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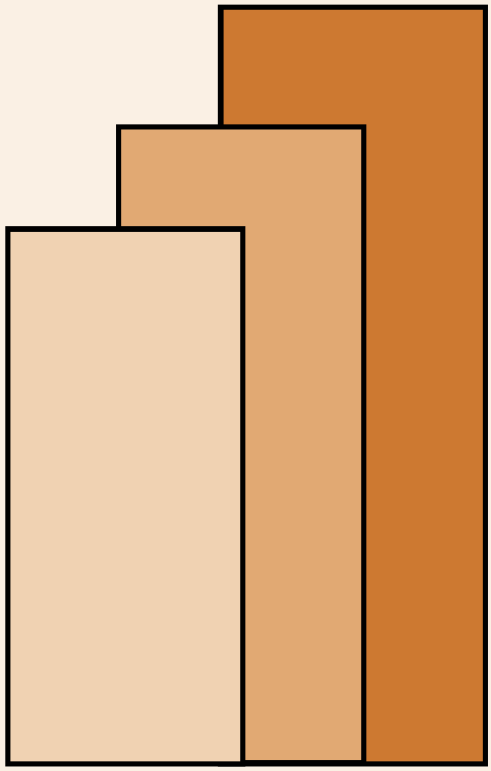

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Abstract

This paper presents one of the few empirical estimates of the impact of globalization, here represented by trade flows, on employment level and structure using Philippine data. Using both aggregate and sub-industry level manufacturing data, the paper shows that increases in the propensity to export shifts the demand for labor upward. It also shows that the impact of the propensity to import on labor demand is unclear yielding from significantly positive to insignificant coefficients. In terms of employment structure, the impact of openness on the proportion of women workers is not significant in the aggregate but at the manufacturing sub-industry level, the increase in the propensity to export is a boon for women workers. Finally, increases in export propensity increase the proportion of low-skilled production workers both at the aggregate and manufacturing sub-industries level.

Keywords: Globalization, Trade, Employment, Philippines

Globalization and Employment: The Impact of Trade on Employment Level and Structure in the Philippines

Aniceto C. Orbeta, Jr.[1]

Introduction

Globalization has been associated with profound changes in the labor market such as changes in the level and structure of labor demand, in skill shortages and relative wages, and in employment elasticities, among others. All of these have far reaching implications on worker's welfare and therefore on the success of the process of adjustment to globalization itself. The heated debates on these issues are clear indications that this is far from being resolved. The paper contributes to this debate by disentangling some of these issues and provide empirical basis for some of the arguments. Better understanding of the impact of globalization will guide analysts and policy makers in the design of a policy environment that will allow workers to better ride the tide of globalization.

O'Rourke and Williamson (2000) defined globalization to mean "the integration of international commodity markets." Globalization is characterized by two major aspects that have profound impact on labor markets. One is the increase in cross-border movements (trade) of final goods and services. The other is the increase in the cross-border flow of production inputs, namely, labor, capital and technology. Of course there are other aspects of globalization, such as the increase social-interaction of peoples [see for example Castles (nd) citing Held et al. (1999)], but these are of limited importance for the purposes of this paper.

This paper focuses on the impact of trade of good and services on employment level and structure. It presents one of the few attempts at empirically establishing the impact of trade on employment level and structure using Philippine data. It does this both at the aggregate as well at the manufacturing sub-industry levels. The use of several levels of aggregation was designed to strengthen whatever empirical results the paper may produce. Careful attention was also given to econometric estimation issues called for by the varied data types used in the study.

This paper is organized as follows. The next section provides a focused review of the issues. This is followed by a presentation of the methodology and data used in the study. The next section presents the analysis of the estimation results. The last section summarizes and concludes.

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Review of Issues

The review of issues will be limited to the subject of the paper fully mindful that there are other issues on the impact of globalization on the labor market. The review is thus confined to the issues of the impact on employment level and structure. For more recent comprehensive reviews please see, for example, Rama (2001), Harrison and Hanson (1999), and for Philippine studies see Medalla et al. (1995) and Lanzona (2001).

Impact of Trade on Employment Level

The effect of globalization on employment is mediated through its impact on overall and sectoral economic growth. With globalization, economic structure would tend to correspond more closely to the comparative advantage of the country. Sectoral shares will change in different ways depending upon the country's natural and human resource endowments, existing infrastructure and technological capabilities, and the degree to which the domestic economy has already been exposed to international competition in the past (ILO 1996).

In the case of highly developed economies, globalization would result in more opportunities for the acceleration of capital outflows and a reduction in the share of manufacturing activities as production shifts to off-shore locations in search of lower costs and better access to overseas markets. This is what is termed as "de-industrialization" where cheap imports from low wage economies flood highly developed economies' markets thus, destroying unskilled jobs.

For developing countries, globalization would result in the decline of inefficient heavy or capital intensive industries that are heavily protected by high tariffs and an increase in labor-intensive and export-oriented industries reflecting the country's comparative advantage.

More specifically, globalization is expected to increase the share of foreign trade in national income and a decline in self-sufficiency ratios in individual sectors. In most developing countries, globalization should also result in a decline in capital output ratio as investment flows much more freely towards profitable sectors. Given the relatively low wage rates in such economies, these would normally be labor-intensive sectors.

Globalization means reduction in government intervention and controls on private sector economic activities. This is expected to spur private economic activity that would mean an increase in foreign trade and improved fiscal position. This would mean employment expansion even in the short-term.

In many cases, however, the liberalization process is accompanied by macroeconomic stabilization measures utilized to improve the external and internal balances in the economy in order to restrain inflationary pressures and make growth sustainable. The stabilization measure causes aggregate domestic demand to fall and has deflationary effect on investment due to lower government capital spending. This has a

negative effect on employment levels. The net effect on the overall employment depends on the private sector's ability to "crowd in" and the speed by which employment elasticity will adjust. Thus, a fall in employment levels is expected to happen in the short run when stabilization effects dominate.

On the other hand, due to competitive pressures from globalization, firms that have been subjected to international competition would need to increase and improve productivity levels and may do so by reducing employment.

The net impact of globalization on employment and unemployment, therefore, will depend on a host of socioeconomic and political factors affecting the processes of liberalization.

Turning to the empirical literature, the analysis of the impact of trade on employment has a long history particularly for developed countries. Many studies using developing country data have also come out much more recently.

Baldwin (1995) provided a comprehensive survey of the impact of trade liberalization on employment for OECD countries. The study generated two conclusions, namely: (1) the output and employment impact of shifts in the volume and composition of trade is that the net employment effects of changes in exports and imports have not been significant in OECD countries; (2) trade changes have produced significant adverse employment effects in particular industries, especially labor-intensive sectors such as textiles, clothing, timber, furniture and leather.

