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Labor Demand and Trade Reform in Latin America

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Summary findings

There are concerns that trade reform and globalization will increase the uncertainty that the average worker, especially the relatively unskilled worker, faces. The increased competitiveness of product markets and greater access to foreign inputs, the argument goes, will lead to more elastic demand for workers. This may have adverse consequences for both labor market volatility and wage dispersion.

Fajnzylber and Maloney argue that while the case that trade liberalization should increase own-wage elasticities may be broadly compelling for competitive import-competing industries, it is less so for imperfectly competitive, nontradable, or export industries. They test the hypothesis using establishment-level panel data from three countries with periods of liberalization.

The data provide only mixed support for the idea that trade liberalization has an impact on own-wage elasticities. No consistent patterns emerge.

If globalization is making the lives of workers more insecure, it is probably working through some other mechanism.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to study the impact of liberalization on labor market risk. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Tania Gomez, room I8-102, telephone 202-473-2127, fax 202-522-0054, email address tgomez@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. William Maloney may be contacted at wmaloney@worldbank.org. November 2000. (43 pages)

Labor Demand and Trade Reform in Latin America*

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1. Introduction

There are increasing fears that trade reform -- and globalization more generally -- will increase the uncertainty faced by the average worker, particularly those with fewer skills. As argued by Rodrik (1997), the increased competitiveness of product markets and the greater access to foreign inputs have led to a more elastic demand for workers. This leads to greater volatility in the labor market since bad shocks to output translate to larger impacts on wages and employment than formerly was the case. Further, the increased elasticity for unskilled workers has also been posited as contributing to the increase in wage dispersion observed with liberalization, and particularly the relative worsening of unskilled relative to skilled workers.

In the "North", a considerable empirical literature has been devoted to the study of the effects of increased imports of manufacturing goods from third world countries on the increasing levels of wage inequality and unemployment of the United States and Europe.[1] On the particular issue of demand elasticities, Slaughter (1997) estimated labor demand elasticities for U.S. manufacturing industries and found that from 1960 through 1990 the demand for production labor did become more elastic in most industries although it is not clear, whether increased trade was the cause.

Among LDCs the literature is almost as thin. Estimating static demand equations using micro-panel data from Turkey, Chinoy, Krishna and Mitra (1999) find no impact of

[1] Although conflicting results have been obtained, standard studies of factor content indicate that trade accounts for 10 to 20 percent of the fall in demand for unskilled labor (Freeman, 1995: 25). Thus, it has been argued that skill-biased technological change can explain most of the shift in demand away from unskilled towards skilled labor, at least in the U.S. manufacturing industries (Berman, Bound and Griliches, 1994).

the liberalization of trade on demand elasticities. Using monthly Brazilian manufacturing survey data and broadly following Slaughter, Paes de Barros, Corseuil and Gonzaga (1999) regress a series of sequentially generated coefficients on both the own wage and lagged employment on aggregate total trade (exports + imports) over GDP. They find no impact of trade openness on either. Using aggregate manufacturing data from Uruguay at the two digit level, Cassoni, Allen and Labadie (1999) find a negative impact of sectoral total trade/GDP on the lagged employment coefficient. While implying more rapid adjustment, it also leads to a lower total own wage elasticity, the opposite of that predicted.

This paper first asks whether, theoretically, it is obvious that increased trade should increase own wage elasticities. Though a complete model of all the predicted effects is intractable, we do point out where the link between the two may not be tight. The paper then uses establishment level data to provide consistent dynamic estimates of labor demand functions for three Latin American countries across trade policy regimes. Estimation is done following Arellano and Bond's GMM in differences approach. [2]

II. Labor Demand and Trade Liberalization

Trade reform might affect own wage elasticities through at least three channels: substitutability of inputs, product demand elasticities, and the degree of collusion in the

[2] Micro- panel data offer more precise estimates of demand functions, allow factor prices to be taken as exogenous, permit compensation for unobserved heterogeneity, and permit distinguishing changes in parameters arising from firm behavior versus the entry end exit of firms into the industry. Despite those benefits, and probably due to the larger efforts associated with generating micro data sets, only a small fraction of the nearly two hundred empirical studies of labor demand functions reviewed by Hamermesh (1993) are based on establishment-level microeconomic data.

industry. Two separable questions arise. First, what is theoretically certain about how each of these channels can influence demand elasticities and second, how would trade reform work through these channels.

Most intuitive theorizing about the first question begins with Marshall's demand laws, (formalized in Hamermesh 1993 or Hicks 1963):

$$-\eta_l = m\sigma + m\eta^{-1}$$

where m is the share of factor expenditures in costs, σ is the Allen elasticity of substitution, and η is the product demand elasticity. This suggests that as the elasticity of substitution with other factors rises (the first term) or the product-demand elasticity rises (the second, "scale" effect) so does the derived demand elasticity. However, these formulations assume perfect competition and linearly homogeneous cost functions. Much of the advance in modern trade theory has occurred at the frontier of the industrial organization literature where increasing returns to scale and collusive behavior are the norm. Further, the *reduction* in collusive behavior is one expected outcome of trade reform that clearly cannot be viewed within a competitive model.

The link from product to labor demand elasticities under imperfect competition.

As one example of the complications market power introduces, Maurice and Ferguson (1973) derived expressions for derived factor demand under monopoly and without the assumption of linear homogeneity in costs:

$$-\eta_l = m\sigma + \frac{m\eta^2}{\varepsilon(\eta_{mr} - \eta_{mc})} \qquad (1)$$

where ε is a term capturing economies of scale, γ_l is the expenditure elasticity (the proportional change in usage of the factor relative to the proportional change in total costs at constant factor prices), η_{mr} is the elasticity of marginal revenue with respect to output and η_{mc} is the elasticity of marginal costs with respect to output.

As in Marshall's case, Le Chatelier's principle would suggest that releasing constraints on the importing of intermediate and capital inputs would lead to increased substitutability of labor for other factors and therefore an increase in the first term through the change in the Allen elasticity.

However, the product-demand elasticity no longer enters directly in the second "scale effect" term as it does in the competitive case. As Maurice and Ferguson acknowledge, it is unquestionably related to the difference between the elasticities of marginal revenue and marginal cost in the denominator. "However," they argue "the relation is a tenuous one, and it cannot be stated explicitly in meaningful economic terms." Whether generally true or not, this does point out that strategic interactions among firms may make the link less direct than we may think. The sharply discontinuous marginal revenue curve emerging from Krishna's (1984) model of trade with a domestic/foreign duopoly is only one example.

The effect of increased competition

A vast simplification of Maurice and Ferguson's work can offer us some insights into the impact of the third effect, increasing competition. We return to the linearly homogenous case with constant marginal cost, which makes equation (1) above:

$$-\eta_l = m\sigma + m\eta_{mr}^{-1}$$

Intuitively, an m% rise in marginal cost due to a 1% rise in wages is translated into quantity along the marginal revenue curve which, given constant returns to scale, implies an equivalent percentage change in the demand for labor. Again, Le Chatelier's principle would seem to guarantee and increased elasticity with access to intermediate inputs through the first term. To see the effect of increased competition and product elasticity on η_{mr} we draw on Bresnahan's (1989) and Porter's (1983) discussions of "conjectural variations" in firm behavior. We assume an individual firm maximizes profits:

$$\pi = q_i p(q,\tau) - c(q_i, w, \tau) \quad p' < 0 p'' \leq 0 c' > 0, c'' \leq 0$$

where p(.) is the industry demand curve which is a function of industry output q, q_i individual firm i's output, τ is the impact of trade liberalization, c is the firm's constant returns to scale cost function, and w is the vector of market given factor prices. As Bresnahan notes, outside of the competitive model, firms do not have supply curves in the sense of there being a solution for q as a function of p=c'(q). Instead price and quantity-setting conduct follow more general supply relations which can be written as

$$mr = p(q,\tau) + p'(q,\tau) q_i \theta(\tau) = c'(qi, w, \tau)$$

where $\theta_i = \frac{\partial q}{\partial q_i}$. The equation can be interpreted as marginal cost = the "perceived" marginal revenue for oligopoly models where θ_i can be considered an index of the competitiveness of oligopoly conduct. θ_i can move from zero in the competitive case, to H (the Herfindahl index) for Cournot, or unity in the case of perfect collusion or monopoly (Porter 1983). Since product demand elasticity $\eta(\tau) = \frac{\partial q p(\tau, q)}{\partial \rho(\tau, q) q}$, it is likely to be affected by any shock to the demand curve from trade reform.

η_{mr}^{-1} can be found by taking the derivative of marginal revenue with respect to q:

$$mr' = (1+\theta)p' + q_i \theta p''$$

Again, since we are working at the industry level, we follow Porter (1983) in aggregating to the industry level where mr, and mr' remain essentially unchanged except that $\theta = n^{-1}\sum\theta_i$ and $q = \sum qi$. Dividing mr by mr' and by q, we can express the elasticity of output with respect to marginal revenue or cost as:

$$\eta_{mr}^{-1} = \frac{p + q\theta p'}{[(1+\theta)p' + q\theta p'')]q}$$

Substituting in

$$\varphi = \frac{\partial \eta}{\partial q} = \eta\left[\frac{p'}{p} - \frac{1}{q} - \frac{p''}{p}\right]$$

to allow for non-constant output elasticities and solving yields:

$$\eta_{mr}^{-1} = \eta\left[\frac{\eta - \theta}{[\eta - \theta(1+q\varphi)]}\right] = \eta\eta_{pc} \qquad (2)$$

Intuitively, how much the elasticity of output, and hence labor demand rises differs in the oligopolistic vs. the competitive case depends on whether the percentage rise in price with a 1% rise in costs exceeds unity. In the perfectly competitive case where $\theta = 0$, the expression collapses to the elasticity of the demand curve and Marshall's law of derived demand. As we move toward monopoly, this is not necessarily so as the denominator suggests. It can be shown that η_{mr}^{-1} is increasing in the output elasticity and in competitiveness where demand elasticities are decreasing in q. Higher product elasticities and more competitive market behavior move in this simplified model and under some additional assumptions, in the direction of higher derived demand elasticities.

An important exception occurs in the case of the frequently modeled and estimated isoelastic demand curve ($\varphi = 0$). In this case, changes in the degree of competitiveness have no impact on derived demand elasticities although price cost margins may fall.

What does trade liberalization do?

Even if effects through these channels were completely straightforward, the question then arises whether or not trade liberalization actually leads to changes of the kind generally postulated ie greater product elasticities, lower degrees of collusion, and greater substitutability of factors. The answer is, again, not always or maybe, not generally.

