

Trade, Multinationals and Labour

Robert Z. Lawrence*

1. Introduction

The theory of international trade suggests that free trade will raise national income. It does not, however, suggest that the incomes of *all* factors of production will rise. Indeed, Stolper and Samuelson (1941) showed that the removal of import barriers could lower the income of the factor of production used relatively intensively in the production of imported products. Therefore, if OECD imports are produced using unskilled labour relatively intensively, freer trade could actually reduce the wages of unskilled workers.

In a second noteworthy application, trade theory also predicts that trade can lead to ‘factor-price equalisation’. Under certain highly restrictive assumptions – in particular that competitive conditions prevail and that technological capabilities are uniform worldwide in both traded and non-traded goods – returns to factors would be equalised around the world.

In principle, these theoretical results were highly relevant to US circumstances during the golden era of the post-war period (1950-1973). Over this period, the US economy reduced its trade barriers and expanded its trade with ‘low-wage’ nations in Europe, Japan and the developing world.¹ Nonetheless, the theory did not excite much attention among US policy makers, because real wages in the United States rose steadily and wage differentials between skilled and unskilled workers actually narrowed. Indeed, over the 1970s, although the US economy became considerably more open (trade doubled as a share of GNP) the premium earned by educated workers actually declined.

In the 1980s, however, the US experience has been different. Real wages have stagnated and relative wages have become more dispersed. In 1973, real hourly earnings of non-supervisory workers measured in 1982 US dollars by the consumer price index (CPI), were \$8.55. By 1992 they had actually *declined* to \$7.43 – a level that had been achieved in the late 1960s. (All subsequent references to ‘dollars’ are to US dollars.) Had real earnings increased at their earlier pace, they would have risen by 40 per cent to over \$12 per hour. Consider real hourly compensation, a more comprehensive measure of the payments to labour because it includes fringe benefits as well as earnings. Between 1973 and 1991, real hourly compensation rose by only 5 per cent. However one measures labour’s income growth, it has clearly slumped since 1973.

A second ominous development in the American economy has accompanied this slump: a dramatic increase in the inequality of earnings based on education, experience

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1. In 1950, compensation in Germany and the United Kingdom was 13 and 17 per cent of that in the United States, respectively. Today, Mexican wages are about 12 per cent of US levels.

and occupation. Bound and Johnson (1992) found that between 1979 and 1988, the ratio of the average wage of a college graduate to the average wage of a high school graduate rose by 15 per cent. Davis (1992) found that between 1979 and 1987, the ratio of weekly earnings of males in their forties to weekly earnings of males in their twenties rose by 25 per cent. The employment cost index (ECI) indicates that between December 1979 and December 1992, the growth of compensation and earnings of white-collar occupations exceeded those of blue-collar occupations by 7.9 and 10.9 per cent respectively. However one distinguishes the skilled from the unskilled, the sharp rise in wage inequality between the two in the 1980s is clear.

In the 1980s, European wage performance differs from that in the United States in one crucial respect – typically, real wages *grew* by 1 to 2 per cent annually. In some countries, however, increased inequality is also evident. According to the OECD (1993), in the UK there was a substantial increase in the ratio of earnings of the highest (90th) to lowest (10th) percentile.² Modest increases in this measure of dispersion also occurred in France, the Netherlands and Sweden. However, in Italy and other Nordic countries no change was discernible while in Germany, low-wage workers (those in the bottom decile) actually experienced relatively more rapid growth than those in the top. Data are also available for some of these countries on wage changes by level of schooling. The premium increased in the 1980s for all countries surveyed besides Japan (where it was unchanged) and the Netherlands (where it fell). Age-earnings profiles increased for all countries in the sample besides Sweden. I have also obtained data on the ratio of wages of manual to non-manual workers in several major European countries (EuroStat 1992). These give a different picture for Germany, showing that between 1978 and 1988 the ratio of manual to non-manual wages fell by 8.1 per cent. They declined by 3 per cent in Italy, but actually rose in Belgium and Denmark.

The OECD (1993) argues that the qualitative similarity in these changes suggests ‘pervasive economic factors are at work’. An important issue in Europe, however, is the degree to which institutional and regulatory factors repressed wage adjustments and instead raised unemployment. The OECD notes that ‘those countries which did not experience an increase in dispersion over the 1980s, Denmark, Finland, Germany, Italy and Norway are countries where national institutions have a particularly strong influence on wage setting’.

What *has* distinguished European labour market performance has been high levels of unemployment, particularly of workers out of jobs for more than 12 months. In 1991 for example, such workers accounted for just 6.3 per cent of the unemployed in the US, but in Germany, France, the United Kingdom and Italy the share was typically about 40 per cent. A second feature is that European employment growth has been virtually confined to the public sector.

Also striking in Europe has been the relative decline in the employment of manual workers in industry in general, and manufacturing in particular. EuroStat data indicate that, between 1978 and 1988, the decline in the ratio of industrial employment of manual to non-manual workers in Germany (-16.1 per cent) and Ireland (-15.1 per cent) was similar to the decline in the ratio of production to non-production workers in United

2. This result is also found by Katz, Loveman and Blanchflower (1992).

States manufacturing (-18.5 per cent), while declines (in the ratio of manual to non-manual workers) were about twice as large in French (-26.8 per cent), Danish (-27.7 per cent) and Italian (-30.4 per cent) manufacturing. The data certainly suggest a trade-off between wage flexibility and employment opportunities.

In both Europe and the United States, alarms have been sounded about the role of trade in this poor labour-market performance. In the United States, the debate over the NAFTA crystallised concerns over wage performance that are best captured by Ross Perot's allusion to the 'giant sucking sound' of jobs as they move southward. One of the chief concerns about the NAFTA was its impetus for what many in the United States see as a major phenomenon – the relocation by multinationals to low-wage countries, or 'runaway plants'. In Europe, while the absorption of low-wage countries such as Spain, Portugal and Greece into the EC proceeded fairly smoothly during the growth phase in the late 1980s, the recessionary environment of the 1990s has sparked similar fears of 'delocalisation' whereby firms relocate to low-wage countries.

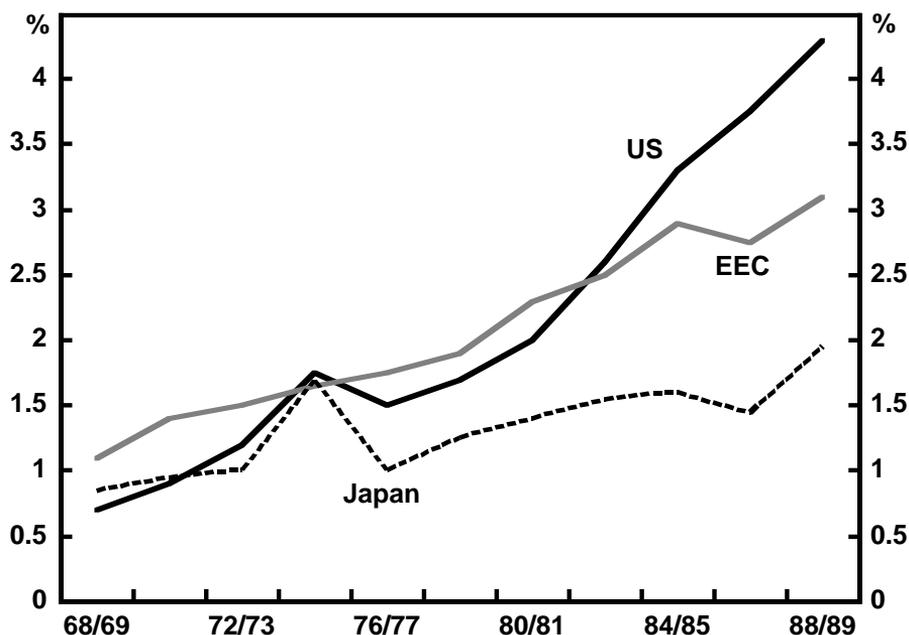
The concerns about international competition in the labour market have been voiced not simply in terms of wages, but also with regard to the regulatory environment that governs employment. In Europe, an important aspect of creating the single market has been the 'social dimension' – the effort to ensure that minimum labour standards prevail throughout the European Union. In France, a furore was raised by the shift of the Hoover corporation from France to Scotland, purportedly attracted by both lower wage costs and lower labour standards. In the European debate about freer trade with Eastern Europe and Asia, concerns have been raised, not simply about low wages, but about 'social dumping' – that is, the downward competitive pressures that are allegedly placed on labour standards as a result of trade. In the United States, concerns about workers' rights have increasingly been reflected in US international trade legislation. Indeed, both France and the US have proposed that worker rights occupy an important role in the post-Uruguay Round agenda.

