)** | -.0008 (.0003)*** | -.0004 (.0003) | .0006 (.0002)*** |
| Some High School | | -.349 (.079)*** | -.370 (.077)*** | -.271 (.085)*** | .217 (.087)** |
| Some College | | -.464 (.205)** | -.639 (.228)*** | -.651 (.231)*** | .449 (.232)* |
| College Degree | | -.724 (.146)*** | -.520 (.140)*** | -1.096 (.183)*** | -.172 (.181) |
| Obs. | | | | 25,520 | |
| Pseudo R^2 | | | | .06 | |
| Sector-fixed effects | | | | | |
| Product Market Tariff | | -.319 (1.463) | -1.387 (1.466) | -2.019 (1.653) | -1.960 (1.569) |
| Intm. Input Tariff | | -.187 (1.540) | 2.699 (1.538)* | 1.538 (1.720) | 2.407 (1.626) |
| Formal empl. for four months | | -1.626 (.072)*** | -1.282 (.079)*** | -.737 (.104)*** | -1.051 (.091)*** |
| Pot. labor force experience | | -.035 (.014)** | .039 (.016)** | -.008 (.018) | .031 (.015)** |
| Sqrd. potential lab. force exp. | | .0005 (.0002)** | -.0008 (.0003)*** | -.0004 (.0003) | .0006 (.0002)*** |
| Some High School | | -.299 (.079)*** | -.361 (.078)*** | -.266 (.086)*** | .224 (.088)** |
| Some College | | -.399 (.206)* | -.628 (.229)*** | -.626 (.233)*** | .472 (.233)** |
| College Degree | | -.635 (.148)*** | -.509 (.141)*** | -1.086 (.185)*** | -.157 (.182) |
| Obs. | | | | 25,520 | |
| Pseudo R^2 | | | | .06 | |

Source: PME 1986-99, male household members in metropolitan area, 25 years or older, with initial formal manufacturing employment (annual transitions between 4th and 8th interview). Reference category: continuation in formal work status. Tariffs at subsector IBGE level. Controlling for year and city effects in both panels, for sector effects in lower panel. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 89: WORK STATUS TRANSITIONS FROM INFORMAL EMPLOYMENT

| Covariate (in t) | (in $t+1$) | From informal manufacturing employment in t to: | | | |
|---------------------------------|-------------|---|----------------------|--------------------|---------------------|
| | | Formal (1) | Self employed (2) | Unemployed (3) | Withdrawn (4) |
| No sector-fixed effects | | | | | |
| Product Market Tariff | | 2.493 (1.331)* | -1.514 (1.612) | -3.647 (3.253) | 4.164 (2.389)* |
| Intm. Input Tariff | | -2.409 (1.611) | 4.340 (1.946)** | 5.127 (3.823) | -3.532 (2.793) |
| Informal empl. for four months | | -.999 (.113)*** | -.844 (.135)*** | -.712 (.252)*** | -1.325 (.227)*** |
| Pot. labor force experience | | .005 (.022) | .051 (.027)* | -.037 (.049) | -.033 (.038) |
| Sqrd. potential lab. force exp. | | -.0005 (.0004) | -.0009 (.0004)** | .00007 (.0009) | .001 (.0006)** |
| Some High School | | -.136 (.118) | .318 (.136)** | .110 (.253) | .451 (.207)** |
| Some College | | -.447 (.299) | -.171 (.387) | -.881 (.780) | -.365 (.761) |
| College Degree | | -.512 (.245)** | -.038 (.288) | -.842 (.637) | -.082 (.504) |
| Obs. | | | | 2,374 | |
| Pseudo R^2 | | | | .06 | |
| Sector-fixed effects | | | | | |
| Product Market Tariff | | -.040 (2.456) | -1.735 (2.832) | -5.193 (5.511) | 3.303 (4.296) |
| Intm. Input Tariff | | .879 (2.652) | 4.315 (3.087) | 5.361 (5.937) | -2.440 (4.556) |
| Informal empl. for four months | | -.992 (.114)*** | -.841 (.136)*** | -.710 (.253)*** | -1.324 (.227)*** |
| Pot. labor force experience | | -.0007 (.023) | .054 (.027)** | -.037 (.050) | -.038 (.038) |
| Sqrd. potential lab. force exp. | | -.0004 (.0004) | -.001 (.0004)** | .00008 (.0009) | .001 (.0006)** |
| Some High School | | -.206 (.122)* | .343 (.141)** | .027 (.261) | .383 (.214)* |
| Some College | | -.562 (.304)* | -.173 (.390) | -1.016 (.789) | -.422 (.767) |
| College Degree | | -.670 (.253)*** | .004 (.297) | -.996 (.644) | -.207 (.512) |
| Obs. | | | | 2,374 | |
| Pseudo R^2 | | | | .07 | |

Source: PME 1986-99, male household members in metropolitan area, 25 years or older, with initial informal manufacturing employment (annual transitions between 4th and 8th interview). Reference category: continuation in informal status. Tariffs at subsector IBGE level. Controlling for year and city effects in both panels, for sector effects in lower panel. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

7.2 SEPARATIONS AND ACCESSIONS, NATIONWIDE, SUBSECTOR IBGE
(BENCHMARK REGRESSIONS)

version 26

7.2 Separations and accessions of prime-age male workers nationwide, sub-sector IBGE (benchmark regressions)

Table 90: WORKER-FIXED EFFECT LOGIT ESTIMATION WITH INTERACTIONS

| | Separations | | | Accessions | | |
|------------------------|--------------------|---------------------|--------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Cmp. Adv. | .169 (.024)*** | .138 (.036)*** | .134 (.043)*** | -.016 (.020) | -.058 (.032)* | -.125 (.038)*** |
| Cmp. Adv. × Prd. Trff. | | .202 (.200) | .265 (.238) | | .289 (.162)* | .599 (.203)*** |
| Exporter Status | .283 (.028)*** | .481 (.048)*** | .478 (.081)*** | -.439 (.027)*** | -.359 (.045)*** | -.564 (.077)*** |
| Exporter × Prd. Trff. | | -1.071 (.213)*** | -.950 (.362)*** | | -.428 (.195)** | .351 (.323) |
| Cmp. Adv. × Exporter | | | .011 (.051) | | | .156 (.047)*** |
| ... × Prd. Trff. | | | -.141 (.291) | | | -.680 (.250)*** |
| Product Market Tariff | -.705 (.426)* | -.424 (.532) | -.499 (.548) | 1.246 (.393)*** | .967 (.474)** | .541 (.504) |
| Intm. Input Tariff | 2.880 (.678)*** | 3.241 (.767)*** | 3.287 (.767)*** | -3.073 (.598)*** | -2.486 (.672)*** | -2.297 (.682)*** |
| Import Penetration | 1.257 (.388)*** | 1.093 (.393)*** | 1.088 (.393)*** | .198 (.355) | .035 (.364) | -.0008 (.364) |
| Obs. | 145,408 | 145,408 | 145,408 | 112,974 | 112,974 | 112,974 |
| Pseudo R^2 | .150 | .150 | .151 | .041 | .041 | .041 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Columns 1 and 4 repeat column 4 of Tables 92 and 93. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 91: YEAR EFFECTS IN WORKER-EFFECT LOGIT ESTIMATION

| | Separations | | | Accessions | | |
|--------------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Year 1990 | -2.061 (.136)*** | -2.126 (.145)*** | -2.131 (.145)*** | 1.032 (.126)*** | .963 (.131)*** | .950 (.131)*** |
| Year 1991 | -1.325 (.067)*** | -1.356 (.070)*** | -1.357 (.070)*** | 1.262 (.062)*** | 1.227 (.064)*** | 1.218 (.064)*** |
| Year 1992 | -.970 (.110)*** | -.980 (.110)*** | -.979 (.110)*** | 1.101 (.109)*** | 1.089 (.109)*** | 1.084 (.110)*** |
| Year 1993 | -.859 (.067)*** | -.860 (.067)*** | -.859 (.067)*** | 1.122 (.067)*** | 1.125 (.067)*** | 1.123 (.067)*** |
| Year 1994 | -.863 (.047)*** | -.858 (.047)*** | -.858 (.047)*** | .971 (.047)*** | .983 (.047)*** | .987 (.047)*** |
| Year 1995 | -.445 (.085)*** | -.432 (.086)*** | -.433 (.086)*** | .697 (.086)*** | .720 (.087)*** | .728 (.087)*** |
| Year 1996 | -.378 (.050)*** | -.368 (.050)*** | -.368 (.050)*** | .685 (.052)*** | .699 (.052)*** | .704 (.052)*** |
| Year 1997 | -.204 (.039)*** | -.194 (.040)*** | -.194 (.040)*** | .488 (.041)*** | .501 (.041)*** | .505 (.041)*** |
| Trade-related covariates | | | | | | |
| 2nd order interactions | | yes | | | yes | |
| 3rd order interactions | | yes | yes | | yes | yes |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Year effects from conditional logit estimation: column 1 completes column 4 of Table 92, columns 2 and 3 complete columns 2 and 3 of Table 90, column 4 completes column 4 of Table 93, columns 5 and 6 complete columns 5 and 6 of Table 90. Other regressors (not reported): Trade-related, sector (subsector IBGE level), plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 92: CONDITIONAL LOGIT ESTIMATION OF SEPARATIONS

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Balassa Comp. Adv. | .080 (.021)*** | | | | .169 (.024)*** | .204 (.023)*** |
| Exporter Status | | .289 (.028)*** | | | .283 (.028)*** | .301 (.028)*** |
| Product Market Tariff | | | -.104 (.416) | | -.705 (.426)* | -1.383 (.410)*** |
| Intm. Input Tariff | | | 1.601 (.633)** | | 2.880 (.678)*** | -1.420 (.553)** |
| Import Penetration | | | | .774 (.353)** | 1.257 (.388)*** | 6.035 (.349)*** |
| Sector-level covariates | | | | | | |
| Sector real exch. rate | .733 (.624) | .843 (.626) | .353 (.640) | .701 (.631) | -.398 (.645) | .213 (.069)*** |
| FDI Flow (USD billion) | -.025 (.020) | -.012 (.020) | -.018 (.020) | -.014 (.020) | -.048 (.020)** | .047 (.019)** |
| Herfindahl Index (sales) | -.371 (.317) | -.517 (.316) | -.399 (.329) | -.656 (.325)** | -.354 (.343) | .929 (.320)*** |
| Plant-level covariates | | | | | | |
| Log Employment | -.343 (.011)*** | -.370 (.011)*** | -.341 (.011)*** | -.339 (.011)*** | -.377 (.011)*** | -.410 (.011)*** |
| Share: Middle School or less | -.750 (.131)*** | -.658 (.131)*** | -.719 (.131)*** | -.717 (.131)*** | -.663 (.132)*** | -.793 (.129)*** |
| Share: Some High School | -.444 (.148)*** | -.392 (.148)*** | -.440 (.147)*** | -.443 (.147)*** | -.393 (.148)*** | -.214 (.145) |
| Share: White-collar occ. | .721 (.075)*** | .700 (.074)*** | .739 (.074)*** | .738 (.074)*** | .691 (.075)*** | .552 (.073)*** |
| Worker-level covariates | | | | | | |
| Tenure at plant (in years) | 1.367 (.036)*** | 1.350 (.036)*** | 1.362 (.036)*** | 1.363 (.036)*** | 1.351 (.036)*** | 1.390 (.037)*** |
| Pot. labor force experience | .006 (.002)** | .006 (.002)** | .006 (.002)** | .006 (.002)** | .006 (.002)** | .031 (.002)*** |
| Unskilled Wh. Collar Occ. | -.256 (.067)*** | -.251 (.067)*** | -.259 (.067)*** | -.255 (.067)*** | -.262 (.067)*** | -.199 (.065)*** |
| Year effects | yes | yes | yes | yes | yes | no |
| Obs. | 145,408 | 145,408 | 145,408 | 145,408 | 145,408 | 145,408 |
| Pseudo R^2 | .148 | .149 | .148 | .148 | .150 | .137 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Professional or managerial occupations and skilled blue collar occupations (not reported) not statistically significant at five-percent level. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 93: CONDITIONAL LOGIT ESTIMATION OF ACCESSIONS

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|--------------------|--------------------|---------------------|--------------------|---------------------|---------------------|
| Balassa Comp. Adv. | .041 (.017)** | | | | -.016 (.020) | -.114 (.019)*** |
| Exporter Status | | -.449 (.027)*** | | | -.439 (.027)*** | -.429 (.026)*** |
| Product Market Tariff | | | 1.306 (.379)*** | | 1.246 (.393)*** | 2.474 (.379)*** |
| Intm. Input Tariff | | | -3.258 (.540)*** | | -3.073 (.598)*** | -3.846 (.514)*** |
| Import Penetration | | | | -.522 (.320) | .198 (.355) | -3.919 (.307)*** |
| Sector-level covariates | | | | | | |
| Sector real exch. rate | -1.264 (.605)** | -.955 (.606) | -.953 (.626) | -.986 (.611) | -.810 (.639) | .038 (.076) |
| FDI Flow (USD billion) | .039 (.022)* | .047 (.021)** | .056 (.021)*** | .047 (.021)** | .058 (.022)*** | .031 (.021) |
| Herfindahl Index (sales) | -.348 (.268) | -.344 (.268) | -.795 (.282)*** | -.275 (.277) | -.788 (.297)*** | -2.335 (.277)*** |
| Plant-level covariates | | | | | | |
| Log Employment | -.190 (.008)*** | -.140 (.009)*** | -.189 (.008)*** | -.189 (.008)*** | -.141 (.009)*** | -.112 (.008)*** |
| Share: Middle School or less | .947 (.107)*** | .857 (.105)*** | .940 (.107)*** | .948 (.107)*** | .850 (.105)*** | .828 (.104)*** |
| Share: Some High School | .740 (.124)*** | .667 (.122)*** | .739 (.124)*** | .740 (.124)*** | .668 (.122)*** | .468 (.120)*** |
| Share: White-collar occ. | -.675 (.067)*** | -.614 (.067)*** | -.679 (.067)*** | -.671 (.067)*** | -.621 (.067)*** | -.534 (.064)*** |
| Worker-level covariates | | | | | | |
| Prof. or Manag'l. Occ. | -.801 (.068)*** | -.807 (.068)*** | -.801 (.068)*** | -.800 (.068)*** | -.807 (.068)*** | -.827 (.066)*** |
| Tech'l. or Superv. Occ. | -.603 (.064)*** | -.610 (.064)*** | -.597 (.064)*** | -.603 (.064)*** | -.604 (.064)*** | -.623 (.062)*** |
| Unskilled Wh. Collar Occ. | -.490 (.061)*** | -.497 (.062)*** | -.488 (.062)*** | -.489 (.061)*** | -.495 (.062)*** | -.519 (.060)*** |
| Skilled Bl. Collar Occ. | -.417 (.032)*** | -.413 (.032)*** | -.413 (.032)*** | -.417 (.032)*** | -.410 (.032)*** | -.443 (.031)*** |
| Year effects | yes | yes | yes | yes | yes | no |
| Obs. | 112,974 | 112,974 | 112,974 | 112,974 | 112,974 | 112,974 |
| Pseudo R^2 | .036 | .040 | .037 | .036 | .041 | .026 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession. Sector information at subsector IBGE level. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 94: FIRST-STAGE PREDICTIONS

| | Separations | | | Accessions | | |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | Exp. Status | Prd. Mkt. Tariff | Imp. Pen. | Exp. Status | Prd. Mkt. Tariff | Imp. Pen. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Instruments | | | | | | |
| World imports APD | 3.576 (.789)*** | -2.278 (.097)*** | -.011 (.053) | 3.829 (.975)*** | -2.121 (.111)*** | .386 (.065)*** |
| World imports CEE | 43.712 (4.341)*** | -33.870 (.534)*** | -16.636 (.293)*** | 38.920 (5.551)*** | -26.912 (.635)*** | -17.067 (.370)*** |
| World imports LAC | -4.740 (1.035)*** | 14.265 (.127)*** | 4.759 (.070)*** | -2.022 (1.319) | 14.041 (.151)*** | 4.865 (.088)*** |
| World imports NAM | -2.380 (.525)*** | -.652 (.065)*** | -1.672 (.035)*** | -2.468 (.662)*** | .377 (.076)*** | -1.992 (.044)*** |
| World imports ODV | -2.142 (.763)*** | -5.735 (.094)*** | .312 (.052)*** | -1.376 (.977) | -5.275 (.112)*** | -.139 (.065)** |
| World imports OIN | 4.173 (.957)*** | -9.100 (.118)*** | -5.678 (.065)*** | 3.977 (1.181)*** | -10.354 (.135)*** | -5.339 (.079)*** |
| World imports WEU | 13.940 (.461)*** | 2.158 (.057)*** | 1.953 (.031)*** | 14.437 (.564)*** | 1.469 (.065)*** | 2.095 (.038)*** |
| USD Exch. Rate | .105 (.025)*** | -.211 (.003)*** | .011 (.002)*** | .081 (.032)** | -.252 (.004)*** | -.014 (.002)*** |
| PPI Idx. EU | .703 (.115)*** | -.928 (.014)*** | .113 (.008)*** | .974 (.144)*** | -.941 (.016)*** | .052 (.010)*** |
| PPI Idx. NAM | .411 (.106)*** | .850 (.013)*** | -.120 (.007)*** | .474 (.138)*** | .802 (.016)*** | -.200 (.009)*** |
| Exogenous covariates | | | | | | |
| Balassa Comp. Adv. | -.020 (.003)*** | -.026 (.0003)*** | -.022 (.0002)*** | -.024 (.003)*** | -.027 (.0004)*** | -.022 (.0002)*** |
| FDI Flow (USD billion) | .002 (.003) | .014 (.0004)*** | .004 (.0002)*** | .0002 (.004) | .014 (.0004)*** | .005 (.0003)*** |
| Herfindahl Index (sales) | .332 (.044)*** | .048 (.005)*** | .053 (.003)*** | .252 (.054)*** | -.026 (.006)*** | .098 (.004)*** |
| Log Employment | .052 (.002)*** | .003 (.0002)*** | -.0009 (.0001)*** | .050 (.002)*** | .003 (.0002)*** | -.0007 (.0001)*** |
| Share: Middle School or less | -.172 (.016)*** | .008 (.002)*** | -.007 (.001)*** | -.184 (.017)*** | .007 (.002)*** | -.009 (.001)*** |
| Share: Some High School | -.063 (.019)*** | -.002 (.002) | .003 (.001)** | -.092 (.021)*** | -.005 (.002)** | .002 (.001) |
| Share: White-collar occ. | .060 (.010)*** | .006 (.001)*** | -.002 (.0007)** | .057 (.012)*** | .004 (.001)*** | -.002 (.0008)** |
| F statistic (IV) | 13.432 | 14,338.09 | 477.064 | 23.689 | 12,723.32 | 310.494 |