Tariff reductions that push the import price below the monopolists' preferred do reduce monopolistic control over importables prices and, in all probability, increase the product elasticity faced by importables producers (Baghwati 1965). Quota reduction, even in this simplified situation, does not always have straightforward effect in either the competitive or non-competitive cases, particularly when the reduction is not complete. As Baghwati noted, by virtue of merely displacing the home demand curve, reducing a quota but not eliminating it still leaves the domestic industry facing a downward sloping demand curve. It is easy to show in the linear case that elasticities may rise or fall with a partial quota reduction depending on the slope of the industry marginal cost curve. In the case of the isoelastic demand curve ($\varphi = 0$), by definition, shifting in the product demand curve has no impact on η unless the reduction is complete.[3]

[3] An isoelastic demand curve will show no effect, a linear demand curve may show a decrease. Whether elasticities rise or fall depends on the shape of the supply curve. As examples, a 45 degree supply curve

We may still imagine that if the firms were not previously competitive, there might be a reduction in market power that would raise elasticities. This is also not obvious. As noted above, equation (2) shows that a partial reduction of quotas that leads to a fall in θ in the isoelastic demand case leaves labor demand elasticities unchanged. More fundamentally, Krugman again highlights the importance of understanding the market structure even with the *complete* removal of quotas: Davidson (1984) and Rotemberg and Saloner (1986) and implicitly Krishna (1984) build models where because protection raises profitability in the absence of collusion it reduces the penalty for cheating on a collusive agreement-hence protection may actually increase competition. Although Krugman admits that the result is unsettling and perhaps improbable, quota reduction may increase θ.

Leaving this last perverse effect aside, we may console ourselves that most liberalizations have eliminated quotas. Yet, QRs are reincarnated in such varied guises - anti dumping suits, voluntary export restraints, environmental controls- that it is difficult not to assume that we really only "partially" liberalized and hence cannot be sure of the overall effect on product elasticities.

Non-tradeables and exportables?

It may also be important to think through the impact on perfectly competitive non-tradeable firms for whom the primary influence of trade liberalization is to reduce input costs. At the simplest level, if demand curves remain unchanged (which they are unlikely

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with intercept zero will dictate no change in elasticity, a vertical supply curve an increase in elasticity and a horizontal supply curve a *decrease.*

to do in general equilibrium) the fall in output price would imply lower demand elasticities along a linear demand curve.[4] For the large share of the work force in these industries, trade liberalization may *reduce* the elasticities they face.

Firms who can now break out of the domestic market and export may in addition face a less elastic world demand curve since there is no a priori reason to assume global and domestic tastes are identical. The expenditure share of their product in richer first world incomes is probably smaller, and hence the elasticity perhaps lower. Further, the larger external market may encourage specialization in a product that reduces its elasticity: a local dinner wine becomes Penfold's Grange; peasant tent floor coverings become Persian Rugs; a traditional altiplano stimulant becomes a first world addiction.

Intermediate inputs

Finally, the one effect that appears pretty consistently in all the above exercises is that arising from substitution with other inputs, σ. Here again, however, some caution is warranted in assuming that liberalization will increase substitutability. In the case of a lowering of tariff barriers, arguably what is occurring is simply a fall in the price of competing inputs. But this does not imply any change in the elasticity-the effect of this price change is exactly what the elasticity is meant to capture. Though σ can change with relative prices (see Hamermesh 1993, p. 35), the direction of change is not determinate.

If quotas were completely binding, then we would expect to see a change in σ. If not, the effect may depend on how the available inputs were allocated. If auctioned, then

[4] Since the world price must have been below the domestic price previously, if we assume identical demand curves, the domestic industry must now have moved down the demand curve and hence face a

the effect of a liberalization is to lower the price of the input and, as in the case of tariffs, there need be no change in σ. If allocated in less transparent ways, there likely would be.

Entry and Exit Decisions

The own wage elasticity workers "face" is a combination of the reallocation decisions of continuing firms, as well as the entry/exit decisions of new or leaving firms. If restrictions on foreign investment are lifted and firms become more adept at comparing labor costs and moving from country to country, the exit elasticity of wages may grow significantly with liberalization. However, the labor demand relations estimated here and elsewhere cannot capture this latter effect, however important. Fajnzylber, Ribeiro and Maloney (2000) do attempt to measure this effect.

In sum, theory cannot be relied on to clinch the case that trade reforms have increased labor demand elasticities. We turn, therefore, to the empirical evidence.

III. Data

We work with comparable firm level data from Colombia (1977-1991), Mexico (1984-1990), and Chile (1979-95). The data sets to be used will be those prepared in the context of the World Bank funded project "Industrial Competition, Productivity, and Their Relation to Trade Regimes" (Roberts and Tybout, 1996).[5] These data sets have several advantages that set them above any other work done to date.

1. They have broad micro-level coverage, including most manufacturing

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lower elasticity.

[5] In the case of Chile, the original data set was updated to cover the period after 1986, using information

establishments with at least ten employees, and have been "cleaned" on a consistent basis. Working at this level permits more precise estimation as well as permitting wages to be taken as exogenous.

2. Panels that follow firms over time permit studying the dynamics of the employment adjustment process. They also provide lagged values to serve as instruments for potentially endogenous variables. Finally, they permit controlling for the existence of plant-specific effects that may be correlated with explanatory variables.

3. The data sets provide consistent coverage across 3 countries in Latin America: Chile, Colombia, Mexico. Our maximum span is 17 years for Chile. Though Slaughter's U.S. series permitted the estimated substitution elasticities to evolve over several decades of trade integration, our data spans periods of dramatic changes in trade regimes. We deal with one case of extreme liberalization (Mexico) and two of renewed protectionism followed by re-liberalization.

Mexico: 1984-1990

In 1985, the De la Madrid government undertook a restructuring of the external sector preceded in magnitude only by Chile's reforms of the mid 1970s. (Lustig 1992, Maloney and Azevedo 1995) Import licensing was cut to a quarter of previous levels while maximum import tariffs fell 50% and became more unified. The liberalization process would continue under NAFTA into the 1990s. The initial liberalization was accompanied by a sharp depreciation of the real exchange rate which mitigated the reduction in protection. Over the course of the early 1990s, a steady appreciation would lead to an

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provided by the Instituto Nacional de Estadística (Santiago, Chile).

increasing competitive pressure on the tradeables sector. Although the bulk of the reforms had been taken before our sample begins, arguably the impact was worked out exactly over our period of study.

Chile: 1979-1995:

In the context of wide ranging and profound structural reforms, Chile gradually reduced tariffs to a uniform 10% across industries by 1979. From 1976 to 1982, the industrial sector was majorly restructured both in terms of product mix, and shedding of labor. The period we analyze ranges from 1982 to 1995 a period in which the restructuring was largely complete, but which saw dramatic reversal in the protection that domestic firms would face. First, with the collapse of the currency peg in July of 1982, the currency depreciated almost 60% by 1985. Second, in March of 1983 tariffs were doubled to 20% and then raised to 35% in September 1984. They were eased back to 30% in March of 1985, 20% three months later where they stayed for two years until January 1988 when they were reduced to 15%.

The finally reduction to 11% in June 1991 came on top of a rapid appreciation of the exchange rate of 22% from 1989-95. Arguably, the period of 1983-1988, was a period of relatively high protection compared either to the period the came before, or that after 1990.

Colombia: 1977-1991

The 1970s were characterized by fairly liberal trade environment. QRs were steadily reduced reaching their low point in 1980 when 69% of all commodities did not

require import licenses. Nominal tariffs fell from an average of 46% in 1973 to 31.8% in 1974 then reached 26.9% in 1980.

A declining real exchange rate and a worsening trade deficit led to a tendency to reverse trade liberalization in 1981 that sharply accelerated between 1983-1985. Only 36% of commodities were classified in the free import category, down from 69% in 1980 and the share would fall through 1984 when only 5% of all commodities freely imported, 83% required licenses and 16.5% were prohibited. Nominal tariffs rose to over 55% in 1983.

A gradual process of liberalization began in 1985. The Plan Vallejo liberalized imports of intermediate and capital goods and 1988 saw again a sharp reduction in overall tariffs. 1990 saw an even sharper measures with the virtual elimination of the licensing regime and a cutting of average tariffs also by roughly half. However the actual reduction in protection to Colombian industry is difficult to measure. From 1983 to 1991, the exchange rate depreciated by roughly 50%, arguably leaving the level of protection in 1990 similar to that previous. Looking at a crude measure of nominal tariff movements ER movements, substantial lowering of protection only occurs in 1990 and 1991 (Roberts 1996 p 228, Ocampo and Villar 1992).

IV. Dynamic Panel Modeling

The theoretical discussion above does not leave us with a particular functional form to estimate so we depart from a reasonably standard log linear autoregressive specification (see Hammermesh 1993, Sevestre and Trognon 1996):

$$l_{it} = \alpha l_{i(t-1)} + w_{it}\eta(\theta(\tau),\tau) + \psi q_t + \mu_t + \mu_i + \xi_{it}$$

The log of employment in firm i in period t is a function of lagged employment, a vector of the logs of the skilled and unskilled wages in the firm ($\mathbf{w}_i$), and industry output (to capture cyclical effects), time varying levels effects that affect all firms equally, individual "fixed" effects, and a random error term. Firm level output is omitted since we are interested both in substitution effects conditional on output and output effects of a change in wages. Unfortunately, the standard OLS techniques for approaching the individual effects, random effects or fixed effects estimators, are not consistent in this context. The assumption of a lack of correlation between μ_t and the explanatory variables required for variable effects estimator is not defensible in this context since both l_t *and* l_{t-1} are a function of μ_i. OLS is clearly inconsistent and FGLS is also should the errors show either heteroskedasticity or serial correlation (Sevestre and Trognon 102). Further, the usual elimination of μ_i by subtracting off the time mean induces a negative correlation between the transformed error and the lagged dependent variables of order 1/T, which, in short panels such as those used here remains substantial.

If at least one of the explanatory variables is truly exogenous, Balestra and Nerlove (1966), its lags can be used as instruments and will yield consistent estimates. However, in the present case, it is difficult to assume that either wages, or output are uncorrelated with μ_i. As an example, larger output firms tend to use more sophisticated production techniques. These also require a more reliable or skilled work force which will show up as

receiving a higher wage.[6] Both output and the observed wage are therefore correlated with the unobserved "sophistication" of the production technology.

