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INTERNATIONAL TRADE, OUTSOURCING AND LABOR: A VIEW FROM THE DEVELOPING COUNTRIES

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Contents/Roteiro:

Abstract:

This paper looks at the relation between trade, the operation of transnational corporations and labor markets from the developing countries' perspective. In the recent debate on **developed** countries, emphasis has been given to the roles of greater trade and investment relations with developing countries and labor saving technologies in explaining the falling employment opportunities for unskilled workers and the widening wage differential between skilled and unskilled workers. For symmetrical reasons it should be expected that in developing countries, employment opportunities for the unskilled would improve and wage differentials would shrink. However, so far the evidences do not support this symmetrical behavior. Why? The paper advances a few theoretical hypotheses for the unexpected evidences. It also looks at the connection between the pervasive drive towards greater labor market flexibility and lower labor costs and greater international integration in developing countries. Finally, it presents a taxonomy of views --optimistic and pessimistic views-- on the impact of greater international integration from the developing countries perspective.

Resumo:

Este trabalho se refere à relação entre comércio internacional, a operação de empresas transnacionais e mercados de trabalho do ponto de vista dos países em desenvolvimento. No recente debate sobre países **desenvolvidos**, tem-se enfatizado a crescente integração através de relações de comércio e investimentos com países em desenvolvimento e as tecnologias poupadoras de trabalho para explicar a redução nas oportunidades de emprego para trabalhadores pouco qualificados e a ampliação do diferencial de salários entre qualificados e pouco qualificados. Por razões simétricas, deveria se esperar que nos países em desenvolvimento, as oportunidades de emprego para pouco qualificados melhorassem e o diferencial de salários diminuisse. Entretanto, as evidências não mostram este comportamento simétrico. Porque? O trabalho desenvolve algumas hipóteses teóricas para estas evidências não esperadas. O trabalho também se refere à conexão entre a tendência à flexibilização do mercado de trabalho e à redução dos custos trabalhistas, e a crescente integração internacional dos países em desenvolvimento. Finalmente, o trabalho apresenta uma taxonomia de visões, otimistas e pessimistas, sobre a integração internacional do ponto de vista dos países em desenvolvimento.

Section 1: Labor market flexibility

Labor economists usually think of the benefits of labor market deregulation as being associated with greater flexibility of the real wage in face of macroeconomic shocks (which reduces unemployment) and absence of mobility costs in face of sectoral costs (which reduce segmentation and inefficiencies). Arguments based on market imperfections can always be used to show that certain regulations and "rigidities"might have positive long run effects and that, therefore, the nature of regulations and the degree of regulation should also be a matter of scrutiny. [see Freeman, 1993]

Individual firms and business men see the issue from a different perspective. For them, rigidities translate into greater labor costs. Accordingly, the basic idea behind the notion of "labor market flexibility" is that, in face of greater volatility of the environment (due to greater international competition, global outsourcing, shorter product cycles, etc.), the costs of adjusting to the environment become greater. In a completely stable environment, the costs of adjustment are zero. The costs of adjustment are fixed for a given level of volatility of the environment and they increase with the level of volatility. That is, the greater the volatility of the environment, given the unit cost of adjustment, the greater the contribution of adjustments to total costs.

Let total labor cost be given by:

$$C = (w + c\,\sigma)\,N$$

where w = compensation per worker, c = unit cost of adjustment (costs of laying off a worker and hiring a new one, for example), σ = frequency of adjustments (proportion of workers laid off and hired per unit of time) and N = employment.

Firms maximize profits:

$$\underset{N}{\text{Max}}\ \Pi = F(N) - (w + c\,\sigma)\,N$$

where: F = production function. The first order condition for this maximization implies:

$$F'(N) = w + c\,\sigma$$

As σ increases due to greater volatility of the environment, the levels of employment and output fall. Total profits also fall with an increase in σ. In an open economy, given the international price of the goods produced by the firm, there would be a reduction in the market share. In face of this situation, firms will have an incentive to act collectively to "demand" a reduction in labor costs, that is, in "institutional" determinants of w and c.

It is true that, in principle, firms would always have incentives to demand reductions in the institutional determinants of w and c. But if there exists a fixed cost associated with demanding such reductions, there must be an "acceptable" level of c related to every level of σ or interval of σ. Only a change in the interval, say from $[\sigma_0, \sigma_1]$ to $[\sigma_1, \sigma_2]$ with $\sigma_0 < \sigma_1 < \sigma_2$, would lead firms to incur in the costs of organizing and demanding a reduction in w and c.

Based on this general view on the role of adjustment costs, two types of demands for deregulation and greater flexibility of the labor market arise:

1. Smaller role for centralized/sectoral negotiations and greater emphasis on firm-specific negotiations. With firm-specific negotiations, firms and workers, based on their respective objective functions and bargaining power, can accommodate wages, hours and job descriptions to changes in the environment. Thus, direct negotiations between firms and workers enhances flexibility.

2. Smaller role for institutional and legal regulations external to the firm which, in face of greater volatility of the environment, increase the cost of labor. There should be a reduction in the costs of adjustment in order to reduce the cost of labor.

Both demands on the part of the business sectors are being voiced worldwide. The general tune is for a reduction in the level of regulations, the role of unions and negotiations at the sectoral and centralized levels. But whereas the first type of demand requires a learning process on the part of firms, unions and individual workers as well as the development of new institutional arrangements, the second, though involving political battles, has more immediate effects once adopted. Hence, demands for reduction in costs of dismissals

and lay offs and in non-wage labor costs are very common everywhere in the world these days.

The increase in international competition has also increased the demand for greater flexibility and the reduction of labor costs. The recent and very drastic trade liberalization in most Latin American countries has led to an important movement on the part of the business sector for the deregulation of labor markets and the reduction in external restrictions to direct negotiations between firms and workers. The bottom line of the argument is that the reduction of labor costs is an important element in increasing the competitiveness of firms.

The same argument is made in relation to the attraction of FDI and multinationals. In order to increase FDI and attract TNCs it is important to have a flexible labor market and low labor costs. The notion is that outsourcing by TNCs takes into account the cost of labor and the costs of rigidity.

Of course, the level of labor costs depends as much on the wage (hourly compensation) as on the productivity of labor. The latter, in turn, depends on the levels of general and specific knowledge of workers in firms, externalities (the average level of education of the labor force and the access to modern technologies) and the system of incentives to increase workers' performance. But education, training, externalities and non-Fordist systems of incentives take time to develop. This is probably why the cheap and fast road of demanding reductions the hourly compensation and other institutional determinants of the cost of labor (such as the cost of lay offs) is being pursued. As a matter of fact, this road might also be seen as the most realistic strategy, given certain constraints such as the urge to open up the trade account and the fiscal constraints which reduce the capacity of governments to increase the investments in education and externalities.

The final two sections of the paper relate the demands for greater labor market flexibility and smaller labor costs on the part of the business community to the outcomes of greater international integration.