Sources: *WTF* (NBER) bilateral import data 1990-98; sector data 1990-98 from various sources at subsector IBGE level; *RAIS* 1990-98 labor force information; *SECEX* exporter information 1990-98. Weighted regressions using worker-sample observations (as in Table 92 for separations, Table 93 for accessions), controlling for year effects. Annual sector-weighted world imports, coefficients rescaled to imports in USD trillion. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 95: LINEAR AND INSTRUMENTAL-VARIABLE WORKER-FE ESTIMATION

| | Separations | | | Accessions | | |
|-----------------------|--------------------|--------------------|-------------------|---------------------|--------------------|--------------------|
| | Cdl. logit | OLS-FE | | Cdl. logit | OLS-FE | |
| | | (1) | (2) | | (3) | (4) |
| Balassa Comp. Adv. | .169 (.024)*** | .017 (.002)*** | .023 (.003)*** | -.016 (.020) | .002 (.002) | -.002 (.003) |
| Exporter Status | .283 (.028)*** | .038 (.003)*** | .516 (.096)*** | -.439 (.027)*** | -.049 (.003)*** | -.500 (.091)*** |
| Product Market Tariff | -.705 (.426)* | -.100 (.035)*** | -.032 (.081) | 1.246 (.393)*** | .124 (.032)*** | .113 (.073) |
| Intm. Input Tariff | 2.880 (.678)*** | .343 (.054)*** | .161 (.141) | -3.073 (.598)*** | -.309 (.049)*** | -.227 (.132)* |
| Import Penetration | 1.257 (.388)*** | .052 (.034) | .004 (.077) | .198 (.355) | .088 (.031)*** | .265 (.071)*** |
| Obs. | 145,408 | 293,353 | 293,353 | 112,974 | 293,124 | 293,124 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Estimates in column 1 and 4 repeat column 4 in Tables 92 and 93. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 96: COMPLEMENTARY CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS

| | Cdl. logit | Primary school | High school | College educ. | Sector FE | Privatiz. control | Outsrc. job ind. |
|---------------------------|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Balassa Cmp. Adv. | .138 (.036)*** | .114 (.041)*** | .462 (.148)*** | -.096 (.226) | -.074 (.056) | .139 (.037)*** | .135 (.037)*** |
| Cmp. Adv. × Prd. Trf. | .202 (.200) | .195 (.224) | -1.217 (.910) | 2.334 (1.440) | -.122 (.215) | .207 (.201) | .224 (.205) |
| Exporter Status | .481 (.048)*** | .481 (.055)*** | .292 (.168)* | .122 (.251) | .465 (.048)*** | .481 (.048)*** | .482 (.048)*** |
| Exporter × Prd. Trff. | -1.071 (.213)*** | -1.000 (.244)*** | -.388 (.767) | .926 (1.156) | -.979 (.215)*** | -1.070 (.213)*** | -1.077 (.216)*** |
| Product Market Tariff | -.424 (.532) | -.287 (.612) | -.715 (1.860) | -6.007 (3.247)* | -1.663 (.575)*** | -.415 (.531) | -.495 (.539) |
| Intm. Input Tariff | 3.241 (.767)*** | 2.856 (.882)*** | 6.273 (2.821)** | 11.171 (4.703)** | 4.829 (.876)*** | 3.242 (.768)*** | 3.415 (.778)*** |
| Import Penetration | 1.093 (.393)*** | .503 (.483) | 2.233 (1.300)* | .346 (2.018) | 3.039 (.638)*** | 1.102 (.397)*** | 1.098 (.397)*** |
| <i>addl. regressor(s)</i> | | | | | yes | -.208 (1.232) | -.015 (.037) |
| Obs. | 145,408 | 110,831 | 17,627 | 7,498 | 145,408 | 145,408 | 143,536 |
| Pseudo R^2 | .150 | .161 | .270 | .246 | .152 | .150 | .152 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 97: COMPLEMENTARY CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS

| | Cdl. logit | Primary school | High school | College educ. | Sector FE | Privatiz. control | Outsrc. job ind. |
|---------------------------|--------------------|--------------------|--------------------|-------------------|---------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Balassa Comp. Adv. | .169 (.024)*** | .498 (.267)* | .145 (.028)*** | .216 (.150) | -.094 (.049)* | .170 (.026)*** | .169 (.024)*** |
| Exporter Status | .283 (.028)*** | .379 (.243) | .296 (.033)*** | .297 (.143)** | .284 (.028)*** | .283 (.028)*** | .283 (.029)*** |
| Product Market Tariff | -.705 (.426)* | -3.960 (4.290) | -.500 (.499) | -1.771 (2.281) | -2.361 (.476)*** | -.694 (.427) | -.751 (.430)* |
| Intm. Input Tariff | 2.880 (.678)*** | 10.027 (7.163) | 2.469 (.779)*** | 7.146 (4.086)* | 5.149 (.748)*** | 2.875 (.675)*** | 3.010 (.686)*** |
| Import Penetration | 1.257 (.388)*** | 8.588 (3.668)** | .678 (.477) | .886 (1.995) | 3.227 (.638)*** | 1.264 (.392)*** | 1.269 (.391)*** |
| <i>addl. regressor(s)</i> | | | | | yes | -.142 (1.227) | -.018 (.037) |
| Obs. | 145,408 | 2,897 | 110,831 | 7,498 | 145,408 | 145,408 | 143,536 |
| Pseudo R^2 | .150 | .391 | .161 | .245 | .151 | .150 | .151 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 98: COMPLEMENTARY CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS

| | Cdl. logit | Primary school | High school | College educ. | Sector FE | Privatiz. control | Outsrc. job ind. |
|------------------------------|--------------------|--------------------|---------------------|-------------------|--------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Balassa Cmp. Adv. | -.058 (.032)* | -.022 (.036) | -.315 (.122)** | -.288 (.191) | -.115 (.053)** | -.062 (.032)* | -.055 (.032)* |
| Cmp. Adv. × Prd. Trf. | .289 (.162)* | .104 (.179) | 1.092 (.682) | 1.037 (1.045) | .381 (.176)** | .268 (.164) | .270 (.165) |
| Exporter Status | -.359 (.045)** | -.322 (.052)** | -.454 (.160)** | -.740 (.245)** | -.373 (.045)** | -.358 (.045)** | -.371 (.046)** |
| Exporter × Prd. Trff. | -.428 (.195)** | -.525 (.225)** | -.284 (.685) | -.191 (1.023) | -.350 (.194)* | -.433 (.195)** | -.357 (.197)* |
| Product Market Tariff | .967 (.474)** | 1.375 (.532)** | .969 (1.867) | .423 (2.763) | 1.385 (.563)** | .894 (.482)* | .908 (.479)* |
| Intm. Input Tariff | -2.486 (.672)** | -2.702 (.751)** | -6.480 (2.704)** | -3.161 (3.890) | -2.070 (.842)** | -2.454 (.673)** | -2.495 (.680)** |
| Import Penetration | .035 (.364) | .001 (.433) | .0009 (1.206) | -1.074 (1.992) | 1.632 (.668)** | -.014 (.370) | .033 (.367) |
| Share: Jobs at private firms | | | | | | .964 (1.176) | |
| Indic.: Outsourceable job | | | | | | | -.097 (.033)** |
| Obs. | 112,974 | 86,468 | 12,063 | 4,786 | 112,974 | 112,974 | 110,985 |
| Pseudo R^2 | .041 | .043 | .091 | .089 | .042 | .041 | .040 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 99: COMPLEMENTARY CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS

| | Cdl. logit | Primary school | High school | College educ. | Sector FE | Privatiz. control | Outsrc. job ind. |
|---------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Balassa Comp. Adv. | -.016 (.020) | -.120 (.209) | -.006 (.023) | -.141 (.118) | -.067 (.048) | -.024 (.022) | -.015 (.021) |
| Exporter Status | -.439 (.027)*** | -.477 (.216)** | -.420 (.031)*** | -.776 (.140)*** | -.438 (.027)*** | -.439 (.027)*** | -.437 (.027)*** |
| Product Market Tariff | 1.246 (.393)*** | .099 (3.290) | 1.333 (.451)*** | 2.033 (2.092) | 1.822 (.498)*** | 1.118 (.412)*** | 1.185 (.397)*** |
| Intm. Input Tariff | -3.073 (.598)*** | -7.113 (5.668) | -2.943 (.673)*** | -5.152 (3.393) | -2.954 (.750)*** | -2.987 (.603)*** | -3.041 (.604)*** |
| Import Penetration | .198 (.355) | -9.315 (3.845)** | .084 (.423) | -.720 (1.948) | 1.764 (.665)*** | .128 (.363) | .181 (.358) |
| <i>addl. regressor(s)</i> | | | | | yes | 1.140 (1.166) | -.098 (.033)*** |
| Obs. | 112,974 | 2,752 | 86,468 | 4,786 | 112,974 | 112,974 | 110,985 |
| Pseudo R^2 | .041 | .223 | .043 | .088 | .042 | .041 | .040 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 100: UNCONDITIONAL LOGIT ESTIMATES OF SEPARATIONS

| | Separations | | | Accessions | | |
|------------------------|--------------------|-------------------|--------------------|---------------------|--------------------|---------------------|
| | Cdl. logit | Logit | | Cdl. logit | Logit | |
| | | cdl. smpl. | full smpl. | | cdl. smpl. | full smpl. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .134 (.043)*** | .117 (.025)*** | .168 (.018)*** | -.125 (.038)*** | -.027 (.026) | .025 (.020) |
| Cmp. Adv. × Prd. Trff. | .265 (.238) | -.118 (.148) | -.270 (.103)*** | .599 (.203)*** | .490 (.151)*** | .687 (.113)*** |
| Exporter Status | .478 (.081)*** | .068 (.048) | -.081 (.037)** | -.564 (.077)*** | -.389 (.055)*** | -.825 (.044)*** |
| Exp. × Prd. Trff. | -.950 (.362)*** | -.153 (.225) | .373 (.162)** | .351 (.323) | .007 (.257) | .520 (.204)** |
| Cmp. Adv. × Exporter | .011 (.051) | .072 (.033)** | .076 (.024)*** | .156 (.047)*** | .137 (.035)*** | .239 (.027)*** |
| ... × Prd. Trf. | -.141 (.291) | -.325 (.188)* | -.458 (.131)*** | -.680 (.250)*** | -.513 (.202)** | -.657 (.156)*** |
| Product Market Tariff | -.499 (.548) | .411 (.315) | .040 (.239) | .541 (.504) | -.151 (.331) | -2.141 (.263)*** |
| Intm. Input Tariff | 3.287 (.767)*** | .631 (.401) | .694 (.306)** | -2.297 (.682)*** | -.488 (.423) | 2.840 (.338)*** |
| Import Penetration | 1.088 (.393)*** | -.025 (.184) | -.081 (.149) | -.0008 (.364) | -.011 (.216) | -1.242 (.177)*** |
| Obs. | 145,408 | 145,408 | 293,353 | 112,974 | 112,974 | 293,124 |
| Pseudo R^2 | .151 | .033 | .050 | .041 | .024 | .079 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 101: UNCONDITIONAL LOGIT ESTIMATION

| | Separations | | | Accessions | | |
|-----------------------|----------------------|-------------------|--------------------|----------------------|--------------------|---------------------|
| | Cdl. logit (1) | Logit | | Cdl. logit (4) | Logit | |
| | | cdl. smpl. (2) | full smpl. (3) | | cdl. smpl. (5) | full smpl. (6) |
| Balassa Comp. Adv. | .169 (.024)*** | .108 (.009)*** | .125 (.007)*** | -.016 (.020) | .072 (.009)*** | .184 (.007)*** |
| Exporter Status | .283 (.028)*** | .066 (.015)*** | -.017 (.012) | -.439 (.027)*** | -.304 (.017)*** | -.508 (.013)*** |
| Product Market Tariff | -.705 (.426)* | -.095 (.221) | -.489 (.170)*** | 1.246 (.393)*** | .223 (.251) | -1.402 (.198)*** |
| Intm. Input Tariff | 2.880 (.678)*** | .978 (.344)*** | 1.371 (.255)*** | -3.073 (.598)*** | -.932 (.380)** | 2.232 (.301)*** |
| Import Penetration | 1.257 (.388)*** | -.125 (.173) | -.328 (.140)** | .198 (.355) | .179 (.203) | -1.009 (.165)*** |
| Obs. | 145,408 | 145,408 | 293,353 | 112,974 | 112,974 | 293,124 |
| Pseudo R^2 | .150 | .033 | .05 | .041 | .023 | .078 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Estimates in columns 1 and 4 repeat column 6 in Tables 92 and 93. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 102: SUMMARY STATISTICS FOR SEPARATION SAMPLE, 1990-98

| | All sectors | | Comp. adv. quintile | |
|--------------------------------|-------------|----------|---------------------|-------------|
| | Mean | Std.Dev. | 1st Mean | 5th Mean |
| | (1) | (2) | (3) | (4) |
| Outcomes | | | | |
| Indic.: Separation | .282 | .450 | .314 | .260 |
| Indic.: Layoff | .245 | .430 | .262 | .231 |
| Indic.: Quit | .026 | .160 | .031 | .020 |
| Main covariates | | | | |
| Balassa Comp. Adv. | 1.450 | 1.047 | 3.223 | 1.373 |
| Exporter Status | .495 | .500 | .438 | 1.000 |
| Product Market Tariff | .193 | .103 | .174 | .204 |
| Sector-level covariates | | | | |
| Intm. Input Tariff | .146 | .077 | .105 | .154 |
| Import Penetration | .064 | .052 | .031 | .074 |
| Sector real exch. rate | .944 | .102 | .957 | .947 |
| FDI Flow (USD billion) | .110 | .334 | .263 | .103 |
| Herfindahl Index (sales) | .089 | .056 | .083 | .098 |
| Share: Jobs at private firms | .955 | .019 | .966 | .955 |
| Plant-level covariates | | | | |
| Log Employment | 5.148 | 1.952 | 5.551 | 6.210 |
| Share: Middle School or less | .745 | .219 | .815 | .699 |
| Share: Some High School | .182 | .159 | .137 | .204 |
| Share: White-collar occ. | .264 | .211 | .241 | .291 |
| Worker-level covariates | | | | |
| Tenure at plant (in years) | .952 | 1.208 | .778 | 1.248 |
| Pot. labor force experience | 25.276 | 9.971 | 26.116 | 25.154 |
| Middle School or less | .785 | .411 | .854 | .744 |
| Some High School | .151 | .358 | .108 | .171 |
| Some College | .020 | .141 | .012 | .028 |
| College Degree | .038 | .191 | .021 | .052 |
| Prof. or Manag'l. Occ. | .085 | .278 | .069 | .102 |
| Tech'l. or Superv. Occ. | .082 | .274 | .061 | .098 |
| Unskilled Wh. Collar Occ. | .070 | .255 | .080 | .075 |
| Skilled Bl. Collar Occ. | .636 | .481 | .646 | .623 |
| Unskilled Bl. Collar Occ. | .102 | .303 | .120 | .088 |
| Indic.: Outsourceable job | .252 | .434 | .234 | .294 |

Source: RAIS 1990-98 (1% random estimation sample of Table 92), male workers nationwide, 25 to 64 years old, with manufacturing job (146,800 observations). Sector information at subsector IBGE level.

Table 103: SUMMARY STATISTICS FOR ACCESSION SAMPLE, 1990-98

| | All sectors | | Comp. adv. quintile | |
|--------------------------------|-------------|----------|---------------------|-------------|
| | Mean | Std.Dev. | 1st Mean | 5th Mean |
| | (1) | (2) | (3) | (4) |
| Outcome | | | | |
| Indic.: Accession | .292 | .455 | .326 | .237 |
| Main covariates | | | | |
| Balassa Comp. Adv. | 1.511 | 1.083 | 3.251 | 1.485 |
| Exporter Status | .409 | .492 | .412 | 1.000 |
| Product Market Tariff | .179 | .094 | .167 | .190 |
| Sector-level covariates | | | | |
| Intm. Input Tariff | .136 | .071 | .102 | .143 |
| Import Penetration | .063 | .053 | .033 | .074 |
| Sector real exch. rate | .940 | .095 | .954 | .942 |
| FDI Flow (USD billion) | .120 | .349 | .278 | .119 |
| Herfindahl Index (sales) | .088 | .056 | .087 | .096 |
| Share: Jobs at private firms | .957 | .019 | .968 | .957 |
| Plant-level covariates | | | | |
| Log Employment | 4.697 | 1.942 | 5.345 | 5.942 |
| Share: Middle School or less | .769 | .219 | .824 | .727 |
| Share: Some High School | .170 | .167 | .133 | .190 |
| Share: White-collar occ. | .240 | .212 | .233 | .263 |
| Worker-level covariates | | | | |
| Pot. labor force experience | 24.248 | 9.414 | 25.351 | 23.329 |
| Middle School or less | .800 | .400 | .860 | .751 |
| Some High School | .144 | .351 | .103 | .168 |
| Some College | .018 | .131 | .011 | .027 |
| College Degree | .033 | .178 | .021 | .051 |
| Prof. or Manag'l. Occ. | .066 | .248 | .058 | .081 |
| Tech'l. or Superv. Occ. | .069 | .253 | .054 | .080 |
| Unskilled Wh. Collar Occ. | .064 | .245 | .076 | .067 |
| Skilled Bl. Collar Occ. | .657 | .475 | .664 | .647 |
| Unskilled Bl. Collar Occ. | .116 | .320 | .123 | .107 |
| Indic.: Outsourceable job | .232 | .422 | .228 | .270 |

Source: RAIS 1990-98 (1% random estimation sample of Table 93), male workers nationwide, 25 to 64 years old, with manufacturing job (112,971 observations). Sector information at subsector IBGE level.