Following Anderson and Hsiao (1982), we therefore difference the data to eliminate μ_i, yielding our base specification

Unless the idiosyncratic error followed a random walk, this differencing necessarily gives

$$\Delta l_{it} = \alpha \Delta l_{i(t-1)} + \Delta w_{it} \eta(\theta(\tau), \tau) + \psi \Delta q_t + \Delta \mu_t + \Delta \xi_{it}$$

the transformed error an MA(ϕ) structure that is correlated with the differenced LDV. This can be overcome by using lags of greater than t-ϕ as instruments. We follow Arellano and Bond 's (1991) employment of additional lags as instruments to improve the efficiency of the estimates in a Generalized Method of Moments (GMM) context.

We instrument lagged differenced employment with its lag and with second and further lags of capital stocks or output. Though we attempted to instrument for any remaining endogeneity in wages, the results, as with Roberts and Skoufias and Maloney and Ribeiro, were poor and counterintuitive and in the end we do not instrument for them. As we instrument lagged differenced employment with its lag, we lose three years of data in each panel. This is not so much of a problem in Colombia where the sample begins substantially before the change in regime. In Mexico we lose 1984-86, the period when most reforms were occurring. However, the full impact of these changes was probably not instantaneous and the exchange rate appreciated sharply across the period so the experiment is still of interest. The Chilean data now begins in 1982, the last year of the

[6] This does not imply lack of competitiveness in product markets. Firms take the wage for workers of all combinations of characteristics they desire. Since we do not observe these characteristics, the firm may

extremely open trade regime before the economic collapse. The several year period of greater protectionism that followed and then the re-liberalization after make this period interesting.

Measures of openness:

1. *Changes in Regime: (Tariff Rate, Real Exchange Rate, License Coverage)* Changing tariff or quota regimes therefore has some advantages. As the proliferation of anti-dumping cases testifies, these may still understate the true degree of protection. Since real exchange rate movements also constitute protection, we include them as "regime" variables

2. *Realized trade flows: (Import Penetration Index, Export content of Production.)* Though seemingly logical measures of increased integration, these measures have two disadvantages. First, theoretically, it is not necessary for trade to actually occur for the domestic agent's behavior to change, the threat is enough (Bhagwati, 1965). Hence very small or no observed imports may nonetheless be associated with large changes in industrial structure. Second, customary measures of competition are extremely noisy. In Chile, the data after 1986 do not* have a sectoral identification code and hence these variables cannot be calculated.

3. *Observed Competitiveness: (price-cost margin).* This measure of monopoly rents

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appear to be paying more for the workers.

proxies for the degree of monopoly power. Empirically, Harrison (1994) and Levinsohn (1993) argued that observed falls in price-cost margins following liberalization imply more elastic product demand.

In the estimations, these variables are included free standing and as interactive variables on the relevant elasticity. This provides for a more direct testing procedure than that used by Slaughter who collected the elasticities in a panel and then regressed them on various openness measures leaving unclear what the standard errors would be.

VI. Results

Following Arellano and Bond, tables 1-6 present the results of the difference dynamic GMM estimations. Preliminary exploration using the Blundell and Bond (1998) systems estimator generated countertuitive results, in particular very high adjustment lags, so we remain with the difference specification (See Fajnzylber and Maloney, 2000). The variables are listed across the top of each table: lagged employment, contemporaneous and lagged blue collar wages, contemporaneous and lagged white collar wage and, for Colombia and Mexico, the industry value added. Since the Chilean data does not include industry identification in the entire sample, we exclude the industry value added term. The diagnostics reported are those of Arellano and Bond: the Sargan test for overidentifying restrictions, implicitly a test of specification, and tests for second order serial correlation.

To begin, we include yearly dummies and interactive terms on all variables, reported in the column below each variable. This is the most straightforward way of testing for structural break in the labor demand equations across time. Wald tests, both on

whether the set of dummies for a any given year is significant (Specification Wald), and whether the set of time dummies on any particular variable is significant (Variable Wald), are reported in the penultimate column and in the last row respectively. It is necessary to recall that by definition of the 5% level of confidence, there is a 50% chance that ten time dummies will generate at least one rejection of the null of no change where there is, in fact, no structural break. Throughout the discussion we refer to the absolute value of the own wage elasticities i.e., -.5 is greater than -.3. The calculation of the long run elasticity is standard: the sum of the impact elasticities (coefficients on the contemporaneous and lagged wage) divided by unity minus the coefficient on lagged employment.

The difference GMM specifications are largely satisfactory. For all countries, the Sargan tests are of acceptable values and the presence of second order serial correlation is rejected. The base specifications for each country offer plausible values for the long run own elasticities most central to analysis and their constituent elements, the lagged dependent variables.

Time Dummies

Chile:

Table 1 suggests that there is little evidence of structural break in the blue collar specification. There is a high variance in the calculated long run own wage elasticity ranging from .085 to .641. This suggests that any estimates of demand elasticities depend on the sample period chosen and that comparisons of elasticities across countries must bear this in mind. The significant breaks in the short run elasticity occur in 1986 and 1990-1992, however it moves counterintuitively toward being more elastic in 1986, a

period of more protection, and it is difficult to explain why the short run elasticities would get larger in 1990-92 and then revert to their previous values thereafter as Chilean industry faces a more competitive environment. The Wald tests serve as a measure of the break in the long run elasticity and show break only in 1986 and 1989 and do not suggest a consistent movement in line with Rodrik's theory.

White collar workers do show a provocative consistent structural break in the long run elasticity from 1987-1989, a period of arguably greater protection. Yet all three LR elasticities become greater in absolute value rather than lower. The variable Wald tests suggests that there are significant time effects in the own wage.

Colombia

In table 3, the specification Wald tests for Colombia also show no consistent pattern of structural break although sporadic breaks occur in 1984, 1985 and 1988. In the first case, none of the dummies on the components of the LR own elasticity are significant, and in the second, the short run elasticity become larger in a period of greater protection. Individual dummies on the contemporaneous own wage are significant in 1988-1989, but there is no obvious correlation with policy change. Though the long run own wage elasticity does appear larger in 1991, a period of increased liberalization, the Wald test does not suggest significance.

Table 4 shows that neither the specification Wald tests or the coefficient Wald tests suggest any break in the white collar specification and no individual dummies are significant.

Mexico

For blue collar workers, table 5 shows sharp breaks in the coefficients on the contemporaneous wage in the direction predicted with liberalization. However, the specification Wald test find no overall structural break and despite larger LR elasticities in 1988 and 1989, the reverse is true in 1990, a period of greater liberalization and an appreciating exchange rate. The variable Wald tests also suggest no significant break except for the constant.

Table 6 suggests, again, no evidence of significant overall specification change although all LR own elasticities are higher in the more open period. The variable Wald test shows significance only for the constant and industry value added.

In sum, there is no strong evidence from these regressions that liberalization has led to greater LR own wage elasticities.

Openness Proxies

Tables 7-12 present the results of the same specification, but adding to the time dummies explicit measures of liberalization described above. Most variables were included both free standing and as interactive variables with the exception of economy wide variables which had no cross sectional variation.

Chile:

In the trade policy specification, both the interactive terms on the tariff rate and the real exchange rates show significance on either the contemporaneous or lagged own wage coefficient, and the variable Wald tests show marginal significance. However,

counterintuitively, higher tariff protection appears to *raise* the elasticity as does a depreciation of the exchange rate. A higher price cost margin appears to affect the specification at a high level of statistical significance but has no effect on the own wage coefficients. Counterintuitively, rising profit margins are correlated with a significant rise in the coefficient on lagged employment and thus with a higher long run own elasticity.

For white collar workers, table 8 suggests that a depreciation of the real exchange rate has the counterintuitive effect of increasing the own wage elasticity with both the specification and variable Wald tests strongly significant. Price cost margins do not have significant effects on either the short nor the long run employment response to own wage changes.

In sum, there is little evidence of more openness leading to higher long run own wage elasticities.

Colombia:

Among the trade policy variables, only the real exchange rate has an effect on the blue collar elasticity and in the direction predicted. Both the combined coefficients on the own wage and the reduction in the coefficient on lagged employment move to reduce the long run elasticity. This effect is supported again in the trade flows specification. Here however, increased imports counter-intuitively appear to shorten the adjustment period and reduce the long run elasticity. Increased exports do seem to lead to higher short run and long run elasticities. The price cost margin lengthens the adjustment period with the effect of *increasing* the long run own elasticity.

For white collar workers, the only significant coefficient in the trade policy

specification is that on the lagged dependent variable-a more depreciated currency decreases long run own elasticity. In the trade flows specification, both increased exports and imports do decrease the short run own elasticity although the specification Wald tests are only marginally significant. The statistically significant increase in the coefficient on lagged employment has the impact of *increasing* the long run elasticity as price cost margins rise.

Overall, Colombia provides some evidence in favor of the Rodrik hypothesis, but the results are still highly mixed.

Mexico:

For blue collar workers, product tariffs have an indeterminate effect, counterintuitively increasing the short run elasticities but reducing the coefficient on lagged employment. Evaluated at the variable means, an increase in tariffs of one standard deviation lowers the demand elasticities as predicted. In Mexico, the data also allow for the construction of a variable for protection of inputs. The impact of higher input tariffs is also indeterminate but when evaluated at the variable means, a one standard deviation increase in tariffs leads to a lowering of elasticities. As section II argues, theoretically, it is not obvious that this should be the case but the finding is broadly consistent with Rodrik's argument. Neither the non-trade barriers variable nor the real exchange rate appear significantly. Increased imports do appear to have the predicted effect on the short and long run elasticities although the specification Wald test is not significant. The real exchange rate again does not affect short run own wage elasticities but by decreasing the coefficient on lagged employment, it effectively does reduce the total elasticity as

predicted. As for price cost margins, they have no significant effects on either the short run or the long run elasticity.

For white collar workers, no tariff variable has any impact on the own wage elasticities although the exchange rate has the opposite of the predicted effect through the lagged own wage. No trade flow variable has any impact, but the real exchange rate does have the predicted effect here through reducing the coefficient on lagged employment. Further, non-trade barriers do decrease long run elasticities through the coefficient on lagged employment. Increased prices cost margins appear to increase the own wage elasticity.

Conclusions

This paper has argued that the case that trade liberalization should increase own wage elasticities, while compelling in the case of competitive import competing industries, is perhaps less so in the frequent case of imperfectly competitive, non-tradeable, or even export industries. It has then tested the hypothesis using establishment level panel data from three countries with periods of liberalization.

The results show that estimates of elasticities do change greatly in magnitude, if not significantly so, across time and that comparisons across countries should take this into account when attempting to make inference about the flexibility or efficiency of labor markets. But more importantly, the data provide only very mixed support for the idea that trade liberalization has an impact on own wage elasticities and no consistent patterns emerge. If globalization is making the lives of workers more insecure, it is probably working through some other mechanism than that examined here.