Section 2: The role of international trade and TNC's on labor markets

The connections between larger trade flows between developing and developed countries and greater penetration of TNC's in developing countries, on the one hand, and recent developments in labor markets in *developed* countries, on the other hand, can be summarized as follows:

a) The reduction in trade barriers in developing countries affects labor markets in the developed countries by altering the demand for unskilled workers. The core of the argument is that smaller protection to skill-intensive sectors and the lower cost of capital and other inputs' imports in developing countries would tend to increase the production of unskilled labor-intensive goods. Larger trade flows between developed and developing countries would thus reduce the demand for unskilled labor in developed countries.

b) Since the cost of labor, in general, and the relative cost of unskilled labor, in particular, are smaller in developing countries than in developed countries, there would be a tendency towards the dislocation of certain industries to developing countries, thus affecting the demand for unskilled labor in developed countries. The growth of FDI towards developing countries would then play an important part in explaining of certain trends in labor markets in developed countries.

It should be noted that, in principle, a reduction in trade barriers could attract TNC's.\[2] The reduction in the cost of capital and other inputs' imports and the incentives to export -- which usually come together with trade opening-- might become relevant forces in increasing TNC's penetration. Hence, connection (b) could follow from connection (a).

Another type of connection can be established between the drive to reduce labor costs in developing countries (as discussed in section 1) and the impact of trade and FDI on labor markets. Lower labor costs would increase the attraction of TNC's and promote the dislocation of production of certain goods to developing countries thus reducing the demand for labor in developed countries. If the supply of skilled labor in developing countries is rationed, the increase in FDI resulting from the reduction in the cost of labor would be biased towards unskilled labor-intensive sectors. Hence, the reduction in labor costs in developing countries would tend to exacerbate the two primary connections ((a) and (b)) established above.

Or course, FDI and TNC's penetration is based on a variety of factors including

[2] Trade opening might not increase TNC's penetration if it is followed by greater exchange rate and interest rate volatility, and hence, greater uncertainty.

economic and political stability, the existence of infrastructure, the size of the domestic market and the proximity to suppliers and important markets. Given these factors, it is assumed that the cost of labor and the level of flexibility of the labor market affect the decision of TNC's to invest in country A instead of country B. In deciding to invest in the home country or in a developing country, given certain general conditions (political and economic stability, etc), labor cost differentials becomes a relevant factor in favor of the developing country. In deciding between two developing countries, ceteris paribus, a TNC will invest in country A instead of B if the cost of labor and the rigidities imposed by labor codes and unions are smaller in the former than in the latter.

The effects on labor markets in developed countries of increasing competition from manufactures produced in the developing countries are a widening of wage differentials between skilled and unskilled workers and the growth of unemployment amongst the less skilled. Hence, part of the economic problems with unemployment and increasing poverty in developed countries would be attributed to the competition with developing countries.

As for the role of North-South trade, Wood's (1994, p. 10) calculations on the impact on labor markets in developing countries are certainly very impressive:

> *For the Norther manufacturing as a whole, the cumulative reduction up to 1990 in the demand for unskilled labour caused by expansion of trade with the South is estimated (..) to have been between 6 and 12 million persons-years. The increase in the demand for skilled labour was small, so that the total demand for labour in manufacturing was reduced by about the same amount as the demand for unskilled labour. (...) This initial estimate, however, omits the effects of defensive unskilled-labour-saving innovation.*

As for the role of TNC's outsourcing, using cross-country regression of US net trade patterns for different skill categories of goods, Sachs & Shatz (1994, p. 51) find that

> *Foreign-based production in low-wage countries is used as an export platform for reexport to the United States. [The econometric results are] also consistent with another interpretation: that when US firms engage in foreign-based production in developing countries, they supply the foreign market more*

through production at the foreign base than through exports from the US. The former interpretation is most likely for less skill-intensive goods and the latter for more skill-intensive goods.

As a mirror image of what is happening in developed countries, demand for unskilled labor should be *greater* (and *increasing*) and wage differentials between skilled and unskilled workers should be *smaller* (and *shrinking*) in developing countries. Hence, the effects of larger trade flows and outsourcing by TNC's would be diverse in developing and developed countries. Whereas in the latter, relative wages between skilled and unskilled workers would increase, in the former, relative wages would shrink. The distributional effects for the developing countries would then be positive.

There are some evidences in this direction, if not in the trends, at least in the levels. Drawing from figures on US multinationals in developed and developing countries collected by Lawrence (1994) and shown in Tables 1 and 2, the following empirical evidences are noteworthily:

- In 1989, the employment ratio between production and nonproduction employees (proxy for the ratio of unskilled to skilled workers) was greater in developing countries (1.7) than in developed countries (1.23) and that the wage differential was smaller (0.41 against 0.66). **[Table 1]**

- Compensation per worker was much smaller in developing countries. The ratios of compensation per worker in developing and developed countries are: 0.28 (all workers), 0.23 (production workers) and 0.37 (nonproduction workers). **[Table 2]**

- Workers are more productive in developed countries: output per worker was US$ 66,093 in developed countries in 1989 and US$ 26,648 in developing countries. Net income per worker was, respectively, US$ 12,587 and US$ 6,250. **[Table 2]**

- The ratio of output per worker to compensation per worker (the inverse of the labor share) was 2 in developed countries and 2.9 in developed countries. As for the ratio between net income per worker and compensation per worker, it was 0.38 in developed countries and 0.66 in developing countries. [**Table 2**]

Table 1: Employment and wages in US multinationals

Employment in 000,000's

	Production workers employment			Nonproduction workers employment			Employment ratio: production: nonproduction			Compensation ratio: production: nonproduction		
	77	89	%	77	89	%	77	89	%	77	89	%
Multinationals in US												
Manufacturing	7.2	na	...	4.5	na	...	1.6	na	...	0.7	na	...
Foreign affiliates												
Developed countries	1.7	1.2	-30	1.1	.97	-8	1.6	1.2	-23	.75	.66	-11
Developing countries	.68	.68	-.6	.34	.4	16	1.9	1.7	-14	.47	.41	-13

Source: Lawrence (1994) based on data from the US Department of Commerce

Table 2: Employment, output, and compensation in US manufacturing foreign affiliates (1989)

	Output ($MM) (1)	Employment (2)	Comp. per worker ($) (3)	Net income per worker ($) (4)	(4) / (3)	Output per worker ($) (5)	(5) / (3)
Developed countries							
All workers	143,244	2,167,300	33,028	12,587	0.38	66,093	2.0
Production	---	1,196,100	26,943	---	---	---	---
Nonproductio	---	971,200	40,523	---	---	---	---
Developing countries							
All workers	28,764	1,079,400	9,404	6,250	0.66	26,648	2,9
Production	---	679,200	6,110	---	---	---	---
Nonproductio	---	400,200	14,955	---	---	---	---
Ratio of developing to developed countries							
Compensation per worker							
All workers	0.28						
Production	0.23						
Nonproductio	0.37						
Output per worker (5)	0.40						
Net income per worker (4)	0.50						
(5) / (3)	1.45						
(4) / (3)	1.74						

Source: Lawrence (1994) based on data from the US Department of Commerce: US Direct Investment Abroad 1989 Benchmark survey, and Survey of current business, Feb 1994

Section 3: Evidences "against" the conventional view

However, as far as trends are concerned, the same tables lead to evidences against the conventional view on effects on developing countries of greater trade flows with developed countries and greater TNC's penetration. In particular, notice that:

- Even in developing countries, where less skilled workers are abundant and comparatively cheaper, there was a reduction in the ratio of production and nonproduction workers. Between 1977 and 1989, the ration of production to nonproduction workers fell 23% in developed countries but it also fell by 14% in developing countries. Lawrence (1994) attributes these changes to unskilled-labor-saving technological innovations which affect both developed and developing countries. **[Table 1]**

- As for the compensation ratios between production and nonproduction workers, they went from 0.75 to 0.66 in developed countries and from 0.47 to 0.41 in developing countries. This means that both in developed and developing countries wage differentials between skilled (nonproduction) and unskilled (production workers) have widen. **[Table 1]**

The available literature on recent developments in wage differentials, returns to education and skill and employment patterns in Latin America also go in the opposite direction as that implied by the conventional view. Table 3 provides a summary survey of the relevant literature indicating a widening of wage differentials in the major Latin American countries in recent times.\[3]

[3] A word of caution on the evidences presented in Table 3. In all Latin American countries, the recent years (say, from 1985 onwards) have been marked by periods of very high and then rapidly decelerating rates of inflation. This alone could lead to significant changes in relative wages associated either with problems with deflators or with actual economic causes. Privatization also had effects on relative wages and the employment profile. The papers do not "control" for these factors.

Table 3: Literature survey on the impact of trade and TNC's on employment and wages structures in Developing countries

Author	*Data/method*	*Findings*
Hnason & Harrison (1995)	⊠ Data from manufacturing plants in **Mexico** (SECOFI) from 1984 to 1990 and data from the Industrial Census from 1965 to 1988. White collars identified as skilled and blue collar as unskilled workers.	□ CECOFI data: between 1984 and 1990, ratio of average hourly compensation between skill and unskilled increased from 1.93 and 2.55; and ratio of average annual earnings increased from 1.91 to 2.47. □ Ind. census data: ratio of average wage went from 1.84 to 2.16. □ No evidences of important changes in relative employment at inter sectoral level. □ Within industries, foreign plants and exporters pay relatively higher returns to skilled workers. Hence, greater intl integration has a role in explaining increase in income inequality.
Aitken et al (1995)	⊠ Plant data for **Mexico and Venezuela** from late 1970's to late **80's.** ⊠ Tests the hypothesis that, since foreign owned firms have productive advantages over domestic firms, their presence increases labor productivity and hence wages. ⊠ Also tests the hypothesis that the presence of multinationals has spill over effects increasing the wage of domestic firms as well.	□ Venezuela: presence of TNC increases average wages of both skilled and unskilled workers. But negative wage spillover from foreign to domestically owned firms were found. Poaching by foreign enterprises and negative effect on domestic productivity associated with foreign competition could explain the result. □ Mexico:presence of TNC increases average wages but the effect is significantly lower for unskilled workers. No impact or negative wage spillover from foreign to domestically owned firms. □ High wage differentials between foreign and domestic firms after controlling for size, geographic location, skill mix and capital intensity. □ Wage differentials between foreign and domestic firms do not differ for skilled and unskilled workers which can be seen as an evidence that the differentials are associated with the jobs and not with the skill profile of workers.
Robbins (1994)	⊠ Data: household survey for **Greater Santiago (Chile)** between 1957 and 1992.	□ Relative wages shifted sharply in favor of more educated workers. Supply changes cannot explain this result since the relative supply of more educated rose.

Author	*Data/method*	*Findings*
Pessino (1995)	◙ Data: household survey for **Greater Buenos Aires (Argentina)** between 1986 and 1994.	□ Over the whole period (1986-94) there is an increase **in the** rate of return to tertiary education and a reduction in the return **to** primary and secondary education. □ After 1993 there is an increase in the rate of return to primary and secondary education. The losers in this last period are those without primary education.
This paper (see analysis immediately after this table)	◙ Data: Firms' data for the industrial formal sector and total formal sector in **São Paulo (Brazil):** ◙ Data on hired and laid off workers by level of education between 1986 and 1995 ◙ Distribution of employed workers according to the levels of education and wage brakets between 1986 and 1991.	□ There are evidences that there has been an increase in the proportion of educated to less educated workers both in industry and in the formal sector as a whole [*Figures 1a and 1b*]. This might reflect a change in the profile of labor demand, but could also reflect a change in the education profile of the labor force. □ In the formal sector as a whole the marginal returns to education have fallen between 1987 and 1991. However, in industry --a sector directly affected by trade--, the marginal returns to education have not increased but they have certainly not fallen [*Figures 2a to 2d*]. The marginal return to secondary education in the industrial sector increased significantly in 1991.

As summarized in the **Table**, at least in Latin American countries, the recent evidences on the trends on employment and compensation ratios between skilled and unskilled workers go against the conventional view that international trade and TNCs penetration would increase the production:nonproduction ratio and reduce wage differentials. What the evidences show is that the ratios in industry have not increased (in some cases they have decreased) and wage differentials have not decreased (in almost all cases studied they have increased).

The evidences on Brazil are examined in more detail in what follows. The analysis refers to *the formal wage earners* in the state of S. Paulo (Brazil) which concentrates more than 60% of the urban workers in the modern segments of the labor force.

Figures 1a and 1b show the evolution of the ratios of workers in different educational groups.\[4] Figure 1a refers to the industrial sector and Figure 1b to the formal sector as a whole.\[5] The figures show an increase in the ratios of educated to less educated workers both in industry and in the formal sector as a whole. To the extent that there exists a positive correlation between the ratio of educated to less educated workers and the ratio of skilled to less skilled workers, the evidences would indicate a growing ratio of skilled to less skilled workers in both sectors.

The increase in the ration of educated to less educated workers could either reflect a shift in the demand for labor towards the more educated in these two segments of the market or a change in the profile of education of the labor force. There are evidences that the level of education of the work force has increased in the last decade. Hence, supply effects certainly play o role. However, to know the relative importance of demand and supply forces would demand further research.