From the standpoint of the developing economies, these concerns could not have appeared at a worse moment. Since the mid 1980s, these economies have almost universally shifted toward export-oriented, 'market-friendly' policies which are implicitly predicated on the assumption that global markets are available. Similarly, progress in the reconstruction of Eastern Europe and the economies of the former Soviet Union depends critically on their ability to gain access to the markets of the EC.

But is trade in general, and that with developing countries in particular, really responsible for the poor labour-market performance in developed economies? What role has been played by employment and sourcing shifts within multinationals? And what role should changes in labour standards play in addressing these concerns? These are three questions I will discuss in this paper.

The US experience is perhaps the most suitable for detailed analysis. US wages are generally more flexible than those in other countries, and as indicated in Figure 1, compared with the EC and Japan, the US share of apparent consumption of manufactured goods imported from developing countries is higher and has risen more rapidly over the 1980s. In addition, the US remains the world's largest multinational investor. In Section 2 of this paper, therefore, I will consider the impact of trade on average US wage behaviour. In Section 3, I will concentrate on relative wage behaviour in the US,

Figure 1: Manufactured Imports from LDCs
(share in apparent consumption)



although I will introduce evidence from Germany and Japan. I will argue that the role of trade has been surprisingly small. In Section 4, I will introduce evidence on wages and employment in US multinationals both at home and abroad. These data indicate remarkably similar changes taking place in US multinationals worldwide – a finding that is strongly suggestive that technology, rather than trade, is exercising a dominant influence. They also indicate that employment growth within US foreign affiliates abroad has been too small to be viewed as having displaced large numbers of jobs in the United States. The same is true of the growth in value added sourced from abroad. Finally, in Section 5, I consider the issue of labour standards. At a multilateral level, some agreement on basic minimum labour standards could be helpful, both in allaying concerns about the denial of elementary human rights and in limiting the scope for opportunistic protectionist actions. Beyond these minimum standards, however, there are strong reasons for permitting national diversity.

2. Average Wages

2.1 Measuring Compensation

Before explaining average US wage behaviour it is necessary to clarify how wages are measured. The most commonly cited statistic – real average hourly earnings of production workers – shows a *decline* of almost 11 per cent between 1979 and 1991. By contrast, a second commonly cited series – real hourly compensation in the business sector –

shows an *increase* of 1.5 per cent over the same period. These series differ because:

- the average hourly earnings series samples only production or non-supervisory workers, while the hourly compensation series includes all persons engaged in work (including the self employed); and
- the hourly earnings series reflects only wages while the compensation measure includes employers' contributions for social insurance and private benefit plans (including retirement and medical care).

Both differences are important, and the series have diverged because:

- the wages of production workers have risen more slowly than those of non-production workers; and
- for all workers, fringe benefits have increased more rapidly than wages.

The remainder of this section focuses on the aggregate compensation measure.

2.2 International Factors

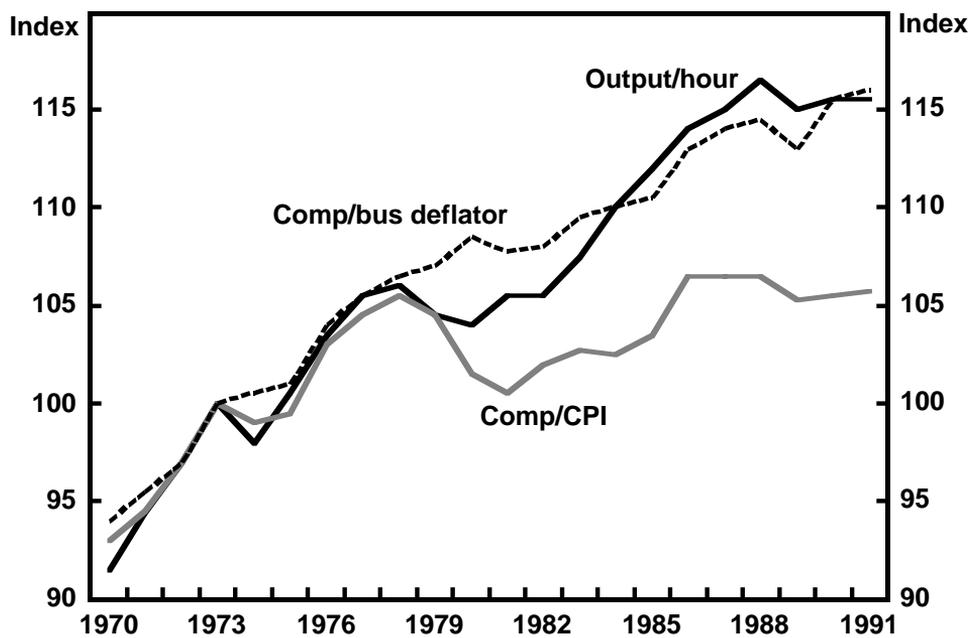
Several economists have ascribed the poor average growth in US wages over the 1980s to international factors. Lester Thurow has argued that slow growth in US manufacturing employment due to the trade deficit in manufactured goods is to blame. Leamer (1994) claims that increased capital formation abroad is leading inevitably to 'wage equalisation' in which American wage rates converge to those in other countries. According to Leamer, this convergence is not benign because it entails not simply a rise in foreign wage levels, but also a decline in average American wage levels. Johnson and Stafford (1993) argue that the erosion of high returns from American technological leadership has been the principle source of the slow rise in American real wages since 1973. However, a careful reading of the data supports none of these views.

It is easy to reject the claim that poor average US wage performance reflects the loss of high-wage manufacturing jobs because of US trade performance. Between 1981 and 1991, the US trade balance in manufactured goods did decline significantly – from a surplus of \$18 billion to a deficit of \$47 billion. But this shift was not large enough to provide much of an explanation for average wages in the economy as a whole. In 1991, the trade deficit was equal to about five per cent of value added in manufacturing. Average hourly earnings in manufacturing were 8.2 per cent higher than those in the private sector generally. (Average weekly earnings were 29 per cent higher.) Since manufacturing accounted for 17 per cent of total employment, shifting an additional $(0.05 * 17)$ 0.85 per cent of employment to manufacturing would have raised average hourly and weekly wages by 0.07 and 0.25 per cent respectively – an amount scarcely large enough to explain the poor wage performance of the 1980s.

2.3 Assessing Compensation Performance

Before turning to the other explanations based on trade it is useful to examine the behaviour of US compensation more closely. As a first approximation, we expect the change in real compensation to match the change in output per worker. Since growth of output per worker in the US did slow down dramatically after 1973, it is reasonable to expect that real compensation would decline in parallel. However, the data suggest that

Figure 2: Output/Hour and Real Hourly Compensation
(1973 = 100)



real compensation failed to match even the slow improvement in average labour productivity growth.

As Figure 2 indicates, between 1973 and 1979, average real compensation (average hourly compensation deflated by the CPI for urban consumers) increased in line with output per hour in the US business sector. However, from 1979 to 1991, the two trends diverged markedly. While output per worker grew by 10.5 per cent – already a very slow pace by historical standards – real hourly compensation grew by only 1.5 per cent.