References:

Arellano, M. and Bond, S. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." Review of Economic Studies 58: 277-297.

Bhagwati, J. (1965) "On the Equivalence of Tariffs and Quotas," in R.E. Baldwin (ed.) Trade, Growth and the Balance of Payments, Amsterdam: North Holland.

Berman, E., Bound, J. and Griliches, Z. 1994. "Changes in the Demand for Skilled Labor within U.S. Manufacturing: Evidence from the Annual Survey of Manufactures." Quarterly Journal of Economics 109 (2): 367-397.

Bresnahan, T. (1989) "Empirical Studies of Industries with Market Power," in R Schmalensee and R.D. Willig eds. Handbook of Industrial Organization Volume 2. (New York: North Holland)

Burki, S.J. and Edwards, S. 1997. "Latin America after Mexico: Quickening the Pace." In Annual World Bank Conference on Development in Latin America and the Caribbean 1995: the Challenges of Reform, edited by Burki, S.J., Edwards, S. and Aiyer, S. Washington D.C.: The World Bank.

Burki, S. J. and Perry, G. E. 1997. The Long March: a Reform Agenda for Latin America and the Caribbean in the Next Decade. The World Bank Latin American and Caribbean Studies. Washington, DC: The World Bank.

Canonero, G. and Werner, A. 1996. "Relative Wages and Trade Liberalization in Mexico". Mimeo, IMF.

Cassoni, Adriana, Steven G. Allen, Gaston J. Labadie (1999) "Union, Labor Market Regulation, and Employment in Uruguay." Mimeo, IDB.

Chinoy, Sajji, Pravin Krishna and Devashish Mitra (1999), "Trade Liberalization and Labor Demand Elasticities: Evidence from Turkey" mimeo, Brown University

Davidson, C. (1984), "Cartel Stability and Trade Policy," *Journal of International Economics* 17:219-237.

Dunnes, T. and Roberts, M. J. 1993. "The Long-Run Demand for Labor: Estimates from Census Establishment data." U.S. Bureau of the Census, Working Paper CES 93-13.

Easterly, W., Loayza, N., and Montiel, P. 1997. "Has Latin America's Post-reform Growth been Disappointing?" Journal of International Economics 43: 287-311.

Feenstra, R.C. and Hanson, G. H. 1996. "Foreign Investment, Outsourcing, and Relative Wages." In The Political Economy of Trade Policy: Papers in Honor of Jagdish Bhagwati, edited by Feenstra, R. C., Grossman, G.M., and Irwin, D. A. Cambridge, MA: The MIT Press.

Fajnzylber, P, and W.F. Maloney (2000), "Labor Demand in Colombia, Chile and Mexico, Dynamic Panel Modeling" mimeo, LAC PREM.

Fajnzylber, P, E. Ribeiro and W.F. Maloney (2000), "Entry and Exit Decisions and Labor Demand," mimeo LAC PREM.

Freeman, R. B. 1995. "Are our Wages set in Beijing?" Journal of Economic Perspectives 9(3): 15-32.

Griliches, Z. and Hausman, J. A. 1986. "Errors in Variables in Panel Data." Journal of Econometrics 31: 93-118.

Hamermesh, D. S. 1993. Labor Demand. Princeton, NJ: Princeton University Press.

Hanson, G. H. and Harrison, A. 1995. "Trade, Technology, and Wage Inequality." NBER Working Paper 5110.

Krugman, P.(1996), *Rethinking International Trade* (Cambridge: MIT Press).

Lustig, N. (1992), Mexico: The Remaking of an Economy, (Washington: Brookings Institution)

Maloney, W. and R. Azevedo (1995), " "Trade Reform, Uncertainty and Export Promotion: Mexico 1982-1988. Journal of Development Economics, 48:1 67-90.

Maurice, S. and C. E. Ferguson (1973) "Factor Demand Elasticity under Monopoly and Monopsony," *Economica 11:180-186.*

Ocampo, J.O. and L. Villar (1992), "Trayectoria y Vicisitudes de la Apertura Economica Colombiana," Pensamiento Iberoamericano 21:165-186.

Pagnagariya, Arvind (1999), "Trade Openness: Consequences for the Elasticity of Demand for Labor and Wage Outcomes." University of Maryland, mimeo.

Paes de Barros, Ricardo, Carlos Henrique Corseuil and Gustavo Gonzaga (1999), "Labor Market Regulations and the Demand for Labor in Brazil. Mimeo IDB.

Pissarides, C. A. 1997. "Learning by Trading and the Return to Human Capital in Developing Countries." The World Bank Economic Review 11(1): 17-32.

Porter, R. (1983), "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886," *Bell Journal of Economics*, 14:2:301-314.

Revenga, A. 1994. "Employment and Wage Effects of Trade Liberalization: The Case of Mexican Manufacturing." Mimeo. The World Bank.

Robbins, D. J. 1996. "Evidence on Trade and Wages in the Developing World." OECD Development Centre Technical Papers No. 119. Paris: OECD.

Roberts, M. J. and Tybout, J. R. 1996. Industrial Evolution in Developing Countries: Micro Patterns of Turnover, Productivity, and Market Structure. New York, NY: Oxford University Press.

Roberts, M J. and Skoufias, E. 1997. "The Long-Run Demand for Skilled and Unskilled Labor in Colombian Manufacturing Industries." Review of Economics and Statistics 79: 330-334.

Rodrik, D. 1997. Has Globalization Gone Too Far? Washington, DC: Institute for International Economics.

Sevestre P. and A. Trognon (1996), "Dynamic Linear Models" in Matyas, L. and P Sevestre, The Econometrics of Panel Data, (Boston: Kluwer Academic Publishers),100-118.

Slaughter, M. J. 1997. "International Trade and Labor-Demand Elasticities." NBER Working Paper 6262.

Sosin, K. and Fairchild, L. 1984. "Nonhomotheticity and Technological Bias in Production." Review of Economics and Statistics 66: 44-50.

Wood, A. 1994. North-South Trade, Employment, and Inequality: Changing Fortunes in a Skill-Driven World. Oxford: Clarendon Press.

Wood, A. 1995. "How Trade Hurt Unskilled Workers." Journal of Economic Perspectives 9(3): 57-80.

Wood, A. 1997. "Openness and Wage Inequality in Developing Countries: The Latin American Challenge to East Asian Conventional Wisdom." The World Bank Economic Review 11(1): 33-58.

Appendix I. Notes on the Fundamental Law of Labor Demand

The "Fundamental Law of Labor Demand"(FLFD) [7] used in most discussions of the topic is generally derived from the cost function. Since we are interested in the impact of an economy wide rise in labor costs, as opposed to idiosyncratic ones, we follow Hamermesh in aggregating to the industry level. From Shepherd's lemma applied to any homothetic cost function:

$$l^* = c_w \quad k^* = c_r \quad \sigma = cc_{wr}/c_w c_r \quad c_{ww} = -(r/w)c_{wr} \tag{1}$$

and take the derivative with respect to the wage

$$\frac{\partial L}{\partial w} = qc_{ww} + \frac{\partial q}{\partial p}\frac{\partial p}{\partial c}c_w^2$$

By equations (1) this can be rewritten

$$\frac{\partial L}{\partial w} = \frac{rk}{q}\frac{\sigma L}{wc} + \frac{\partial q}{\partial p}\frac{\partial p}{\partial c}\frac{L^2}{q^2}$$

multiplying both sides by w/L yields

$$\eta_l = -\frac{rk}{cq}\sigma + \frac{wL}{cq}\eta_{qc} = -(1-m)\sigma - m\eta_{qc}$$

where m is labor's share in costs, and σ is the Allen constant output elasticity of substitution which measures the ease of substitution among factors when the only possible adjustment to a rise in a factor's price by changing relative use of factors. The expression differs from the FLFD only to the degree $\eta_{qc} \neq \eta$.

[7] Hamermesh (1993) p 27

Table 1: Industry Labor Demand for Blue Collar Workers in Chile (1982-95)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Constant	Wald Test: p-value(b)	L.R. Elast.(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Base	0.381(*)	-0.244(*)	0.068(*)	0.041(*)	-0.006	-0.179(*)	--	-0.285	0.972	0.695	21014
Specification(c)	(0.095)	(0.015)	(0.023)	(0.007)	(0.007)	(0.010)					(1501)
Time Variant	0.627	-0.169(*)	0.112	0.071(*)	-0.034	-0.176(*)	--	-0.153	0.660	0.811	21014
Specification	(0.475)	(0.043)	(0.105)	(0.027)	(0.039)	(0.021)					(1501)
Variable* T83	-0.533	-0.072	-0.104	-0.001	0.036	0.142(*)	0.442	-0.257			
	(0.531)	(0.048)	(0.116)	(0.032)	(0.046)	(0.038)					
Variable* T84	0.607	-0.009	0.193	-0.103(**)	-0.046	0.316(*)	0.159	-0.545			
	(0.572)	(0.067)	(0.126)	(0.045)	(0.055)	(0.033)					
Variable* T85	0.224	-0.068	0.029	-0.051	0.049	0.143(**)	0.199	-0.641			
	(0.853)	(0.067)	(0.163)	(0.038)	(0.048)	(0.067)					
Variable* T86	-0.707	-0.106(***)	-0.253(***)	-0.036	0.059	0.223(*)	0.043	-0.385			
	(0.607)	(0.061)	(0.135)	(0.034)	(0.045)	(0.028)					
Variable* T87	-1.108(***)	-0.031	-0.193	-0.038	0.032	0.284(*)	0.111	-0.190			
	(0.663)	(0.077)	(0.142)	(0.034)	(0.046)	(0.034)					
Variable* T88	-0.596	-0.067	-0.153	0.007	0.054	0.244(*)	0.666	-0.286			
	(0.499)	(0.059)	(0.116)	(0.033)	(0.044)	(0.025)					
Variable* T89	-0.289	-0.110	0.025	-0.072(**)	0.006	0.214(*)	0.012	-0.215			
	(0.568)	(0.070)	(0.126)	(0.037)	(0.053)	(0.028)					
Variable* T90	-0.313	-0.130(***)	-0.060	-0.012	0.058	0.180(*)	0.243	-0.360			
	(0.568)	(0.075)	(0.142)	(0.036)	(0.043)	(0.032)					
Variable* T91	-0.694	-0.123(**)	-0.125	-0.036	0.038	0.205(*)	0.108	-0.286			
	(0.501)	(0.061)	(0.121)	(0.033)	(0.042)	(0.023)					
Variable* T92	-0.027	-0.138(**)	0.012	-0.004	0.057	0.215(*)	0.177	-0.457			
	(0.558)	(0.067)	(0.140)	(0.046)	(0.046)	(0.024)					
Variable* T93	-0.156	-0.025	0.038	-0.065(***)	-0.022	0.176(*)	0.167	-0.085			
	(0.888)	(0.058)	(0.226)	(0.040)	(0.061)	(0.044)					
Variable* T94	0.981	-0.056	0.136	-0.027	-0.002	0.149(*)	0.930	-0.037			
	(1.638)	(0.089)	(0.292)	(0.059)	(0.076)	(0.040)					
Variable* T95	0.192	-0.069	0.012	-0.053	0.005	0.168(*)	0.780	-0.634			
	(1.213)	(0.088)	(0.235)	(0.046)	(0.072)	(0.024)					
Wald Test (d)	0.120	0.591	0.044	0.158	0.431	0.000					

Notes: GMM estimates with first-differenced data. All variables are assumed exogenous except for lagged employment. Instruments are based on second and further lags of employment and output. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Best point estimates calculated as [(Ln WBt + Ln WBt-1)/ Ln Lt-1]. (b) Wald Test of Joint Significance of the variables interacted with a given year dummy. (c) Time dummies were included but are here omitted (d) P. Values. Wald Test of Joint Significance of year dummies interacted with a given variable.