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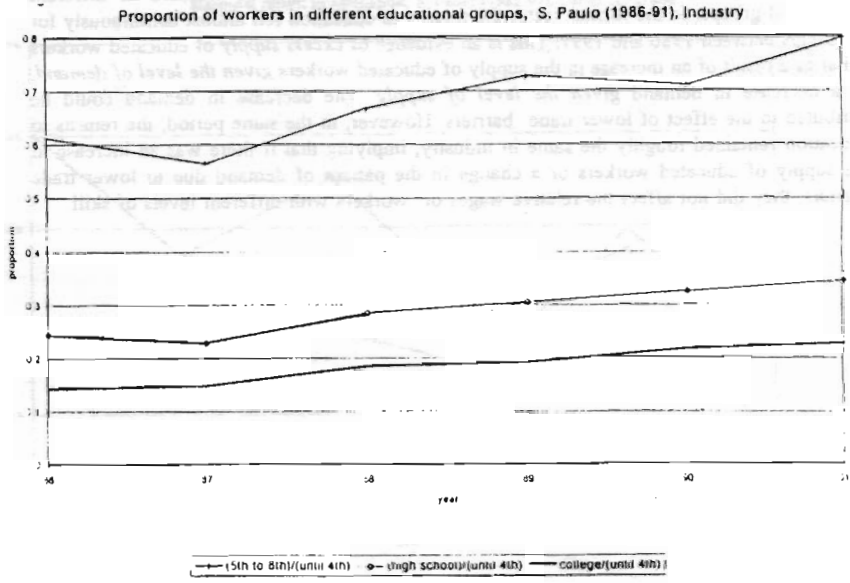
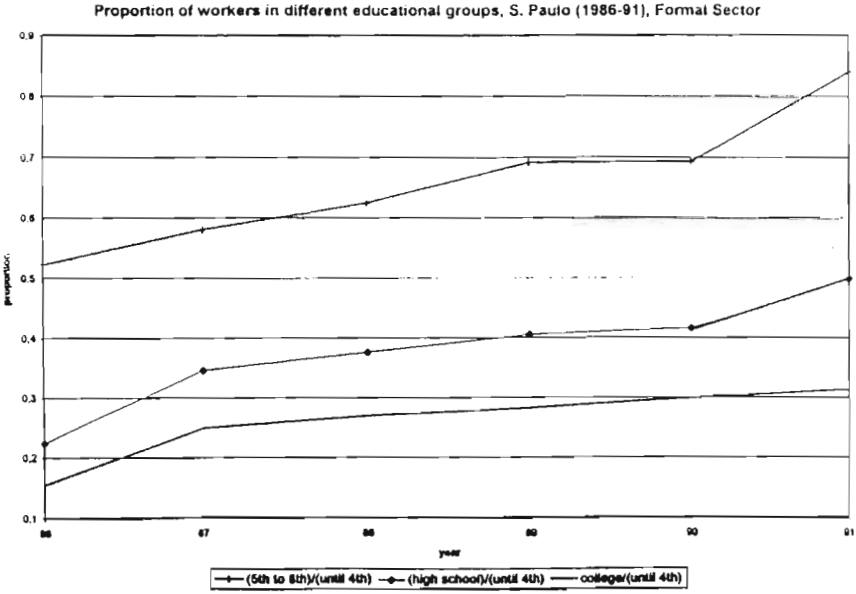
[4] Educational groups: [a] those with at least the 4th grade, [b] those between the 4th and the 8th grade, [c] those between the 8th grade and complete primary education, [d] those between complete primary and complete secondary education, [e] and those between complete secondary and complete college education. In part of the analysis groups [c] and [d] are added and form a same group referred to as c" (those between 8th grade and complete secondary education).

[5] Workers in the industrial sector are a subset of the group of workers in the formal sector.

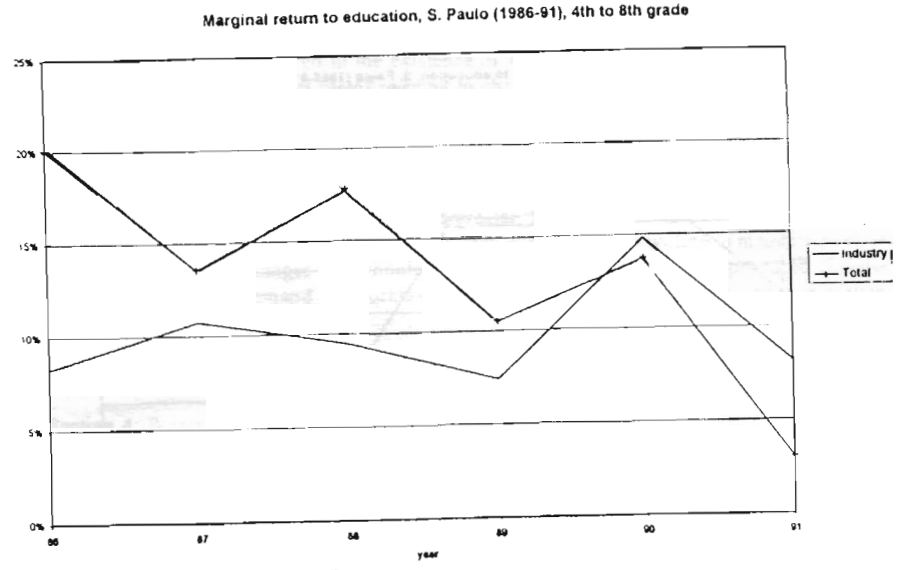
>> Figures 1a and 1b

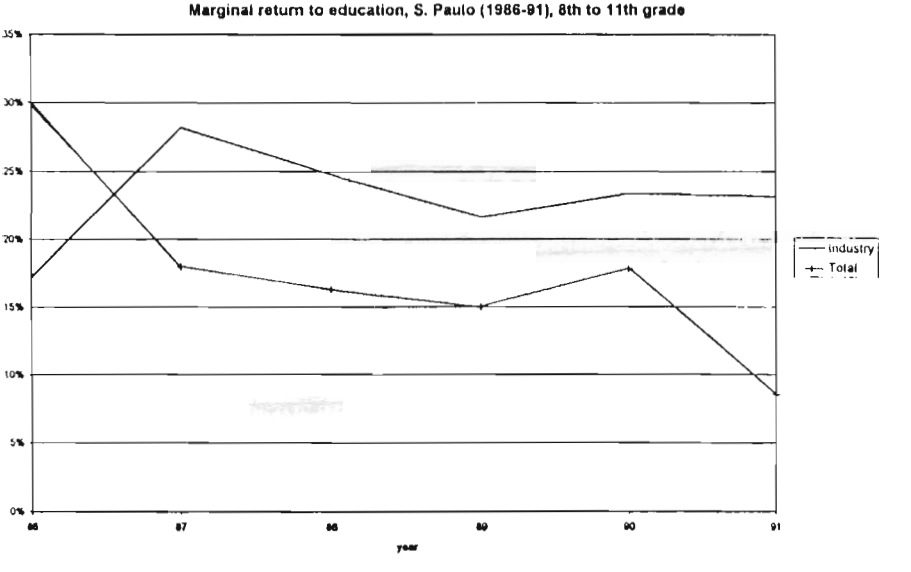




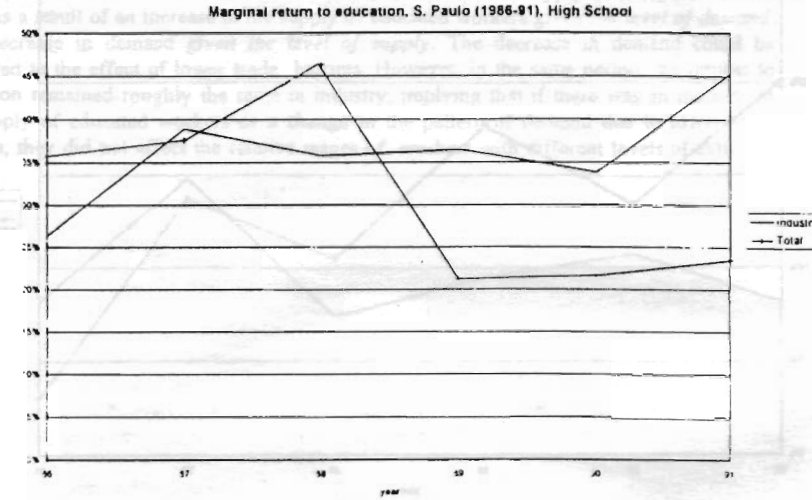
Figures 2a to 2d show the marginal returns to education in industry and the formal sector as measured by the ratios between the average wages of workers in different educational groups. In the formal sector the returns to education fell almost continuously for all groups between 1986 and 1991. This is an evidence of *excess supply* of educated workers either as a result of an increase in the supply of educated workers *given the level of demand*, or a decrease in demand *given the level of supply*. The decrease in demand could be attributed to the effect of lower trade barriers. However, in the same period, the returns to education remained roughly the same in industry, implying that if there was an increase in the supply of educated workers or a change in the pattern of demand due to lower trade barriers, they did not affect the relative wages of workers with different levels of skill.