This divergence could in principle be explained by a shift in incomes from wages to profits. However, in 1991, the share of total compensation in the value added of the business sector was 65.6 per cent – less than one percentage point lower than it was in 1979 (see Table 1). If we deflate nominal compensation by production prices rather than consumption prices, we see that workers in the 1980s *were* basically compensated for the growth in output per worker. If workers had chosen to consume the products they actually produced, they could have raised their real compensation by as much as the improvement in productivity growth. This finding is inconsistent with Leamer's argument that international competition is bringing US wages down to foreign levels. If Leamer was correct, we would expect to see real product wages growing more slowly than productivity.³

3. In addition to arguing that trade has reduced average US wage rates, Leamer (1994) argues that trade has lowered the relative wages of unskilled workers. This claim will be discussed below.

Table 1: Real Compensation and Output

Year	Earnings/ CPI (1)	Comp/ CPI (2)	Output/ Hour (3)	Comp/ POut (4)	Comp/ POut-I (5)	Comp/ CPI-Sh (6)	FWTOT (7)	Comp Share (8)	GDP87/ Hours (9)
1970	98.0	89.4	87.5	88.5	86.1	88.1	126.5	67.0	89.3
1971	100.4	91.2	90.4	89.7	86.9	89.8	124.2	65.7	92.5
1972	104.3	93.9	93.2	91.8	89.4	92.7	120.0	65.2	93.9
1973	104.5	96.1	95.6	94.0	91.6	94.4	116.9	65.1	95.4
1974	101.4	95.1	93.9	94.3	92.0	93.2	107.1	66.5	94.7
1975	99.1	95.8	96.0	94.3	92.9	94.1	106.9	65.0	97.9
1976	100.7	98.8	98.8	97.3	96.0	96.9	107.3	65.2	100.0
1977	102.1	100.3	100.5	98.7	98.0	98.4	103.8	65.0	100.7
1978	102.7	101.4	101.1	99.4	99.2	100.3	102.0	65.1	100.6
1979	100.0	100.0	100.0	100.0	100.0	100.0	100.0	66.2	100.0
1980	95.2	97.5	99.3	101.0	100.8	99.2	91.7	67.3	100.4
1981	93.9	96.8	100.5	100.4	101.0	98.9	93.9	66.1	101.5
1982	93.8	98.0	100.7	102.1	102.1	100.6	97.6	67.1	101.8
1983	94.9	98.5	102.9	102.4	101.1	100.5	101.5	65.9	103.9
1984	94.3	98.4	105.3	102.6	101.5	100.7	104.4	64.5	104.4
1985	93.8	99.3	106.8	103.7	101.9	102.2	105.7	64.3	105.4
1986	94.1	102.4	109.0	106.6	104.7	106.2	107.6	64.7	107.8
1987	93.2	102.3	110.1	107.5	105.4	106.4	102.5	64.6	107.8
1988	92.4	102.4	111.1	108.2	105.9	106.8	102.7	64.5	108.4
1989	91.8	101.0	110.2	107.1	104.5	105.3	102.0	64.3	108.4
1990	90.3	101.1	110.5	108.8	105.6	105.4	100.2	65.2	109.2
1991	89.4	101.4	110.5	109.5	105.1	105.8	101.5	65.6	110.4

Note: Earnings = average hourly earnings
 CPI = CPI for all urban consumers
 Comp = Average hourly compensation
 CPI-Sh = CPI minus shelter component
 CompShare = share of compensation
 in business output value added
 Output = business sector output
 (excludes housing)

POut = deflator for output
 POut-I = deflator for output minus investment
 FWTOT = ratio of fixed weight price index of
 exports of goods and services to price index
 of imports
 Hours = hours worked in business sector

The wage gap illustrated in Figure 2 is thus almost totally due to a discrepancy between the production and the consumption wage. When nominal compensation is deflated by a *production* price index (in this case the business sector GNP deflator) rather than by the *consumer* price index, this 'production wage' closely tracks the growth in output per worker from 1979 to 1991.

Apparently, the prices of the products that workers consume have risen more rapidly than those which they produce. Three major differences in the composition of the deflators for production and consumption compensation merit attention. Consider first, investment goods. The consumer price index which is used to measure real earnings does

not, of course, reflect the prices of investment goods. The prices of the most rapidly growing investment goods, computers, have declined precipitously. Simply subtracting gross domestic investment from business sector output provides a measure of consumption goods output. The implicit deflator from this series suggests that between 1979 and 1991, real compensation in terms of consumer goods increased by 5.1 per cent (versus 1.5 per cent using the CPI for all urban consumers). Thus about half of the shortfall between product and consumption compensation can be explained by the relative price decline in investment goods.

A second major compositional difference between the CPI and the business sector output used in measuring productivity is housing. Output of owner-occupied housing is not included in the business-sector output measure used by the Bureau of Labor Statistics (BLS) to estimate business-sector productivity growth. However, the price of shelter is a major component of the consumer price index. Between 1979 and 1991, the index of shelter prices increased by 17 per cent more rapidly than the rest of the CPI. If we deflate hourly compensation by the CPI minus shelter, we obtain an estimated increase in real compensation between 1979 and 1991 of 5.8 per cent – which is similar to the estimate using the business deflator minus investment goods.

The third major difference between production and consumption prices involves the goods and services that enter international trade. If the production wage increases match domestic productivity growth as they appear to have done, the level of real compensation will depend on the impact of import prices on total consumer price inflation. This impact can be picked up by the terms of trade (the ratio of export to import prices). The broadest measure of the terms of trade (using the GDP deflators for exports and imports of goods and services) shows an improvement of 5.2 per cent, while the fixed-weight price measures show an increase of 1.5 per cent. This finding is inconsistent with the view of Johnson and Stafford (1993) that an erosion of the rents from US technological leadership explains the slow growth in US wages over this period. If this were the case, the international buying power of US workers (as captured by the ratio of import to domestic wages) would have risen more slowly than their ability to produce domestically produced goods.

In sum, the evidence indicates that had American workers chosen to consume the products they produced, their real compensation would have increased by about ten per cent over the 1980s – about as much as output per worker in the business sector. However, real wage growth lagged behind productivity growth for two main reasons. First, much of the productivity growth occurred in industries producing capital goods such as computers, which workers do not generally buy. Second, there were increases in the relative price of housing (which workers consume but do not produce). International trade played no role in this poor average wage growth. Over the 1980s, the prices of US exports actually rose more rapidly than the prices of the goods the United States imports.

It is noteworthy that the slowdown in US productivity growth has been centred in the services sectors, most of which are *not* exposed to international competition. Productivity growth did slump throughout the economy between 1973 and 1979 but, since 1979, both multi-factor and labour productivity in manufacturing have returned to their post-war pace. By contrast, productivity in the rest of the business sector has stagnated. Indeed,

between 1979 and 1988, according to the BLS, almost *all* productivity improvements, estimated on a multi-factor productivity basis, took place in manufacturing. Similarly, there was a substantial divergence between the growth of GDP per worker in the economy as a whole and in manufacturing. If demand for manufactured goods has an elasticity of less than unity, faster relative productivity in manufacturing will lead to a decline in manufacturing employment.

3. Trade and Wage Inequality

Other analysts have suggested that trade (or globalisation) helps explain the growing *inequality* in US wages. Reich (1991) has argued that global competition has bifurcated American workers, and thereby American society, into two groups: high-earning ‘symbolic analysts’ whose talents are rewarded by globalisation; and the mass of ordinary production workers whose earnings are depressed by it. And referring to growing wage disparity, Murphy and Welch (1993) found a correspondence between the patterns of wage growth and durable goods performance and conclude that ‘the evolving pattern of international trade is perhaps a primary cause of recent wage changes’.