Table 2: Industry Labor Demand for WhiteCollar Workers in Chile (1982-95)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Constant	Wald Test: p-value(b)	L.R. Elast.(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Base Specification(c)	0.248(*)	0.032(**)	-0.032(**)	-0.376(*)	0.108(*)	-0.074(*)	--	-0.357	0.221	0.795	21014
	(0.045)	(0.015)	(0.013)	(0.012)	(0.018)	(0.013)					(1501)
Time Variant	0.262(***)	0.019	-0.032	-0.289(*)	0.099(***)	-0.070(*)	--	-0.258	0.213	0.599	21014
Specification	(0.153)	(0.049)	(0.045)	(0.032)	(0.054)	(0.020)					(1501)
Variable* T83	-0.032	0.008	-0.006	-0.054	-0.017	-0.014	0.899	-0.339			
	(0.170)	(0.063)	(0.062)	(0.043)	(0.068)	(0.030)					
Variable* T84	-0.103	-0.016	-0.008	-0.009	-0.026	0.098(*)	0.991	-0.268			
	(0.254)	(0.067)	(0.065)	(0.045)	(0.093)	(0.028)					
Variable* T85	0.028	0.012	0.003	-0.114(**)	-0.012	0.049(***)	0.408	-0.446			
	(0.240)	(0.071)	(0.059)	(0.052)	(0.082)	(0.027)					
Variable* T86	-0.122	0.054	0.093	-0.096(**)	0.007	0.168(*)	0.110	-0.325			
	(0.232)	(0.074)	(0.074)	(0.049)	(0.090)	(0.024)					
Variable* T87	-0.102	0.122(***)	0.007	-0.168(*)	-0.009	0.159(*)	0.007	-0.438			
	(0.218)	(0.070)	(0.070)	(0.049)	(0.085)	(0.027)					
Variable* T88	-0.104	0.110	0.042	-0.145(*)	-0.036	0.156(*)	0.050	-0.442			
	(0.180)	(0.069)	(0.067)	(0.049)	(0.079)	(0.026)					
Variable* T89	0.282	-0.076	-0.131(***)	-0.194(*)	0.153	0.108(*)	0.003	-0.506			
	(0.282)	(0.073)	(0.070)	(0.051)	(0.119)	(0.034)					
Variable* T90	-0.069	-0.031	0.014	-0.094(***)	0.002	0.105(*)	0.469	-0.349			
	(0.244)	(0.079)	(0.061)	(0.050)	(0.105)	(0.026)					
Variable* T91	-0.095	0.005	0.018	-0.082(***)	-0.012	0.106(*)	0.627	-0.341			
	(0.219)	(0.068)	(0.060)	(0.047)	(0.087)	(0.023)					
Variable* T92	0.004	0.006	0.019	-0.065	-0.001	0.102(*)	0.862	-0.349			
	(0.261)	(0.065)	(0.061)	(0.050)	(0.100)	(0.024)					
Variable* T93	0.173	-0.006	-0.069	-0.047	0.103	0.105(*)	0.715	-0.239			
	(0.251)	(0.074)	(0.069)	(0.056)	(0.099)	(0.025)					
Variable* T94	0.008	-0.074	-0.049	-0.027	0.020	0.101(*)	0.844	-0.270			
	(0.228)	(0.068)	(0.070)	(0.049)	(0.089)	(0.024)					
Variable* T95	0.297	-0.066	0.025	-0.090	0.122	0.056(**)	0.499	-0.359			
	(0.369)	(0.080)	(0.067)	(0.060)	(0.125)	(0.028)					
Wald Test (d)	0.970	0.204	0.474	0.003	0.973	0.000					

Notes: GMM estimates with first-differenced data. All variables are assumed exogenous except for lagged employment. Instruments are based on second and further lags of employment and output. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Best point estimates calculated as [(Ln WBt + Ln WBt-1)/ Ln Lt-1]. (b) Wald Test of Joint Significance of the variables interacted with a given year dummy. (c) Time dummies were included but are here omitted (d) P. Values. Wald Test of Joint Significance of year dummies interacted with a given variable.

Table 3: Industry Labor Demand for Blue Collar Workers in Colombia (1980-91)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(b)	L.R. Elast.(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Base Specification(c)	0.215(*) (0.080)	-0.424(*) (0.028)	0.037 (0.035)	0.074(*) (0.010)	0.011 (0.009)	0.054(*) (0.013)	-0.005 (0.009)	--	-0.493	0.311	0.312	22992 (1916)
Time Variant Specification	0.159 (0.316)	-0.453(*) (0.053)	-0.051 (0.094)	0.118(*) (0.024)	-0.001 (0.018)	0.011(*) (0.023)	0.004 (0.018)	--	-0.599	0.386	0.929	22992 (1916)
Variable* T81	-0.149 (0.302)	0.090 (0.060)	0.064 (0.100)	-0.058(***) (0.032)	0.011 (0.028)	0.010 (0.039)	-0.013 (0.019)	0.094	-0.353			
Variable* T82	-0.021 (0.369)	-0.065 (0.089)	0.058 (0.124)	-0.030 (0.037)	0.036 (0.028)	-0.011 (0.035)	0.024 (0.020)	0.488	-0.593			
Variable* T83	0.032 (0.573)	-0.051 (0.098)	0.129 (0.250)	-0.087(**) (0.037)	0.018 (0.041)	0.060 (0.038)	-0.013 (0.022)	0.154	-0.525			
Variable* T84	-0.176 (0.334)	0.011 (0.064)	0.031 (0.108)	-0.066(***) (0.035)	0.058(**) (0.027)	0.092(*) (0.035)	-0.013 (0.019)	0.008	-0.454			
Variable* T85	0.830 (0.665)	-0.199(**) (0.098)	0.346 (0.273)	0.004 (0.052)	-0.017 (0.051)	0.215(*) (0.062)	-0.081(*) (0.020)	0.025	-32.194			
Variable* T86	-0.482 (0.524)	0.049 (0.089)	-0.157 (0.266)	-0.058 (0.057)	0.017 (0.080)	0.020 (0.068)	-0.033 (0.028)	0.702	-0.463			
Variable* T87	0.625 (0.817)	0.150 (0.095)	0.355 (0.329)	-0.107(***) (0.057)	-0.023 (0.075)	-0.019 (0.049)	0.020 (0.022)	0.281	0.005			
Variable* T88	-0.036 (0.359)	0.137(***) (0.081)	0.094 (0.114)	-0.052 (0.040)	0.048 (0.035)	-0.007 (0.050)	-0.023 (0.020)	0.058	-0.311			
Variable* T89	0.366 (0.532)	0.200(***) (0.108)	0.170 (0.194)	-0.058 (0.043)	-0.028 (0.050)	-0.050 (0.069)	-0.007 (0.020)	0.569	-0.281			
Variable* T90	0.091 (0.444)	0.156 (0.106)	0.062 (0.130)	-0.067 (0.045)	0.034 (0.040)	0.081 (0.077)	-0.019 (0.021)	0.214	-0.382			
Variable* T91	-0.040 (0.334)	0.058 (0.078)	-0.017 (0.103)	-0.035 (0.044)	0.034 (0.042)	0.086 (0.054)	-0.032 (0.020)	0.432	-0.525			
Wald Test: p-value(d)	0.732	0.049	0.698	0.505	0.667	0.001	0.000					

Notes: GMM estimates with first-differenced data. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Best point estimates calculated as [(Ln WBt + Ln WBt-1)/ Ln Lt-1]. (b) Wald Test of Joint Significance of the variables interacted with a given year dummy. (c) Time dummies were included but are here omitted (d) Wald Test of Joint Significance of year dummies interacted with a given variable.

Table 4: Industry Labor Demand for WhiteCollar Workers in Colombia (1980-91)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(b)	L.R. Elast.(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Base Specification(c)	0.290(*) (0.061)	-0.028(**) (0.013)	0.009 (0.010)	-0.307(*) (0.016)	0.095(*) (0.021)	0.039(*) (0.013)	0.007 (0.010)	--	-0.299	0.354	0.752	22992 (1916)
Time Variant Specification	0.321(***) (0.174)	-0.051 (0.050)	0.015 (0.044)	-0.340(*) (0.054)	0.124 (0.084)	-0.917 (1.185)	0.089 (0.102)	--	-0.319	0.212	0.705	22992 (1916)
Variable* T81	-0.261 (0.201)	-0.029 (0.059)	-0.029 (0.051)	0.028 (0.059)	-0.113 (0.093)	0.959 (1.184)	-0.072 (0.102)	0.898	-0.321			
Variable* T82	0.071 (0.279)	-0.025 (0.062)	-0.007 (0.062)	-0.029 (0.071)	-0.030 (0.109)	0.933 (1.191)	-0.046 (0.102)	0.959	-0.452			
Variable* T83	-0.085 (0.260)	0.016 (0.061)	-0.031 (0.056)	-0.007 (0.068)	0.001 (0.111)	0.960 (1.188)	-0.084 (0.102)	0.914	-0.294			
Variable* T84	-0.230 (0.239)	0.076 (0.063)	0.023 (0.054)	0.066 (0.066)	-0.081 (0.105)	0.986 (1.185)	-0.084 (0.102)	0.494	-0.255			
Variable* T85	0.353 (0.556)	-0.547 (0.728)	-0.486 (0.569)	-0.318 (0.396)	0.310 (0.508)	5.689 (5.740)	-0.309 (0.268)	0.765	-2.590			
Variable* T86	0.074 (0.291)	0.030 (0.118)	0.029 (0.116)	0.026 (0.089)	0.006 (0.113)	0.929 (1.734)	-0.062 (0.150)	0.916	-0.304			
Variable* T87	-0.234 (0.408)	-0.015 (0.203)	0.012 (0.102)	0.023 (0.282)	-0.045 (0.207)	2.868 (5.573)	-0.087 (0.146)	0.951	-0.260			
Variable* T88	-0.038 (0.340)	0.053 (0.082)	0.016 (0.057)	0.072 (0.097)	-0.043 (0.123)	0.324 (1.775)	-0.032 (0.125)	0.866	-0.262			
Variable* T89	-0.066 (0.485)	0.207 (0.251)	0.074 (0.191)	-0.020 (0.146)	-0.052 (0.196)	-3.158 (6.811)	0.046 (0.228)	0.933	-0.386			
Variable* T90	0.295 (0.506)	0.337 (0.238)	0.121 (0.126)	0.298 (0.217)	0.229 (0.237)	-1.741 (2.480)	0.065 (0.157)	0.752	0.807			
Variable* T91	0.450 (0.509)	0.020 (0.144)	-0.063 (0.070)	0.092 (0.179)	0.162 (0.151)	0.565 (2.647)	-0.084 (0.104)	0.727	0.164			
Wald Test: p-value(d)	0.615	0.815	0.891	0.884	0.607	0.980	0.000					