Kruger (1983) summarized the study on the linkages of trade policies and employment in 10 industrializing countries. The conclusion was that moving towards a more neutral trade policy will lead to more labor-intensive production. Harrison and Hanson (1999), however, pointed out that no direct measurement was done. The study just hypothesized that trade reform would lead to employment increases as production shifts toward more labor-intensive tradables.

Much more recent studies using data from Latin American countries reveal modest impact of trade liberalization on employment and wages. Rama (1994), for instance, used four digit manufacturing data of Uruguay to measure the impact of trade liberalization and employment. The estimation results show that a 1% decline in protection rate led to a 0.4 – 0.5% reduction in employment within the same year. Ravenga (1994), on the other hand, used plant level data for Mexico to study the impact of reductions in tariff and quota coverage on firm-level employment. Her estimates revealed that tariff reduction has no impact on employment. Reduction in quota coverage from 90% to 10%, however, is associated with a 2-3% decline in employment. Currie and Harrison (1997) found that most manufacturing firms in Morocco were unaffected by tariff reductions and elimination of quotas. Significant impacts were found in only few industries such as textiles and beverages. In particular, a 21% decline in the tariff protection for firms in the textiles, beverages and apparel was associated with a 6% decline in employment. Harrison and Hanson (1999) provided some explanations to this

sluggish response of employment to trade liberalization. One is labor market imperfections such as hiring and firing costs and minimum wage regulations have prevented firms from responding to the to the trade reforms. Another explanation is the lack of output response. When output is not affected it follows that employment will also not be affected.

The study avoids the problem-laden output response route and goes straight to movements in the trade of goods and services as the determinant of labor demand.

Impact of Trade on the Employment Structure

Occupational Structure. Changes in the occupational structure of the labor force depend on the countries' level of development, their degree of openness in the past, and initial conditions.

In the case of highly developed economies, improvement of skills, technological improvement and transfer of lower skilled jobs are expected as the nature of the job change in favor of the higher skilled and white collar ones. The nature of jobs would change due to the adoption of newer technology to keep labor costs down and improve productivity.

In the case of developing economies, an increase in the demand for workers with basic skills is most likely to take place because of their comparative advantage in labor-intensive and export-oriented industries. The expansion in employment is expected in industries involved in semi-finished assembly, light engineering, agro-processing and metal-based batch production. On the other hand, reduction in employment may be expected in industries involved in iron and steel, heavy machine tools, continuous process chemical and pharmaceutical industries and electric generation equipment industries.

Sex and Age Structure. Female labor force participation in most developing countries is expected to increase as a result of globalization. However, their work conditions and wages may deteriorate. These effects are brought about by many interrelated factors. Females are generally lower paid and less organized and thus, hiring them in assembly operations will enable the firms to reduce wage costs and have more flexible employment. Export-oriented industries especially those engaged in semi-conductor assembly, garments and light engineering prefer female workers due to their skills. The service industries provide more employment to female workers but is usually characterized by the dominance of part time, casual, or temporary jobs as well as lower wage rates and high incidence of subcontracting.

The demographic composition of the labor force is also affected by globalization. The age structure of the labor force may be expected to fall as existing industries, established behind tariff protection, decline and new industries requiring new skills take their place. The need to retrain workers could also result in a lowering of the age profile of the labor force.

Methodology and Data

Methodological Considerations

*Impact of trade on employment levels***.** Based on the Heckscher-Ohlin model, Wood (1996) explains that there are two effects of trade, namely, the sectoral and factoral effects. The sectoral effects expand production of the abundant-factor-intensive goods and contract production of scarce-factor-intensive goods. The factoral effects, which follow from the sectoral shifts in the composition of production, increase the demand for (and price of) abundant factors, and reduce the demand for (and price of) scarce factors – this is known as the Stolper-Samuelson theorem. The paper models the impact of trade on employment using the factoral effects, i.e., given shifts in production structure (e.g., towards more exports) are there shifts in labor demand? Most studies on the impact of trade relate changes in trade protection, e.g., tariffs and quantitative restrictions, and employment (e.g., Ravenga, 1994; Rama 1994). The results from these studies, as the explained by Harrison and Hanson (1999), are usually clouded by interim sectoral effects that are affected by a host of changes in macroeconomic policies that are concurrently applied to the economy for many other reasons. The approach used in the paper minimizes these other effects by going straight to test the hypothesis whether increase in openness, exports propensity for example, increases/decreases labor demand.

To test whether trade increases the employment propensity, we estimate the traditional labor demand function but with shifters, i.e.,

(1) $E_t=f(O_t, w_t, r_t; z_t)$

where

E_t = employment
O_t = real output
w_t = real wage rate
r_t = real user cost of capital
z_t = shifters

Hamermesh (1993) provides a recent detailed treatment of labor demand functions. The presence of output among the explanatory variables of factor demand functions is common in applications using developing country data that are almost always operating below full capacity (e.g. Faini and de Melo (1996)[2]). Three globalization shifters (indicators of sectoral effects) will be used, namely, the ratio of export to GDP, ratio of imports to GDP and ratio of the sum of exports and imports to GDP. These three are well-known measures of openness of a country. If exports use the more abundant factor, labor, then, holding other things constant, increases in propensity to export will shift demand for labor upwards. On the other hand, if imports substitute for domestic

[2] Faini and de Melo (1996) does not include other factors inputs in the labor demand function which other specifications does (e.g. Hamermesh 1993).

production, this is expected to dampen demand for labor, holding other things constant. The sum of export and imports will capture the net of these opposite effects.

The paper uses both aggregate and manufacturing sub-industry level data to estimate this relationship.

Impact of trade on the structure of employment. Two aspects of employment structure are analyzed. One is the impact on the proportion of women workers. The other is the impact on the proportion of low-skilled production workers. The common hypothesis is that trade increases the demand for women workers as well as low-skill production workers.

To analyze the impact of trade on the employment structure, the method described in Wood (1996) that relates the proportion of manufacturing employment to total employment to the ratio of manufactured exports to total value added was adopted, i.e,

(1) $Li_t/L_{Tt}=f(O_t, pr_t)$

where

L_{It}/L_{Tt} = Employment structure of interest
Ot = Openness indicator
pr_t = ratio of factor price of i to total factor price

The left hand side variable will be the proportion of women workers or proportion of production workers. The openness indicators that will be used are the same as the ones identified earlier, namely, export to GDP ratio, import to GDP ratio, and the ratio of the sum of exports and imports to GDP. The ratio of the price of a specific factor to the total average factor price captures the changes in relative factor cost effects. The original Wood (1996) formulation does not have the relative price variable. It should be easy to understand why relative prices should also be an important factor in the decision to hire more or less of the input of interest.

Again aggregate and manufacturing sub-industry data are used to estimate this relationship.