Table 104: MEANS IN SEPARATION AND ACCESSION SAMPLES, 1990-98

| Comparative advantage quintiles | Separations | | Accessions | |
|---------------------------------|-------------|------------|------------|------------|
| | 1st (1) | 5th (2) | 1st (3) | 5th (4) |
| Main covariates | | | | |
| Balassa Comp. Adv. | 3.223 | 1.373 | 3.251 | 1.485 |
| Exporter Status | .438 | 1.000 | .412 | 1.000 |
| Product Market Tariff | .174 | .204 | .167 | .190 |
| Sector-level covariates | | | | |
| Intm. Input Tariff | .105 | .154 | .102 | .143 |
| Import Penetration | .031 | .074 | .033 | .074 |
| FDI Flow (USD billion) | .263 | .103 | .278 | .119 |
| Herfindahl Index (sales) | .083 | .098 | .087 | .096 |
| Share: Jobs at private firms | .966 | .955 | .968 | .957 |
| Log Employment | 5.551 | 6.210 | 5.345 | 5.942 |
| Share: Middle School or less | .815 | .699 | .824 | .727 |
| Share: Some High School | .137 | .204 | .133 | .190 |
| Share: White-collar occ. | .241 | .291 | .233 | .263 |
| Worker-level covariates | | | | |
| Middle School or less | .854 | .744 | .860 | .751 |
| Some High School | .108 | .171 | .103 | .168 |
| Some College | .012 | .028 | .011 | .027 |
| College Degree | .021 | .052 | .021 | .051 |
| Prof. or Manag'l. Occ. | .069 | .102 | .058 | .081 |
| Tech'l. or Superv. Occ. | .061 | .098 | .054 | .080 |
| Unskilled Wh. Collar Occ. | .080 | .075 | .076 | .067 |
| Skilled Bl. Collar Occ. | .646 | .623 | .664 | .647 |
| Unskilled Bl. Collar Occ. | .120 | .088 | .123 | .107 |
| Indic.: Outsourceable job | .234 | .294 | .228 | .270 |

Source: RAIS 1990-98 (1% random estimation samples of Tables 92 and 93), male workers nationwide, 25 to 64 years old, with manufacturing job (146,800 observations in separation and 112,971 in accession sample). Sector information at subsector IBGE level.

Table 105: TRADE EXPOSURE AND PREDICTED LABOR MARKET OUTCOMES

| | 1990 | 1992 | 1994 | 1998 |
|--|------|-------|-------|-------|
| <i>Trade Exposure</i> | | | | |
| Import Penetration | .041 | .056 | .060 | .103 |
| Product Market Tariff | .358 | .202 | .142 | .167 |
| Intm. Input Tariff | .278 | .152 | .107 | .129 |
| <i>Change in Separation rates predicted by</i> | | | | |
| change in Import Penetration since 1990 | | .016 | .020 | .064 |
| changes in Tariffs since 1990 | | .067 | .092 | .081 |
| <i>Change in Accession rates predicted by</i> | | | | |
| change in Import Penetration since 1990 | | -.008 | -.012 | -.040 |
| changes in Tariffs since 1990 | | .018 | .023 | .019 |

Source: RAIS 1990-98, male workers nationwide, 25 to 64 years old, with manufacturing job (estimation samples from Tables 92 and 93). Sector information at subsector IBGE level. Predicted changes in separation and accession rates based on marginal effects implied by column (6) estimates in Tables 92 and 93 ($\hat{P}(1 - \hat{P})$ is .170 for separations and .174 for accessions).

7.3 Separations and accessions of prime-age male workers nationwide, subsector IBGE

Table 106: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, SUBSECTOR IBGE 1990-98

| | Separations | | Accessions | |
|--------------------------------|---------------------|--------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Balassa Comp. Adv. | .138 (.036)*** | .134 (.043)*** | -.058 (.032)* | -.125 (.038)*** |
| Comp. Adv. × Prd. Trff. | .202 (.200) | .265 (.238) | .289 (.162)* | .599 (.203)*** |
| Exporter Status | .481 (.048)*** | .478 (.081)*** | -.359 (.045)*** | -.564 (.077)*** |
| Exporter × Prd. Trff. | -1.071 (.213)*** | -.950 (.362)*** | -.428 (.195)** | .351 (.323) |
| Comp. Adv. × Exporter | | .011 (.051) | | .156 (.047)*** |
| Comp. Adv. × Exp. × Prd. Trff. | | -.141 (.291) | | -.680 (.250)*** |
| Product Market Tariff | -.424 (.532) | -.499 (.548) | .967 (.474)** | .541 (.504) |
| Intm. Input Tariff | 3.241 (.767)*** | 3.287 (.767)*** | -2.486 (.672)*** | -2.297 (.682)*** |
| Import Penetration | 1.093 (.393)*** | 1.088 (.393)*** | .035 (.364) | -.0008 (.364) |
| Obs. | 145,408 | 145,408 | 112,974 | 112,974 |
| Pseudo R^2 | .150 | .151 | .041 | .041 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 107: YEAR EFFECTS IN CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, SUBSECTOR IBGE 1990-98

| | Separations | | Accessions | |
|--------------|---------------------|---------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) |
| Year 1990 | -2.126 (.145)*** | -2.131 (.145)*** | .963 (.131)*** | .950 (.131)*** |
| Year 1991 | -1.356 (.070)*** | -1.357 (.070)*** | 1.227 (.064)*** | 1.218 (.064)*** |
| Year 1992 | -.980 (.110)*** | -.979 (.110)*** | 1.089 (.109)*** | 1.084 (.110)*** |
| Year 1993 | -.860 (.067)*** | -.859 (.067)*** | 1.125 (.067)*** | 1.123 (.067)*** |
| Year 1994 | -.858 (.047)*** | -.858 (.047)*** | .983 (.047)*** | .987 (.047)*** |
| Year 1995 | -.432 (.086)*** | -.433 (.086)*** | .720 (.087)*** | .728 (.087)*** |
| Year 1996 | -.368 (.050)*** | -.368 (.050)*** | .699 (.052)*** | .704 (.052)*** |
| Year 1997 | -.194 (.040)*** | -.194 (.040)*** | .501 (.041)*** | .505 (.041)*** |
| Obs. | 145,408 | 145,408 | 112,974 | 112,974 |
| Pseudo R^2 | .150 | .151 | .041 | .041 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Other regressors (not reported): Trade-related, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 108: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS, 1990-98

| | Specification | | | | |
|--------------------------------|--------------------|--------------------|--------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .168 (.024)*** | .138 (.036)*** | | | .138 (.036)*** |
| Comp. Adv. × Prd. Trff. | | .216 (.200) | | | .202 (.200) |
| Exporter Status | | | .282 (.028)*** | .487 (.048)*** | .481 (.048)*** |
| Exporter × Prd. Trff. | | | | -1.107 (.214)*** | -1.071 (.213)*** |
| Product Market Tariff | -.799 (.426)* | -1.133 (.516)** | .041 (.419) | .643 (.437) | -.424 (.532) |
| Intm. Input Tariff | 3.147 (.677)*** | 3.554 (.765)*** | 1.166 (.648)* | 1.171 (.648)* | 3.241 (.767)*** |
| Import Penetration | 1.344 (.388)*** | 1.255 (.393)*** | .297 (.365) | .229 (.365) | 1.093 (.393)*** |
| Sector-level covariates | | | | | |
| Sector real exch. rate | -.386 (.644) | -.395 (.644) | .264 (.646) | .271 (.646) | -.391 (.646) |
| FDI Flow (USD billion) | -.049 (.020)** | -.042 (.020)** | -.017 (.020) | -.015 (.020) | -.040 (.020)** |
| Herfindahl Index (sales) | -.307 (.343) | -.252 (.344) | -.554 (.341) | -.533 (.341) | -.287 (.344) |
| Plant-level covariates | | | | | |
| Log Employment | -.347 (.011)*** | -.347 (.011)*** | -.371 (.011)*** | -.369 (.011)*** | -.376 (.011)*** |
| Share: Middle School or less | -.730 (.131)*** | -.731 (.131)*** | -.646 (.131)*** | -.639 (.131)*** | -.656 (.131)*** |
| Share: Some High School | -.442 (.148)*** | -.443 (.148)*** | -.392 (.148)*** | -.388 (.147)*** | -.390 (.148)*** |
| Share: White-collar occ. | .725 (.075)*** | .727 (.075)*** | .706 (.074)*** | .710 (.074)*** | .696 (.075)*** |
| Worker-level covariates | | | | | |
| Tenure at plant (in years) | 1.365 (.036)*** | 1.365 (.036)*** | 1.348 (.036)*** | 1.348 (.036)*** | 1.351 (.036)*** |
| Pot. labor force experience | .006 (.002)** | .006 (.002)** | .006 (.002)** | .006 (.002)** | .006 (.002)** |
| Prof. or Manag'l. Occ. | -.082 (.070) | -.083 (.070) | -.071 (.070) | -.071 (.070) | -.078 (.070) |
| Tech'l. or Superv. Occ. | -.076 (.068) | -.076 (.068) | -.068 (.068) | -.065 (.068) | -.070 (.068) |
| Unskilled Wh. Collar Occ. | -.266 (.067)*** | -.267 (.067)*** | -.255 (.067)*** | -.255 (.067)*** | -.262 (.067)*** |
| Skilled Bl. Collar Occ. | -.062 (.038)* | -.063 (.038)* | -.058 (.038) | -.057 (.037) | -.061 (.038) |
| Obs. | 145,408 | 145,408 | 145,408 | 145,408 | 145,408 |
| Pseudo R^2 | .149 | .149 | .149 | .15 | .15 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 109: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS, 1990-98

| | Specification | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | -.016 (.020) | -.050 (.031) | | | -.058 (.032)* |
| Comp. Adv. × Prd. Trff. | | .236 (.162) | | | .289 (.162)* |
| Exporter Status | | | -.439 (.027)*** | -.363 (.045)*** | -.359 (.045)*** |
| Exporter × Prd. Trff. | | | | -.406 (.194)** | -.428 (.195)** |
| Product Market Tariff | 1.405 (.393)*** | 1.024 (.468)** | 1.167 (.382)*** | 1.342 (.391)*** | .967 (.474)** |
| Intm. Input Tariff | -3.499 (.597)*** | -3.034 (.671)*** | -2.898 (.558)*** | -2.875 (.559)*** | -2.486 (.672)*** |
| Import Penetration | .046 (.354) | -.066 (.362) | .297 (.334) | .278 (.335) | .035 (.364) |
| Sector-level covariates | | | | | |
| Sector real exch. rate | -.899 (.637) | -.900 (.637) | -.892 (.633) | -.878 (.633) | -.793 (.639) |
| FDI Flow (USD billion) | .060 (.022)*** | .067 (.022)*** | .055 (.022)** | .055 (.022)** | .067 (.022)*** |
| Herfindahl Index (sales) | -.858 (.296)*** | -.784 (.300)*** | -.768 (.296)*** | -.759 (.296)** | -.689 (.301)** |
| Plant-level covariates | | | | | |
| Log Employment | -.189 (.008)*** | -.189 (.008)*** | -.142 (.009)*** | -.141 (.009)*** | -.141 (.009)*** |
| Share: Middle School or less | .942 (.107)*** | .942 (.107)*** | .849 (.105)*** | .850 (.105)*** | .851 (.105)*** |
| Share: Some High School | .738 (.124)*** | .737 (.124)*** | .668 (.122)*** | .668 (.122)*** | .667 (.122)*** |
| Share: White-collar occ. | -.677 (.067)*** | -.675 (.067)*** | -.622 (.067)*** | -.621 (.067)*** | -.617 (.067)*** |
| Worker-level covariates | | | | | |
| Prof. or Manag'l. Occ. | -.801 (.068)*** | -.802 (.068)*** | -.808 (.068)*** | -.807 (.068)*** | -.808 (.068)*** |
| Tech'l. or Superv. Occ. | -.597 (.064)*** | -.597 (.064)*** | -.604 (.064)*** | -.603 (.064)*** | -.603 (.064)*** |
| Unskilled Wh. Collar Occ. | -.488 (.062)*** | -.489 (.062)*** | -.496 (.062)*** | -.495 (.062)*** | -.495 (.062)*** |
| Skilled Bl. Collar Occ. | -.413 (.032)*** | -.414 (.032)*** | -.410 (.032)*** | -.409 (.032)*** | -.410 (.032)*** |
| Obs. | 112,974 | 112,974 | 112,974 | 112,974 | 112,974 |
| Pseudo R^2 | .037 | .037 | .041 | .041 | .041 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 110: FIRST-STAGE PREDICTIONS OF SECTOR REGRESSORS, SUBSECTOR IBGE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|
| | Prd. Mkt. Tariff | Intm. Tariff | Imp. Pen. | Prd. Mkt. Tariff | Intm. Tariff | Imp. Pen. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| USD Exch. Rate | .014 (.0007)*** | .061 (.0006)*** | .004 (.0002)*** | .015 (.0007)*** | .063 (.0006)*** | .004 (.0002)*** |
| PPI Idx. EU | -2.224 (.007)*** | -2.040 (.006)*** | .247 (.002)*** | -2.258 (.007)*** | -2.070 (.006)*** | .249 (.002)*** |
| PPI Idx. NAM | .693 (.006)*** | .371 (.005)*** | .059 (.002)*** | .711 (.006)*** | .387 (.005)*** | .056 (.002)*** |
| Balassa Comp. Adv. | -.016 (.0002)*** | -.026 (.0002)*** | -.023 (.00006)*** | -.016 (.0002)*** | -.026 (.0002)*** | -.022 (.00006)*** |
| FDI Flow (USD billion) | .029 (.0006)*** | .031 (.0005)*** | .005 (.0002)*** | .029 (.0006)*** | .031 (.0006)*** | .005 (.0002)*** |
| Herfindahl Index (sales) | -.017 (.004)*** | -.282 (.003)*** | .309 (.001)*** | -.028 (.004)*** | -.290 (.003)*** | .310 (.001)*** |
| Log Employment | .011 (.0001)*** | .008 (.00009)*** | .002 (.00003)*** | .009 (.0001)*** | .007 (.00008)*** | .001 (.00003)*** |
| Share: Middle School or less | .030 (.002)*** | .016 (.002)*** | -.022 (.0006)*** | .025 (.002)*** | .014 (.002)*** | -.018 (.0005)*** |
| Share: Some High School | -.020 (.003)*** | -.021 (.002)*** | .005 (.0007)*** | -.027 (.002)*** | -.024 (.002)*** | .010 (.0006)*** |
| Share: White-collar occ. | -.008 (.001)*** | -.008 (.001)*** | -.008 (.0003)*** | -.008 (.001)*** | -.008 (.001)*** | -.007 (.0003)*** |
| <i>F</i> statistic (IV) | 67,810.65 | 83,202.08 | 42,451.25 | 68,491.53 | 83,945.77 | 42,546.58 |

Sources: Sector data from various sources at subsector IBGE level; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 108 for separations, Table 109 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 111: FIRST-STAGE PREDICTIONS OF EXPORT STATUS, SUBSECTOR IBGE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | OLS (1) | Firm FE (2) | Firm FE (3) | OLS (4) | Firm FE (5) | Firm FE (6) |
| World imports APD | .004 (.055) | -.133 (.080)* | .142 (.085)* | -.013 (.056) | -.091 (.081) | .209 (.086)** |
| World imports CEE | -3.961 (.255)*** | -3.511 (.367)*** | -3.163 (.369)*** | -4.074 (.258)*** | -3.386 (.369)*** | -3.002 (.371)*** |
| World imports LAC | -.862 (.140)*** | -.567 (.202)*** | -.660 (.202)*** | -.877 (.141)*** | -.651 (.202)*** | -.753 (.203)*** |
| World imports NAM | .984 (.059)*** | .882 (.084)*** | .744 (.085)*** | 1.015 (.059)*** | .871 (.084)*** | .720 (.085)*** |
| World imports ODV | .846 (.063)*** | .706 (.089)*** | .690 (.089)*** | .869 (.063)*** | .691 (.089)*** | .673 (.089)*** |
| World imports OIN | .231 (.185) | .627 (.267)** | -.218 (.282) | .282 (.187) | .491 (.269)* | -.431 (.283) |
| World imports WEU | -.054 (.010)*** | -.074 (.014)*** | -.032 (.015)** | -.058 (.010)*** | -.069 (.014)*** | -.023 (.015) |
| Balassa Comp. Adv. | -.053 (.0008)*** | -.034 (.001)*** | -.058 (.003)*** | -.052 (.0008)*** | -.034 (.001)*** | -.059 (.003)*** |
| Comp. Adv. × Prd. Trff. | | | .148 (.016)*** | | | .161 (.016)*** |
| FDI Flow (USD billion) | -.021 (.002)*** | -.024 (.004)*** | -.019 (.004)*** | -.023 (.002)*** | -.025 (.004)*** | -.019 (.004)*** |
| Herfindahl Index (sales) | .328 (.014)*** | .310 (.020)*** | .284 (.020)*** | .334 (.014)*** | .316 (.020)*** | .288 (.021)*** |
| Log Employment | .133 (.0004)*** | .128 (.0007)*** | .128 (.0007)*** | .131 (.0004)*** | .126 (.0007)*** | .126 (.0007)*** |
| Share: Middle School or less | -.449 (.007)*** | -.370 (.010)*** | -.370 (.010)*** | -.451 (.007)*** | -.366 (.010)*** | -.367 (.010)*** |
| Share: Some High School | -.295 (.009)*** | -.291 (.012)*** | -.294 (.012)*** | -.299 (.009)*** | -.290 (.012)*** | -.293 (.012)*** |
| Share: White-collar occ. | .013 (.004)*** | .037 (.006)*** | .038 (.006)*** | .019 (.004)*** | .042 (.006)*** | .042 (.006)*** |
| <i>F</i> statistic (IV) | 144.141 | 36.48 | 36.353 | 147.979 | 35.054 | 36.083 |

Sources: SECEX exporter information 1990-98; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 108 for separations, Table 109 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent. Annual world imports, coefficients rescaled to imports in USD billion.