Notes: GMM estimates with first-differenced data. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Best point estimates calculated as [(Ln WBt + Ln WBt-1)/ Ln Lt-1]. (b) Wald Test of Joint Significance of the variables interacted with a given year dummy. (c) Time dummies were included but are here omitted (d) Wald Test of Joint Significance of year dummies interacted with a given variable.

Table 5: Industry Labor Demand for Blue Collar Workers in Mexico (1987-90)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(b)	L.R. Elast.(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Base Specification(c)	0.239 (0.184)	-0.194(*) (0.028)	0.054 (0.041)	0.047(*) (0.016)	0.012 (0.015)	0.065(*) (0.019)	-0.019(**) (0.009)	--	-0.183	0.614	0.173	9532 (2383)
Time Variant Specification	0.105 (0.127)	-0.119(*) (0.038)	0.024 (0.025)	0.060(*) (0.020)	0.034(*) (0.012)	0.039 (0.049)	-0.017(*) (0.007)	--	-0.106	0.813	0.179	9532 (2383)
Variable* T88	-0.189 (0.407)	-0.119(***) (0.067)	-0.024 (0.056)	0.002 (0.031)	-0.024 (0.030)	0.011 (0.118)	0.011 (0.013)	0.407	-0.220			
Variable* T89	0.112 (1.134)	-0.202(**) (0.086)	0.127 (0.221)	-0.037 (0.047)	-0.030 (0.089)	0.065 (0.121)	0.067(***) (0.036)	0.195	-0.217			
Variable* T90	0.311 (0.671)	-0.016 (0.060)	0.144 (0.188)	-0.008 (0.040)	-0.024 (0.054)	0.311 (0.671)	-0.026 (0.026)	0.875	0.055			
Wald Test: p-value(d)	0.907	0.118	0.683	0.851	0.854	0.835	0.018					

Notes: GMM estimates with first-differenced data. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Best point estimates calculated as [(Ln WBt + Ln WBt-1)/ Ln Lt-1]. (b) Wald Test of Joint Significance of the variables interacted with a given year dummy. (c) Time dummies were included but are here omitted (d) Wald Test of Joint Significance of year dummies interacted with a given variable.

Table 6: Industry Labor Demand for White Collar Workers in Mexico (1987-90)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(b)	L.R. Elast.(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Base Specification(c)	0.137 (0.157)	0.043(**) (0.021)	0.012 (0.014)	-0.180(*) (0.021)	0.037(***) (0.028)	0.034(**) (0.020)	-0.011(**) (0.005)	--	-0.166	0.344	0.254	9532 (2383)
Time Variant Specification	0.085 (0.115)	0.077(**) (0.036)	-0.006 (0.015)	-0.169(*) (0.055)	0.052(***) (0.030)	0.050(**) (0.025)	-0.009 (0.005)	--	-0.128	0.620	0.687	9532 (2383)
Variable* T88	-0.007 (1.287)	-0.003 (0.070)	0.044 (0.090)	-0.022 (0.078)	-0.054 (0.184)	-0.042 (0.053)	0.023 (0.015)	0.681	-0.210			
Variable* T89	0.584 (0.806)	-0.117(**) (0.060)	-0.015 (0.083)	-0.033 (0.075)	0.061 (0.146)	-0.067 (0.084)	0.071(*) (0.019)	0.343	-0.268			
Variable* T90	0.486 (0.497)	-0.029 (0.057)	0.052 (0.039)	-0.019 (0.071)	0.071 (0.104)	0.026 (0.102)	-0.017 (0.030)	0.808	-0.150			
Wald Test: p-value(d)	0.606	0.169	0.577	0.979	0.871	0.002	0.002					

Notes: GMM estimates with first-differenced data. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Best point estimates calculated as [(Ln WBt + Ln WBt-1)/ Ln Lt-1]. (b) Wald Test of Joint Significance of the variables interacted with a given year dummy. (c) Time dummies were included but are here omitted (d) Wald Test of Joint Significance of year dummies interacted with a given variable.

Table 7:Trade Openness and Industry Labor Demand for Blue Collar Workers in Chile (1982-95)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Constant	Wald Test: p-value(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Trade Policy Specification	0.488(*) (0.039)	0.005 (0.106)	-0.042 (0.089)	0.118(**) (0.051)	-0.097(**) (0.047)	-0.110(***) (0.057)	--	0.188	0.571	21014 (1501)
Variable* Tariff Rate	0.001 (0.001)	0.001 (0.002)	-0.004(***) (0.002)	-0.001 (0.001)	0.003(*) (0.001)		0.007			
Variable* Real Exchange Rate	0.0002 (0.0002)	-0.002(**) (0.001)	0.001(**) (0.001)	-0.0004 (0.0004)	0.0003 (0.0004)		0.227			
Wald Test: p-value(b)	0.065	0.074	0.085	0.203	0.004					
Price-Cost-Margin Specification(c)	0.496(*) (0.054)	-0.255(*) (0.028)	0.149(*) (0.033)	0.067(*) (0.021)	-0.022 (0.026)	-0.183(*) (0.010)	--	0.261	0.520	21014 (1501)
Variable* Price Cost Margin	0.001(*) (0.0005)	0.0002 (0.0007)	-0.001 (0.0009)	-0.001(***) (0.0006)	0.0001 (0.0008)	0.004 (0.003)	0.000			

Notes: GMM estimates with first-differenced data. Time dummies were included but are here omitted. All variables are assumed exogenous except for lagged employment. Instruments are based on second and further lags of employment and output. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Wald Test of Joint Significance of the variables interacted with a given openness variable. (b) Wald Test of Joint Significance of openness variables interacted with a given variable. (c) Additional Instruments: second and further lags of price-cost-margins.

Table 8: Trade Openness and Industry Labor Demand for White Collar Workers in Chile (1982-95)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Constant	Wald Test: p-value(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Trade Policy	0.256(*)	-0.072	-0.046	0.012	-0.017	0.051	--	0.193	0.669	21014
Specification	(0.052)	(0.105)	(0.100)	(0.097)	(0.071)	(0.073)				(1501)
Variable* Tariff Rate	-0.007	0.001	-0.001	0.002	0.002		0.997			
	(0.020)	(0.004)	(0.003)	(0.006)	(0.005)					
Variable* Real	0.001	0.001	0.0003	-0.003(*)	0.001		0.002			
Exchange Rate	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)					
Wald Test: p-value(b)	0.847	0.584	0.936	0.000	0.204					
Price-Cost-Margin	0.215(*)	-0.097(*)	-0.038	-0.410(*)	0.220(*)	-0.074(*)	--	0.341	0.913	21014
Specification(c)	(0.040)	(0.033)	(0.036)	(0.026)	(0.037)	(0.012)				(1501)
Variable* Price Cost	0.0004	0.003(*)	-0.038	0.0007	-0.004	-0.005	0.000			
Margin	(0.0005)	(0.001)	(0.036)	(0.0007)	(0.001)	(0.005)				

Notes: GMM estimates with first-differenced data. Time dummies were included but are here omitted. All variables are assumed exogenous except for lagged employment. Instruments are based on second and further lags of employment and output. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Wald Test of Joint Significance of the variables interacted with a given openness variable. (b) Wald Test of Joint Significance of openness variables interacted with a given variable. (c) Additional Instruments: second and further lags of price-cost-margins.

Table 9: Trade Openness and Industry Labor Demand for Blue Collar Workers in Colombia (1980-91)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Trade Policy	0.475(*)	-0.656(*)	0.158	0.003	0.003	0.059(*)	-0.003	--	0.100	0.157	22992
Specification(b)	(0.112)	(0.170)	(0.124)	(0.075)	(0.089)	(0.018)	(0.010)				(1916)
Variable* Tariff Rate	-0.0003	0.007	-0.0002	-0.003	-0.004		0.007	0.798			
	(0.004)	(0.006)	(0.006)	(0.006)	(0.005)		(0.017)				
Variable* Average Tariff	-0.003	-0.009	0.002	0.003	0.006			0.427			
	(0.004)	(0.007)	(0.007)	(0.006)	(0.005)						
Variable* Non-Tariff-Barriers	0.0004	-0.0004	-0.0003	0.001	-0.0003			0.298			
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)						
Variable* Real Exchange Rate	-0.001(**)	0.003(**)	-0.002(***)	-0.0001	-0.002(***)			0.029			
	(0.001)	(0.001)	(0.001)	(0.0007)	(0.001)						
Wald Test: p-value(c)	0.032	0.015	0.218	0.103	0.447						
Trade Flows	0.031	-0.672(*)	0.098	0.201	0.215	0.043(**)	-0.012	--	0.592	0.689	22992
Specification(d)	(0.202)	(0.224)	(0.157)	(0.158)	(0.150)	(0.022)	(0.013)				(1916)
Variable* Import Ratio	-0.007(**)	-0.010	-0.006	0.008	0.005		0.031(***)	0.483			
	(0.004)	(0.008)	(0.006)	(0.006)	(0.005)		(0.017)				
Variable* Export Ratio	-0.003	-0.031(**)	0.013	0.019	0.0002		-0.004	0.473			
	(0.007)	(0.015)	(0.030)	(0.013)	(0.026)		(0.028)				
Variable* Real Exchange Rate	0.003	0.005(*)	-0.0004	-0.003(**)	-0.002			0.055			
	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)						
Wald Test: p-value(c)	0.229	0.012	0.699	0.128	0.088		0.186				
Price-Cost-Margin	0.157(**)	-0.425(*)	-0.009	0.122(***)	0.064	0.054(*)	-0.007	--	0.914	0.503	22968
Specification(e)	(0.069)	(0.058)	(0.076)	(0.064)	(0.079)	(0.013)	(0.008)				(1914)
Variable* Price Cost Margin	0.002(***)	0.0002	0.002	-0.002	-0.002		-0.002	0.505			
	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)		(0.008)				

Notes: GMM estimates with first-differenced data. Time dummies were included but are here omitted. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Wald Test of Joint Significance of the variables interacted with a given openness variable. (b) Additional Instrument: second and further lags of the tariff rate. (c) Wald Test of Joint Significance of openness variables interacted with a given variable. (d) Additional Instruments: second lags of import and export ratios. (e) Additional Instruments: second and further lags of price-cost-margins.