3.1 Factor Composition and Quantity of Trade

Studies that have tried to quantify the relationships more precisely, however, have generally concluded that the impact of trade is small. In particular, Borjas, Freeman and Katz (1991, p. 237) estimate the quantities of educated and uneducated labour embodied in US manufactured goods exports and imports. They concluded that trade flows explained at most 15 per cent (i.e. 1.9 percentage points) of the 12.4 per cent increase between 1980 and 1988 in the earnings differential between college-educated workers and their high-school-educated counterparts. Moreover, given the decline in the manufactured goods trade deficit from \$106 billion in 1988 to \$47 billion in 1991, their method would attribute to trade less than one percentage point of the disparity in relative wage growth by that time. (In 1993 the deficit had increased again to \$91.5 billion.)

When one considers with whom America trades, it is not surprising that estimates of the factor supplies embodied in US manufacturing trade indicate relatively small effects on wages. In 1990, for example, 70 per cent of America’s manufacturing imports came from OECD countries – countries with endowments and wage levels very similar to America’s.⁴ US imports from developing countries did increase rapidly over the decade but, again, what needs to be borne in mind is the magnitude. In 1990 for example, these imports amounted to \$115.8 billion or 2.1 per cent of US GNP versus 1.2 per cent in 1981.⁵ It is hard to see how a change of this magnitude (less than one per cent of GNP) could have a large impact on the overall labour market.⁶ In a recent study, for example,

4. In 1980, hourly compensation in other OECD countries was 83 per cent of US levels; this dropped to 64 per cent by 1985 but then increased to 103 per cent by 1990.

5. Imports of manufactured goods into the EC in 1988/89 amounted to \$89 billion, less than two per cent of GNP.

6. US exports to developing countries have also grown rapidly. Over the 1980s the US trade *deficit* in manufactured goods trade with developing countries swung by \$45.55 billion or 0.8 per cent of GDP.

Sachs and Shatz (1994) estimate that trade with developing countries reduced US manufacturing employment by 5.7 per cent between 1978 and 1990, a number equal to about one per cent of employment overall.

Wood (1991, 1994) has challenged this methodology on the grounds that the use of the labour-intensity measures using developed-country production data assumes that imports and domestic products are similar products. Wood argues, on the contrary, that goods imported from developing countries are not close substitutes for those produced in developed countries and are, therefore, far more labour intensive. He therefore objects to the use of input coefficients from developed countries to estimate the job content of imports. Wood argues instead that the input coefficients of developing countries (with some adjustments) should be used. Moreover, he argues that this problem exists not only for direct manufacturing inputs, but also for indirect inputs from other sectors. In addition, he maintains it holds for both goods and services imports. Taking all these factors into account leads him to conclude that the employment, and thus wage impact, is larger than conventional estimates suggest, although he still finds that the effect of the trade of the North with the South is 'much smaller than is popularly supposed'.

But take an extreme version of Wood's hypothesis. Suppose *all* the growth in US imports over the 1980s reflects imports of products that were *not* produced in the United States in 1980 at all. Had imports from developing countries not increased, therefore, Americans would have spent their money on *other* domestic (and imported) products. This counterfactual of the Wood hypothesis suggests that imports may have displaced products that were not unusually labour intensive.

If Wood is correct, as Sachs and Shatz (1994) note, industries in which trade with developing countries have a growing share should record unusually rapid increases in skill intensity as the more unskilled-labour intensive activities move offshore. In fact, Sachs and Shatz do not find unusually large increases in the skill intensity of low-skill sectors.⁷

3.2 Prices

In any case, there is a problem in using *ex post* trade flows to make these calculations. Such flows do not necessarily capture the effect of price pressures that operate through trade.⁸ If international competition forced US workers to lower their wages, for example, domestic firms might be able to prevent imports from rising. By examining only trade flows, as these calculations do, we would conclude that trade had no impact on wages. In principle, therefore, even if trade flows are small, changes in traded goods prices could have large effects on the prices (and thus factor returns) of domestically-produced substitutes. As Bhagwati (1991) has emphasised, relative price changes are the critical intervening variable in the chain of causation from trade to factor prices.

7. Wood also argues that the pressures from international competition could spur technological change that is particularly rapid in labour-intensive products. The evidence on this question is somewhat more supportive of Wood. As shown by Lawrence and Slaughter (1993, Figure 10) there is a positive slope to a regression of total-factor productivity against the ratio of production to non-production workers. Leamer (1994) and Sachs and Shatz (1994) report similar results.

8. Deardorff and Staiger (1988) demonstrate the conditions under which this methodology is appropriate. It is necessary that both preferences and production technology are Cobb-Douglas.

Some studies have estimated the impact of changes in traded goods prices on wages in particular industries. Ravenga (1992) finds statistically significant effects, although she estimates the impact on wages to be much smaller than the impact on employment. While this analysis is informative, it is really testing for the effect of trade on returns to industry-specific human capital, rather than the general attributes such as education which are of interest here. To do this it is necessary to explore general equilibrium effects.

If trade lowered the relative wages of unskilled workers, according to the Stolper-Samuelson theorem, we would expect to see a decline in the relative price of goods which are produced using unskilled labour relatively intensively. In Lawrence and Slaughter (1993), however, we find that over the 1980s, the relative import and export prices of unskilled-labour-intensive goods actually increased slightly. In addition, Lawrence and Slaughter noted that if trade were the operative factor, we would expect to see a contraction in labour-intensive industries, but we would also expect to see the remaining sectors taking advantage of this labour, by using unskilled labour relatively more intensively. In fact, we note that throughout US manufacturing, there has been a pervasive upward shift in the ratio of skilled to unskilled labour. Our conclusion, therefore, is that the simple Stolper-Samuelson process due to trade does not provide an adequate account of the growing wage inequality. Instead, we interpret the evidence as consistent with a bias in manufacturing technology towards the more intensive use of skilled labour. Our conclusion is supported by Berman, Bound and Griliches (1992) and Bound and Johnson (1992) who find that trade played basically no role in America's wage changes in the 1980s, and ascribe these changes to technological change and changes in unmeasured labour quality. I should stress, however, that our paper was designed to examine the role of trade and not, directly, to provide evidence on technological change. Moreover since we only examined data for the manufacturing sector, we could not resolve the role played by technology or other factors in economy-wide wage behaviour. In addition, I should stress that we did not argue that evidence of an increase in the ratio of skilled to non-skilled workers by itself would constitute sufficient basis to reject the claim that Stolper-Samuelson effects were reducing the wages of unskilled workers. For this purpose the price evidence is crucial.

As might have been anticipated, given its surprising conclusions, our work has been attacked by several authors. First, Leamer (1994) has argued that our use of production and non-production workers as proxies for skill levels is misleading because non-production workers includes low-skill occupations such as secretaries, while production workers could be supervisors with considerable skill. However, as Sachs and Shatz (1994) and Bound and Johnson (1992) show quite convincingly, this measure actually does fairly well in tracking other measures of skill. Moreover, the evidence indicates that in US manufacturing, the rapid increase in non-production workers was actually concentrated in the more highly educated professional and managerial categories. Between 1983 and 1990, for example, manufacturing employment of managers and administrators increased by 25.9 per cent (professionals by 12.9 per cent), while employment of non-sales white-collar workers actually declined by 3.0 per cent.

Cepii (1994) argues that our finding of a rapid increase in the ratio of skilled to unskilled workers simply reflects the fact that the relative supply of skilled workers increased rapidly in the 1980s. But, as reported in Table 2, the shift we find occurred

Table 2: Changes in Ratio of Production to Non-Production Workers

Year	Production-worker employment to non-production-worker employment				
	Weighted average ratios			Decomposition of change ^(a)	
	Value	Change	% Change	Between industries %	Within industries %
1959	3.23	—	—	—	—
1969	3.00	(0.22)	-6.9	25.1	74.9
1979	2.79	(0.22)	-7.2	-5.9	105.9
1989	2.27	(0.51)	-18.5	30.3	69.7
Change over entire period		(0.95)	-29.6	-50.6	150.6

Note: (a) Based on the following standard decomposing formula: total change (industry x) = (change in employment share * mean production:non-production ratio in period) + (change in production:non-production ratio * mean employment share for period).