Table 112: PSEUDO-IV CONDITIONAL LOGIT ESTIMATES, 1990-98

| | Separations | | Accessions | |
|-------------------------------|--------------------|--------------------|---------------------|--------------------|
| | Tariff IV (1) | Exporter IV (2) | Tariff IV (3) | Exporter IV (4) |
| Predicted Product Mkt. Tariff | -5.737 (3.300)* | | -4.554 (3.368) | |
| Residual Product Mkt. Tariff | -.323 (.436) | | 1.018 (.410)** | |
| Predicted Intm. Input Tariff | 7.440 (3.846)* | | 4.450 (3.980) | |
| Residual Intm. Input Tariff | 2.598 (.683)*** | | -2.824 (.607)*** | |
| Predicted Import Penetration | | | | |
| Residual Import Penetration | 1.005 (.394)** | | .242 (.358) | |
| Predicted Exporter Status | | | | |
| Residual Exporter Status | | .283 (.028)*** | | -.439 (.027)*** |
| Obs. | 145,408 | 145,408 | 112,974 | 112,974 |
| Pseudo R^2 | .150 | .150 | .041 | .041 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 113: FIXED-EFFECTS LINEAR LEAST-SQUARES ESTIMATES, SHORT SUBSECTOR IBGE REGRESSIONS 1990-98

| | Separations | | | Accessions | | |
|-----------------------|--------------------|--------------------|-------------------|---------------------|--------------------|---------------------|
| | Cdl. Logit | OLS-FE | | Cdl. Logit | OLS-FE | |
| | | (1) | (2) | | (3) | (4) |
| Balassa Comp. Adv. | .169 (.024)*** | .017 (.002)*** | .014 (.006)** | -.016 (.020) | .002 (.002) | -.018 (.006)*** |
| Exporter Status | .283 (.028)*** | .038 (.003)*** | .337 (.261) | -.439 (.027)*** | -.049 (.003)*** | -1.064 (.275)*** |
| Product Market Tariff | -.705 (.426)* | -.100 (.035)*** | -.176 (.069)** | 1.246 (.393)*** | .124 (.032)*** | -.025 (.080) |
| Intm. Input Tariff | 2.880 (.678)*** | .343 (.054)*** | | -3.073 (.598)*** | -.309 (.049)*** | |
| Import Penetration | 1.257 (.388)*** | .052 (.034) | | .198 (.355) | .088 (.031)*** | |
| Obs. | 145,408 | 293,353 | 293,353 | 112,974 | 293,124 | 293,124 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Instruments: World imports by year and real exchange rate components by sector and year (two instruments with sector variation). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 114: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS BY EDUCATION GROUP, 1990-98

| | Cdl. Logit baseline | Primary school | High school | College educ. | Privatiz. control | Outsourc. job indic. |
|-------------------------|------------------------|---------------------|-------------------|--------------------|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .138 (.036)*** | .114 (.041)*** | .462 (.148)*** | -.096 (.226) | .139 (.037)*** | .135 (.037)*** |
| Comp. Adv. × Prd. Trff. | .202 (.200) | .195 (.224) | -1.217 (.910) | 2.334 (1.440) | .207 (.201) | .224 (.205) |
| Exporter Status | .481 (.048)*** | .481 (.055)*** | .292 (.168)* | .122 (.251) | .481 (.048)*** | .482 (.048)*** |
| Exporter × Prd. Trff. | -1.071 (.213)*** | -1.000 (.244)*** | -.388 (.767) | .926 (1.156) | -1.070 (.213)*** | -1.077 (.216)*** |
| Product Market Tariff | -.424 (.532) | -.287 (.612) | -.715 (1.860) | -6.007 (3.247)* | -.415 (.531) | -.495 (.539) |
| Obs. | 145,408 | 110,831 | 17,627 | 7,498 | 145,408 | 143,536 |
| Pseudo R^2 | .150 | .161 | .270 | .246 | .150 | .152 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 115: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS BY EDUCATION GROUP, 1990-98

| | Cdl. Logit baseline | Primary school | High school | College educ. | Privatiz. control | Outsourc. job indic. |
|-------------------------|------------------------|--------------------|--------------------|--------------------|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | -.058 (.032)* | -.022 (.036) | -.315 (.122)*** | -.288 (.191) | -.062 (.032)* | -.055 (.032)* |
| Comp. Adv. × Prd. Trff. | .289 (.162)* | .104 (.179) | 1.092 (.682) | 1.037 (1.045) | .268 (.164) | .270 (.165) |
| Exporter Status | -.359 (.045)*** | -.322 (.052)*** | -.454 (.160)*** | -.740 (.245)*** | -.358 (.045)*** | -.371 (.046)*** |
| Exporter × Prd. Trff. | -.428 (.195)** | -.525 (.225)** | -.284 (.685) | -.191 (1.023) | -.433 (.195)** | -.357 (.197)* |
| Product Market Tariff | .967 (.474)** | 1.375 (.532)*** | .969 (1.867) | .423 (2.763) | .894 (.482)* | .908 (.479)* |
| Obs. | 112,974 | 86,468 | 12,063 | 4,786 | 112,974 | 110,985 |
| Pseudo R^2 | .041 | .043 | .091 | .089 | .041 | .040 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 116: ALTERNATIVE LOGIT ESTIMATES OF SEPARATIONS, 1986-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|---------------------|--------------------|--------------------|---------------------|-------------------|
| | baseline | cond'l sample | full sample | Sector FE | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .138 (.036)*** | .149 (.020)*** | .200 (.015)*** | -.074 (.056) | .034 (.021) |
| Comp. Adv. × Prd. Trff. | .202 (.200) | -.268 (.120)** | -.472 (.087)*** | -.122 (.215) | .156 (.048)*** |
| Exporter Status | .481 (.048)*** | .161 (.027)*** | .0006 (.021) | .465 (.048)*** | |
| Exporter × Prd. Trff. | -1.071 (.213)*** | -.515 (.125)*** | -.084 (.094) | -.979 (.215)*** | |
| Product Market Tariff | -.424 (.532) | .594 (.297)** | .302 (.227) | -1.663 (.575)*** | .410 (.269) |
| Obs. | 145,408 | 145,408 | 293,353 | 145,408 | 244,543 |
| Pseudo R^2 | .150 | .033 | .050 | .152 | .135 |

Source: RAIS 1986-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 117: ALTERNATIVE LOGIT ESTIMATES OF ACCESSIONS, 1986-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
| | baseline | cond'l sample | full sample | Sector FE | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | -.058 (.032)* | .026 (.021) | .115 (.017)*** | -.115 (.053)** | -.022 (.019) |
| Comp. Adv. × Prd. Trff. | .289 (.162)* | .286 (.121)** | .442 (.096)*** | .381 (.176)** | .018 (.038) |
| Exporter Status | -.359 (.045)*** | -.190 (.031)*** | -.420 (.025)*** | -.373 (.045)*** | |
| Exporter × Prd. Trff. | -.428 (.195)** | -.643 (.148)*** | -.500 (.117)*** | -.350 (.194)* | |
| Product Market Tariff | .967 (.474)** | .099 (.304) | -1.854 (.246)*** | 1.385 (.563)** | 1.078 (.255)*** |
| Obs. | 112,974 | 112,974 | 293,124 | 112,974 | 195,144 |
| Pseudo R^2 | .041 | .023 | .078 | .042 | .031 |

Source: RAIS 1986-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

7.4 Separations and accessions of prime-age male workers nationwide, CNAE sector

Table 118: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, CNAE 1990-98

| | Separations | | Accessions | |
|--------------------------------|--------------------|--------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Balassa Comp. Adv. | .0006 (.014) | .010 (.019) | .006 (.014) | -.003 (.018) |
| Comp. Adv. × Prd. Trff. | .326 (.086)*** | .293 (.119)** | -.018 (.083) | -.030 (.111) |
| Exporter Status | .397 (.054)*** | .423 (.064)*** | -.376 (.051)*** | -.418 (.061)*** |
| Exporter × Prd. Trff. | -.915 (.244)*** | -.993 (.291)*** | -.318 (.219) | -.299 (.266) |
| Comp. Adv. × Exporter | | -.016 (.023) | | .014 (.023) |
| Comp. Adv. × Exp. × Prd. Trff. | | .056 (.149) | | .040 (.144) |
| Product Market Tariff | -.028 (.308) | .008 (.316) | .523 (.260)** | .514 (.267)* |
| Intm. Input Tariff | 1.080 (.575)* | 1.085 (.575)* | -1.925 (.482)*** | -1.934 (.482)*** |
| Import Penetration | .210 (.336) | .208 (.336) | .256 (.307) | .253 (.308) |
| Obs. | 124,993 | 124,993 | 96,682 | 96,682 |
| Pseudo R^2 | .162 | .162 | .053 | .053 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 119: YEAR EFFECTS IN CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, CNAE 1990-98

| | Separations | | Accessions | |
|--------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Year 1990 | -1.307 (.237)*** | -1.308 (.237)*** | .428 (.233)* | .430 (.233)* |
| Year 1991 | -.379 (.076)*** | -.379 (.076)*** | .332 (.077)*** | .332 (.077)*** |
| Year 1993 | -.016 (.059) | -.017 (.059) | .091 (.059) | .092 (.059) |
| Year 1994 | -.087 (.144) | -.088 (.144) | -.048 (.142) | -.045 (.142) |
| Year 1995 | .297 (.200) | .296 (.199) | -.226 (.197) | -.223 (.197) |
| Year 1996 | .464 (.159)*** | .463 (.159)*** | -.353 (.156)** | -.351 (.156)** |
| Year 1997 | .663 (.149)*** | .662 (.149)*** | -.614 (.146)*** | -.611 (.146)*** |
| Year 1998 | .977 (.118)*** | .976 (.118)*** | -1.201 (.117)*** | -1.199 (.117)*** |
| Obs. | 124,993 | 124,993 | 96,682 | 96,682 |
| Pseudo R^2 | .162 | .162 | .053 | .053 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Other regressors (not reported): Trade-related, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 120: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS, CNAE 1990-98

| | Specification | | | | |
|--------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .048 (.009)*** | .009 (.014) | | | .0006 (.014) |
| Comp. Adv. × Prd. Trff. | | .301 (.086)*** | | | .326 (.086)*** |
| Exporter Status | | | .241 (.031)*** | .406 (.054)*** | .397 (.054)*** |
| Exporter × Prd. Trff. | | | | -.888 (.241)*** | -.915 (.244)*** |
| Product Market Tariff | -.177 (.278) | -.443 (.296) | -.189 (.279) | .208 (.294) | -.028 (.308) |
| Intm. Input Tariff | .935 (.574) | 1.123 (.577)* | .675 (.576) | .712 (.573) | 1.080 (.575)* |
| Import Penetration | .319 (.335) | .327 (.335) | -.071 (.329) | -.103 (.329) | .210 (.336) |
| Sector-level covariates | | | | | |
| Sector real exch. rate | -1.365 (.690)** | -1.555 (.693)** | -1.025 (.689) | -.959 (.690) | -1.478 (.695)** |
| FDI Flow (USD billion) | -.079 (.019)*** | -.061 (.020)*** | -.055 (.019)*** | -.055 (.019)*** | -.057 (.020)*** |
| Herfindahl Index (sales) | -.116 (.307) | -.095 (.307) | -.016 (.291) | -.004 (.291) | -.088 (.307) |
| Plant-level covariates | | | | | |
| Log Employment | -.327 (.013)*** | -.328 (.013)*** | -.352 (.013)*** | -.350 (.013)*** | -.351 (.013)*** |
| Share: Middle School or less | -.758 (.157)*** | -.750 (.157)*** | -.707 (.156)*** | -.701 (.156)*** | -.689 (.157)*** |
| Share: Some High School | -.573 (.177)*** | -.567 (.178)*** | -.550 (.176)*** | -.547 (.176)*** | -.523 (.178)*** |
| Share: White-collar occ. | .878 (.088)*** | .883 (.089)*** | .840 (.088)*** | .840 (.088)*** | .848 (.089)*** |
| Worker-level covariates | | | | | |
| Tenure at plant (in years) | 1.475 (.043)*** | 1.476 (.043)*** | 1.460 (.043)*** | 1.461 (.043)*** | 1.466 (.043)*** |
| Pot. labor force experience | .004 (.003) | .004 (.003) | .005 (.003)* | .005 (.003)* | .004 (.003) |
| Prof. or Manag'l. Occ. | -.058 (.081) | -.061 (.081) | -.060 (.081) | -.060 (.081) | -.057 (.081) |
| Tech'l. or Superv. Occ. | -.064 (.077) | -.066 (.077) | -.062 (.077) | -.060 (.077) | -.064 (.077) |
| Unskilled Wh. Collar Occ. | -.192 (.077)** | -.192 (.077)** | -.192 (.077)** | -.191 (.077)** | -.192 (.078)** |
| Skilled Bl. Collar Occ. | -.026 (.042) | -.028 (.042) | -.024 (.042) | -.023 (.042) | -.028 (.042) |
| Obs. | 124,993 | 124,993 | 126,256 | 126,256 | 124,993 |
| Pseudo R^2 | .160 | .161 | .161 | .162 | .162 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. 160 Sector information at CNAE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 121: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS, CNAE 1990-98

| | Specification | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | -.003 (.008) | .002 (.013) | | | .006 (.014) |
| Comp. Adv. × Prd. Trff. | | -.038 (.082) | | | -.018 (.083) |
| Exporter Status | | | -.436 (.030)*** | -.373 (.051)*** | -.376 (.051)*** |
| Exporter × Prd. Trff. | | | | -.337 (.217) | -.318 (.219) |
| Product Market Tariff | .496 (.239)** | .525 (.248)** | .370 (.239) | .496 (.253)** | .523 (.260)** |
| Intm. Input Tariff | -2.189 (.477)*** | -2.206 (.479)*** | -1.947 (.477)*** | -1.927 (.478)*** | -1.925 (.482)*** |
| Import Penetration | .152 (.307) | .150 (.307) | .183 (.298) | .176 (.299) | .256 (.307) |
| Sector-level covariates | | | | | |
| Sector real exch. rate | .627 (.679) | .647 (.680) | .655 (.679) | .689 (.680) | .702 (.684) |
| FDI Flow (USD billion) | .018 (.021) | .016 (.022) | .016 (.021) | .016 (.021) | .013 (.022) |
| Herfindahl Index (sales) | -.424 (.287) | -.427 (.287) | -.456 (.269)* | -.451 (.269)* | -.371 (.286) |
| Plant-level covariates | | | | | |
| Log Employment | -.231 (.010)*** | -.231 (.010)*** | -.182 (.010)*** | -.182 (.010)*** | -.182 (.010)*** |
| Share: Middle School or less | .803 (.122)*** | .803 (.122)*** | .722 (.118)*** | .721 (.119)*** | .711 (.119)*** |
| Share: Some High School | .565 (.143)*** | .565 (.143)*** | .535 (.139)*** | .533 (.140)*** | .497 (.140)*** |
| Share: White-collar occ. | -.974 (.082)*** | -.974 (.082)*** | -.894 (.081)*** | -.894 (.081)*** | -.898 (.082)*** |
| Worker-level covariates | | | | | |
| Prof. or Manag'l. Occ. | -.768 (.080)*** | -.768 (.080)*** | -.774 (.079)*** | -.772 (.079)*** | -.771 (.080)*** |
| Tech'l. or Superv. Occ. | -.644 (.075)*** | -.644 (.075)*** | -.656 (.075)*** | -.654 (.075)*** | -.647 (.075)*** |
| Unskilled Wh. Collar Occ. | -.532 (.072)*** | -.532 (.072)*** | -.525 (.072)*** | -.524 (.072)*** | -.530 (.072)*** |
| Skilled Bl. Collar Occ. | -.392 (.036)*** | -.391 (.036)*** | -.391 (.036)*** | -.391 (.036)*** | -.385 (.036)*** |
| Obs. | 96,682 | 96,682 | 97,625 | 97,625 | 96,682 |
| Pseudo R^2 | .049 | .049 | .053 | .053 | .053 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at CNAE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 122: FIRST-STAGE PREDICTIONS OF SECTOR REGRESSORS, CNAE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|----------------------|----------------------|---------------------|----------------------|----------------------|
| | Prd. Mkt. Tariff | Intm. Tariff | Imp. Pen. | Prd. Mkt. Tariff | Intm. Tariff | Imp. Pen. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| USD Exch. Rate | .015 (.0008)*** | .060 (.0006)*** | .023 (.0003)*** | .016 (.0008)*** | .061 (.0006)*** | .022 (.0003)*** |
| PPI Idx. EU | -1.590 (.007)*** | -1.481 (.005)*** | .058 (.003)*** | -1.602 (.007)*** | -1.495 (.006)*** | .059 (.003)*** |
| PPI Idx. NAM | .196 (.006)*** | -.085 (.005)*** | .138 (.002)*** | .207 (.006)*** | -.074 (.005)*** | .136 (.002)*** |
| Balassa Comp. Adv. | -.010 (.0001)*** | -.009 (.00009)*** | -.009 (.00004)*** | -.010 (.0001)*** | -.009 (.00009)*** | -.009 (.00004)*** |
| FDI Flow (USD billion) | .025 (.0007)*** | .015 (.0006)*** | .003 (.0003)*** | .025 (.0007)*** | .015 (.0006)*** | .003 (.0003)*** |
| Herfindahl Index (sales) | -.046 (.003)*** | -.113 (.002)*** | .033 (.001)*** | -.057 (.003)*** | -.122 (.002)*** | .034 (.001)*** |
| Log Employment | .014 (.0001)*** | .007 (.0001)*** | .002 (.00005)*** | .013 (.0001)*** | .006 (.0001)*** | .003 (.00005)*** |
| Share: Middle School or less | .052 (.003)*** | .029 (.002)*** | -.094 (.001)*** | .041 (.002)*** | .021 (.002)*** | -.076 (.0009)*** |
| Share: Some High School | -.020 (.003)*** | -.017 (.003)*** | -.028 (.001)*** | -.033 (.003)*** | -.026 (.002)*** | -.008 (.001)*** |
| Share: White-collar occ. | -.001 (.002) | -.009 (.001)*** | -.012 (.0006)*** | -.006 (.002)*** | -.012 (.001)*** | -.005 (.0006)*** |
| <i>F</i> statistic (IV) | 42,131.87 | 65,230.11 | 15,458.67 | 41,723 | 64,725.41 | 15,328.48 |