Table 10: Trade Openness and Industry Labor Demand for WhiteCollar Workers in Colombia (1980-91)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Trade Policy Specification(b)	0.340(*) (0.066)	-0.096 (0.090)	0.086 (0.071)	-0.484(*) (0.098)	0.136(***) (0.080)	0.035(**) (0.015)	0.007 (0.010)	--	0.340	0.892	22992 (1916)
Variable* Tariff Rate	0.001 (0.003)	-0.001 (0.006)	0.0004 (0.005)	-0.002 (0.005)	0.001 (0.004)		0.006 (0.009)	0.892			
Variable* Average Tariff	-0.002 (0.002)	0.001 (0.006)	0.0005 (0.005)	0.004 (0.005)	-0.002 (0.004)			0.632			
Variable* Non-Tariff-Barriers	0.0002 (0.0002)	0.001 (0.001)	-0.0003 (0.001)	-0.0003 (0.001)	-0.0001 (0.001)			0.778			
Variable* Real Exchange Rate	- 0.0005(***) (0.0003)	0.0004 (0.001)	-0.001 (0.0005)	0.001 (0.001)	0.00003 (0.001)			0.164			
Wald Test: p-value(c)	0.072	0.918	0.519	0.204	0.705						
Trade Flows Specification(d)	0.296(*) (0.074)	-0.111 (0.161)	0.264(**) (0.131)	-0.361(**) (0.147)	0.058 (0.131)	0.068(*) (0.018)	0.017 (0.012)	--	0.130	0.983	22992 (1916)
Variable* Import Ratio	0.0003 (0.001)	0.003 (0.007)	-0.018(*) (0.006)	0.001 (0.006)	0.012(**) (0.006)		0.000 (0.006)	0.068			
Variable* Export Ratio	-0.003 (0.002)	-0.029(**) (0.013)	-0.012 (0.020)	0.036(*) (0.012)	0.004 (0.017)		-0.005 (0.015)	0.096			
Variable* Real Exchange Rate	0.0001 (0.0004)	0.002 (0.002)	0.001 (0.001)	-0.002 (0.002)	-0.001 (0.002)			0.375			
Wald Test: p-value(c)	0.496	0.097	0.028	0.005	0.056		0.940				
Price-Cost-Margin Specification(e)	0.200(*) (0.067)	0.087 (0.068)	0.084 (0.075)	-0.323(*) (0.086)	0.190(**) (0.084)	0.038(*) (0.013)	0.012 (0.010)	--	0.875	0.936	22968 (1914)
Variable* Price Cost Margin	0.003(**) (0.001)	-0.004(***) (0.002)	-0.002 (0.002)	0.0007 (0.003)	-0.004 (0.003)		0.022(*) (0.007)	0.004			

Notes: GMM estimates with first-differenced data. Time dummies were included but are here omitted. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Wald Test of Joint Significance of the variables interacted with a given openness variable. (b) Additional Instruments: second and further lags of the tariff rate. (c) Wald Test of Joint Significance of openness variables interacted with a given variable. (d) Additional Instruments: second lags of import and export ratios. (e) Additional Instruments: second and further lags of price-cost-margins.

Table 11: Trade Openness and Industry Labor Demand for Blue Collar Workers in Mexico (1987-90)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Trade Policy	0.475(**)	-1.002	-0.909	0.896	1.053	0.092(*)	0.001	--	0.828	0.157	8196
Specification(b)	(0.225)	(1.298)	(0.910)	(0.953)	(1.033)	(0.035)	(0.061)				(2049)
Variable* Tariff Rate	-0.017(***)	-0.007	-0.058(**)	0.036	0.046		0.084	0.057			
	(0.009)	(0.047)	(0.030)	(0.036)	(0.042)		(0.099)				
Variable* Inputs Tariff	0.016(***)	0.007	0.038(**)	-0.035	-0.026		-0.091	0.034			
	(0.009)	(0.032)	(0.020)	(0.023)	(0.027)		(0.091)				
Variable* Non-Tariff-	0.0001	-0.001	-0.001	0.002	-0.0001		-0.001	0.111			
Barriers	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		(0.005)				
Variable* Real	0.002	0.008	0.017	-0.011	-0.016			0.122			
Exchange Rate	(0.002)	(0.018)	(0.012)	(0.013)	(0.015)						
Wald Test: p-value(c)	0.226	0.080	0.069	0.009	0.319		0.700				
Trade Flows	2.488(*)	0.310	-0.081	-1.139(**)	0.104	0.035	-0.121(***)	--	0.299	0.727	9508
Specification(d)	(0.910)	(0.629)	(0.698)	(0.579)	(0.453)	(0.031)	(0.071)				(2377)
Variable* Import Ratio	0.001	-0.051(***)	0.041	0.042(**)	-0.040(***)		-0.029	0.416			
	(0.005)	(0.027)	(0.030)	(0.020)	(0.024)		(0.067)				
Variable* Export Ratio	-0.0002	0.021	-0.036	-0.028	0.029		-0.038	0.722			
	(0.006)	(0.028)	(0.039)	(0.023)	(0.028)		(0.075)				
Variable* Real	-0.011(**)	0.00001	0.002	0.008(***)	0.001			0.165			
Exchange Rate	(0.006)	(0.005)	(0.006)	(0.005)	(0.004)						
Wald Test: p-value(c)	0.150	0.107	0.401	0.155	0.159		0.053				
Price-Cost-Margin	0.731(**)	0.473(***)	-0.179	0.210	0.200	0.103(**)	-0.003	--	0.863	0.399	9524
Specification(e)	(0.326)	(0.275)	(0.269)	(0.205)	(0.248)	(0.048)	(0.013)				(2381)
Variable* Price Cost	-0.003	0.009	0.009	-0.005	-0.006		0.036(***)	0.588			
Margin	(0.002)	(0.009)	(0.009)	(0.006)	(0.008)		(0.022)				

Notes: GMM estimates with first-differenced data. Time dummies were included but are here omitted. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Wald Test of Joint Significance of the variables interacted with a given openness variable. (b) Additional Instrument: the second lag of the tariff rate. (c) Wald Test of Joint Significance of openness variables interacted with a given variable. (d) Additional Instruments: third and further lags of import and export ratios. (e) Additional Instruments: second and further lags of price-cost-margins.

Table 12: Trade Openness and Industry Labor Demand for White Collar Workers in Mexico (1987-90)
(standard errors in parenthesis)

	Ln L t-1	Ln WBt	Ln WBt-1	Ln WWt	Ln WWt-1	Ln Industry Value Added	Constant	Wald Test: p-value(a)	Sargan Test	Autoco. Test (2nd o.)	No. Obs (Plants)
Trade Policy	0.372	-1.450(***)	0.214	-0.297	1.294	0.053(**)	-0.059	--	0.303	0.203	8196
Specification(b)	(0.295)	(0.860)	(0.594)	(0.462)	(0.661)	(0.027)	(0.044)				(2049)
Variable* Tariff Rate	0.003	-0.044	-0.001	-0.0002	0.040		-0.056	0.127			
	(0.005)	(0.030)	(0.018)	(0.016)	(0.028)		(0.060)				
Variable* Inputs Tariff	-0.005	0.028	0.003	-0.004	-0.023		0.049	0.167			
	(0.004)	(0.021)	(0.011)	(0.011)	(0.018)		(0.052)				
Variable* Non-Tariff-Barriers	0.0003	0.0005	-0.0003	-0.001	0.002(**)		0.001	0.344			
	(0.0003)	(0.001)	(0.001)	(0.001)	(0.001)		(0.003)				
Variable* Real Exchange Rate	0.0001	0.019(***)	-0.002	0.002	-0.017(***)			0.304			
	(0.002)	(0.012)	(0.008)	(0.006)	(0.009)						
Wald Test: p-value(c)	0.688	0.341	0.904	0.521	0.031		0.786				
Trade Flows	1.051(*)	-0.648(***)	-0.311	-0.278	0.297	0.033	-0.088(*)	--	0.610	0.665	9508
Specification(d)	(0.385)	(0.358)	(0.448)	(0.333)	(0.426)	(0.028)	(0.034)				(2377)
Variable* Import Ratio	-0.002	0.008	-0.011	-0.001	0.017		0.054	0.744			
	(0.004)	(0.014)	(0.019)	(0.012)	(0.024)		(0.041)				
Variable* Export Ratio	0.001	0.011	0.014	-0.011	-0.028		-0.049	0.955			
	(0.004)	(0.023)	(0.025)	(0.019)	(0.035)		(0.054)				
Variable* Real Exchange Rate	- 0.004(***) (0.002)	0.004 (0.003)	-0.002 (0.004)	0.002 (0.003)	0.004 (0.004)			0.058			
Wald Test: p-value(c)	0.326	0.174	0.951	0.502	0.869		0.229				
Price-Cost-Margin	0.185	-0.653(*)	0.606(*)	0.419(**)	-0.503(*)	0.144(*)	-0.014(**)	--	0.440	0.229	9524
Specification(e)	(0.176)	(0.251)	(0.233)	(0.190)	(0.192)	(0.040)	(0.007)				(2381)
Variable* Price Cost Margin	0.0001	0.021(*)	-0.018(*)	-0.019(*)	0.017(*)		-0.001	0.008			
	(0.001)	(0.008)	(0.007)	(0.006)	(0.006)		(0.012)				

Notes: GMM estimates with first-differenced data. Time dummies were included but are here omitted. All variables are assumed exogenous except for lagged employment. Instruments are based on the second and further lags of employment and capital stocks. (*) Significant at the 1% level. (**) Significant at the 5% level. (***) Significant at the 10% level. (a) Wald Test of Joint Significance of the variables interacted with a given openness variable. (b) Additional Instrument: the second lag of the tariff rate. (c) Wald Test of Joint Significance of openness variables interacted with a given variable. (d) Additional Instruments: third and further lags of import and export ratios. (e) Additional Instruments: second and further lags of price-cost-margins.