Estimation Methods

Estimation method used depends on what data set is used. The aggregate data sets used are simple time series. For this data set, Prais-Winsten estimation results are presented whenever autocorrelation is exhibited by the data based on Durbin-Watson statistics. Otherwise, ordinary least squares estimates are presented. Sub-industry data are cross-section time series. For these data sets, ordinary least-squares, random and fixed effects estimates are presented. Greene (1997) pointed out that the distinction between fixed and random effects maybe erroneous. It was argued that it should always be random effects model unless there are a priori reasons that the difference between sub-industries

can be modeled as parametric shifts in the equations which calls for fixed-effects. On the other hand, the problem with the random effects model is that it assumes that the individual sub-industry effects are uncorrelated with the other regressors. If this assumption is rejected, random effects estimates suffers from omitted variable bias. The results of the three estimation procedures are presented so that comparisons can be done. Breusch-Pagan tests are done to determine if individual effects are present for the random effects. A Hausman test[3] is conducted to test whether random effects violates the assumption of orthogonality of the individual effects and the other regressors. For fixed-effects estimates an F-test for the individual fixed effects jointly being zero is also reported.

All estimations are done in Stata.

Data

The study used three data sets in the estimations. One is aggregate data on employment and output, exports and imports for years 1980 to 2000. The two others are manufacturing sub-industry level data.

One of the manufacturing sub-industry-level is data is from the Annual Survey of Establishments (ASE) at the 3-digit PSIC level. The use of the ASE is limited to the years where direct export values are gathered, i.e., 1993-1997. The other manufacturing sub-industry data is from the NAPES database at the two-digit commodity code. Like the ASE, the NAPES dataset was augmented by other national datasets, such as interest rate, to be able to estimate identical specifications with the one using the ASE data so that comparability of estimates is assured.

Aggregate Data

The total employment is from the national labor force survey (LFS) of the National Statistics Office (NSO). Output used is real Gross Domestic Product from the National Income Accounts (NIA) from the National Statistics Coordination Board (NSCB). Wage rate used was generated using the compensation for employees in the NIA Consolidated Account I divided by the number of wage and salary workers in the LFS. This was deflated using the GDP deflator. Since the paper estimates labor demand functions, this is wage real wage that is relevant. The interest rate used is the bank-lending rate[4] from the Banko Sentral Ng Pilipinas (BSP) converted into real values using the GDP deflator. Exports and Imports are from trade statistics of the NSO. The data covers the years 1980-2000.

[3] Hausman test it is based on the test of differences of coefficients that can also arise from misspecifications. The test of the orthogonality between individual effects and the other regressors, therefore, presumes that there is no misspecification (Green 1997).

[4] The BSP defines this as the weighted average interest charged by commercial banks on loans granted during a given period of time. Monthly data is derived as the ratio of actual interest income of sample banks on their peso-denominated loans to the total outstanding level of these loans.

Manufacturing Sub-Industry Level Data

Annual Survey of Establishments (ASE). Data on manufacturing industries at the three-digit PSIC level (23 sub-industries, Table 2) was used. Employment, wages and salaries and output data are from the survey. Real wage data are generated from the salaries and wages in the survey divided by the number of paid employees. This was converted into real values using manufacturing price index. Interest rate is the bank-lending rate described above[5]. Export data is direct export component of goods sold. Direct export data is only available starting 1993 and the latest available ASE data is 1997 so the dataset only covers the period 1993-1997.

NAPES Database. Napes database reports industry data at the two-digit commodity level. Only data on manufacturing commodities (22 commodities; code c01-c22, Table 4) were used. Employment, output, wage bill and exports data are also reported. The interest rate used is the bank-lending rate described above because other variables required to compute user cost of capital are not available. Data covers the years 1980 - 1995.

Trends in Selected Statistics

Aggregate Data. Table 1 shows that both export and import to GDP ratios are rising. This indicates the increasing openness of the economy. It is also shown in the table that exports are being increasingly dominated by manufactured products. In term of employment to value added ratio, the trend is not as clear both at the total economy and manufacturing industry level. In terms of employment structure, there is trend towards more female workers. This is not surprising as studies show that labor force participation of women is still low – about only half that of men. In terms of the proportion of production and related workers to total employment, this is also rising.

Manufacturing Industry Data. In the manufacturing sector, Table 2 shows that ASE data does not show clear trend in either employment to output or value added ratios. Nor is labor-capital ratio showing a clear trend at the manufacturing industry level. There are only few manufacturing sub-industries indicating increasing trends in employment to output or to value added ratios, such as those involving leathers products (PSIC 323 and 324) and pottery (PSIC 361). Export propensity is clearly rising as shown in Table 3, although due to data limitations this only covers 1993-1997. In terms of structure of employment, Table 3 shows that the proportion of women workers is rising. The trend, however, is not very clear for the proportion of low skilled production workers.

[5] Earlier versions of the estimate used user cost of capital computed using a simplified version of the formula described in Gregorio (1979). As in most usage, the second term was ignored, i.e., the expression used is q(r+d)/(1-u), where q is the price index for fixed capital, r is interest rate (bank-lending rate), d is depreciation rate (depreciation expenses/book value of fixed assets), and u is corporate income tax rate. This was later dropped for comparability purposes because the NAPES database does not have variables that will allow computation of the user cost of capital.

Using the Napes database, Table 4 shows the same unclear pattern of employment to output or value added ratios. The employment output ratio appears to be rising but the employment to value added ratio is shown to be declining. In terms of openness indicators, the dataset indicates a rising propensity to export but unclear trend in the propensity to import.

Estimation Results

Impact on Level Employment

Aggregate Level. Estimates using aggregate level data show that the determinants of labor demand have the expected signs, i.e., positive for output, negative for real wages, and positive, although not significant, for the interest rate which proxies for the cost of capital (Table 5). It is also shown that labor demand shifts upward with higher propensity to exports and imports. The result for imports appears to be contrary to the common notion that imports substitute for domestic production. It is fairly well known, however, that in most developing countries like the Philippines, domestic production is highly dependent on imports. This explains the positive impact on labor demand. Given the positive impact of both export and imports, it is not surprising to have a positive effect of the ratio of the sum of exports and imports to GDP on labor demand too.

Manufacturing Sub-Industries Level. Using manufacturing sub-industries level data from the NAPES database, Breusch and Pagan test attests to the presence of individual sub-industry effects which mean panel data estimation techniques should be used (Table 6). The Hausman test, on the other hand, rejects the random effects estimation assumption of the absence of correlation between the individual sub-industry effects and the other regressors which means that random effects estimates suffers from inconsistency due to omitted variables. However, for the purposes of this study, there is not much qualitative difference of the estimation results of the two procedures. Both estimates show positive impact of export propensity on labor demand. Propensity to import is insignificant as a determinant of labor demand. The coefficient of the sum of exports and imports to output ratio is positive and significant. The interest rate is insignificant as a determinant of labor demand. Thus, the results using this data sets corroborates the results generated using aggregate data.