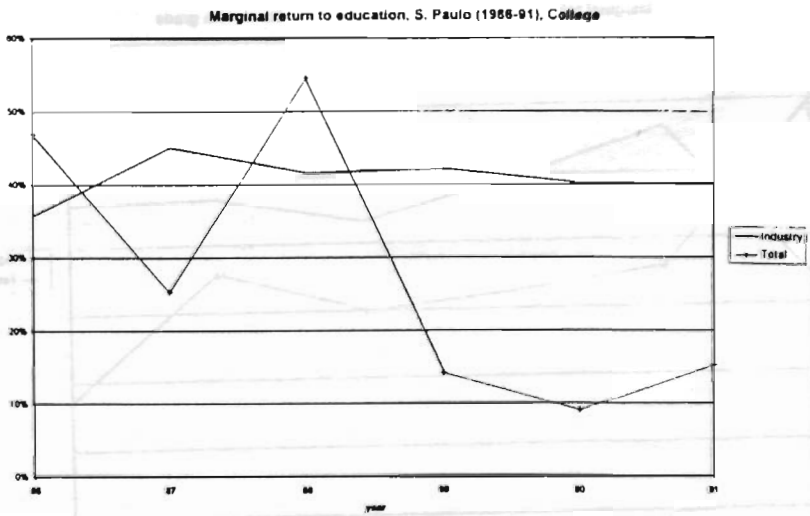
>>Figures 2a and 2b





>> Figures 2c and 2d





Assuming that changes in the pattern of supply of workers were similar in the two sectors (formal as a whole and industry), the difference in the behavior of the returns to education should be attributed to the existence of segmentation between the two "markets". Whereas wages in the formal sector respond to changes in demand and supply, it seems that in the industrial sector wages are relatively insensitive to these forces. It could be argued that they are "rigid" as a result of "efficiency wages" practices, for example.

Another strand of reasoning could argued that the effect of changes in trade barriers is stronger in the industrial sector than in the formal sector as a whole where the incidence of firms operating in non-tradable sectors is greater. In such case, even in face of a growing supply of educated workers, firms in the industrial sector would be willing to maintain relative wages stable due to changes in technology or the standard of the goods produced if these changes increase the demand for workers' skills. This line of reasoning is pursued in section 4.

Section 4: Possible explanations

There are four strands of thought associating greater international integration (through trade and direct investment in developing countries) with changes in employment patterns and relative wages which could "explain"the recent trends in Latin American countries.

4.1. A first argument is that TNCs attracts skilled workers. If the supply of skilled workers is inelastic there will be an increase in their absolute and relative wages. Poaching of workers on the part of TNC's could explain *negative spill overs* (see reference to Aitken et al (1995) on **Table 1**) since the pool of skilled workers available for domestically-owned firms would fall, reducing their productivity and the wages paid there.

4.2. Greater penetration of TNC's usually implies greater capital investments whereas trade liberalization reduces the cost of imported capital for domestic firms. If capital and labor skill are complements, then capital investments would raise the returns to skill. Likewise, new investments are usually accompanied by improved technology which is also complement to skill. If investments in R&D in TNC's are greater than in domestic firms, and R&D and skill are complements, again there would be an increase in the returns to skill, widening wage differentials.

4.3. *Wood's topology of skills.* For Wood (1994), in an integrated world, with low costs of transportation and communication, neither capital intensity nor technology should be used as explanations for the content of North-South trade. He argues that

> *Apart from infrastructure, labour is ... the only internationally immobile factor of production (and that) labour is not homogeneous: there are rather two distinct immobile factors --skilled and unskilled workers. The North-South difference in the relative supply of these two factors provides the main basis for trade in manufacture.* (p. 41)

The reduction of trade barriers and greater international integration through TNC's penetration would have two basic effects in developing countries according to Wood (1994, p. 50). First there would be a shift in the composition of manufacturing output away from

skilled-intensive activities and towards semi-skilled-intensive activities.\[6]

Second, there would be a tendency towards the shrinking of manufacturing production, relative to agriculture. This second effect (on the size of the manufacturing sector) would depend on the initial division between semi-skilled workers and *uneducated* workers.\[7] Wood assumes that the greater the share of the uneducated in the labor force, the greater the reduction in employment in manufacture. It is assumed that uneducated workers do not have the minimum skills for performing tasks in manufacture.

The consequences of opening up the economy for relative wages and income inequality depends on the strength of the second effect, as follows:

a) In a country where the share of uneducated is large, the reduction in manufacture production would reduce the demand for both skilled and semi-skilled workers (although the relative demand for the latter would grow in relation to the former). Hence, the contraction of manufacturing production would tend to reduce the wage of skilled and semi-skilled workers and the relative wage of these with respect to the uneducated. Hence, relative wages would shrink and the average wage in the economy would fall.

b) Where the share of uneducated is moderate, the effect on relative wages is ambiguous. The demand for skilled workers relative to semi-skilled workers would fall (leading to a reduction in wage differentials). In such case, however, there could be an expansion in manufacture employment, such that the relative wage of semi-skilled and uneducated would increase. Depending on the relative strength of the two effects, income inequality could worsen or improve.

c) Finally, where the share of uneducated is small or negligible, the reduction in the demand for skilled workers relative to semi-skilled workers would dominate and inequality would fall. This, according to Wood, is a good approximation of what happened in East Asian countries where the opening of the economies started with high rates of literacy.

The crucial link for these three possibilities and their respective results is the influence of the share of uneducated workers on the demand for semi-educated workers following the abolishment of trade barriers. As noted above, Wood assumes that the greater the share of the uneducated in the labor force, the greater the reduction in employment in manufacture relative to agriculture employment.

But if the logic of international outsourcing of TNC's is taken into account, the result could be slightly different. TNC's are assumed to be attracted by the relatively lower cost of semi-skilled workers (or BAS-ED workers) in comparison to their cost in developed countries. As trade barriers are reduced, the cost of capital imports and other inputs are reduced, and there should be an increase in TNC penetration and an increase in the demand for

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[6] Skilled intensive sectors are sectors with high intensity of *skilled workers*, with post-secondary and advanced education, or SKILD workers in Wood's terminology). Semi skilled intensive sectors are intensive in *semi-skilled workers* with primary education who in developed countries are characterized as "unskilled", or BAS-ED workers in Wood's terminology.

[7] Uneducated workers are "unskilled" workers whose share in developed countries is negligible, or NO-ED workers in Wood's terminology.

manufacture labor, and in particular, of semi-skilled workers.