Sources: Sector data from various sources at CNAE level; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 120 for separations, Table 121 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 123: FIRST-STAGE PREDICTIONS OF EXPORT STATUS, CNAE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | OLS (1) | Firm FE (2) | Firm FE (3) | OLS (4) | Firm FE (5) | Firm FE (6) |
| World imports APD | .890 (.058)*** | .635 (.087)*** | .691 (.088)*** | .883 (.058)*** | .675 (.087)*** | .739 (.089)*** |
| World imports CEE | 1.081 (.258)*** | .977 (.385)*** | 1.042 (.386)*** | .975 (.260)*** | 1.128 (.388)*** | 1.205 (.388)*** |
| World imports LAC | -.445 (.149)*** | .161 (.223) | .141 (.223) | -.422 (.150)*** | .076 (.224) | .052 (.224) |
| World imports NAM | -.382 (.060)*** | -.444 (.091)*** | -.470 (.091)*** | -.372 (.060)*** | -.455 (.091)*** | -.485 (.092)*** |
| World imports ODV | .033 (.064) | .008 (.093) | .005 (.093) | .065 (.064) | -.017 (.094) | -.021 (.094) |
| World imports OIN | -2.856 (.192)*** | -2.076 (.288)*** | -2.245 (.292)*** | -2.851 (.193)*** | -2.194 (.290)*** | -2.391 (.294)*** |
| World imports WEU | .123 (.010)*** | .093 (.015)*** | .102 (.015)*** | .123 (.010)*** | .097 (.015)*** | .107 (.015)*** |
| Balassa Comp. Adv. | -.002 (.0004)*** | .004 (.0008)*** | -.0003 (.002) | -.001 (.0004)*** | .005 (.0008)*** | -.0009 (.002) |
| Comp. Adv. × Prd. Trff. | | | .033 (.010)*** | | | .039 (.010)*** |
| FDI Flow (USD billion) | -.043 (.002)*** | -.043 (.003)*** | -.042 (.003)*** | -.045 (.002)*** | -.045 (.003)*** | -.044 (.003)*** |
| Herfindahl Index (sales) | .093 (.010)*** | -.116 (.021)*** | -.115 (.021)*** | .100 (.010)*** | -.115 (.022)*** | -.114 (.022)*** |
| Log Employment | .134 (.0004)*** | .134 (.0008)*** | .134 (.0008)*** | .132 (.0004)*** | .132 (.0008)*** | .132 (.0008)*** |
| Share: Middle School or less | -.516 (.008)*** | -.461 (.012)*** | -.461 (.012)*** | -.520 (.008)*** | -.465 (.012)*** | -.465 (.012)*** |
| Share: Some High School | -.270 (.010)*** | -.329 (.014)*** | -.329 (.014)*** | -.275 (.010)*** | -.329 (.014)*** | -.330 (.014)*** |
| Share: White-collar occ. | .098 (.005)*** | .107 (.006)*** | .108 (.006)*** | .102 (.005)*** | .111 (.006)*** | .112 (.006)*** |
| <i>F</i> statistic (IV) | 114.991 | 43.169 | 46.789 | 114.389 | 43.215 | 47.766 |

Sources: SECEX exporter information 1990-98; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 120 for separations, Table 121 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent. Annual world imports, coefficients rescaled to imports in USD billion.

Table 124: PSEUDO-IV CONDITIONAL LOGIT ESTIMATES, CNAE 1990-98

| | Separations | | Accessions | |
|-------------------------------|---------------------|--------------------|---------------------|--------------------|
| | Tariff IV (1) | Exporter IV (2) | Tariff IV (3) | Exporter IV (4) |
| Predicted Product Mkt. Tariff | -7.523 (2.982)** | | -.437 (3.112) | |
| Residual Product Mkt. Tariff | -.110 (.281) | | .414 (.241)* | |
| Predicted Intm. Input Tariff | 8.672 (3.558)** | | -1.436 (3.774) | |
| Residual Intm. Input Tariff | .968 (.578)* | | -1.916 (.482)*** | |
| Predicted Import Penetration | | | | |
| Residual Import Penetration | .149 (.337) | | .245 (.307) | |
| Predicted Exporter Status | | | | |
| Residual Exporter Status | | .227 (.031)*** | | -.436 (.030)*** |
| Obs. | 124,993 | 124,993 | 96,682 | 96,682 |
| Pseudo R^2 | .161 | .161 | .053 | .053 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 125: FIXED-EFFECTS LINEAR LEAST-SQUARES ESTIMATES, SHORT CNAE REGRESSIONS 1990-98

| | Separations | | | Accessions | | |
|-----------------------|-------------------|--------------------|-------------------|---------------------|--------------------|---------------------|
| | Cdl. Logit | OLS-FE | | Cdl. Logit | OLS-FE | |
| | | (1) | (2) | | (3) | (4) |
| Balassa Comp. Adv. | .044 (.009)*** | .004 (.0008)*** | .005 (.001)*** | .005 (.008) | .0003 (.0007) | -.003 (.001)*** |
| Exporter Status | .227 (.031)*** | .031 (.003)*** | | -.436 (.030)*** | -.048 (.003)*** | |
| Product Market Tariff | -.146 (.278) | -.071 (.021)*** | -.441 (.327) | .391 (.240) | .061 (.019)*** | .691 (.282)** |
| Intm. Input Tariff | .839 (.575) | .206 (.043)*** | .503 (.736) | -1.936 (.479)*** | -.239 (.039)*** | -2.214 (.632)*** |
| Import Penetration | .241 (.336) | -.049 (.028)* | | .268 (.307) | .087 (.026)*** | |
| Obs. | 124,993 | 255,943 | 255,943 | 96,682 | 255,140 | 255,140 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Instruments: World imports by year and real exchange rate components by sector and year (two instruments with sector variation). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 126: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS BY EDUCATION GROUP, CNAE 1990-98

| | Cdl. Logit baseline | Primary school | High school | College educ. | Privatiz. control | Outsourc. job indic. |
|-------------------------|------------------------|--------------------|------------------|-------------------|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .0006 (.014) | .008 (.015) | -.011 (.072) | .096 (.083) | .162 (.031)*** | -.001 (.014) |
| Comp. Adv. × Prd. Trff. | .326 (.086)*** | .359 (.093)*** | -.010 (.425) | -.440 (.659) | -.430 (.212)** | .340 (.087)*** |
| Exporter Status | .397 (.054)*** | .431 (.062)*** | .072 (.193) | -.074 (.285) | -.616 (.156)*** | .393 (.054)*** |
| Exporter × Prd. Trff. | -.915 (.244)*** | -.997 (.280)*** | .646 (.847) | 2.072 (1.327) | 5.846 (.965)*** | -.899 (.246)*** |
| Product Market Tariff | -.028 (.308) | .173 (.353) | -1.250 (.991) | -1.971 (1.912) | -1.587 (.897)* | -.054 (.311) |
| Obs. | 124,993 | 96,268 | 14,786 | 6,164 | 37,794 | 123,680 |
| Pseudo R^2 | .162 | .171 | .290 | .295 | .299 | .163 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 127: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS BY EDUCATION GROUP, CNAE 1990-98

| | Cdl. Logit baseline | Primary school | High school | College educ. | Privatiz. control | Outsourc. job indic. |
|-------------------------|------------------------|--------------------|--------------------|---------------------|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .006 (.014) | .010 (.015) | .055 (.065) | -.178 (.098)* | -.006 (.027) | .006 (.014) |
| Comp. Adv. × Prd. Trff. | -.018 (.083) | -.051 (.089) | -.034 (.388) | .527 (.567) | -.140 (.189) | -.011 (.083) |
| Exporter Status | -.376 (.051)*** | -.336 (.058)*** | -.541 (.175)*** | -1.162 (.305)*** | -.439 (.137)*** | -.383 (.051)*** |
| Exporter × Prd. Trff. | -.318 (.219) | -.368 (.254) | .170 (.719) | .696 (1.182) | -1.082 (.870) | -.270 (.221) |
| Product Market Tariff | .523 (.260)** | .609 (.300)** | 2.062 (.967)** | -1.087 (1.460) | -1.264 (.795) | .443 (.262)* |
| Obs. | 96,682 | 74,930 | 10,080 | 3,883 | 31,021 | 95,260 |
| Pseudo R^2 | .053 | .055 | .115 | .112 | .099 | .052 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 128: ALTERNATIVE LOGIT ESTIMATES OF SEPARATIONS, CNAE 1990-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|--------------------|-------------------|-------------------|-------------------|-------------------|
| | baseline | cond'l sample | full sample | full interact. | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .0006 (.014) | .011 (.008) | .032 (.006)*** | .009 (.014) | .018 (.010)* |
| Comp. Adv. × Prd. Trff. | .326 (.086)*** | .286 (.049)*** | .223 (.036)*** | .301 (.086)*** | .133 (.033)*** |
| Exporter Status | .397 (.054)*** | .087 (.029)*** | -.044 (.022)** | | |
| Exporter × Prd. Trff. | -.915 (.244)*** | -.301 (.129)** | -.131 (.097) | | |
| Product Market Tariff | -.028 (.308) | .432 (.137)*** | .109 (.104) | -.443 (.296) | -.290 (.195) |
| Obs. | 124,993 | 124,993 | 255,943 | 124,993 | 190,545 |
| Pseudo R^2 | .162 | .036 | .051 | .161 | .150 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 129: ALTERNATIVE LOGIT ESTIMATES OF ACCESSIONS, CNAE 1990-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|--------------------|--------------------|--------------------|------------------|-------------------|
| | baseline | cond'l sample | full sample | full interact. | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .006 (.014) | -.0007 (.009) | .032 (.007)*** | .002 (.013) | -.012 (.009) |
| Comp. Adv. × Prd. Trff. | -.018 (.083) | .187 (.057)*** | .243 (.040)*** | -.038 (.082) | .075 (.027)*** |
| Exporter Status | -.376 (.051)*** | -.216 (.033)*** | -.489 (.026)*** | | |
| Exporter × Prd. Trff. | -.318 (.219) | -.448 (.156)*** | -.243 (.119)** | | |
| Product Market Tariff | .523 (.260)** | .398 (.157)** | .174 (.120) | .525 (.248)** | .426 (.174)** |
| Obs. | 96,682 | 96,682 | 255,140 | 96,682 | 148,970 |
| Pseudo R^2 | .053 | .023 | .080 | .049 | .041 |

Source: RAIS 1990-98 (1% random sample), male workers nationwide, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

7.5 Separations and accessions of prime-age male workers in metropolitan areas, subsector IBGE

Table 130: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, SUBSECTOR IBGE 1990-98

| | Separations | | Accessions | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Balassa Comp. Adv. | .084 (.057) | .154 (.072)** | .081 (.057) | .055 (.073) |
| Comp. Adv. × Prd. Trff. | .470 (.315) | .245 (.400) | -.020 (.306) | -.163 (.410) |
| Exporter Status | .438 (.076)*** | .631 (.130)*** | -.418 (.080)*** | -.549 (.136)*** |
| Exporter × Prd. Trff. | -1.023 (.322)*** | -1.548 (.568)*** | -.277 (.336) | -.369 (.589) |
| Comp. Adv. × Exporter | | -.145 (.089) | | .059 (.091) |
| Comp. Adv. × Exp. × Prd. Trff. | | .437 (.475) | | .265 (.491) |
| Product Market Tariff | -.002 (.810) | .253 (.856) | 1.166 (.820) | 1.392 (.889) |
| Intm. Input Tariff | 1.590 (1.172) | 1.598 (1.180) | -1.430 (1.177) | -1.761 (1.196) |
| Import Penetration | -.313 (.571) | -.298 (.572) | -1.597 (.616)*** | -1.593 (.618)*** |
| Obs. | 43,123 | 43,123 | 32,215 | 32,215 |
| Pseudo R^2 | .079 | .079 | .061 | .061 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 131: YEAR EFFECTS IN CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, SUBSECTOR IBGE 1990-98

| | Separations | | Accessions | |
|--------------|---------------------|---------------------|-------------------|-------------------|
| | (1) | (2) | (3) | (4) |
| Year 1990 | -.846 (.220)*** | -.855 (.221)*** | .500 (.227)** | .541 (.229)** |
| Year 1991 | -1.586 (.114)*** | -1.580 (.114)*** | .761 (.121)*** | .760 (.121)*** |
| Year 1992 | -1.795 (.184)*** | -1.784 (.184)*** | .462 (.201)** | .444 (.202)** |
| Year 1993 | -1.384 (.111)*** | -1.378 (.111)*** | .732 (.122)*** | .718 (.123)*** |
| Year 1994 | -.772 (.077)*** | -.776 (.077)*** | .746 (.085)*** | .750 (.085)*** |
| Year 1995 | .119 (.139) | .107 (.139) | .620 (.154)*** | .632 (.154)*** |
| Year 1996 | -.154 (.084)* | -.161 (.084)* | .626 (.094)*** | .632 (.094)*** |
| Year 1997 | -.040 (.068) | -.045 (.068) | .472 (.075)*** | .474 (.075)*** |
| Obs. | 43,123 | 43,123 | 32,215 | 32,215 |
| Pseudo R^2 | .079 | .079 | .061 | .061 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Other regressors (not reported): Trade-related, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 132: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS, 1990-98

| | Specification | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .157 (.035)*** | .084 (.057) | | | .084 (.057) |
| Comp. Adv. × Prd. Trff. | | .488 (.314) | | | .470 (.315) |
| Exporter Status | | | .241 (.044)*** | .447 (.076)*** | .438 (.076)*** |
| Exporter × Prd. Trff. | | | | -1.063 (.322)*** | -1.023 (.322)*** |
| Product Market Tariff | -.007 (.634) | -.728 (.785) | 1.016 (.613)* | 1.625 (.642)** | -.002 (.810) |
| Intm. Input Tariff | 1.137 (1.048) | 1.930 (1.168)* | -1.207 (.966) | -1.242 (.966) | 1.590 (1.172) |
| Import Penetration | .091 (.559) | -.112 (.571) | -.905 (.533)* | -.958 (.534)* | -.313 (.571) |
| Sector-level covariates | | | | | |
| Sector real exch. rate | 4.977 (1.057)*** | 5.008 (1.056)*** | 5.818 (1.055)*** | 5.747 (1.058)*** | 4.896 (1.062)*** |
| FDI Flow (USD billion) | -.089 (.040)** | -.072 (.041)* | -.053 (.039) | -.049 (.039) | -.064 (.041) |
| Herfindahl Index (sales) | -1.690 (.504)*** | -1.578 (.508)*** | -2.100 (.499)*** | -2.082 (.499)*** | -1.641 (.509)*** |
| Plant-level covariates | | | | | |
| Log Employment | -.273 (.015)*** | -.273 (.015)*** | -.293 (.015)*** | -.291 (.015)*** | -.299 (.015)*** |
| Share: Middle School or less | -.044 (.196) | -.047 (.196) | .109 (.197) | .126 (.197) | .067 (.198) |
| Share: Some High School | -.156 (.224) | -.160 (.224) | -.056 (.225) | -.046 (.226) | -.077 (.226) |
| Share: White-collar occ. | .349 (.117)*** | .354 (.117)*** | .351 (.117)*** | .356 (.117)*** | .341 (.117)*** |
| Worker-level covariates | | | | | |
| Tenure at plant (in years) | .478 (.032)*** | .478 (.032)*** | .467 (.032)*** | .469 (.032)*** | .474 (.032)*** |
| Pot. labor force experience | .013 (.003)*** | .013 (.003)*** | .013 (.003)*** | .013 (.003)*** | .013 (.003)*** |
| Prof. or Manag'l. Occ. | -.677 (.101)*** | -.679 (.101)*** | -.674 (.101)*** | -.675 (.101)*** | -.683 (.101)*** |
| Tech'l. or Superv. Occ. | -.494 (.098)*** | -.495 (.099)*** | -.509 (.098)*** | -.508 (.099)*** | -.504 (.099)*** |
| Unskilled Wh. Collar Occ. | -.209 (.100)** | -.210 (.100)** | -.204 (.100)** | -.205 (.100)** | -.220 (.100)** |
| Skilled Bl. Collar Occ. | -.157 (.060)*** | -.157 (.060)*** | -.151 (.060)** | -.150 (.060)** | -.161 (.060)*** |
| Obs. | 43,123 | 43,123 | 43,123 | 43,123 | 43,123 |
| Pseudo R^2 | .077 | .077 | .077 | .078 | .079 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 133: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS, 1990-98