The results using manufacturing sub-industry level data from the ASE data is much less clear (Table 7). Again the Breusch and Pagan test points to the presence of individual sub-industry effects. Hausman test also rejects the random effects assumption that the individual effects is not correlated with the other regressors, hence random effects estimates are inconsistent due to omitted variables. While the random effects points to a positive but insignificant effect of export propensity on labor demand, the fixed effects estimation result has a mildly significant (a little less than 95% level)

negative coefficient, indicating a depressing impact on labor demand by export propensity[6]. The coefficient of capital cost is positive but insignificant.

These estimation results using manufacturing sub-industry level data, except for some deviation from the fixed effects estimation results using manufacturing sub-industries data from the ASE, confirms the hypothesis of the positive impact of export propensity on labor demand. The results also show that, rather than substituting for domestic production, propensity to imports are insignificant determinants of labor demand. The sum of exports and imports to GDP ratio is positively related with the demand for labor.

Impact on the Structure of Employment

Impact on Women Workers.[7] Using aggregate data, estimation results show that all degree of openness indicators are insignificant determinants of the proportion of women workers (Table 8). The same is also true for the relative wage variable.

Using manufacturing sub-industry data from the ASE, the Breusch-Pagan test indicates the presence of individual sub-industry effects and the Hausman test indicates the rejection of the assumption of the absence of correlation between individual sub-industry effects and other regressors (Table 9). However, the fixed and random effects estimates are qualitatively similar. The estimation results show a significant positive impact of the propensity to export to the proportion of employed women in the manufacturing sector. The coefficient of the relative wage rate is significantly negative as expected.

The estimation results show that while at the aggregate level it cannot be claimed that openness increases the proportion of women workers among the employed, in the manufacturing sector, this is established.

Impact on Proportion of Low-Skilled/High-Skilled Workers. Using aggregate data, the estimation results show that the propensity to export is a positive determinant of the proportion of production workers among the employed (Table 10). The propensity to import and the sum of export and import to GDP ratio are both insignificant determinants of the proportion of production workers.

Using manufacturing sub-industry data from the ASE, the Breusch-Pagan test points to the presence of individual effects while the Hausman test indicate the acceptance of the random effects assumption of the absence of correlation between individual effects and the other regressors, hence, the random effects estimation does not

[6] The difference in results between the one NAPES and ASE data sets might be due to the difference in length of periods. Recall that NAPES has data from 1980-1995. ASE, on the other hand, has complete data only for 1993-1997. In fact the estimates obtained using NAPES datasets restricted to 5-years (1991-1995) to coincide with the length of the ASE data sets, the results are similar (See Appendix A).

[7] The impact on the age-structure was not included because of the absence of age-group specific wage rates.

suffer from inconsistency (Table 11). But then again, the estimation results of fixed-effects and random effects a qualitatively similar. The impact of propensity to export on the proportion of production workers is significantly positive. The relative wages, on the other hand, is not a significant determinant.

The estimation results show that both at the aggregate and manufacturing sub-industry levels, the increase in export propensity leads to the greater demand for lower-skilled production workers as hypothesis for developing countries.

Summary and Conclusion

The paper presents one of the few empirical estimates of the impact of globalization, here represented by trade flows, on employment level and structure using Philippine data. It uses both aggregate and sub-industry level manufacturing data sets.

The paper shows that both at the aggregate and manufacturing sub-industry level, increases in the propensity to export shifts the demand for labor upward. Given that Philippines is a labor-abundant country, this result validates the factoral effects in Hecksher-Ohlin model. The paper also shows that the impact of the propensity to import on labor demand is unclear yielding from significantly positive to insignificant coefficients. This casts doubts on the common notion of wholesale substitution of imports for domestic production and instead implies some import dependence of domestic production as shown by significant positive coefficients. The impact of the ratio of the sum of exports and imports to GDP understandably follows from the compounded effect of export and import intensity.

In terms of employment structure, the impact of openness on the proportion of women workers is not significant in the aggregate but at the manufacturing sub-industry level, the increase in the propensity to export is a boon for women workers. For the proportion of low-skilled production workers, increases in export propensity increase the proportion of low-skilled production workers both at the aggregate and manufacturing sub-industries level. This validates the hypothesis for developing countries that increase in exports expands the demand for workers with basic skills.

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Trends in Selected Statistics, Aggregate Data

Indicators	1980	1985	1990	1995	2000
Export/GDP, %	17.8	15.1	18.5	23.5	51.0
Import/GDP, %	25.5	17.7	29.4	38.4	45.2
Manufactured Export, %	39.7	62.2	72.6	82.7	93.0
Employment/GDP, Total (persons per 1985 Million PhP)	28.1	35.5	31.3	32.0	29.1
Employment GDP, Manufacturing (persons per 1985 Million PhP)	10.8	13.4	11.9	12.6	11.8
Proportion of Women Workers, %	34.1	36.8	36.3	37.0	37.9
Proportion of Production Workers, %	19.2	19.3	20.6	21.7	23.7

Source of basic data: NSCB, National Income Accounts; Labor Force Survey, NSO.

Table 2

Manufacturing Establishments with Average Total Employment of 10 or more by Industry Group.

(Person per 1985 Million)