If this variant to Wood's reasoning makes sense, in case (a) examined above, the forces towards smaller inequality due to a reduction in wage differentials between semi-skilled and uneducated workers would be smaller, strengthening the forces towards greater inequality. In case (b), if the share of the skilled workers is small relatively to the share of semi-skilled and uneducated, the effect of the expansion in manufacture production could dominate, hence strengthening the bias towards greater inequality

4.4. A final possibility for the widening of wage differentials in developing countries following the reduction of trade barriers and greater international integration through FDI, has to do with the effects on the labor process of technology and the standard of quality of the goods produced. The basic notion here is that the process of international integration is governed by the technological standards and product quality standards of firms and consumers in the developed countries. These standards are higher than those in developing countries. Hence, greater incidence of TNC outsourcing and export-oriented firms targeting markets in developed countries will lead to a change in the technology and the quality content of goods produced in developing countries. Workers might have to be "different" or behave differently in face of changes in technology or product quality standards.

Workers can be "different" in two ways. They can be different because of differences in their background (as measured by education and experience for example). But even if they have the same background, in face of differences in the characteristics of the firms in which they work, or their jobs, they become "different".

The efficiency wages literature argues that two workers with the same human capital characteristics earn different wages because of differences in the technologies used by the firms in which they work. The wages paid by firms depends on the costs of shirking and monitoring workers. In firms in which monitoring is difficult and costly and shirking is costly, firms will be prepared to pay higher wages in order to reduce shirking. Shirking in the literature can be defined as the deliberate decision on the part of the worker of reducing effort.

Ramaswamy & Rowthorn (1991) have introduced the notion of "damage potential" of workers. The greater the costs of shirking for a firm, the greater the damage potential. But even in case of firms in which the costs of shirking are identical, wages could be different if the damage potential of workers depended on what Ramaswamy & Rowthorn call "performance". Performance encompasses

> *wide array of attributes which determine the effectiveness of work ... For instance, performance can depend upon how intensely workers concentrate on their jobs (and) upon factor such as the willingness of workers to take initiative and function flexibly.(p. 509)*

The model developed by Ramaswamy & Rowthorn to explore the notion of damage potential and performance is a generalization of Solow's model of efficiency wages. They proposes a production function in which "standard labor input" (hours of work) and "effort" (or "performance") are not multiplicative. Instead, they enter the function separately in which case the degree of substitutability between hours of work and effort affects the wage-effort elasticity. The function proposed is the following:

$$y = f(H, e(Z)) \quad \text{with } e' > 0,\ e'' < 0,\ f_H > 0 \text{ and } F_e > 0$$

where H = hours of work, e = effort (or performance), Z = real hourly compensation and y = output. Profits are defined as $\Pi = y - ZH$. Profit maximization give rise to the following equations:

$$\delta\Pi/\delta Z = f_e\, e(Z) - L = 0$$

$$\delta\Pi/\delta H = f_H - Z = 0$$

Solving these equations, the following effort-wage elasticity is obtained:

$$E_Z = [e'(Z^*)\, Z^*]/e(Z^*) = \varepsilon_H/\varepsilon_e$$

where $\varepsilon_H = (H/y)/(\delta y/\delta H)$ e $\varepsilon_e = (e/y)/(\delta y/\delta e)$

The size of E_Z depends on the characteristics of the firm. Firms in which hours of work and effort or performance are *substitutes*, ε_H and ε_e are more or less of the same size. In particular, if the two elasticities are equal, the wage-effort elasticity is one (the Solow condition). Firms in which hours of work cannot replace performance, ε_e will be greater than ε_H. Hence, the wage-effort elasticity (E_Z) will be lower in the latter case than in the former case.

The first conclusion then is that E_Z is inversely related to the damage potential of workers as determined by the importance attributed to performance by different firms. When H and e enter the production function separately, E_Z can be smaller than 1. Hence, the so-called Solow condition ($E_Z = 1$) becomes a special case.

Another important result is that first and second order conditions of profit maximization imply that, if E_Z can vary across firms, then

$$\delta E_Z/\delta Z^* < 0$$

that is, workers employed in firms with the greater damage potential (smaller E_Z), receive the highest wage.

Graph 1 depicts the determination of the equilibrium wage (Z^*) and the equilibrium demand for labor (H^*). Notice that, the smaller E_Z, the greater the equilibrium wage and the smaller the equilibrium demand for labor (H^*).

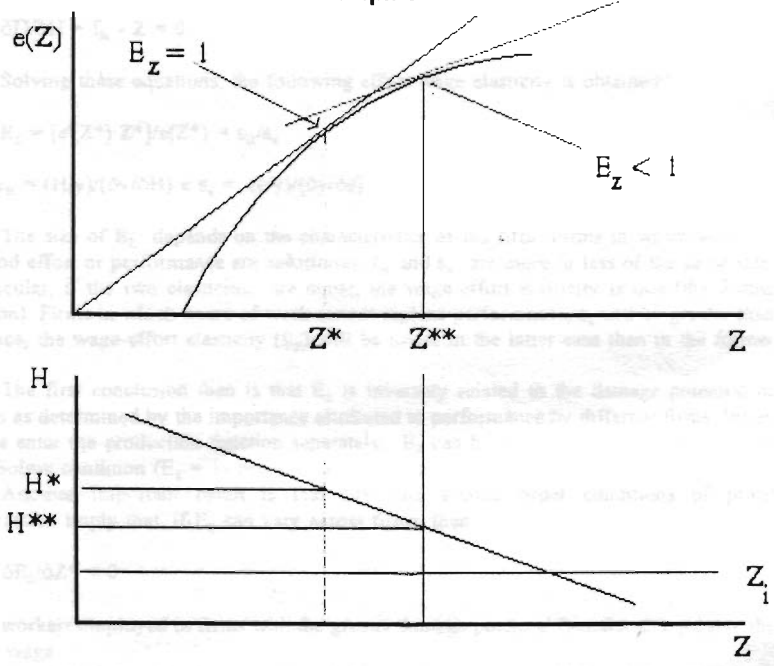
We can now compare two representative firms demanding undistinguishable workers from a human capital point of view. In firm 1 (on the right in **graph 2**), we assume that ε_e is close to zero (damage potential is negligible) which implies that E_Z is very high. This firm hires "hours of work" of workers with a given set of human capital characteristics and does not give much weight to performance. We stretch the assumptions to the case in which the firm does not care about performance at all, takes the hourly wage of these workers as given by supply and demand at the industry level (Z_i) and fixes the level of employment by equating Z_i to the marginal revenue of labor (H_i). In other words, we assume that firm 1 operates in a competitive labor market.

In the second representative firm (on the left of **graph 2**), ε_e is positive and therefore E_Z is small. The greater ε_e, the smaller E_Z. The wage decreases in E_Z.