| | Specification | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .075 (.034)** | .090 (.057) | | | .081 (.057) |
| Comp. Adv. × Prd. Trff. | | -.093 (.304) | | | -.020 (.306) |
| Exporter Status | | | -.470 (.046)*** | -.413 (.080)*** | -.418 (.080)*** |
| Exporter × Prd. Trff. | | | | -.299 (.337) | -.277 (.336) |
| Product Market Tariff | 1.172 (.673)* | 1.304 (.799) | 1.486 (.647)** | 1.634 (.670)** | 1.166 (.820) |
| Intm. Input Tariff | -1.871 (1.073)* | -2.009 (1.166)* | -2.486 (.978)** | -2.491 (.980)** | -1.430 (1.177) |
| Import Penetration | -1.865 (.601)*** | -1.825 (.614)*** | -2.074 (.572)*** | -2.082 (.572)*** | -1.597 (.616)*** |
| Sector-level covariates | | | | | |
| Sector real exch. rate | .135 (1.149) | .127 (1.149) | .920 (1.134) | .903 (1.134) | .344 (1.156) |
| FDI Flow (USD billion) | .123 (.046)*** | .119 (.047)** | .134 (.045)*** | .135 (.045)*** | .115 (.047)** |
| Herfindahl Index (sales) | -1.210 (.477)** | -1.232 (.481)** | -1.286 (.475)*** | -1.286 (.475)*** | -1.134 (.483)** |
| Plant-level covariates | | | | | |
| Log Employment | -.231 (.013)*** | -.231 (.013)*** | -.175 (.014)*** | -.175 (.014)*** | -.178 (.014)*** |
| Share: Middle School or less | 1.338 (.203)*** | 1.339 (.203)*** | 1.215 (.199)*** | 1.217 (.199)*** | 1.192 (.199)*** |
| Share: Some High School | 1.196 (.233)*** | 1.196 (.233)*** | 1.124 (.230)*** | 1.125 (.230)*** | 1.112 (.229)*** |
| Share: White-collar occ. | -.787 (.120)*** | -.788 (.120)*** | -.720 (.120)*** | -.718 (.120)*** | -.725 (.119)*** |
| Worker-level covariates | | | | | |
| Prof. or Manag'l. Occ. | -.858 (.103)*** | -.857 (.103)*** | -.846 (.104)*** | -.847 (.104)*** | -.847 (.104)*** |
| Tech'l. or Superv. Occ. | -.776 (.098)*** | -.776 (.098)*** | -.763 (.098)*** | -.762 (.098)*** | -.760 (.098)*** |
| Unskilled Wh. Collar Occ. | -.421 (.098)*** | -.421 (.098)*** | -.415 (.099)*** | -.416 (.099)*** | -.421 (.099)*** |
| Skilled Bl. Collar Occ. | -.345 (.057)*** | -.345 (.057)*** | -.330 (.057)*** | -.330 (.057)*** | -.333 (.057)*** |
| Obs. | 32,215 | 32,215 | 32,215 | 32,215 | 32,215 |
| Pseudo R^2 | .055 | .055 | .060 | .060 | .061 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 134: FIRST-STAGE PREDICTIONS OF SECTOR REGRESSORS, SUBSECTOR IBGE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|
| | Prd. Mkt. | Intm. | Imp. | Prd. Mkt. | Intm. | Imp. |
| | Tariff | Tariff | Pen. | Tariff | Tariff | Pen. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| USD Exch. Rate | -.003 (.0009)*** | .044 (.0007)*** | .007 (.0002)*** | -.0009 (.0009) | .045 (.0007)*** | .007 (.0002)*** |
| PPI Idx. EU | -2.008 (.009)*** | -1.959 (.008)*** | .290 (.003)*** | -2.048 (.009)*** | -1.992 (.008)*** | .295 (.002)*** |
| PPI Idx. NAM | .614 (.008)*** | .395 (.006)*** | .103 (.002)*** | .634 (.008)*** | .410 (.006)*** | .104 (.002)*** |
| Balassa Comp. Adv. | -.022 (.0003)*** | -.031 (.0003)*** | -.026 (.00008)*** | -.022 (.0003)*** | -.030 (.0003)*** | -.026 (.00008)*** |
| FDI Flow (USD billion) | .038 (.0009)*** | .037 (.0008)*** | .005 (.0002)*** | .039 (.0009)*** | .037 (.0008)*** | .006 (.0002)*** |
| Herfindahl Index (sales) | .006 (.005) | -.298 (.004)*** | .242 (.001)*** | .003 (.005) | -.304 (.004)*** | .243 (.001)*** |
| Log Employment | .013 (.0001)*** | .009 (.0001)*** | .002 (.00004)*** | .012 (.0001)*** | .008 (.0001)*** | .002 (.00004)*** |
| Share: Middle School or less | .039 (.002)*** | .026 (.002)*** | -.020 (.0007)*** | .042 (.002)*** | .030 (.002)*** | -.018 (.0006)*** |
| Share: Some High School | -.060 (.003)*** | -.048 (.003)*** | -.004 (.0008)*** | -.061 (.003)*** | -.046 (.002)*** | -.002 (.0008)*** |
| Share: White-collar occ. | .005 (.002)*** | .002 (.001) | -.012 (.0005)*** | .005 (.002)*** | .003 (.001)* | -.010 (.0004)*** |
| <i>F</i> statistic | 37,708.2 | 49,592.67 | 40,354.78 | 38,840 | 51,154.89 | 41,651.52 |

Sources: Sector data from various sources at subsector IBGE level; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 132 for separations, Table 133 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 135: FIRST-STAGE PREDICTIONS OF EXPORT STATUS, SUBSECTOR IBGE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | OLS (1) | Firm FE (2) | Firm FE (3) | OLS (4) | Firm FE (5) | Firm FE (6) |
| World imports APD | -0.664 (.070)*** | -0.403 (.117)*** | -0.045 (.124) | -0.783 (.070)*** | -0.459 (.119)*** | -0.057 (.126) |
| World imports CEE | -7.585 (.321)*** | -5.676 (.536)*** | -5.161 (.540)*** | -8.254 (.322)*** | -6.204 (.545)*** | -5.623 (.548)*** |
| World imports LAC | -0.987 (.177)*** | -0.532 (.298)* | -0.649 (.298)** | -0.986 (.176)*** | -0.620 (.301)** | -0.754 (.301)** |
| World imports NAM | 1.932 (.073)*** | 1.364 (.122)*** | 1.170 (.124)*** | 2.092 (.073)*** | 1.501 (.123)*** | 1.285 (.125)*** |
| World imports ODV | 1.439 (.080)*** | 1.102 (.131)*** | 1.070 (.131)*** | 1.556 (.080)*** | 1.214 (.133)*** | 1.176 (.133)*** |
| World imports OIN | 2.552 (.233)*** | 1.609 (.390)*** | .506 (.410) | 2.961 (.233)*** | 1.791 (.395)*** | .555 (.416) |
| World imports WEU | -0.201 (.013)*** | -0.144 (.021)*** | -0.088 (.022)*** | -0.223 (.013)*** | -0.155 (.021)*** | -0.093 (.022)*** |
| Balassa Comp. Adv. | -0.040 (.001)*** | -0.039 (.002)*** | -0.070 (.004)*** | -0.038 (.001)*** | -0.038 (.002)*** | -0.073 (.004)*** |
| Comp. Adv. × Prd. Trff. | | | .204 (.024)*** | | | .229 (.024)*** |
| FDI Flow (USD billion) | -0.037 (.003)*** | -0.030 (.006)*** | -0.023 (.006)*** | -0.040 (.003)*** | -0.030 (.006)*** | -0.021 (.006)*** |
| Herfindahl Index (sales) | .407 (.017)*** | .449 (.029)*** | .423 (.029)*** | .415 (.017)*** | .438 (.029)*** | .409 (.029)*** |
| Log Employment | .125 (.0005)*** | .141 (.001)*** | .140 (.001)*** | .120 (.0005)*** | .137 (.001)*** | .136 (.001)*** |
| Share: Middle School or less | -0.470 (.009)*** | -0.471 (.014)*** | -0.471 (.014)*** | -0.476 (.009)*** | -0.474 (.014)*** | -0.474 (.014)*** |
| Share: Some High School | -0.248 (.011)*** | -0.339 (.017)*** | -0.340 (.017)*** | -0.246 (.010)*** | -0.334 (.017)*** | -0.335 (.017)*** |
| Share: White-collar occ. | -0.004 (.006) | .039 (.009)*** | .041 (.009)*** | -0.005 (.006) | .039 (.009)*** | .041 (.009)*** |
| F statistic | 278.782 | 42.507 | 36.334 | 330.087 | 50.068 | 41.834 |

Sources: SECEX exporter information 1990-98; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 132 for separations, Table 133 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent. Annual world imports, coefficients rescaled to imports in USD billion.

Table 136: PSEUDO-IV CONDITIONAL LOGIT ESTIMATES, 1990-98

| | Separations | | Accessions | |
|-------------------------------|---------------------|--------------------|----------------------|--------------------|
| | Tariff IV | Exporter IV | Tariff IV | Exporter IV |
| | (1) | (2) | (3) | (4) |
| Predicted Product Mkt. Tariff | 13.289 (7.763)* | | -17.353 (8.652)** | |
| Residual Product Mkt. Tariff | .134 (.649) | | .972 (.702) | |
| Predicted Intm. Input Tariff | -13.944 (8.443)* | | 19.066 (9.458)** | |
| Residual Intm. Input Tariff | .842 (1.051) | | -1.298 (1.089) | |
| Predicted Import Penetration | | | | |
| Residual Import Penetration | -.033 (.567) | | -1.678 (.614)*** | |
| Predicted Exporter Status | | 4.263 (.868)*** | | -.201 (.872) |
| Residual Exporter Status | | .241 (.044)*** | | -.471 (.046)*** |
| Obs. | 43,123 | 43,123 | 32,215 | 32,215 |
| Pseudo R^2 | .079 | .078 | .061 | .061 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 137: FIXED-EFFECTS LINEAR LEAST-SQUARES ESTIMATES, SHORT SUBSECTOR IBGE REGRESSIONS 1990-98

| | Separations | | | Accessions | | |
|-----------------------|-------------------|--------------------|-------------------|---------------------|--------------------|-------------------|
| | Cdl. Logit | OLS-FE | | Cdl. Logit | OLS-FE | |
| | | (1) | (2) | | (3) | (4) |
| Balassa Comp. Adv. | .158 (.035)*** | .011 (.002)*** | .034 (.012)*** | .079 (.034)** | .008 (.002)*** | -.005 (.006) |
| Exporter Status | .241 (.044)*** | .016 (.002)*** | .863 (.436)** | -.471 (.046)*** | -.028 (.002)*** | -.562 (.222)** |
| Product Market Tariff | .088 (.634) | -.011 (.030) | -.112 (.108) | .997 (.678) | .058 (.025)** | .057 (.065) |
| Intm. Input Tariff | .901 (1.048) | .123 (.049)** | | -1.387 (1.080) | -.080 (.042)* | |
| Import Penetration | -.048 (.559) | -.069 (.027)*** | | -1.595 (.602)*** | -.018 (.023) | |
| Obs. | 43,123 | 173,803 | 173,803 | 32,215 | 177,072 | 177,072 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Instruments: World imports by year and real exchange rate components by sector and year (two instruments with sector variation). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 138: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS BY EDUCATION GROUP, 1990-98

| | Cdl. Logit baseline (1) | Primary school (2) | High school (3) | College educ. (4) | Privatiz. control (5) | Outsourc. job indic. (6) |
|-------------------------|-------------------------------|--------------------------|-----------------------|-------------------------|-----------------------------|--------------------------------|
| Balassa Comp. Adv. | .084 (.057) | .215 (.069)*** | -.409 (.251) | -.554 (.354) | .109 (.058)* | .079 (.057) |
| Comp. Adv. × Prd. Trff. | .470 (.315) | -.087 (.372) | 2.493 (1.383)* | 4.234 (2.290)* | .614 (.314)* | .609 (.316)* |
| Exporter Status | .438 (.076)*** | .496 (.094)*** | .395 (.277) | -.064 (.398) | .428 (.076)*** | .429 (.077)*** |
| Exporter × Prd. Trff. | -1.023 (.322)*** | -1.093 (.391)*** | -1.479 (1.317) | .732 (1.988) | -.985 (.321)*** | -.991 (.327)*** |
| Product Market Tariff | -.002 (.810) | .391 (.973) | -2.456 (2.948) | -11.092 (4.929)** | .268 (.805) | -.258 (.812) |
| Obs. | 43,123 | 29,963 | 4,901 | 2,882 | 43,123 | 42,485 |
| Pseudo R^2 | .079 | .097 | .224 | .235 | .079 | .081 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 139: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS BY EDUCATION GROUP, 1990-98

| | Cdl. Logit baseline (1) | Primary school (2) | High school (3) | College educ. (4) | Privatiz. control (5) | Outsourc. job indic. (6) |
|-------------------------|-------------------------------|--------------------------|-----------------------|-------------------------|-----------------------------|--------------------------------|
| Balassa Comp. Adv. | .081 (.057) | .072 (.067) | .286 (.234) | -.159 (.351) | .102 (.058)* | .069 (.058) |
| Comp. Adv. × Prd. Trff. | -.020 (.306) | -.080 (.344) | -.750 (1.474) | 1.078 (1.873) | .080 (.307) | .035 (.310) |
| Exporter Status | -.418 (.080)*** | -.401 (.097)*** | -.669 (.279)** | -.518 (.403) | -.424 (.080)*** | -.423 (.081)*** |
| Exporter × Prd. Trff. | -.277 (.336) | -.263 (.402) | -.393 (1.136) | -2.154 (1.664) | -.250 (.336) | -.225 (.342) |
| Product Market Tariff | 1.166 (.820) | .533 (.925) | 3.772 (3.504) | 2.216 (4.767) | 1.512 (.833)* | 1.162 (.830) |
| Obs. | 32,215 | 22,010 | 3,405 | 1,751 | 32,215 | 31,623 |
| Pseudo R^2 | .061 | .051 | .109 | .109 | .061 | .061 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 140: ALTERNATIVE LOGIT ESTIMATES OF SEPARATIONS, 1986-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|---------------------|------------------|-------------------|--------------------|-------------------|
| | baseline | cond'l sample | full sample | Sector FE | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .084 (.057) | .056 (.038) | .105 (.028)*** | -.053 (.100) | .102 (.033)*** |
| Comp. Adv. × Prd. Trff. | .470 (.315) | .321 (.213) | .087 (.159) | .193 (.341) | .095 (.076) |
| Exporter Status | .438 (.076)*** | .116 (.050)** | -.072 (.038)* | .404 (.076)*** | |
| Exporter × Prd. Trff. | -1.023 (.322)*** | -.259 (.217) | .108 (.162) | -.851 (.322)*** | |
| Product Market Tariff | -.002 (.810) | -.260 (.512) | -.130 (.394) | -.638 (.910) | .936 (.417)** |
| Obs. | 43,123 | 43,123 | 173,803 | 43,123 | 76,845 |
| Pseudo R^2 | .079 | .030 | .078 | .081 | .078 |

Source: RAIS 1986-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 141: ALTERNATIVE LOGIT ESTIMATES OF ACCESSIONS, 1986-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|--------------------|--------------------|---------------------|--------------------|-------------------|
| | baseline | cond'l sample | full sample | Sector FE | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .081 (.057) | .041 (.042) | .050 (.032) | -.034 (.105) | .086 (.032)*** |
| Comp. Adv. × Prd. Trff. | -.020 (.306) | .269 (.235) | .842 (.181)*** | -.058 (.336) | -.095 (.071) |
| Exporter Status | -.418 (.080)*** | -.245 (.059)*** | -.503 (.046)*** | -.443 (.080)*** | |
| Exporter × Prd. Trff. | -.277 (.336) | -.550 (.269)** | -.465 (.215)** | -.138 (.335) | |
| Product Market Tariff | 1.166 (.820) | -.354 (.563) | -2.997 (.448)*** | 1.734 (1.019)* | .894 (.439)** |
| Obs. | 32,215 | 32,215 | 177,072 | 32,215 | 60,055 |
| Pseudo R^2 | .061 | .036 | .111 | .062 | .057 |