PSIC	Industry Description	1983			1985			1990			1995			1997		
		Emp./ Output	Emp./ VA	Emp./ Capital	Emp./ Output	Emp./ VA	Emp./ Capital	Emp./ Output	Emp./ VA	Emp./ Capital	Emp./ Output	Emp./ VA	Emp./ Capital	Emp./ Output	Emp./ VA	Emp./ Capital
311	Food Manufacturing 1	1.13	4.23	5.62	1.72	5.22	11.24	1.55	6.06	11.70	1.49	4.79	7.24	1.71	3.92	7.67
312	Food Manufacturing 2	3.06	10.33	7.29	3.55	11.51	9.68	2.26	4.69	10.79	2.29	5.56	7.87	2.69	9.17	8.98
313	Beverage Manufacturing	2.04	3.61	47.08	1.98	3.30	6.56	1.45	2.44	4.86	1.12	1.80	2.33	1.25	2.21	2.70
314	Tobacco Manufacturing	1.37	4.84	7.42	1.12	3.03	18.17	1.06	1.90	10.35	0.95	1.42	15.30	0.98	1.42	12.05
321	Mfr of Textiles	5.60	14.72	7.72	6.15	19.76	12.45	5.34	15.41	12.86	4.10	10.71	8.11	4.68	12.52	9.22
322	Mfr of Wearing Apparel, Except Footwear	11.08	27.15	67.75	17.81	34.85	106.95	10.64	21.78	90.05	9.53	18.44	60.19	8.54	19.28	58.08
323	Leather & Productsof Lthr, Subs & Fur	9.72	22.57	32.45	12.28	33.36	47.68	11.19	20.04	46.09	11.30	25.96	55.95	10.98	27.86	53.41
324	Mfr of Leather Footwear	10.34	18.07	45.72	16.44	44.73	57.54	19.25	41.46	38.06	11.49	32.71	63.91			
331	Mfr of Wood & Wood/Cork Prods, Exc Furn	6.05	14.87	15.22	8.45	21.81	21.90	6.65	18.39	28.83	6.85	19.70	19.67	4.95	14.82	13.45
332	Mfr/Rrp of Furniture & Fixture (Wooden)	12.64	25.69	50.65	16.88	36.99	71.31	12.99	27.04	56.21	5.66	14.56	25.53	8.70	19.89	30.16
341	Mfr of Paper & Paper Products	1.86	5.28	2.81	1.91	4.91	5.06	1.79	5.03	7.69	1.96	5.65	3.47	2.12	5.40	2.35
342	Printing, Publishing & Allied Ind	4.87	11.26	16.14	5.96	13.86	26.12	5.08	12.26	25.30	4.23	10.24	13.20	5.12	11.03	13.90
351	Mfr of Industrial Chemicals	1.03	2.98	2.38	1.20	3.77	4.03	0.93	2.53	1.11	1.02	2.92	1.97	1.90	5.29	4.85
352	Mfr of Other Chemical Products	1.29	3.19	10.51	1.56	3.89	11.43	1.13	2.53	8.52	1.12	2.11	5.11	1.10	2.22	4.00
353	Petroleum Refineries	0.03	0.14	1.22	0.05	0.16	0.89	0.06	0.31	0.54	0.05	0.15	0.19	0.03	0.08	0.17
354	Misc Products of Petroleum & Coal	1.63	8.51	7.40	1.67	7.05	10.54	1.49	10.71	11.40	0.95	3.29	8.49	0.74	4.24	6.75
355	Mfr of Rubber Products	4.44	10.02	21.16	6.35	19.13	28.82	5.00	11.62	22.41	4.56	9.18	12.06	3.25	9.21	5.86
356	Mfr of Plastic Products, N.E.C.	3.90	10.47	14.24	4.02	13.06	8.48	3.22	11.19	14.91	2.93	8.18	7.01	3.35	7.70	9.10
361	Mfr of Pottery, China & Earthenware	5.20	9.15	8.33	7.53	14.83	10.04	6.12	10.61	18.80	8.53	14.38	15.50			
362	Mfr of Glass& Glass Products	3.48	10.07	4.52	2.75	6.34	4.21	3.24	5.96	6.34	1.95	3.20	2.30	2.42	3.87	3.82
363	Mfr of Cement	1.42	4.53	1.99	1.87	6.05	1.64	1.14	3.28	2.09	0.85	1.74	0.76	0.74	1.49	0.46
369	Mfr of Other Non-Metallic Products, NEC	5.73	14.62	8.52	7.91	19.25	12.25	4.96	8.94	11.69	4.37	8.71	7.07	6.59	13.27	6.69
371	Iron & Steel Basic Industries	1.01	2.23	2.66	1.58	4.51	3.82	0.97	4.98	2.90	1.12	3.86	1.93	1.42	5.15	2.95
372	Non-Ferrous Metal Basic Industries	2.07	6.28	2.86	0.61	5.42	0.55	0.31	1.46	0.35	0.40	1.52	0.90	0.77	2.55	1.86
381	Fabricated Metal Prods Exc Mach & Equip	3.67	10.64	14.26	3.89	13.39	12.63	3.48	10.91	21.08	4.35	13.03	14.80	4.78	11.57	16.65
382	Mfr of Machinery Exc Electrical	8.60	18.32	22.30	8.04	19.21	26.53	6.67	16.46	28.60	3.19	8.51	12.98	2.07	7.50	8.86
383	Elect Mach Apparatus, Appliances &Supp	3.40	8.84	16.52	3.48	10.17	14.46	2.34	6.03	11.04	2.40	6.94	8.07	1.90	4.90	6.56
384	Mfr of Transport Equipment	2.01	7.31	4.84	4.79	14.44	6.83	1.32	5.15	6.21	1.00	3.85	7.60	1.05	2.64	4.64
385	Prof, Scientific, Msurg & Cont Equipment	4.85	17.85	20.53	12.64	21.09	53.35	10.88	15.50	60.12	8.12	16.50	22.00	8.32	15.95	19.07
386	Furniture & Fixtures, Prim of Metal	9.48	19.81	6.49	13.47	36.33	7.36	8.69	16.89	22.51	7.11	22.41	20.43			
390	Other Manufacturing Industries	7.82	15.96	25.95	14.53	26.16	58.92	7.39	16.02	40.53	7.81	16.65	29.79	5.62	12.77	19.32
	Total	2.37	7.00	8.14	2.77	7.89	10.45	2.46	6.75	10.12	2.15	5.50	6.59	2.22	5.33	6.63

Source: Annual Survey of Establishments, NSO, various years

Census Value Added (VA) - represents the difference between the value of output and total costs of materials and supplies consumed, fuels purchased, industrial services done by others and goods purchased and resold

Value of Output- represents the total value of products sold, receipts from contract work and industrial services done for others, receipts from goods bought and sold in same condition, fixed assets produced on own account and change in inventories (ending less beginning of finished products, work-in-process and goods for resale