Appendix

Tables A1 to A3 contain means and standard deviations for the samples that were used in the analysis. Observations with non-positive values for employment, wages or output were excluded. In addition, odd observations were eliminated when they implied large jumps in the corresponding variables, suggesting reporting or recording errors. Finally, the plants with incomplete information for the periods considered were also excluded, so the final samples consist of complete and balanced panels.

Table A1: Summary Statistics(*) for Chilean Plants (1981-95)

Year	Blue Collar Employment (per plant)	White Collar Employment (per plant)	Blue Collar Wages[a] (per worker)	White Collar Wages[a] (per worker)	Tariff Rate (percent)	Real Exchange Rate (1980=100)	Price Cost Margin[b] (percent)
1981	68.1	26.6	184.9	460.6	10.0	100.0	31.2
	(140.2)	(68.2)	(99.5)	(317.8)	(0.0)	(0.0)	(26.2)
1982	58.6	24.3	172.0	440.9	10.0	124.3	32.1
	(125.4)	(60.4)	(95.4)	(306.7)	(0.0)	(0.0)	(26.8)
1983	59.8	23.9	129.7	338.6	17.8	133.8	31.2
	(124.4)	(57.3)	(78.9)	(255.3)	(0.0)	(0.0)	(25.0)
1984	64.6	24.1	119.0	321.6	24.1	137.8	32.6
	(127.6)	(54.0)	(72.8)	(250.8)	(0.0)	(0.0)	(22.9)
1985	69.0	25.6	102.1	267.2	25.7	156.2	33.5
	(130.3)	(57.8)	(66.4)	(213.0)	(0.0)	(0.0)	(19.9)
1986	72.9	28.6	103.9	267.6	20.0	151.9	30.1
	(131.4)	(67.5)	(72.1)	(228.8)	(0.0)	(0.0)	(23.2)
1987	79.4	31.3	102.4	251.4	20.0	148.7	32.1
	(139.1)	(69.2)	(71.0)	(196.6)	(0.0)	(0.0)	(31.6)
1988	84.2	32.4	118.8	288.9	15.0	163.0	32.6
	(151.4)	(66.1)	(88.3)	(217.5)	(0.0)	(0.0)	(21.1)
1989	89.4	35.6	127.7	299.5	15.0	162.0	33.6
	(155.7)	(72.6)	(84.8)	(233.4)	(0.0)	(0.0)	(21.1)
1990	90.2	36.4	137.1	320.6	15.0	157.3	34.4
	(157.8)	(72.5)	(92.8)	(284.0)	(0.0)	(0.0)	(20.0)
1991	91.3	36.7	144.8	339.4	13.0	148.6	34.0
	(158.7)	(71.7)	(95.8)	(250.3)	(0.0)	(0.0)	(20.9)
1992	95.7	37.4	158.0	373.1	11.0	138.9	35.1
	(163.7)	(77.8)	(101.3)	(263.7)	(0.0)	(0.0)	(20.4)
1993	96.4	38.7	175.9	403.5	11.0	144.7	35.5
	(165.1)	(77.9)	(108.3)	(278.4)	(0.0)	(0.0)	(20.0)
1994	94.5	40.4	191.3	433.8	11.0	141.5	35.0
	(159.1)	(95.2)	(111.5)	(300.1)	(0.0)	(0.0)	(22.4)
1995	91.5	40.2	203.0	450.0	11.0	128.7	34.8
	(149.9)	(94.7)	(119.7)	(335.4)	(0.0)	(0.0)	(22.9)

Source: Authors' calculations. (*) Means with standard deviation in parenthesis. (a) Thousands of 1980 pesos. (b) Calculated as the value of output minus expenditures on labor and materials over output.

Table A2: Summary Statistics[*] for Colombian Plants (1979-91)

Year	Blue Collar Employment (per plant)	White Collar Employment (per plant)	Blue Collar Wages[a] (per worker)	White Collar Wages[a] (per worker)	Industry Value Added[b]	Tariff Rate (percent)	Non-Tariff Barriers (percent)	Real Exchange Rate (1980=100)	Import Ratio (percent)	Export Ratio (percent)	Price Cost Margin[c] (percent)
1979	104.6	39.6	19.7	35.4	1816.1	35.0	55.6	97.9	14.2	8.6	31.9
	(201.2)	(85.6)	(10.9)	(24.1)	(1382.9)	(15.3)	(0.0)	(0.0)	(18.0)	(7.0)	(15.3)
1980	104.6	40.4	20.5	35.6	1930.0	35.0	56.0	100.0	15.7	8.5	29.4
	(201.2)	(88.0)	(11.9)	(24.5)	(1455.1)	(15.3)	(0.0)	(0.0)	(19.0)	(8.0)	(15.0)
1981	101.2	40.9	21.0	36.8	1743.3	34.9	47.9	101.4	17.4	8.6	29.3
	(194.8)	(88.8)	(12.3)	(25.6)	(1356.1)	(15.2)	(0.0)	(0.0)	(19.9)	(8.0)	(15.2)
1982	97.8	40.7	23.4	39.8	1791.1	35.0	45.3	96.8	16.5	7.1	27.8
	(182.8)	(89.8)	(16.3)	(28.1)	(1446.7)	(15.3)	(0.0)	(0.0)	(20.2)	(6.4)	(16.2)
1983	94.3	40.6	24.9	42.4	1858.6	45.5	58.6	99.1	15.4	4.8	27.6
	(175.7)	(89.0)	(15.2)	(29.6)	(1561.0)	(20.6)	(0.0)	(0.0)	(19.3)	(4.8)	(16.2)
1984	93.7	40.8	25.1	43.0	1960.4	56.4	78.9	109.6	13.4	3.9	27.4
	(167.3)	(86.0)	(14.9)	(30.4)	(1625.8)	(25.4)	(0.0)	(0.0)	(17.9)	(3.3)	(14.7)
1985	88.3	40.3	24.9	41.3	2191.8	56.4	85.2	123.2	13.2	5.4	27.5
	(154.2)	(81.7)	(16.6)	(29.5)	(2021.9)	(25.5)	(0.0)	(0.0)	(17.9)	(4.5)	(15.3)
1986	87.9	41.6	24.8	41.6	2611.0	56.4	57.6	133.9	13.2	6.5	27.7
	(149.1)	(85.9)	(15.5)	(31.0)	(2744.1)	(25.50	(0.0)	(0.0)	(18.4)	(5.6)	(16.0)
1987	90.4	42.8	24.2	41.0	2400.4	56.3	54.7	137.2	13.5	7.9	27.9
	(152.1)	(85.1)	(15.2)	(29.1)	(2168.2)	(25.4)	(0.0)	(0.0)	(18.5)	(10.1)	(16.2)
1988	90.1	44.2	24.0	41.2	2573.4	56.4	52.8	137.4	14.0	9.3	29.0
	(154.2)	(86.3)	(14.8)	(29.1)	(2369.1)	(25.4)	(0.0)	(0.0)	(18.4)	(14.2)	(16.1)
1989	89.4	45.2	24.6	42.2	2725.5	37.1	55.3	143.8	14.1	11.2	28.8
	(150.1)	(91.0)	(15.6)	(30.4)	(2631.9)	(13.3)	(0.0)	(0.0)	(18.9)	(17.0)	(16.5)
1990	89.2	46.4	24.8	43.3	2902.9	31.6	38.3	154.4	15.9	14.0	29.3
	(151.0)	(92.7)	(16.0)	(31.5)	(2804.6)	(9.1)	(0.0)	(0.0)	(20.1)	(21.9)	(16.3)
1991	89.9	47.5	24.9	44.2	2873.5	31.6	9.5	152.8	27.1	18.7	29.8
	(155.6)	(94.8)	(16.6)	(32.2)	(2649.4)	(9.1)	(0.0)	(0.0)	(43.2)	(27.9)	(16.7)

Source: Authors' calculations. (*) Means with standard deviation in parenthesis. (a) Thousands of pesos (constant prices). (b) Millions of pesos (constant prices). (c) Calculated as the value of output minus expenditures on labor and materials over output.

Table A3: Summary Statistics(*) for Mexican Plants (1986-90)

Year	Blue Collar Employment (per plant)	White Collar Employment (per plant)	Blue Collar Wages[a] (per worker)	White Collar Wages[a] (per worker)	Industry Value Added[b]	Output Tariff Rate (percent)	InputTariff Rate (percent)	Non-Tariff Barriers (percent)	Real Exchange Rate (1984=100)	Import Ratio (percent)	Export Ratio (percent)	Price Cost Margin[c] (percent)
1986	246.4	104.1	63.7	124.2	27.9	32.5	24.3	33.0	121.8	19.5	16.7	32.0
	(521.8)	(184.6)	(27.0)	(64.1)	(19.8)	(11.2)	(7.8)	(39.5)	(0.0)	(24.5)	(21.5)	(24.4)
1987	243.5	103.9	58.2	114.5	28.4	31.0	23.0	18.7	119.5	13.4	11.2	33.2
	(508.3)	(182.8)	(26.3)	(62.5)	(20.5)	(8.4)	(7.2)	(33.4)	(0.0)	(16.8)	(12.9)	(25.2)
1988	245.2	105.0	56.5	116.4	29.9	15.0	10.1	4.0	98.6	14.2	9.8	33.1
	(494.4)	(181.8)	(28.6)	(70.6)	(22.8)	(4.8)	(3.4)	(15.1)	(0.0)	(15.3)	(9.5)	(22.0)
1989	253.1	106.6	65.9	150.1	36.4	15.4	11.9	3.1	96.6	16.4	11.9	32.9
	(513.4)	(188.1)	(35.0)	(137.3)	(27.5)	(3.7)	(2.2)	(14.3)	(0.0)	(16.1)	(10.4)	(25.2)
1990	257.3	106.7	72.7	181.0	40.4	15.5	11.8	2.7	92.7	17.5	9.5	31.3
	(548.6)	(187.8)	(42.6)	(128.3)	(31.2)	(3.7)	(2.3)	(13.6)	(0.0)	(16.3)	(10.4)	(29.7)

Source: Authors' calculations. (*) Means with standard deviation in parenthesis. (a) Thousands of 1980 pesos. (b) Billions of 1980 pesos. (c) Calculated as the value of output minus expenditures on labor and materials over output.

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