Source: RAIS 1986-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

7.6 Separations and accessions of prime-age male workers in metropolitan areas, CNAE sector

Table 142: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, CNAE 1990-98

| | Separations | | Accessions | |
|--------------------------------|-------------------|-------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| Balassa Comp. Adv. | .053 (.030)* | .056 (.042) | .021 (.028) | -.021 (.041) |
| Comp. Adv. × Prd. Trff. | .333 (.168)** | .520 (.241)** | .081 (.167) | .202 (.248) |
| Exporter Status | .294 (.091)*** | .352 (.112)*** | -.415 (.095)*** | -.519 (.116)*** |
| Exporter × Prd. Trff. | -.410 (.392) | -.225 (.490) | -.064 (.406) | .200 (.498) |
| Comp. Adv. × Exporter | | -.004 (.054) | | .066 (.050) |
| Comp. Adv. × Exp. × Prd. Trff. | | -.335 (.307) | | -.181 (.300) |
| Product Market Tariff | -.102 (.518) | -.188 (.541) | -.220 (.503) | -.351 (.525) |
| Intm. Input Tariff | -.285 (.899) | -.281 (.900) | .036 (.876) | -.026 (.877) |
| Import Penetration | -.851 (.497)* | -.847 (.497)* | -1.900 (.513)*** | -1.906 (.513)*** |
| Obs. | 34,346 | 34,346 | 25,781 | 25,781 |
| Pseudo R^2 | .101 | .101 | .067 | .067 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 143: YEAR EFFECTS IN CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS AND ACCESSIONS, CNAE 1990-98

| | Separations | | Accessions | |
|--------------|---------------------|---------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) |
| Year 1990 | -1.030 (.251)*** | -1.039 (.251)*** | 1.177 (.256)*** | 1.186 (.256)*** |
| Year 1991 | -1.649 (.123)*** | -1.650 (.123)*** | .998 (.130)*** | 1.000 (.130)*** |
| Year 1992 | -1.886 (.205)*** | -1.888 (.205)*** | .438 (.221)** | .437 (.221)** |
| Year 1993 | -1.587 (.124)*** | -1.589 (.124)*** | .821 (.134)*** | .821 (.135)*** |
| Year 1994 | -1.018 (.090)*** | -1.021 (.090)*** | .949 (.095)*** | .950 (.095)*** |
| Year 1995 | -.167 (.165) | -.171 (.165) | .987 (.174)*** | .988 (.174)*** |
| Year 1996 | -.337 (.099)*** | -.339 (.098)*** | .848 (.106)*** | .850 (.106)*** |
| Year 1997 | -.164 (.079)** | -.166 (.079)** | .615 (.085)*** | .616 (.085)*** |
| Obs. | 34,346 | 34,346 | 25,781 | 25,781 |
| Pseudo R^2 | .101 | .101 | .067 | .067 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Other regressors (not reported): Trade-related, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 144: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS, CNAE 1990-98

| | Specification | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .104 (.019)*** | .058 (.030)* | | | .053 (.030)* |
| Comp. Adv. × Prd. Trff. | | .319 (.167)* | | | .333 (.168)** |
| Exporter Status | | | .231 (.053)*** | .331 (.090)*** | .294 (.091)*** |
| Exporter × Prd. Trff. | | | | -.515 (.387) | -.410 (.392) |
| Product Market Tariff | -.102 (.446) | -.357 (.474) | -.197 (.444) | .093 (.493) | -.102 (.518) |
| Intm. Input Tariff | -.307 (.893) | -.194 (.896) | -.834 (.892) | -.835 (.890) | -.285 (.899) |
| Import Penetration | -.748 (.495) | -.742 (.495) | -1.386 (.482)*** | -1.402 (.482)*** | -.851 (.497)* |
| Sector-level covariates | | | | | |
| Sector real exch. rate | 4.028 (1.210)*** | 3.880 (1.213)*** | 4.608 (1.206)*** | 4.600 (1.207)*** | 3.867 (1.215)*** |
| FDI Flow (USD billion) | -.095 (.038)** | -.083 (.038)** | -.055 (.037) | -.054 (.037) | -.077 (.038)** |
| Herfindahl Index (sales) | -1.109 (.442)** | -1.079 (.441)** | -.689 (.430) | -.686 (.431) | -1.084 (.442)** |
| Plant-level covariates | | | | | |
| Log Employment | -.257 (.018)*** | -.258 (.018)*** | -.276 (.019)*** | -.275 (.019)*** | -.282 (.019)*** |
| Share: Middle School or less | .414 (.236)* | .421 (.236)* | .488 (.235)** | .499 (.235)** | .518 (.238)** |
| Share: Some High School | .265 (.273) | .273 (.274) | .250 (.272) | .258 (.272) | .343 (.275) |
| Share: White-collar occ. | .680 (.141)*** | .687 (.141)*** | .610 (.140)*** | .611 (.140)*** | .662 (.142)*** |
| Worker-level covariates | | | | | |
| Tenure at plant (in years) | .638 (.045)*** | .639 (.045)*** | .620 (.044)*** | .621 (.045)*** | .634 (.045)*** |
| Pot. labor force experience | .013 (.004)*** | .013 (.004)*** | .014 (.004)*** | .014 (.004)*** | .013 (.004)*** |
| Prof. or Manag'l. Occ. | -.720 (.123)*** | -.722 (.123)*** | -.721 (.122)*** | -.720 (.122)*** | -.726 (.123)*** |
| Tech'l. or Superv. Occ. | -.450 (.119)*** | -.452 (.120)*** | -.428 (.119)*** | -.424 (.119)*** | -.461 (.120)*** |
| Unskilled Wh. Collar Occ. | -.136 (.122) | -.138 (.122) | -.128 (.120) | -.126 (.121) | -.149 (.122) |
| Skilled Bl. Collar Occ. | -.123 (.072)* | -.126 (.072)* | -.110 (.071) | -.108 (.071) | -.128 (.072)* |
| Obs. | 34,346 | 34,346 | 34,935 | 34,935 | 34,346 |
| Pseudo R^2 | .100 | .100 | .099 | .099 | .101 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at CNAE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 145: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS, CNAE 1990-98

| | Specification | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .026 (.016) | .015 (.028) | | | .021 (.028) |
| Comp. Adv. × Prd. Trff. | | .081 (.166) | | | .081 (.167) |
| Exporter Status | | | -.432 (.052)*** | -.414 (.094)*** | -.415 (.095)*** |
| Exporter × Prd. Trff. | | | | -.095 (.404) | -.064 (.406) |
| Product Market Tariff | -.141 (.448) | -.201 (.468) | -.245 (.444) | -.201 (.485) | -.220 (.503) |
| Intm. Input Tariff | -.246 (.873) | -.230 (.875) | -.106 (.862) | -.107 (.862) | .036 (.876) |
| Import Penetration | -2.091 (.510)*** | -2.084 (.511)*** | -2.133 (.497)*** | -2.134 (.497)*** | -1.900 (.513)*** |
| Sector-level covariates | | | | | |
| Sector real exch. rate | 2.455 (1.256)* | 2.421 (1.259)* | 2.622 (1.250)** | 2.626 (1.249)** | 2.375 (1.266)* |
| FDI Flow (USD billion) | .014 (.045) | .018 (.046) | .021 (.044) | .021 (.044) | .009 (.046) |
| Herfindahl Index (sales) | -.681 (.496) | -.672 (.496) | -.763 (.453)* | -.762 (.453)* | -.547 (.501) |
| Plant-level covariates | | | | | |
| Log Employment | -.269 (.017)*** | -.269 (.017)*** | -.206 (.017)*** | -.206 (.017)*** | -.219 (.018)*** |
| Share: Middle School or less | 1.177 (.236)*** | 1.178 (.236)*** | 1.060 (.232)*** | 1.061 (.232)*** | 1.042 (.231)*** |
| Share: Some High School | .998 (.276)*** | .999 (.276)*** | .928 (.272)*** | .928 (.272)*** | .925 (.271)*** |
| Share: White-collar occ. | -1.078 (.151)*** | -1.076 (.151)*** | -.949 (.149)*** | -.948 (.149)*** | -.979 (.151)*** |
| Worker-level covariates | | | | | |
| Prof. or Manag'l. Occ. | -.934 (.129)*** | -.934 (.129)*** | -.949 (.129)*** | -.949 (.129)*** | -.930 (.130)*** |
| Tech'l. or Superv. Occ. | -.910 (.121)*** | -.910 (.121)*** | -.913 (.121)*** | -.913 (.121)*** | -.894 (.121)*** |
| Unskilled Wh. Collar Occ. | -.542 (.119)*** | -.542 (.119)*** | -.554 (.120)*** | -.554 (.120)*** | -.532 (.120)*** |
| Skilled Bl. Collar Occ. | -.423 (.068)*** | -.424 (.068)*** | -.418 (.068)*** | -.418 (.068)*** | -.415 (.068)*** |
| Obs. | 25,781 | 25,781 | 26,064 | 26,064 | 25,781 |
| Pseudo R^2 | .062 | .062 | .066 | .066 | .067 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at CNAE level. Controlling for year effects. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 146: FIRST-STAGE PREDICTIONS OF SECTOR REGRESSORS, CNAE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|
| | Prd. Mkt. Tariff | Intm. Tariff | Imp. Pen. | Prd. Mkt. Tariff | Intm. Tariff | Imp. Pen. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| USD Exch. Rate | .002 (.001)** | .044 (.0008)*** | .024 (.0004)*** | .005 (.001)*** | .045 (.0008)*** | .023 (.0004)*** |
| PPI Idx. EU | -1.344 (.009)*** | -1.357 (.007)*** | .058 (.003)*** | -1.355 (.009)*** | -1.369 (.007)*** | .061 (.003)*** |
| PPI Idx. NAM | .079 (.008)*** | -.080 (.006)*** | .224 (.003)*** | .084 (.008)*** | -.072 (.006)*** | .228 (.003)*** |
| Balassa Comp. Adv. | -.018 (.0002)*** | -.014 (.0002)*** | -.013 (.00008)*** | -.018 (.0002)*** | -.014 (.0002)*** | -.013 (.00008)*** |
| FDI Flow (USD billion) | .027 (.001)*** | .013 (.0008)*** | .001 (.0004)*** | .029 (.001)*** | .014 (.0008)*** | .002 (.0004)*** |
| Herfindahl Index (sales) | -.048 (.003)*** | -.111 (.003)*** | .021 (.001)*** | -.050 (.003)*** | -.109 (.003)*** | .019 (.001)*** |
| Log Employment | .020 (.0002)*** | .010 (.0001)*** | .001 (.00007)*** | .019 (.0002)*** | .009 (.0001)*** | .002 (.00007)*** |
| Share: Middle School or less | .050 (.003)*** | .046 (.002)*** | -.088 (.001)*** | .058 (.003)*** | .052 (.002)*** | -.080 (.001)*** |
| Share: Some High School | -.092 (.004)*** | -.056 (.003)*** | -.023 (.002)*** | -.090 (.004)*** | -.056 (.003)*** | -.015 (.001)*** |
| Share: White-collar occ. | .011 (.002)*** | .008 (.002)*** | -.027 (.0009)*** | .016 (.002)*** | .011 (.002)*** | -.023 (.0008)*** |
| <i>F</i> statistic | 22,089.93 | 35,586.78 | 12,426.02 | 22,236.78 | 36,024.05 | 12,880.65 |

Sources: Sector data from various sources at CNAE level; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 144 for separations, Table 145 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 147: FIRST-STAGE PREDICTIONS OF EXPORT STATUS, CNAE 1986-98

| | Separations | | | Accessions | | |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | OLS (1) | Firm FE (2) | Firm FE (3) | OLS (4) | Firm FE (5) | Firm FE (6) |
| World imports APD | .395 (.072)*** | .438 (.127)*** | .498 (.130)*** | .294 (.072)*** | .422 (.129)*** | .506 (.132)*** |
| World imports CEE | -1.693 (.325)*** | -.841 (.567) | -.761 (.569) | -2.445 (.326)*** | -1.130 (.578)* | -1.020 (.579)* |
| World imports LAC | -.756 (.186)*** | -.122 (.328) | -.148 (.328) | -.704 (.185)*** | .005 (.333) | -.028 (.333) |
| World imports NAM | .393 (.076)*** | .053 (.133) | .024 (.134) | .533 (.075)*** | .044 (.135) | .004 (.135) |
| World imports ODV | .533 (.081)*** | .348 (.138)** | .342 (.138)** | .683 (.081)*** | .451 (.140)*** | .445 (.140)*** |
| World imports OIN | -1.150 (.241)*** | -1.332 (.422)*** | -1.517 (.430)*** | -.809 (.241)*** | -1.305 (.430)*** | -1.561 (.437)*** |
| World imports WEU | .008 (.013) | .033 (.022) | .042 (.023)* | -.006 (.013) | .036 (.023) | .049 (.023)** |
| Balassa Comp. Adv. | .006 (.0006)*** | .004 (.001)*** | -.002 (.003) | .007 (.0006)*** | .005 (.001)*** | -.003 (.003) |
| Comp. Adv. × Prd. Trff. | | | .036 (.016)** | | | .051 (.016)*** |
| FDI Flow (USD billion) | -.065 (.003)*** | -.044 (.006)*** | -.043 (.006)*** | -.068 (.003)*** | -.046 (.006)*** | -.044 (.006)*** |
| Herfindahl Index (sales) | -.108 (.011)*** | -.081 (.029)*** | -.079 (.029)*** | -.071 (.010)*** | -.056 (.029)* | -.053 (.030)* |
| Log Employment | .132 (.0006)*** | .147 (.001)*** | .147 (.001)*** | .127 (.0006)*** | .144 (.001)*** | .144 (.001)*** |
| Share: Middle School or less | -.499 (.009)*** | -.552 (.016)*** | -.552 (.016)*** | -.498 (.009)*** | -.569 (.016)*** | -.569 (.016)*** |
| Share: Some High School | -.195 (.011)*** | -.354 (.019)*** | -.353 (.019)*** | -.183 (.011)*** | -.366 (.019)*** | -.366 (.019)*** |
| Share: White-collar occ. | .089 (.007)*** | .115 (.010)*** | .116 (.010)*** | .085 (.006)*** | .108 (.010)*** | .109 (.010)*** |
| <i>F</i> statistic | 31.461 | 12.656 | 14.147 | 38.573 | 15.433 | 17.859 |

Sources: SECEX exporter information 1990-98; RAIS 1986-98 labor force information. Weighted regressions using worker-sample observation counts (as in Table 144 for separations, Table 145 for accessions). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent. Annual world imports, coefficients rescaled to imports in USD billion.

Table 148: PSEUDO-IV CONDITIONAL LOGIT ESTIMATES, CNAE 1990-98

| | Separations | | Accessions | |
|-------------------------------|-------------------|--------------------|---------------------|--------------------|
| | Tariff IV (1) | Exporter IV (2) | Tariff IV (3) | Exporter IV (4) |
| Predicted Product Mkt. Tariff | | | | |
| Residual Product Mkt. Tariff | -.091 (.446) | | -.213 (.451) | |
| Predicted Intm. Input Tariff | .577 (1.189) | | .516 (1.219) | |
| Residual Intm. Input Tariff | -.368 (.902) | | .043 (.883) | |
| Predicted Import Penetration | -5.942 (6.735) | | -4.752 (7.227) | |
| Residual Import Penetration | -.831 (.497)* | | -1.904 (.514)*** | |
| Predicted Exporter Status | | | | |
| Residual Exporter Status | | .214 (.054)*** | | -.428 (.053)*** |
| Obs. | 34346 | 34346 | 25781 | 25781 |
| Pseudo R^2 | .101 | .100 | .067 | .067 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 149: FIXED-EFFECTS LINEAR LEAST-SQUARES ESTIMATES, SHORT CNAE REGRESSIONS 1990-98

| | Separations | | | Accessions | | |
|-----------------------|-------------------|--------------------|-------------------|---------------------|--------------------|-------------------|
| | Cdl. Logit | OLS-FE | | Cdl. Logit | OLS-FE | |
| | | (1) | (2) | | (3) | (4) |
| Balassa Comp. Adv. | .101 (.019)*** | .007 (.0009)*** | .008 (.003)*** | .033 (.016)** | .002 (.0008)** | -.012 (.008) |
| Exporter Status | .214 (.054)*** | .013 (.003)*** | .047 (.344) | -.428 (.053)*** | -.027 (.002)*** | |
| Product Market Tariff | -.066 (.446) | -.030 (.017)* | .038 (.186) | -.190 (.449) | .008 (.014) | -.464 (.289) |
| Intm. Input Tariff | -.399 (.897) | .090 (.036)** | | .020 (.874) | -.044 (.031) | |
| Import Penetration | -.841 (.496)* | -.112 (.022)*** | | -1.906 (.512)*** | -.043 (.019)** | -1.029 (.545)* |
| Obs. | 34,346 | 147,532 | 147,532 | 25,781 | 149,693 | 149,693 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations and accessions exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation or accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Instruments: World imports by year and real exchange rate components by sector and year (two instruments with sector variation). Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 150: CONDITIONAL LOGIT ESTIMATES OF SEPARATIONS BY EDUCATION GROUP, CNAE 1990-98

| | Cdl. Logit baseline | Primary school | High school | College educ. | Privatiz. control | Outsourc. job indic. |
|-------------------------|------------------------|-------------------|-------------------|-------------------|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .053 (.030)* | .054 (.034) | .049 (.186) | .279 (.187) | .160 (.074)** | .053 (.030)* |
| Comp. Adv. × Prd. Trff. | .333 (.168)** | .364 (.191)* | .747 (1.041) | -.327 (1.257) | .077 (.535) | .381 (.169)** |
| Exporter Status | .294 (.091)*** | .305 (.111)*** | .365 (.333) | -.401 (.575) | -.193 (.293) | .296 (.092)*** |
| Exporter × Prd. Trff. | -.410 (.392) | -.381 (.478) | -.937 (1.444) | 3.485 (2.852) | 2.877 (1.770) | -.411 (.397) |
| Product Market Tariff | -.102 (.518) | -.159 (.626) | -1.509 (1.987) | -3.792 (4.060) | 1.700 (2.033) | -.130 (.526) |
| Obs. | 34,346 | 24,336 | 3,836 | 2,284 | 10,049 | 33,922 |
| Pseudo R^2 | .101 | .120 | .264 | .294 | .201 | .102 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 151: CONDITIONAL LOGIT ESTIMATES OF ACCESSIONS BY EDUCATION GROUP, CNAE 1990-98

| | Cdl. Logit baseline | Primary school | High school | College educ. | Privatiz. control | Outsourc. job indic. |
|-------------------------|------------------------|--------------------|--------------------|-------------------|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Balassa Comp. Adv. | .021 (.028) | .006 (.032) | -.025 (.127) | -.292 (.344) | .100 (.062) | .027 (.028) |
| Comp. Adv. × Prd. Trff. | .081 (.167) | .046 (.183) | -.152 (.967) | 1.534 (1.411) | -.621 (.435) | .039 (.168) |
| Exporter Status | -.415 (.095)*** | -.400 (.116)*** | -.957 (.333)*** | -.676 (.502) | -.784 (.264)*** | -.437 (.096)*** |
| Exporter × Prd. Trff. | -.064 (.406) | .032 (.494) | .561 (1.355) | -.717 (2.112) | 1.835 (1.665) | .049 (.415) |
| Product Market Tariff | -.220 (.503) | .278 (.591) | -2.278 (2.068) | -2.740 (2.649) | -.018 (1.739) | -.214 (.512) |
| Obs. | 25,781 | 18,104 | 2,697 | 1,422 | 7,988 | 25,372 |
| Pseudo R^2 | .067 | .065 | .122 | .107 | .104 | .066 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 152: ALTERNATIVE LOGIT ESTIMATES OF SEPARATIONS, CNAE 1990-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|-------------------|------------------|--------------------|-----------------|-------------------|
| | baseline | cond'l sample | full sample | Sector FE | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .053 (.030)* | .022 (.018) | .064 (.012)*** | .058 (.030)* | .073 (.019)*** |
| Comp. Adv. × Prd. Trff. | .333 (.168)** | .247 (.109)** | .160 (.074)** | .319 (.167)* | .077 (.057) |
| Exporter Status | .294 (.091)*** | -.008 (.055) | -.187 (.043)*** | | |
| Exporter × Prd. Trff. | -.410 (.392) | .318 (.245) | .392 (.182)** | | |
| Product Market Tariff | -.102 (.518) | -.220 (.279) | -.661 (.217)*** | -.357 (.474) | -.194 (.313) |
| Obs. | 34,346 | 34,346 | 147,532 | 34,346 | 54,383 |
| Pseudo R^2 | .101 | .036 | .081 | .100 | .089 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Separations exclude transfers, deaths, and retirements. Reference observations are employments with no reported separation in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