Capital - Year-End book value of fixed assets

Employment - Total Employment

Table 3
Trends in Selected Statistics, ASE

PSIC	Industry Description	1985				1990				1993				1995				1997			
		No of Establish-ments	Prop. Of Women Workers (%)	Prop. Of Production Workers (%)	Dir. Exp./ Ouput (%)	No of Establish-ments	Prop. Of Women Workers (%)	Prop. Of Production Workers (%)	Dir. Exp./ Ouput (%)	No of Establish-ments	Prop. Of Women Workers (%)	Prop. Of Production Workers (%)	Dir. Exp./ Ouput (%)	No of Establish-ments	Prop. Of Women Workers (%)	Prop. Of Production Workers (%)	Dir. Exp./ Ouput (%)	No of Establish-ments	Prop. Of Women Workers (%)	Prop. Of Production Workers (%)	Dir. Exp./ Ouput (%)
311	Food Manufacturing 1	407	-	68.8	-	801	36.9	69.1	-	765	34.4	72.3	23.3	712	38.5	72.1	23.8	1802	34.1	70.3	15.2
312	Food Manufacturing 2	924	-	69.8	-	1761	25.1	68.6	-	1924	27.3	70.4	3.7	1796	28.1	70.2	4.1	1916	31.8	68.4	1.0
313	Beverage Manufacturing	88	-	44.7	-	98	9.0	44.6	-	86	9.9	43.6	0.0	88	9.1	41.1	0.1	124	10.2	43.1	0.7
314	Tobacco Manufacturing	26	-	85.5	-	28	51.8	86.6	-	22	49.4	90.1	1.7	20	45.1	89.4	1.3	18	44.8	87.2	1.0
321	Mfr of Textiles	312	-	82.3	-	537	48.7	85.1	-	575	52.0	81.8	33.1	491	52.3	81.3	29.3	583	55.7	81.1	36.6
322	Mfr of Wearing Apparel, Except Footwear	413	-	87.2	-	1550	82.5	86.0	-	1722	79.6	86.9	57.1	1495	79.0	84.8	63.2	2003	76.0	81.5	66.0
323	Leather & Productsof Lthr, Subs & Fur	50	-	81.0	-	106	62.1	81.8	-	83	63.0	79.6	47.0	84	66.0	82.4	67.7	559	59.9	83.1	60.8
324	Mfr of Leather Footwear	132	-	84.9	-	351	49.5	84.9	-	363	51.6	81.1	18.2	370	55.6	87.1	48.2	0	-	-	-
331	Mfr of Wood & Wood/Cork Prods, Exc Furn	284	-	74.5	-	604	11.6	81.4	-	454	13.5	82.9	28.5	351	16.4	82.3	30.6	574	18.1	79.1	24.3
332	Mfr/Rrp of Furniture & Fixture (Wooden)	276	-	83.6	-	601	26.8	85.4	-	557	22.9	80.5	42.6	435	48.5	139.5	65.4	659	31.2	76.5	38.1
341	Mfr of Paper & Paper Products	99	-	70.8	-	158	20.6	74.6	-	200	22.4	78.1	9.4	205	22.8	77.3	7.2	288	26.8	73.4	10.3
342	Printing, Publishing & Allied Ind	354	-	67.0	-	591	30.3	65.3	-	630	31.0	63.2	11.0	632	30.6	63.4	4.0	911	37.9	65.5	0.0
351	Mfr of Industrial Chemicals	82	-	44.4	-	137	6.6	21.6	-	148	17.4	52.0	16.2	189	19.7	56.1	24.1	321	24.7	62.2	7.7
352	Mfr of Other Chemical Products	212	-	41.3	-	298	29.9	44.6	-	291	30.4	44.2	3.2	293	33.2	43.8	2.0	393	29.8	51.0	5.3
353	Petroleum Refineries	4	-	55.1	-	4	12.9	27.0	-	4	14.0	29.1	0.7	4	12.7	28.6	1.4	5	11.6	41.8	0.3
354	Misc Products of Petroleum & Coal	8	-	65.8	-	12	18.6	60.7	-	16	22.2	58.1	0.3	16	21.1	44.6	0.1	15	24.7	43.7	0.0
355	Mfr of Rubber Products	107	-	67.9	-	179	35.2	83.1	-	178	39.8	77.2	11.3	175	41.2	78.5	28.3	146	15.5	77.0	10.0
356	Mfr of Plastic Products, N.E.C.	157	-	75.4	-	285	24.2	77.9	-	377	27.4	77.9	7.3	359	27.1	76.4	4.9	457	31.3	74.9	9.7
361	Mfr of Pottery, China & Earthenware	21	-	79.7	-	51	33.0	80.9	-	61	42.5	86.8	41.6	59	43.2	84.8	38.3	0	-	-	-
362	Mfr of Glass& Glass Products	27	-	76.8	-	34	6.1	64.5	-	53	8.9	67.9	12.4	46	9.1	65.0	9.2	65	11.8	66.8	7.2
363	Mfr of Cement	16	-	60.0	-	18	6.3	61.1	-	18	6.7	58.9	0.0	18	6.2	67.3	0.0	19	6.0	67.5	0.0
369	Mfr of Other Non-Metallic Products, NEC	155	-	70.3	-	353	9.9	75.8	-	322	13.7	72.3	10.7	249	18.3	74.3	13.8	666	28.6	78.4	15.3
371	Iron & Steel Basic Industries	105	-	56.0	-	153	9.1	73.9	-	178	9.1	75.3	5.6	196	7.5	75.7	4.9	374	9.4	72.6	1.7
372	Non-Ferrous Metal Basic Industries	34	-	65.9	-	31	8.8	69.2	-	30	15.8	74.2	69.0	40	18.0	70.6	0.9	74	24.8	67.9	4.2
381	Fabricated Metal Prods Exc Mach & Equip	262	-	74.9	-	412	11.3	74.0	-	565	15.9	78.3	10.6	548	17.9	75.2	19.5	895	17.3	72.2	1.7
382	Mfr of Machinery Exc Electrical	328	-	69.6	-	463	13.8	76.0	-	488	22.1	77.1	60.4	451	48.1	82.1	68.6	99	52.7	84.2	84.4
383	Elect Mach Apparatus, Appliances &Supp	148	-	73.3	-	228	65.0	78.8	-	265	66.5	78.5	64.6	287	70.0	81.2	64.8	302	71.1	79.8	72.1
384	Mfr of Transport Equipment	161	-	67.6	-	241	10.5	74.2	-	257	13.1	70.7	7.4	253	12.1	69.0	4.1	351	11.4	71.7	7.3
385	Prof, Scientific, Msurg & Cont Equipment	12	-	74.1	-	9	75.6	74.7	-	19	77.7	77.3	70.8	18	80.6	83.6	74.3	65	84.7	89.7	60.9
386	Furniture & Fixtures, Prim of Metal	23	-	71.9	-	31	10.4	75.5	-	35	22.2	56.0	60.4	35	24.9	75.5	75.4	0	-	-	-
390	Other Manufacturing Industries	142	-	84.2	-	321	52.8	80.5	-	319	61.5	80.4	53.8	304	64.9	83.2	58.8	1050	34.1	78.3	23.5
			-		-				-												
	Total	5369	-	72.5	-	10446	41.0	75.4	-	11005	43.2	75.6	19.6	10219	45.6	76.4	20.1	14734	44.0	74.7	22.1

Table 4
Selected Indicators Manufacturing Establishments by Industry Group (NAPES Database)