Source: NBER Databank.

within most industries and not only in the aggregate. As we know from the Rybcynski Theorem, *given product prices*, changes in relative factor supplies affect relative product supplies rather than relative factor use. Thus, given product prices, an increase in the supply of skilled workers raises the supply of skill-intensive goods, but does not change the ratios of skilled and unskilled workers employed in each industry. Moreover, if this relative supply was important in changing relative product prices it should have been associated with a *decline* in the relative wages of skilled workers – exactly the opposite of what happened. The fact that manufacturers are using more skilled labour, despite its relatively higher price, strongly supports the hypothesis that technological change in manufacturing played a role in the wage change.

Sachs and Shatz (1994) raise questions about our use of the price data. In particular, they argue that computer prices should not be included in the sample. When they drop computers, they obtain a negative but statistically insignificant relationship between import price changes and skill intensity and they note that the size of the effect is small. Similarly, if computer price changes are omitted, instead of rising slightly, the ratio of manufacturing producer prices weighted by production-worker employment, to prices weighted by non-production workers falls slightly. While we would agree that computer prices are difficult to measure, we are not convinced that this sector should be given no weight at all in the explanation.

Sachs and Shatz also claim, on the basis of their regressions omitting the computer industry, that there was a negative relationship between total-factor productivity growth and skill intensity. They conclude ‘TFP growth was less on average in high-skilled than low-skilled industries’ and argue, therefore, that technological change was causing wage differentials to narrow rather than widen. Again, the impact of the computer industry is important. In Lawrence and Slaughter (1993), we found that, including computers, the gap between weighted averages of high-skilled and low-skilled productivity growth was positive and thus concluded the impact was the opposite.

3.3 Additional Evidence

I have now undertaken similar investigations of the price behaviour of both German and Japanese imports and producer prices. While not as disaggregated as the US data, these data tell the same story. As shown in Table 3, when price changes over the 1980s are regressed against the ratio of unskilled to skilled employment, they indicate a *positive* rather than negative relationship (that is statistically significant in the case of wholesale prices but not import prices). Similarly, as shown in Table 4, for both countries when industry wholesale and import prices are weighted by production-worker shares, they show larger increases (or smaller declines) than when weighted by non-production workers. Questions might be raised since these data reflect industrial classification systems which include refined petroleum as a manufactured product. In addition, there are the usual issues relating to the inclusion of computers. However, as reported in Table 4 for the weighted averages, dropping these observations does not affect the results.

In the case of Germany, I was also able to obtain unit-value data that could be matched with industry data at a more disaggregated level. Again the data indicate no decline in the relative price of manual-worker-intensive products.

Table 3: Regressions of Price Changes on Ratios of Production to Non-Production Workers in Japan and Germany

Regression	Dep. variable	Constant	JP/NP	GM/NM	R ²	F-stat	No. obs
Wholesale prices (1980-90)							
1	%WP	-14.407 (-1.982)	5.919 (1.851)		0.1599	3.43	20
2	%WP	-11.197 (-1.109)		11.896 (2.871)	0.3547	8.24	17
Import prices (1980-90)							
1	%MP	-29.906 (-2.248)	6.653 (1.137)		0.067	1.29	20
2	%MP	6.399 (0.789)		3.12 (1.012)	0.045	1.02	24

Note: %WP is the percentage change in wholesale prices; %MP is the percentage change in import prices; JP/NP is the Japanese ratio of production to non-production workers; and GM/NM is the German ratio of manual to non-manual workers. Industry data generally corresponds to SITC 2-digit classification.

Sources: Eurostat Labour Costs 1988: Principal results. v1. CECA-CEE-CEEA, Luxembourg, 1992. Ministry of Labour (Japan), *December 1989 Survey*; Statistisches Bundesamt Wiesbaden, *Reihe 8: Preise und Preisindizes fuer die Ein- und Ausfuhr*, 1980, 1985, 1990; Statistisches Bundesamt Wiesbaden, *Reihe 6: Index der Grosshandelsverkaufspreise*, 1980, 1985, 1990; Research and Statistics Department, Bank of Japan, *Price Indexes Annual*, 1980, 1985, 1990.

Table 4: Employment-Weighted Percentage Changes in Wholesale and Import Prices for Japan and Germany (1980-1990)

Japan	Percentage change	
	Wholesale prices	Import prices
All manufacturing industries		
Non-production weights	-5.60	-18.23
Production weights	-3.90	-17.29
Difference (prod less non-prod)	1.70	0.94
Without Office machines		
Non-production weights	-7.09	-18.69
Production weights	-4.72	-17.50
Difference	2.37	1.19
Without Petroleum products		
Non-production weights	-5.49	-18.02
Production weights	-3.84	-17.19
Difference	1.65	0.83
Without Office mach./petroleum prod.		
Non-production weights	-6.98	-18.45
Production weights	-4.66	-17.39
Difference	2.32	1.06
Germany		
	Percentage change	
	Wholesale prices	Import prices
All manufacturing industries		
Non-manual weights	23.98	15.24
Manual weights	26.03	17.07
Difference (man less non-man)	2.05	1.83
Without Office machines		
Non-manual weights	24.79	15.38
Manual weights	26.21	17.11
Difference	1.42	1.73
Without Petroleum products		
Non-manual weights	24.15	15.55
Manual weights	26.11	17.20
Difference	1.96	1.65
Without Office mach./ petroleum prod.		
Non-manual weights	24.97	15.70
Manual weights	26.28	17.24
Difference	1.31	1.54

Note: Non-production and non-manual weights weigh each industry's price change by that industry's share of total manufacturing employment of non-production and non-manual labour. Production and manual weights weigh each industry's price change by that industry's share of total manufacturing employment of production and manual labour. Industry data generally correspond to SITC 2-digit classification.

Mishel and Bernstein (1994) question whether the shift towards the relatively more intensive use of skilled labour in the 1980s is any greater than it was in earlier decades. In Lawrence and Slaughter we provided a chart that shows an acceleration in the 1980s. I can report here additional evidence that supports our view. The shift towards the more intensive use of non-production workers in the 1980s was both larger and more pervasive than in the 1970s and 1960s (see Table 2).⁹ The ratio of production to non-production workers decreased in 87 per cent of the three digit SIC codes in the 1980s compared with 78 per cent in the 1970s and 62 per cent in the 1960s. In addition the average decrease was 18.5 per cent in the 1980s compared with 6.9 and 7.2 per cent in the 1960s and 1970s respectively. Of course, an increase in the manufacturing average could reflect either a change in the mix of industries or in the ratio within industries. As Table 2 indicates, both factors were at work. However, 69.7 per cent of the shift occurred within industries. Since this shift occurred despite the fact that relative wages of non-production workers actually increased, it appears to be strongly suggestive of a skilled-labour-using technological shift that was concentrated in the skill-intensive sector of manufacturing. Mishel and Bernstein also raise the question of whether this change in skill intensity should be described as technological change. In particular, they find an absence of evidence indicating an association with investment and other hard measures of technical change such as R&D, capital accumulation and computerisation, and stress the importance of distinguishing developments in manufacturing from those in the rest of the economy.

I believe both the points they make are important. First, if this evidence is correct, those arguing for a major role for technology must apply a broader interpretation that includes new labour-management relations and work organisation. Second, I believe that the divergent productivity performance between the manufacturing and services sectors in the United States is a major structural feature of the US economy in the 1980s. Historically, relative productivity growth was faster in goods than in services. But this difference has widened in the 1980s when almost all the improvements in total-factor productivity in the business sector were confined to manufacturing. If the demand for manufacturing goods is inelastic, relatively rapid increases in manufacturing productivity will reduce the demand for manufactured goods workers. With no bias in this change, since production workers are relatively intensively employed in manufacturing, this will reduce the demand for production workers. In combination with a shift within manufacturing towards production-worker-saving technical change concentrated in non-production-worker sectors, the impact on relative wages could be considerable.