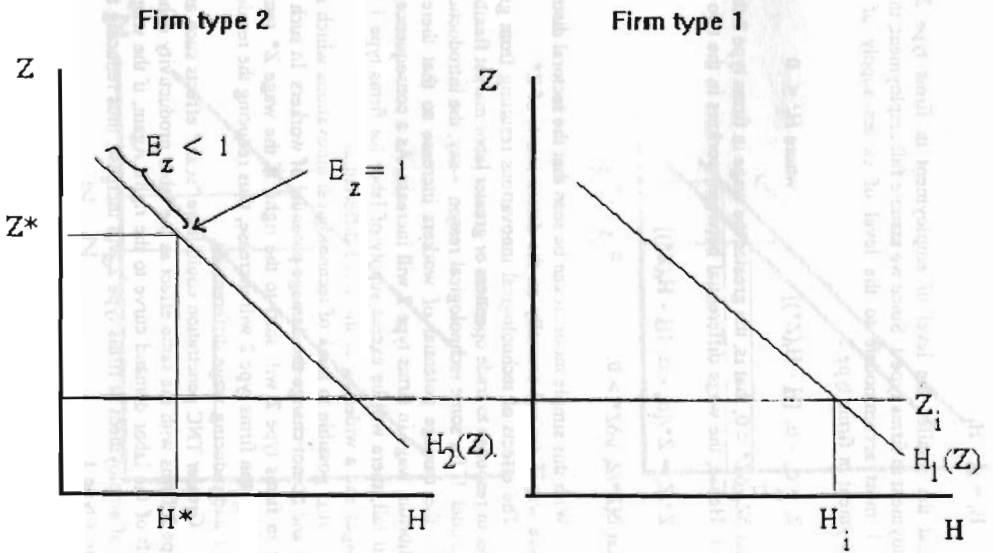
We associate firms type 1 with those producing goods and services for the domestic

market and firms type 2 with TNC's and exporters producing goods for the international market. Both technology and the quality standards of the two different markets affect the weight firms confer to workers' "performance". It is assumed that firms producing for the domestic market use technologies and face consumers with quality standards which do not require a high level of performance. Firms producing for the international market, on the contrary, are more susceptible to damage on the part of workers and hence require high standards of performance.

Graph 1



Graph 2



Let the level of aggregate employment (as measured by the total number of hours) be given at $\underline{H}$. Once the equilibrium wage in firms type 2 is determined according to the profit maximization procedure described above, the level of employment (H_f) is determined. It is assumed that the level of employment in firms type 1 is determined as a *residual* between the aggregate level of employment and employment in firms type 2:[8]

$$H_i = \underline{H} - H_f$$

so that the smaller the level of employment in firms type 2, the greater the level of employment in firms type 1. Since we assume full employment, the equilibrium wage in firms type 1 must accommodate to the level of excess supply of labor, given the level of employment in firms type 2:

$$Z_i = \alpha_o - \alpha_1 [\underline{H} - H_f(Z^*)] \qquad \text{where } H_f' < 0$$

so that $\delta Z_i / \delta Z^* < 0$, that is, the greater the wage in firms type 2 the smaller the wage in firms type 1. Hence, the wage differential between workers in the two types of firms is given by:

$$Z^*/Z_i = Z^*/[\alpha_o - \alpha_1 [\underline{H} - H_f(Z^*)]$$

so that $\delta(Z^*/Z_i)/\delta Z^* > 0$.

With this simple model it can be seen that the sectoral distribution of employment and relative wages depend crucially on the determinants of Z^*.

The effects of technological innovations resulting from greater penetration of TNC's (either in response to trade openness or greater labor market flexibility) can be examined with this model. If for some technological reason --say, the introduction of computers in the shop floor-- the damage potential of workers increase so that there is a reduction in E_Z, the equilibrium wage in firms type 2 will increase. As a consequence, employment in firms type 2 will fall, there will be excess supply of labor for firms type 1 thus leading to a reduction in wages and a widening of the wage differential.

It is possible to think of technological innovations which increase the productivity of labor and do not change the damage potential of workers. In such case, the demand curve for labor in firms type 2 will shift to the right. If the wage Z^* remains constant, the level of employment in firms type 2 will increase, thus reducing the residual supply of labor in firms type 1 and reducing wage differentials.

Greater TNC penetration could have "scale" effects such as an increase in the number of type 2 firms with the same effect as the labor productivity enhancing innovation, namely, a shift of the labor demand curve to the right. Again, if the wage Z^* remains constant, the level of employment in firms type 2 will increase, thus reducing the residual supply of labor in firms type 1.

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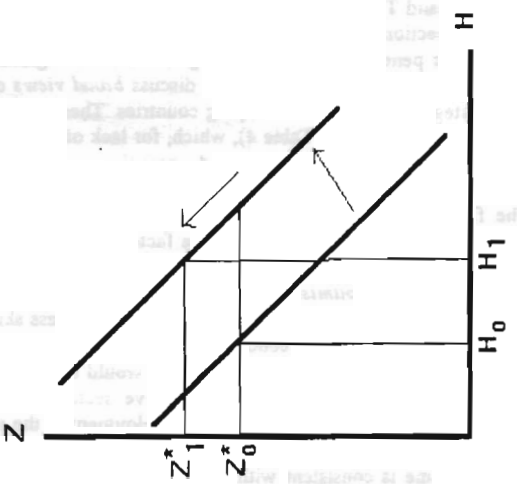
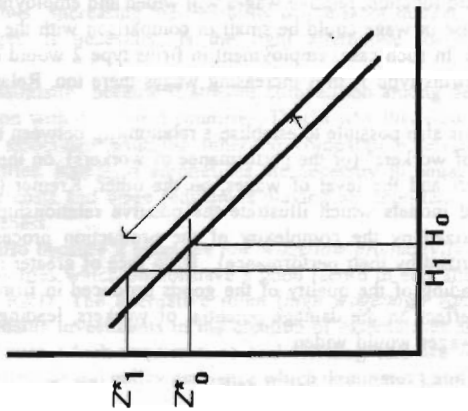
[8] It is implicitly assumed that there exists a certain degree of mobility between workers in the two sectors and that at least part of the workers employed in firms type 1 have the skills to work in firms type 2.


Graph 3a
Z
H
Z^*_1
Z^*_0
H_1
H_0


Graph 3b
Z^*_1
Z^*_0
H_1 H_0

In general, the three effects (increase in labor productivity, increase in the number of type 2 firms and greater damage potential) will take place simultaneously in which case the effect on the sectoral pattern of employment and relative wages becomes ambiguous. As seen in **Graph 3a**, if the increase in the wage is sufficiently large in comparison with the shift in the demand function, relative wages will widen and employment in firms type 2 will fall. But the increase in wage could be small in comparison with the shift in the demand curve as in **Graph 3b**. In such case, employment in firms type 2 would increase, reducing the supply of labor in firms type 1, thus increasing wages there too. Relative wages would shrink in this case.

It is also possible to establish a relationship between the "quality of products" and the "quality of workers" (or the performance of workers), on the one hand, and the performance of workers and the level of wages, on the other. Kremer (1993) and Abowd et al (1995) developed models which illustrate the positive relationship between the quality of goods (characterized by the complexity of the production process) and the quality of workers (characterized by their performance). If, in face of greater international integration, there is an up-grading of the quality of the goods produced in firms type 2, and this in turn has a positive effect on the damage potential of workers, leading to an increase in wages there, relative wages would widen.

Section 5: Trade and TNCs: optimist and pessimistic views

The last section dealt with isolated effects on wage differentials and employment patterns of TNC's penetration in developing countries and greater international integration through trade. In this section the idea is to discuss *broad views* on the outcomes of greater international integration for the developing countries. These views can be distinguished into four groups (as summarized in **Table 4**), which, for lack of a better terminology, are referred to as the "old trade theory" optimistic and pessimistic views and the "new trade theory" optimistic and pessimistic views.