Commodity Code	Sub-Industries	1980				1985				1990				1995			
		Labor/ Output*	Labor/ VA*	Export/ Output**	Import/ Output**	Labor/ Output*	Labor/ VA*	Export/ Output**	Import/ Output**	Labor/ Output*	Labor/ VA*	Export/ Output**	Import/ Output**	Labor/ Output*	Labor/ VA*	Export/ Output**	Import/ Output**
C01	Aerospace	-	-	-	-	-	-	-	-	53.8	91.0	-	-	-	-	-	-
C02	Computers	-	-	-	-	47.2	240.2	-	-	174.2	292.5	-	-	-	-	-	-
C03	Electronics	-	-	-	-	47.0	179.8	-	-	35.0	89.0	18.3	3,880.2	-	-	-	-
C04	Pharmaceuticals	-	-	-	-	24.8	67.4	5.3	332.7	18.5	38.2	758.9	1,466.0	-	-	-	-
C05	Instruments	93.5	195.2	-	-	204.6	659.1	60.4	63.6	156.3	222.1	43.4	61.8	119.5	6.0	-	-
C06	Motor vehicles	-	-	-	-	46.8	233.7	1.9	15.2	9.7	45.8	1.0	22.6	-	-	-	-
C07	Chemicals	12.7	41.2	253.3	1,164.0	17.5	85.8	35.3	290.0	14.2	35.6	85.5	709.1	15.5	180.1	1,888.6	15.8
C08	Electric machinery	38.8	104.7	-	-	48.3	167.5	6.1	70.0	30.0	79.7	4.7	77.4	59.2	169.3	-	-
C09	Machinery	67.6	154.0	3.7	35.6	114.7	325.0	17.0	72.3	102.5	250.6	14.3	77.4	83.8	224.1	72.9	0.4
C10	Oth transport eqpt	-	-	1.2	16.0	70.9	206.2	5.1	43.3	16.5	48.4	30.4	32.1	-	-	42.7	0.2
C11	Shipbuilding	-	-	5.1	311.4	137.1	328.8	19.5	265.0	98.7	200.6	17.5	468.7	-	-	864.4	1.9
C12	Petroleum refining	0.3	2.7	-	-	0.8	2.8	0.5	41.1	0.9	5.3	5.8	54.4	3.1	21.9	-	-
C13	Stone,clay&glass	51.0	125.8	-	-	45.7	159.6	1.5	33.8	47.9	105.3	0.1	122.9	43.8	188.1	-	-
C14	Other manuf	75.6	184.1	1.4	16.8	188.1	391.9	1.1	6.3	108.4	235.2	4.8	9.2	170.4	64.6	39.6	1.7
C15	Rubber&plastics	50.1	136.8	19.9	28.7	71.1	315.6	9.3	7.6	58.2	162.9	9.6	19.1	95.3	74.5	36.8	0.6
C16	Non-ferrous metals	23.6	79.8	92.7	29.5	8.2	87.6	196.0	61.5	4.6	21.7	131.7	40.7	24.4	5.1	118.3	1.3
C17	Ferrous metals	18.6	98.2	18.9	30.4	21.4	66.9	23.9	17.4	13.9	71.3	27.2	29.0	39.4	199.9	179.2	0.6
C18	Fabricated metals	49.4	161.6	122.9	95.0	53.5	226.1	83.4	16.5	70.5	205.6	53.5	33.6	111.4	156.1	265.3	4.1
C19	Food,drink&tobacco	23.9	85.0	10.0	88.1	30.0	95.5	8.0	31.0	33.7	79.6	6.6	54.9	39.1	144.1	251.7	1.1
C20	Paper&printing	28.3	100.4	5.5	47.0	42.6	125.7	6.5	55.8	47.1	124.9	6.6	62.3	62.8	257.8	357.7	1.2
C21	Textiles&clothing	77.9	224.4	29.6	6.7	137.1	516.5	18.9	8.8	116.5	281.9	10.3	10.9	184.1	111.3	42.0	0.1
C22	Wood&furniture	-	-	1.9	19.6	-	-	4.2	26.4	-	-	6.9	30.8	-	126.0	90.1	0.6
	Manufacturing	30.2	107.8	21.0	9.4	37.4	131.2	36.6	18.9	39.9	109.6	34.7	27.1	57.6	60.4	108.3	0.2

* Persons per 1995 Million USD
** %

Table 5

Estimation Results Using Aggregate Data: Labor Demand Equation with Shifters

Variables	Shifters					
	Total Export/GDP		Import/GDP		(Ex+Im)/GDP	
	Coef.	t	Coef.	t	Coef.	t
Ln(Real GDP)	0.3412	4.53	-0.0176	-0.21	0.2144	3.11
Ln(Real Wage)	-0.5600	-4.87	-0.5171	-6.67	-0.5462	-6.09
Ln(Bank Lending Rate)	0.0338	1.14	0.0006	0.02	0.0306	1.25
Shifter	0.7834	5.17	1.4974	8.04	0.5472	7.05
Constant	12.5003	15.01	13.4256	24.45	12.8055	19.72
rho	0.4109				0.3164	
Adj R-squared	0.9980		0.9529		0.9979	
DW Stat	1.3409		1.7566		1.4432	
Est. Procedure	P-W		OLS		P-W	

P-W = Prais-Winsten
OLS - Ordinary Least Squares

Table 6a
Estimation Results Using Manufacturing Subsector Data (NAPES):
Labor Demand Equation with Shifter (Exports/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.8495	29.00	0.6380	17.78	0.6808	19.83
Ln(real ave. wage)	-1.7909	-19.39	-0.3148	-4.44	-0.4174	-5.81
Ln(real bank lending	-0.0936	-0.82	0.0346	0.85	0.0290	0.67
Exports/GDP	0.0470	1.65	0.0517	4.60	0.0503	4.24
Constant	5.9892	7.93	-3.1963	-6.63	-2.9914	-5.81
Adj R-squared	0.7951					
F (4,227)			102.9			
Chi-Sq (4)					463.9	
Test all individual effects are zero						
F (20, 227)			89.5			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					543.5	
Hausman (Chi-sq. (4))					16.9	

Table 6b
Estimation Results Using Manufacturing Subsector Data (NAPES):
Labor Demand Equation with Shifter (Imports/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.8447	25.40	0.6586	17.08	0.6971	18.61
Ln(real ave. wage)	-1.7944	-19.18	-0.3372	-4.56	-0.4420	-5.89
Ln(real bank lending	-0.0969	-0.84	0.0361	0.85	0.0277	0.61
Imports/GDP	0.0068	0.55	0.0120	1.48	0.0076	0.95
Constant	6.0999	7.94	-3.2855	-6.43	-2.9962	-5.49
Adj R-squared	0.7930					
F (4,227)			90.7			
Chi-Sq (4)					420.4	
Test all individual effects are zero						
F (20, 227)			82.7			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					527.0	
Hausman (Chi-sq. (4))					17.7	

Table 6c
Estimation Results Using Manufacturing Subsector Data (NAPES):
Labor Demand Equation with Shifter ((Exports+Imports)/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.8545	25.54	0.6652	17.92	0.7079	19.63
Ln(real ave. wage)	-1.7994	-19.29	-0.3383	-4.67	-0.4453	-6.05
Ln(real bank lending	-0.0927	-0.81	0.0421	1.01	0.0343	0.77
(Exports+Imports)/GDP	0.0112	1.07	0.0194	3.36	0.0162	2.74
Constant	5.9894	7.76	-3.3974	-6.83	-3.1564	-5.91
Adj R-squared	0.79370					
F (4,227)			96.6			
Chi-Sq (4)					437.1	
Test all individual effects are zero						
F (20, 227)			86.1			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					527.5	
Hausman (Chi-sq. (4))					23.4	