There remains the issue of whether technological change itself has been affected by trade. It is noteworthy, that while US productivity growth in manufacturing recovered in the 1980s, it did not exceed the pace it achieved prior to 1973. This could reflect a spur from international competition offsetting a more general slowdown, or it could simply reflect a return to previous performance. More generally however, the links between trade pressures and productivity growth have not been adequately explored. Nonetheless, since the relative price of unskilled labour has been declining, we might expect the endogenous response of technology to be a substitution towards, rather than away from, using unskilled labour.

9. Though perhaps not larger than in the 1950s. Sachs and Shatz (1994) show a rapid increase between 1947 and 1960.

Finally, an alternative interpretation of the rising ratio of non-production to production workers is that it represents increased foreign outsourcing. Indeed, if the production of labour-intensive activities were moved abroad this, rather than a change in technology, could explain the rise in the ratio of non-production to production workers found in US manufacturing. If this was the case, we would expect to find smaller shifts within industries. However, in Lawrence and Slaughter (1993) we found the shifts as pervasive at the 4-digit SIC level as at the 3-digit. Moreover, Berman, Bound and Griliches (1992) note that, according to the 1987 Census of Manufacturing, very little of the materials outsourced came from the same SIC 3-digit industry as the establishment itself. This conclusion is also supported by the evidence on multinationals introduced below.

4. US Multinationals

As reported in Table 5, US firms with foreign operations have not contributed to employment growth within the United States over the past decade – a remarkable result given the rise of about 30 per cent in US employment during this time.¹⁰ These firms are particularly important in the US manufacturing sector – indeed they account for more than half of all manufacturing employment. However, between 1977 and 1989, their manufacturing employment in the US fell 14 per cent (from 11 to 10.13 million); considerably faster than the drop of 1.2 per cent in overall manufacturing employment over the same period.

This sluggish employment growth in US multinationals has been attributed by many Americans to the impact of their foreign operations. It is widely perceived in the US that many of the jobs formerly in these firms have moved abroad. Drawn by low labour costs and low labour standards, MNCs are seen as having relocated their production towards low-wage countries. In particular, the jobs of blue-collar workers are viewed as vulnerable to this development. Such international outsourcing could, in principle, provide an alternative explanation of the widespread decline in *both* relative blue-collar wages and in the ratio of blue to white-collar workers employed in US manufacturing.

The data on US multinational activity are collected in extensive and comprehensive benchmark surveys by the Bureau of Economic Analysis (BEA) in 1977 and 1989. These data provide an unusually comprehensive view of developments world-wide in an important group of actors. The data should, however, be treated with care, particularly because the aggregate level at which I will report them here could conceal important compositional changes by country and industry. In addition, all activities of each firm are ascribed to a single industry, which could lead to misclassification of some activity.

If outsourcing is important, the decline in blue-collar intensity in the US should be associated with an increase in blue-collar intensity abroad. In addition, as viewed through the eyes of the Stolper-Samuelson paradigm, if developing countries lower their trade barriers and increase their specialisation in unskilled-labour-intensive products, in developing countries, the relative wages of production workers should rise, while in developed countries they should fall. In addition, we might expect to see an important

10. In 1989, total non-bank multinational corporation (MNC) employment in the United States was 18.8 million, about the same as the 18.9 million in 1977.

increase in the share of sales by foreign affiliates going to the United States. On the other hand, if global changes in technology were dominant, we should see *parallel* increases in the ratio of blue to white-collar employment in the US and in the rest of the world, and similar movements in wages.

Employment and compensation data for US multinationals are reported in Table 5. Several features are noteworthy. In 1989, US manufacturing multinationals employed over 13.3 million people, about a quarter of whom were in their foreign affiliates. The data suggest that overall multinationals are not necessarily attracted abroad simply by cheap labour; indeed only about one third of US MNC affiliate manufacturing employment is in developing countries. Nonetheless, within developing countries, MNCs do use production workers relatively more intensively than in developed countries and, on average, production workers are paid about half, rather than three-quarters, the compensation of non-production workers. It is noteworthy that the ratio of production to non-production workers in developing countries in 1989 of 1.7 was very similar to the ratios in Europe and Canada of 1.6 and 1.76 respectively in 1977.

There is a widespread view that since both technology and capital are increasingly mobile, productivity is as high in US multinationals abroad as in the United States. If this is the case, we might expect to see lower wages per worker but similar levels of output per worker. As reported in Table 6, measured in current US dollars, output per employee in developing countries in 1989 was actually about 40.3 per cent of output per employee in developed countries. By contrast compensation per employee averaged 28.5 per cent of US levels. (Production workers received 22.7 per cent of the compensation of their US counterparts; non-production workers 37 per cent, while non-wage income per worker was 49.7 per cent of US levels.) Since MNCs actually contribute their capital in the form of know-how, it should be expected that the share of non-wage income will be higher in their foreign operations. Moreover, these data certainly dispel the notion of similar productivity levels in developed and developing countries.

Consider, now, changes in the data between 1977 and 1989 reported in Table 5. These do not support the common perception that overseas employment in US-owned manufacturing foreign affiliates has increased. Indeed, employment in the majority-owned manufacturing foreign affiliates of US MNCs actually declined by 14 per cent; a decline similar to that experienced in their US parents. This decline was mainly due to shrinkage in the European operations of US MNCs where total employment fell by 23 per cent and production-worker employment plunged by 31 per cent. Employment growth in US manufacturing MNCs in developing countries was more robust. Between 1977 and 1989 an increase of 5.9 per cent was recorded. However, the overall magnitude of employment in these US foreign affiliates is relatively small. The aggregate rise in employment was just 60,000. This employment growth is small when compared with the drop of 1.7 million that occurred in US manufacturing parents over the same period and the 500,000 drop that occurred in manufacturing foreign affiliates over the same period. The overall share of developing countries in the employment of US majority-owned foreign manufacturing affiliates increased from just 27 to 34 per cent and their share in the worldwide employment of manufacturing MNCs (i.e. in both US parents and foreign affiliates) increased from just 6.8 to 8.1 per cent.

Table 5: US Multinationals

	Employment figures ('000)																
	Total			Production workers			Non-production workers			Employment ratios			Compensation ratios				
	1977	1989	Change %	1977	1989	Change %	1977	1989	Change %	Prod. workers emp/ non-prod. workers emp	1977	1989	Change %	Prod. workers comp/ non-prod. workers comp	1977	1989	Change %
United States ^(a)																	
Total ^{(b)(c)}	67,344	90,644	34.6	55,179	73,474	33.2	12,165	17,170	41.1	4.54	4.28	-5.7	—	—	—	—	-6.8
Manufacturing	19,682	19,426	-1.3	14,135	13,257	-6.2	5,547	6,169	11.2	2.55	2.15	-15.7	n.a.	n.a.	—	—	—
Multinationals ^(d)																	
Total	18,885	18,765	-0.6	n.a.	n.a.	—	n.a.	n.a.	—	n.a.	n.a.	—	n.a.	n.a.	—	—	—
Manufacturing	11,775	10,127	-14.0	7,257	n.a.	—	4,518	n.a.	—	1.61	n.a.	—	0.78	n.a.	—	—	—
Foreign affiliates ^(e)																	
Majority-owned																	
Manufacturing affiliates in:																	
Developed countries	2,754	2,167	-21.3	1,695	1,196	-29.5	1,059	971	-8.3	1.60	1.23	-23.1	0.75	0.66	-10.8	-10.8	-10.8
Canada	562	455	-19.2	358	274	-23.5	204	181	-11.5	1.76	1.52	-13.6	0.86	0.81	-5.2	-5.2	-5.2
Europe	1,951	1,509	-22.6	1,202	828	-31.1	749	681	-9.1	1.60	1.22	-24.2	0.70	0.63	-10.0	-10.0	-10.0
Japan	40	75	86.6	14	23	62.0	26	52	99.7	0.53	0.43	-18.9	0.75	0.69	-8.5	-8.5	-8.5
Aust.-New Zealand-S. Afr.	201	129	-35.8	122	71	-41.3	80	58	-27.4	1.53	1.23	-19.1	0.78	0.68	-12.5	-12.5	-12.5
Developing countries	1,019	1,079	5.9	675	679	0.6	344	400	16.4	1.96	1.70	-13.6	0.47	0.41	-12.8	-12.8	-12.8
Total	3,773	3,247	-14.0	2,371	1,875	-20.9	1,403	1,371	-2.2	1.69	1.37	-19.1	0.68	0.59	-14.2	-14.2	-14.2