Table 153: ALTERNATIVE LOGIT ESTIMATES OF ACCESSIONS, CNAE 1990-98

| | Cdl. Logit | Logit | | Cdl. Logit | Cdl. Logit |
|-------------------------|--------------------|--------------------|--------------------|-----------------|----------------|
| | baseline | cond'l sample | full sample | Sector FE | 1986-98 |
| | (1) | (2) | (3) | (4) | (5) |
| Balassa Comp. Adv. | .021 (.028) | .003 (.021) | .041 (.015)*** | .015 (.028) | .029 (.018) |
| Comp. Adv. × Prd. Trff. | .081 (.167) | .215 (.126)* | .325 (.089)*** | .081 (.166) | .051 (.054) |
| Exporter Status | -.415 (.095)*** | -.288 (.066)*** | -.589 (.051)*** | | |
| Exporter × Prd. Trff. | -.064 (.406) | -.249 (.300) | -.161 (.233) | | |
| Product Market Tariff | -.220 (.503) | -.102 (.333) | -.680 (.265)** | -.201 (.468) | .226 (.327) |
| Obs. | 25,781 | 25,781 | 149,693 | 25,781 | 41,823 |
| Pseudo R^2 | .067 | .034 | .115 | .062 | .060 |

Source: RAIS 1990-98 (5% random sample), male workers in metropolitan area, 25 to 64 years old, with manufacturing job at plant with 1995 presence. Accessions exclude transfers. Reference observations are employments with no reported accession in a given year. Sector information at CNAE level. Further regressors (not reported): Year indicators, sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.

7.7 Rehiring hazards after displacements of prime-age male workers nationwide, subsector IBGE

Table 154: HAZARD SPECIFICATION COMPARISONS

| | exponential (1) | Weibull (2) | lognormal (3) | loglogistic (4) | gamma (5) |
|---|--------------------|--------------------|---------------------|--------------------|---------------------|
| Balassa Comp. Adv. | -.045 (.008)*** | -.059 (.010)*** | -.074 (.011)*** | -.060 (.008)*** | -.046 (.008)*** |
| Exporter Status | .010 (.014) | .016 (.017) | .015 (.017) | .006 (.014) | .015 (.015) |
| Product Market Tariff | .330 (.226) | .466 (.267)* | .943 (.249)*** | .776 (.209)*** | .102 (.304) |
| Intm. Input Tariff | -.358 (.343) | -.547 (.402) | -1.312 (.367)*** | -.984 (.308)*** | -.288 (.668) |
| Import Penetration | .267 (.172) | .416 (.208)** | .941 (.216)*** | .561 (.163)*** | .339 (.207) |
| First ancillary parameter (log) | | -.228 (.007)*** | -.031 (.007)*** | -.684 (.007)*** | -.691 (.051)*** |
| Second ancillary parameter (κ) | | | | | -1.314 (.089)*** |
| Log likelihood | -40,816.68 | -40,391.61 | -39,636.21 | -39,279.27 | -37,959.52 |
| Akaike's information criterion | 81687.35 | 80839.23 | 79328.42 | 78614.54 | 75977.05 |

Source: RAIS 1990-2001. Male workers nationwide (1% random sample), 25 to 64 years old (in highest paying job if many), displaced from formal-sector manufacturing job between 1990 and 1997 (58,623 obs.). Maximum-likelihood estimation of rehiring into formal job in any sector before December 31, 2001 (censored sample). Sector information at subsector IBGE level. Further regressors (not reported): Year indicators, sector and plant covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent. Akaike (1973) information criterion: $-2 \ln L + 2(c + p + 1)$, where c is the number of covariates and p the number of ancillary parameters.

Table 155: HAZARD SPECIFICATION COMPARISONS, NO YEAR EFFECTS

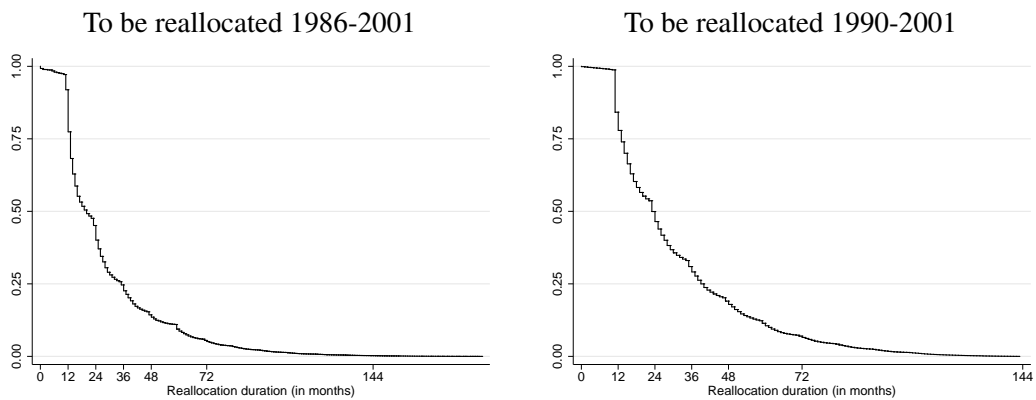
| | exponential (1) | Weibull (2) | lognormal (3) | loglogistic (4) | gamma (5) |
|---|--------------------|--------------------|---------------------|---------------------|---------------------|
| Balassa Comp. Adv. | -.055 (.008)*** | -.068 (.009)*** | -.109 (.010)*** | -.115 (.009)*** | -.126 (.012)*** |
| Exporter Status | .009 (.014) | .007 (.017) | .023 (.018) | .036 (.016)** | .034 (.017)* |
| Product Market Tariff | .102 (.208) | .224 (.242) | .582 (.234)** | .620 (.217)*** | .779 (.233)*** |
| Intm. Input Tariff | -.147 (.296) | .454 (.346) | -1.652 (.336)*** | -3.190 (.310)*** | -2.640 (.499)*** |
| Import Penetration | .127 (.150) | -.379 (.180)** | .890 (.193)*** | 2.152 (.157)*** | 1.526 (.311)*** |
| First ancillary parameter (log) | | -.206 (.006)*** | -.019 (.006)*** | -.624 (.006)*** | -.114 (.034)*** |
| Second ancillary parameter (κ) | | | | | -.275 (.084)*** |
| Log likelihood | -40,837.45 | -40,452.68 | -39,695.66 | -39,632.99 | -39,658.25 |
| Akaike's information criterion | 81,712.9 | 80,945.36 | 79,431.31 | 79,305.98 | 79,358.51 |

Source: RAIS 1990-2001. Male workers nationwide (1% random sample), 25 to 64 years old (in highest paying job if many), displaced from formal-sector manufacturing job between 1990 and 1997 (58,623 obs.). Maximum-likelihood estimation of rehiring into formal job in any sector before December 31, 2001 (censored sample). Sector information at subsector IBGE level. Further regressors (not reported): Sector and plant covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent. Akaike (1973) information criterion: $-2 \ln L + 2(c+p+1)$, where c is the number of covariates and p the number of ancillary parameters.

Table 156: REHIRING HAZARD ESTIMATION, 1990-2001

| | Censored in 2001 | | Rehires within 48 months | | |
|--|---------------------|--------------------|--------------------------|---------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Displacing sector and firm covariates | | | | | |
| Balassa Comp. Adv. | -.126 (.012)*** | -.046 (.008)*** | -.063 (.006)*** | -.038 (.007)*** | -.011 (.004)*** |
| Exporter Status | .034 (.017)* | .015 (.015) | .059 (.010)*** | .084 (.011)*** | .024 (.006)*** |
| Product Market Tariff | .779 (.233)*** | .102 (.304) | .442 (.147)*** | .429 (.162)*** | -.051 (.109) |
| Intm. Input Tariff | -2.640 (.499)*** | -.288 (.668) | -4.714 (.194)*** | -2.867 (.251)*** | .116 (.172) |
| Import Penetration | 1.526 (.311)*** | .339 (.207) | 3.531 (.117)*** | 2.125 (.130)*** | .091 (.074) |
| Rehiring sector and firm covariates | | | | | |
| Balassa Comp. Adv. | | | | -.024 (.007)*** | -.003 (.003) |
| Exporter Status | | | | -.084 (.010)*** | -.060 (.006)*** |
| Product Market Tariff | | | | -.344 (.146)** | .200 (.108)* |
| Intm. Input Tariff | | | | -1.750 (.225)*** | -.426 (.159)*** |
| Import Penetration | | | | 1.930 (.121)*** | .113 (.068)* |
| Year effects | | yes | | | yes |
| Obs. | 58,623 | 58,623 | 19,360 | 19,360 | 19,360 |

Source: RAIS 1990-2001. Male workers nationwide (1% random sample), 25 to 64 years old (in highest paying job if many), displaced from formal-sector manufacturing job between 1990 and 1997. Maximum-likelihood estimation of gamma distributed accelerated “failure time” (success) model for formal job reallocation in any sector before December 31, 2001 (censored sample) or into manufacturing job within 48 months (rehires sample). Sector information at subsector IBGE level. Further regressors (not reported): Sector, plant and worker covariates. Robust standard errors in parentheses: * significance at ten, ** five, *** one percent.



Sources: RAIS 1986-2001 (1% random sample), male workers nationwide, 25 to 64 years old (in highest paying job if many), displaced from a formal-sector job and to-be-reallocated (censoring in December 2001).

Figure 81: **Kaplan-Meier continuation estimates for workers to be reallocated**

8 Appendix

| | RAIS Age Category | Imputed Age |
|----|------------------------|-----------------|
| 1. | Child (10-14) | <i>excluded</i> |
| 2. | Youth (15-17) | <i>excluded</i> |
| 3. | Adolescent (18-24) | <i>excluded</i> |
| 4. | Nascent Career (25-29) | 27 |
| 5. | Early Career (30-39) | 34.5 |
| 6. | Peak Career (40-49) | 44.5 |
| 7. | Late Career (50-64) | 57 |
| 8. | Post Retirement (65-) | <i>excluded</i> |

| | Education Level (A) | RAIS Education |
|-----|--|----------------|
| A1. | Illiterate, or Primary or Middle School Educated | 1-5 |
| A2. | Some High School or High School Graduate | 6-7 |
| A3. | Some College | 8 |
| A4. | College Graduate | 9 |

| | Education Level (B) | RAIS Education |
|-----|--|----------------|
| B1. | Illiterate or Primary School Dropout | 1-2 |
| B2. | Primary School Graduate or Middle School Dropout | 3-4 |
| B3. | Middle School Graduate or High School Dropout | 5-6 |
| B4. | High School Graduate or College Dropout | 7-8 |
| B5. | College Graduate | 9 |

Table 157: AGGREGATE SECTOR DEFINITION

| | Subsector IBGE (two-digit level) | Grand sector | Sector definition |
|----|--|--------------|-------------------|
| 1 | Mining and quarrying | 1 | Mining |
| 2 | Manufacture of non-metallic mineral products | 1 | Manufacturing |
| 3 | Manufacture of metallic products | 1 | Manufacturing |
| 4 | Manufacture of machinery, equipment and instruments | 1 | Manufacturing |
| 5 | Manufacture of electrical and telecommunic. equipment | 1 | Manufacturing |
| 6 | Manufacture of transport equipment | 1 | Manufacturing |
| 7 | Manufacture of wood products and furniture | 1 | Manufacturing |
| 8 | Manufacture of paper and paperboard, and publishing | 1 | Manufacturing |
| 9 | Manufacture of rubber, tobacco, leather, and products n.e.c. | 1 | Manufacturing |
| 10 | Manufacture of chemical and pharmaceutical products | 1 | Manufacturing |
| 11 | Manufacture of apparel and textiles | 1 | Manufacturing |
| 12 | Manufacture of footwear | 1 | Manufacturing |
| 13 | Manufacture of food, beverages, and ethyl alcohol | 1 | Manufacturing |
| 14 | Electricity, gas and water supply | 1 | Other |
| 15 | Construction | 2 | Other |
| 16 | Retail trade | 3 | Commerce |
| 17 | Wholesale trade | 3 | Commerce |
| 18 | Financial intermediation and insurance | 4 | Services |
| 19 | Real estate and business services | 4 | Services |
| 20 | Transport, storage and telecommunications | 4 | Services |
| 21 | Hotels and restaurants, repair and maintenance services | 4 | Services |
| 22 | Medical, dental and veterinary services | 4 | Services |
| 23 | Education | 4 | Services |
| 24 | Public administration and social services | 4 | Other |
| 25 | Agriculture, farming, hunting, forestry and fishing | 5 | Agriculture |
| 26 | Activities n.e.c. | 6 | Other |

Source: RAIS 1986-2001.

Table 158: SIX METROPOLITAN AREAS

| Metropolitan area | Municipalities |
|--------------------|--|
| 003 Recife | 260005, 260105, 260290, 260345, 260680, 260720, 260760, 260775, 260790, 260940, 260960, 261070, 261160, 261370 |
| 004 Salvador | 290570, 290650, 291005, 291610, 291920, 291992, 292740, 292920, 293070, 293320 |
| 005 Belo Horizonte | 310500, 310540, 310620, 310640, 310670, 310810, 310900, 311000, 311250, 311787, 311860, 312410, 312600, 312640, 312720, 312980, 313010, 313100, 313190, 313220, 313370, 313380, 313460, 313660, 313665, 313760, 314015, 314070, 314110, 314230, 314480, 314710, 314930, 315360, 315390, 315460, 315480, 315530, 315670, 315720, 315780, 316292, 316295, 316310, 316553, 316720, 316830, 317120 |
| 006 Rio de Janeiro | 330045, 330170, 330185, 330190, 330227, 330250, 330285, 330320, 330330, 330350, 330360, 330414, 330455, 330490, 330510, 330555, 330575 |
| 007 São Paulo | 350390, 350570, 350660, 350900, 350920, 351060, 351300, 351380, 351500, 351510, 351570, 351630, 351640, 351830, 351880, 352220, 352250, 352310, 352500, 352620, 352850, 352940, 353060, 353440, 353910, 353980, 354330, 354410, 354500, 354680, 354730, 354780, 354870, 354880, 354995, 355030, 355250, 355280, 355645 |
| 009 Porto Alegre | 430060, 430087, 430110, 430310, 430390, 430460, 430468, 430535, 430640, 430676, 430760, 430770, 430905, 430920, 430930, 431080, 431240, 431306, 431337, 431340, 431405, 431480, 431490, 431760, 431840, 431870, 431990, 432000, 432120, 432200, 432300 |

Source: RAIS 1986-2001.

Table 159: LOCATION DEFINITIONS

| Code | Description |
|------|--|
| APD | Asia-Pacific Developing countries including Hong Kong, South Korea, Singapore, Taiwan; including dominions of OIN and WEU countries; including China, Mongolia and North Korea; excluding South Asia (India, Pakistan) |
| CEE | Central and Eastern European countries including EU accession countries and candidates |
| LAC | Latin American and Caribbean countries including Mexico and Central America |
| NAM | North American countries including U.S. dominions excluding Mexico |
| ODV | Other Developing countries including South Asia (India/Pakistan), Africa, Middle East; including dominions of OIN and WEU countries; excluding China |
| OIN | Other Industrialized countries including Japan, Australia, and New Zealand as well as Iceland and Greenland |
| WEU | Western European countries including EU-15, Norway, and Switzerland excluding EU accession countries in 2002 |

Table 160: OCCUPATION DEFINITIONS

| ISCO-88 Category | Occupation Level |
|---|-----------------------------|
| 1. Legislators, senior officials, and managers | Professional & Managerial |
| 2. Professionals | Professional & Managerial |
| 3. Technicians and associate professionals | Technical & Supervisory |
| 4. Clerks | Other White Collar |
| 5. Service workers and shop and market sales workers | Other White Collar |
| 6. Skilled agricultural and fishery workers | Skill Intensive Blue Collar |
| 7. Craft and related workers | Skill Intensive Blue Collar |
| 8. Establishment and machine operators and assemblers | Skill Intensive Blue Collar |
| 9. Elementary occupations | Other Blue Collar |

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