Table 7
Estimation Results Using Manufacturing Subsector Data (ASE):
Labor Demand Equation with Shifter (Exports/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.6410	11.52	0.8004	14.21	0.7119	12.90
Ln(real ave. wage)	-0.2522	-4.32	-0.0336	-2.32	-0.0443	-2.55
Ln(real bank lending	0.1699	0.78	0.0463	0.84	0.0971	1.51
Exports/GDP	1.6160	6.22	-0.3456	-1.94	0.0610	0.31
Constant	1.1098	1.10	-2.5776	-2.98	-1.2911	-1.51
Adj R-squared	0.5259					
F (4,109)			71.13			
Chi-Sq (4)					223.37	
Test all individual effects are zero						
F (30, 109)			86.4			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					173.2	
Hausman (Chi-sq. (4))					61.3	

Table 8
Estimation Results Using Aggregate Data:
Proportion of Women Workers

	Trade Indicators					
	Export/GDP		Import/GDP		(Ex+Im)/GDP	
Variables	Coeff.	t	Coeff.	t	Coeff.	t
Trade Indicators	-0.0350	-0.24	-0.0604	-0.96	-0.0363	-0.76
Ave Wage, Female/Ave. Wage, Total	0.0222	0.93	0.0334	1.43	0.0312	1.27
Constant	0.3554	18.2	0.3578	30.95	0.3594	25.58
rho	0.2679		0.1449		0.1845	
Adj R-squared	0.7087		0.0195		0.3788	
DW Stat	1.7327		1.6694		1.6907	
Est. Procedure	P-W		P-W		P-W	

Table 9
Estimation Results Using Manufacturing Subsector Data (ASE):
Proportion of Women Workers

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Export/GDP	0.6100	13.18	0.2372	4.24	0.3288	6.51
Ave. Wage, Female/Ave. Wage, Total	-0.3535	-3.67	-0.1557	-3.23	-0.1729	-3.50
Constant	0.5141	5.71	0.4227	9.23	0.4137	7.81
Adj R-squared	0.5472					
F (2,111)			12.39			
Chi-Sq (2)					48.67	
Test all individual effects are zero						
F (30, 111)			27.5			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					150.6	
Hausman (Chi-sq. (2))					14.5	

Table 10
Estimation Results Using Aggregate Data:
Proportion of Production Workers

	Trade Indicators					
	Export/GDP		Import/GDP		(Ex+Im)/GDP	
Variables	Coeff.	t	Coeff.	t	Coeff.	t
Trade Indicators	0.3200	2.33	0.0907	1.42	0.0799	1.76
Ave Wage, Production/Ave. Wage, Total	-0.0300	-0.89	-0.0684	-2.42	-0.0578	-2.01
Constant	0.1755	3.01	0.2538	6.48	0.2298	5.13
rho	0.6214		0.7127		0.6966	
Adj R-squared	0.8578		0.8430		0.8519	
DW Stat	1.9854		1.7436		1.8224	
Est. Procedure	P-W		P-W		P-W	

P-W = Prais-Winsten

Table 11
Estimation Results Using Manufacturing Subsector Data (ASE):
Proportion of Production Workers

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Export/GDP	0.2917	7.35	0.1588	2.64	0.2108	4.35
Ave. Wage, Production/Ave. Wage, Total	0.0143	0.46	-0.0200	-1.25	-0.0164	-1.02
Constant	0.6417	26.67	0.6964	35.57	0.6802	26.15
Adj R-squared	0.2671					
F (2,111)			4.59			
Chi-Sq (2)					20.66	
Test all individual effects are zero						
F (30, 111)			16.5			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					159.3	
Hausman (Chi-sq. (2))					2.1	

Appendix A

Estimation Results Using Manufacturing Subsector Data (NAPES) Restricted to 1991-1995: Labor Demand Equation with Shifter (Exports/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.8072	14.13	0.7287	19.09	0.7399	19.89
Ln(real ave. wage)	-1.7608	-11.62	-0.5756	-9.98	-0.6106	-10.24
Ln(real bank lending	-0.2562	-0.92	-0.0266	-0.63	-0.0314	-0.71
Exports/GDP	0.0096	0.28	0.0079	1.07	0.0083	1.06
Constant	6.9829	4.74	-2.0977	-3.87	-1.9997	-3.52
Adj R-squared	0.784					
F (4,58)			92.04			
Chi-Sq (4)					400.68	
Test all individual effects are zero						
F (20, 58)			192.7			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					100.8	
Hausman (Chi-sq. (4))					1.7	

Estimation Results Using Manufacturing Subsector Data (NAPES) Restricted to 1991-1995: Labor Demand Equation with Shifter (Imports/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.8191	11.80	0.7249	18.87	0.7329	19.15
Ln(real ave. wage)	-1.7692	-11.59	-0.5713	-9.71	-0.6048	-9.88
Ln(real bank lending	-0.2513	-0.90	-0.0333	-0.79	-0.0393	-0.88
Imports/GDP	0.0110	0.41	-0.0039	-0.20	-0.0063	-0.38
Constant	6.8679	4.51	-2.0545	-3.77	-1.9113	-3.32
Adj R-squared	0.7843					
F (4,58)			90.1			
Chi-Sq (4)					392.9	
Test all individual effects are zero						
F (20, 58)			188.8			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					98.4	
Hausman (Chi-sq. (4))					0.1	

Estimation Results Using Manufacturing Subsector Data (NAPES) Restricted to 1991-1995: Labor Demand Equation with Shifter ((Exports+Imports)/GDP)

	OLS		Fixed Effects		Random Effects	
Variables	Coef.	t	Coef.	t	Coef.	Z
Ln(output)	0.8192	11.99	0.7274	18.98	0.7397	19.63
Ln(real ave. wage)	-1.7665	-11.63	-0.5763	-9.92	-0.6124	-10.16
Ln(real bank lending	-0.2500	-0.89	-0.0287	-0.68	-0.0342	-0.76
(Exports+Imports)/GDP	0.0077	0.42	0.0041	0.74	0.0036	0.63
Constant	6.8406	4.45	-2.0739	-3.82	-1.9819	-3.46
Adj R-squared	0.78430					
F (4,58)			91.0			
Chi-Sq (4)					395.0	
Test all individual effects are zero						
F (20, 58)			190.5			
Test for Random Effects						
Breusch-Pagan (Chi-sq. (1))					99.0	
Hausman (Chi-sq. (4))					0.5	