Table 6: US Manufacturing Foreign Affiliates: Output and Employment (1989)

	Output \$USm	Employees	Comp. per worker \$US	Net income per worker \$US	Output per worker \$US
Developed countries					
All workers	143,244	2,167,300	33,028	12,587	66,093
Production workers	—	1,196,100	26,943	—	—
Non-production workers	—	971,200	40,523	—	—
Developing countries					
All workers	28,764	1,079,400	9,404	6,250	26,648
Production workers	—	679,200	6,110	—	—
Non-production workers	—	400,200	14,955	—	—
Ratio of developing to developed countries for:					
Compensation per worker					
All workers		0.28			
Production workers		0.23			
Non-production workers		0.37			
Gross product per worker					
		0.40			
Net income per worker					
		0.50			

Sources: US Department of Commerce Publications - *US Direct Investment Abroad 1989 Benchmark Survey*, and *Survey of Current Business*, February 1994.

What about production-worker employment in these affiliates? Of the 60,000 growth in employment overall, only 4,000 occurred in the employment of production workers. As estimated by Slaughter (1994), declines in production-worker employment occurred in Europe (-370,700), Central and South America excluding Mexico (-75,300), and South-East Asia (-6,100). In Mexico, production worker employment increased by 80,900. In Asian countries, while increases were recorded, they were surprisingly small – Malaysia (15,600), Singapore (10,400) South Korea (3,900) and Thailand (11,700). There is, therefore, little evidence that on balance large numbers of production worker jobs are shifting within US multinationals away from the US towards the developing countries.

The ratio of production to non-production workers employed in US manufacturing operations worldwide has fallen precipitously. Indeed the declines are of similar magnitude in US manufacturing parents (-15.7 per cent) and in their affiliates in developing countries (-13.6 per cent). The declines were particularly large in Europe (-24.2 per cent) and in Australia, South Africa and New Zealand (-19.1 per cent). Only

in Mexico did the ratio increase. There were also declines in this ratio in most major industries. According to Slaughter (1994) who estimated these changes at a 3-digit level, three industries were exceptional and did experience both rising foreign employment in production workers and falling ratios of non-production to production workers. These were tobacco products (+4,000, -15.7 per cent), the 'other' subset of chemical products (+10,900, -25.4 per cent) and computers and office equipment (+37,500, -27.4 per cent).¹¹

As I noted above, if the Stolper-Samuelson story were dominant we would expect to see the relative wages of production workers moving in opposite directions in developed and developing countries. Instead, what we see is that, on the contrary, relative wages of production workers have fallen worldwide. *Together the picture that emerges appears to be far more consistent with the notion of a common shift in technology rather than of expanding trade. Worldwide, we see a rise in the relative employment of non-production workers despite the increase in their relative wage.*

More recent data, which reflect the relatively earlier occurrence of recession in the United States, show that overseas employment in US MNCs was more robust than in US parents. Between 1989 and 1991, US-based employment in multinational parents declined by 5.1 per cent (987,000). By contrast, employment in majority-owned manufacturing affiliates increased by 1.6 per cent (50,700). It would be erroneous to assume a causal connection between these developments, but even if one were to make such a connection, less than 10 per cent of US employment loss could be accounted for by jobs that were transferred abroad.

Technological change also appears to be reducing the growth prospects of very large firms. Increasingly, large US firms are downsizing, and slimming down only to those core activities which are essential to their operations; less vital activities are performed by smaller and more flexible suppliers. Figure 3 gives a picture of the quantitative importance of various forms of outsourcing. The corollary of a change in outsourcing is a change in the domestic and foreign content of MNC output, shown in Table 7.

As might be expected for a period in which the US trade deficit increased, between 1982 and 1989 there was a rapid increase in the purchases of manufactured goods by US-based MNCs from their foreign affiliates (Figure 3, upper panel). This increased from \$25 billion in 1982 to \$61.2 billion in 1989. Purchases from unaffiliated foreigners increased even more rapidly from \$16.1 to \$45.3 billion. While the increase has been rapid, these imports still represent only a small share of the total sales of US MNC parents, increasing from 4.1 per cent in 1982 to 6.8 per cent in 1989.¹² Moreover, these numbers refer to purchases from both developed and developing countries.¹³ Manufactured imports from *developing* countries were roughly a third of these shares. These effects are thus simply too small to have had the alleged employment and wage-shift

11. Specifically, 'other' chemical products include SIC 285, 288 and 289.

12. Gross product in US manufacturing was \$647 billion in 1982 and \$1004.6 billion in 1989.

13. Sales of US foreign affiliates of manufactured goods from developing countries to all US purchasers increased from \$7.5 billion in 1982 to about \$20 billion in 1989.

Figure 3: Sourcing Comparison for US Multinationals and their Majority-Owned Affiliates

(manufacturing only; \$US billion)