The first two views are based on the *old static trade theory* which takes factor endowments as given and which sees relative factor price equalization as a central result of greater international integration.

According to the *optimistic view*, smaller trade barriers and larger trade flows with developed countries will increase the relative wages of the less skilled and poorer workers in developing countries. Smaller protection to skill-intensive sectors and the lower cost of capital and other inputs' imports in developing countries would tend to increase the production and demand for labor in the unskilled labor-intensive sectors. Given the level of aggregate employment --which is taken as given at full employment-- the result of greater integration would be less inequality and less poverty.

This outcome is consistent with the view that greater labor market flexibility in the sense of *greater labor mobility* is desirable. Greater flexibility makes the transition of workers across regions and sectors less costly and is consistent with the change in relative wages associated with the change in the structure of employment. In particular, an important barrier to the adjustment would be the downward rigidity of wages of the skilled workers.

The *pessimistic view* emphasizes the increasing competition between developing countries. The threat of the Chinese competition in the non-durable consumption goods markets is the typical situation to have in mind here. The likely scenario envisaged by this view is a price war among unskilled-labor-intensive manufacture producers. Countries in

which the relative supply of unskilled labor is large should therefore prepare for this war and engage in large scale production of such products. The production of these products is based on *economies of scale* and is intensive on *unskilled labor* --both characteristics of the old "Fordist" method of production-- which, as reminded by this view, is still very much alive in certain lines of production. Thus, increasing the flexibility of the labor market, reducing labor costs and lowering wages, if necessary, is the right alternative for enhancing international competitiveness.

This second view is "pessimistic" because it stresses competition among developing countries rather greater integration with developed countries. That is why this view does not emphasize the gains of trade associated with the inherited comparative advantages of developed and developing countries. Rather, it emphasizes the necessity to engage in cost reducing strategies --with labor costs and wage reductions playing an important role-- as measures to increase competitiveness.

The view is pessimistic also because it takes the *low wage/low productivity* strategy as the "realistic strategy" for countries which do not have a good record in education of the work force and investments in R&D. The alternative route (*high wage/high value added strategy)* would demand unaffordable investments in the creation of externalities and active industrial and labor market policies which require time and learning and are not at all congenial with the hands-off intellectual and policy ambiance which dominates Latin America in these days.

Table 4: Optimistic and Pessimistic views on the consequences of greater international integration

	Old trade theory	*New trade theory*
Optimistic	Greater integration with developed countries will increase the gains from specialization and will reduce wage differentials between unskilled and skilled workers thus improving income distribution	Greater penetration of TNC's and export-oriented firms creates a process of "endogenous irradiation" of modernization (positive spill overs) which gives rise to greater demand for investments in R&D, education and training of the labor force outside the modern sector.
Pessimistic	Greater competition among unskilled-labor-intensive manufacture producers leaves no other option to developing countries but to specialize in low-wage/low value added lines of production.	Equipment investment and innovative technologies increase the returns to skill and performance. Skill and responsiveness to greater demand for performance go together and the capacity of absorb technological innovations falls with skill. Hence, greater segmentation rather than "endogenous radiation" should be expected.

The old trade theory tends to ignore the fact that greater international integration and global outsourcing by TNCs might affect the technological basis of production in developing countries and the standards of quality of products. Both effects might have an *anti-unskilled labor bias* even in developing countries and thus alter the relative prices of factors of production in ways that are different from those resulting from the comparative advantage model. The introduction of these ingredients to the analysis gives rise to the other two views associated with elements of the "new trade theory" in which externalities and external economies of scale and dynamic effects related to learning-by-doing and specialization are important.

One view is optimistic. It is based on *spill over effects* of TNCs and the modernization of industry and the export-led growth regime resulting from greater international integration. The idea here is that gains in efficiency in the modern sector generates intra and inter-sectoral spill overs and backward and forward linkages. Over time, there would be a process of "endogenous irradiation" of modernization which gives rise to greater demand for investments in R&D, education and training of the labor force even outside the modern sector.

The *pessimistic view* stems from some of the isolated effects of greater international integration examined in section 4, in particular the discussion of the two-firms model. The basic elements molding this view is that the process of international integration is governed by technological and product quality standards of the developed countries and that the quality of goods and services depends on the quality of equipments and labor. In a world of mobile capital and technology, competitiveness ultimately depends on the level of investments in infrastructure and human capital. Hence, host countries to TNCs must have the appropriate human capital and infrastructure for the production of goods with certain standards of quality.

However, a distinguishing trait of developing countries is an uneven distribution of human capital among individuals and a large proportion of uneducated labor. In such context, the introduction of innovative technologies and firms producing high quality goods --both demanding skilled and high performance workers-- might increase rather than decrease inequality. Equipment investment and innovative technologies increase the returns to skill and performance. It can be argued that (1) skill and responsiveness to greater demand for performance usually go together and (2) the capacity of absorb technological innovations increases with skill. Hence, there are good reasons not to be optimistic about the extent of positive spill over effects and endogenous irradiation. To the extent that this argument makes

sense, greater segmentation (as measured by widening wage differentials for example) rather than "endogenous irradiation" and technological convergence within countries should be expected.

Section 6: Different views and policy issues

The conclusions and policy implications stemming from the four alternative views presented in Table 4 are very different. In general, the "old trade theory" views would stress the necessity for greater labor market flexibility in order to reduce the costs of transition associated with trade openness. The pessimistic view, in particular, would emphasize the importance of adjusting the cost of labor to the increasing competition between developing countries. In other words, the argument would be that the initial comparative advantages are gradually being eroded by throat-cutting competition among developing countries. As a result, factor prices should adjust implying an overall reduction in labor costs.

"New trade theories" would emphasize the importance of spill over effects, externalities, external economies of scale and learning-by-doing. The optimistic view is that spill over effects of greater international integration of developing countries will lead to an overall up-grading of labor productivity and wages. Even if, because the supply of semi-skilled and skilled workers is rationed, wage differentials between these and the unskilled workers end up increasing, there would be an increase in the absolute wage of all workers.

The pessimistic view is that TNC's and export oriented firms have a greater demand for workers' performance than domestically owned firms producing to the domestic market. Hence, greater international integration could lead to greater segmentation of the labor market and wider wage differentials. Also, to the extent that skill and responsiveness to greater demand for performance go together and the capacity of absorb technological innovations falls with skill, there should not be good reasons to be optimistic about the extent of positive spill over effects.

New trade theories are in favor of productivity-enhancing strategies rather than wage-reducing strategies. This certainly differentiates the old and new theories' views. Among the new theories' views, they differ to the extent that the optimistic view would rely on within-firms strategies and market driven spill over effects. In other words, they would rely on the strategies of the firms themselves to enhance labor productivity and on spill overs as

influenced by firms' response to market signals.

The pessimistic view would not rely as much on market forces. Even if it is true that market signals favor productivity-enhancing strategies and innovation sharing among firms, the signals might not be strong enough to overcome structural weaknesses on the part of workers and firms. Workers and firms might have the incentives but might not have the instruments to engage in up-grading strategies. If this is indeed the case, policies designed to provide the instruments should be implemented. Education and training policies and industrial policies should be put in place to reduce the gaps among firms and among workers in such way that spill overs become possible.

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