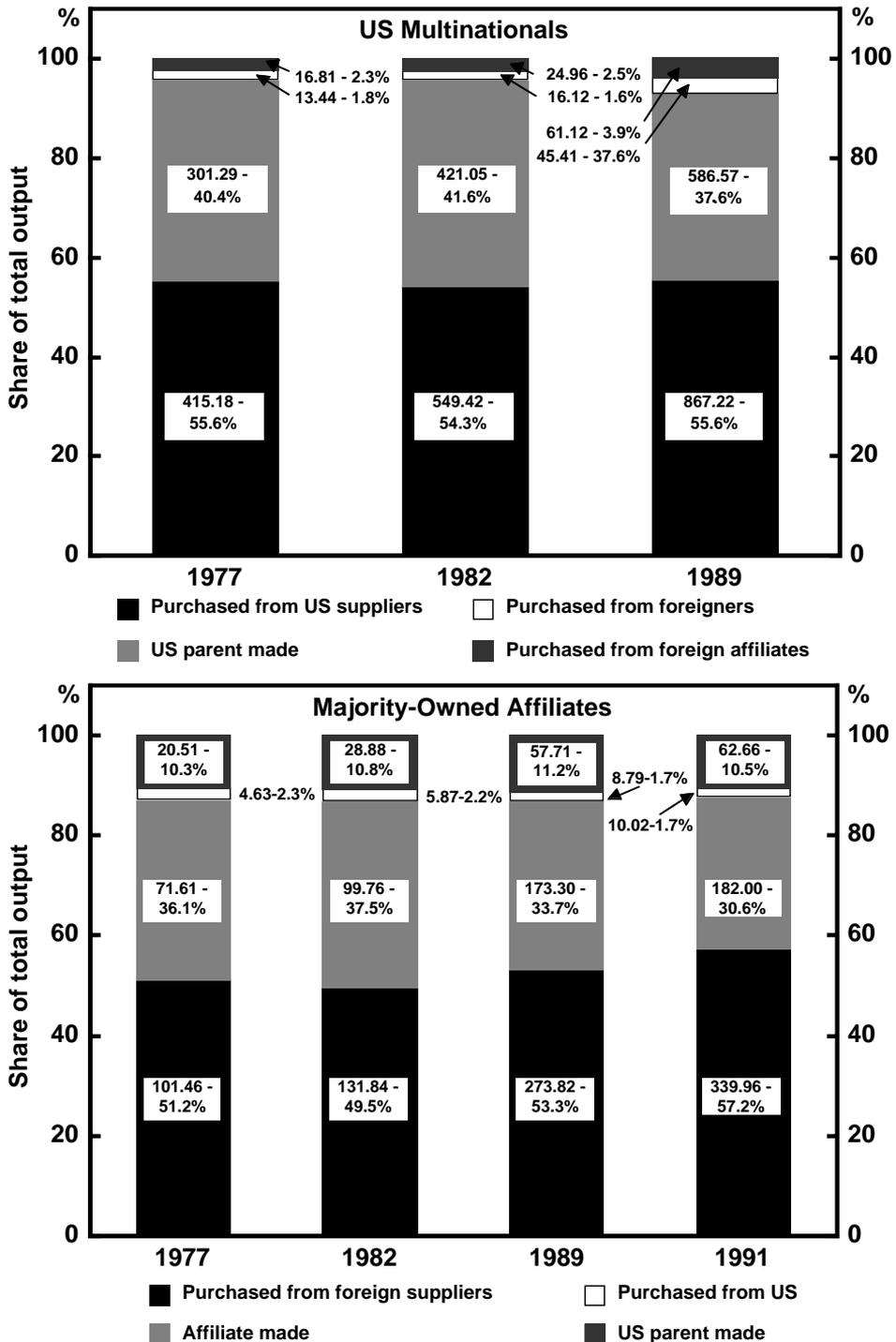


Table 7: Sourcing Comparison for US Multinationals and their Majority-Owned Affiliates
(manufacturing only)

	1977		1982		1989		1991	
	\$USb	%	\$USb	%	\$USb	%	\$USb	%
US multinationals								
Total output	746.71	100.00	1,011.55	100.00	1,560.32	100.00		
Output made	318.10	42.60	446.01	44.09	647.69	41.51		
Output purchased	428.61	57.40	565.54	55.91	912.63	58.49		
Output's foreign content	30.24	4.05	41.08	4.06	106.53	6.83		
Output's US content	716.47	95.95	970.47	95.94	1,453.79	93.17		
Majority-owned affiliates								
Total output	198.22	100.00	266.34	100.00	513.61	100.00	594.71	100.00
Output made	92.12	46.47	128.64	48.30	231.01	44.98	244.75	41.15
Output purchased	106.10	53.53	137.70	51.70	282.60	55.02	349.96	58.85
Output's foreign content	173.07	87.31	231.59	86.95	447.11	87.05	87.77	14.76
Output's US content	25.15	12.69	34.75	13.05	66.49	12.95	12.22	2.05

Source: Department of Commerce, *Survey of Current Business*, February 1994.

effects.¹⁴ Overall value added within US multinational parents fell from 41.6 per cent of sales in 1982 to 37.6 per cent in 1989. Of this 4 point shift, almost 1.2 points represented a rise in domestic outsourcing and 2.8 per cent outsourcing from abroad.

The slimming down that is evident in US parents is even more striking in the behaviour of their foreign manufacturing affiliates (Figure 3, lower panel). Between 1982 and 1989, value added within these operations declined from 37.5 to 33.7 per cent of sales, of which almost all represented a rise in inputs sourced abroad rather than in the United States. The data for 1991 suggest that this trend has continued with the share of value added performed in-house in affiliates declining to 30.6 per cent. The share of inputs sourced by foreign affiliates from their US parents and other US sources has remained fairly constant over this period.¹⁵

5. Labour Standards and Deeper Integration

In most OECD countries, the government has an extensive role in the labour market. It commonly regulates work hours and the cost of overtime; mandates vacations, holidays and sick leave; sets minimum wages; restricts child and forced labour; ensures nondiscrimination; provides unemployment, disability and retirement income insurance, and in many countries health insurance; and sets and conditions for hiring and firing, unionisation and collective bargaining.

By and large, nations have taken these actions independently, although a voluntary set of international standards has been agreed to at the ILO, and the GATT does contain a fairly narrow prohibition on trade in goods made with prison labour.¹⁶ Nonetheless, efforts to bring these issues to the international policy arena have been present in both the United States and the European Union. As early as 1953, the US proposed adding a labour standards article to GATT and it pushed unsuccessfully for the inclusion of labour standards in the Tokyo and Uruguay Rounds. The US has also tried to induce foreign compliance with worker rights in other aspects of its trade policy. Since the mid 1980s, the US Congress has passed a series of laws that directly link preferential trade and investment benefits to respect for basic worker rights.¹⁷ In Section 301 and Super 301 of the *Omnibus Trade Act* of 1988, the 'systematic denial of internationally recognised worker rights' by foreign governments is defined as an 'unreasonable trade practice' and

14. The BEA reaches similar conclusions. In the *Survey of Current Business* of July 1993 they compared employment patterns in high and low-wage countries over the period 1982 to 1991. The low-wage share of MOFA employment increased by 3 percentage points to 34 per cent. Between 1982 and 1989 they find that the domestic content of US-parent's output in manufacturing decreased from 96 to 93 per cent.

15. Slaughter (1994) produces evidence that foreign and US labour are actually price complements rather than substitutes. A one per cent drop in foreign wages tends to raise home employment by nearly 0.1 per cent.

16. The original charter of the ITO in 1948 contained a section on labour rights although it was never ratified by the US congress for other reasons.

17. Eligibility under the *Caribbean Basin Economic Recovery Act of 1983*, the Generalised System of Preferences (GSP) in 1984, the Overseas Private Investment Corporation (OPIC) in 1985, and US participation in the Multilateral Investment Guarantee Agency in 1987, have all been conditioned on adherence to ILO standards on worker rights. These include the rights to associate and bargain collectively, the banning of forced or compulsory or child labour, the provision of reasonable conditions for worker health and safety and the existence of a national mechanism for determining a generally applicable minimum wage.

made liable for US countermeasures where ‘such denials cause a burden or restrictions on US commerce’. Labour standards were also an important issue in the recent NAFTA negotiations. While the NAFTA agreement itself did not include provisions on labour rights, one of the side agreements established an international enforcement regime for alleged violations of national minimum wage, child labour, and occupational health and safety regulations, and an oversight and evaluation mechanism (without enforcement powers) for other labour issues.¹⁸

The US focus has been on achieving ‘minimal standards.’ By contrast, measures within the European Community have been considerably more extensive. In 1956, according to Steil (1994), French officials argued that social legislation in Europe should be harmonised in conjunction with the reduction of tariff protection to ‘make apparent to the workers the link that must exist between the common market’s establishment and higher standards of living’. More recently, European countries who fail to provide their workers with ‘adequate social protection’ are widely viewed as guilty of ‘social dumping’. Britain, for example, was accused of social dumping when Hoover moved from Burgundy to Scotland. Within Europe, efforts have been made to raise labour standards to prevent such ‘dumping’. On 9 December 1989, all EC members besides Britain agreed to the ‘Social Charter’ that covers an extensive set of worker’s rights.¹⁹ The European Commission has also been active in implementing this Charter.²⁰

At a multilateral level, however, there are increasing calls for moving beyond the voluntary standards of the ILO and the GATT’s prohibition on forced labour (Collingsworth, Goold and Harvey 1994). The United States tried to ensure that discussions on labour standards would take place in the new WTO. French leaders have been vocal in calling for European action against other nations with lower standards of social protection. Prime Minister Balladur has demanded that Europe be protected from ‘foreign traders with different values’. President Mitterrand has called for trade sanctions against nations with ‘inadequate social protection’ and European Community President, Jacques Delors has called for a ‘global social contract’.

These recent pressures in the labour area are part of more widespread trends toward ‘deeper international integration’ as domestic policies come under increasing international scrutiny. By contrast, most post-war liberalisation efforts have involved shallow integration. They have aimed at removing national barriers to the entry of goods and capital and providing foreign products and investors with the *same* treatment accorded

18. Conspicuous by its absence, and an important reason for the opposition of organised US labour to the NAFTA were rights of association, organising and bargaining.

19. These include rights to freedom of movement; employment and remuneration; the improvement of living and working conditions – that is, the right to social protection; the right to freedom of association and collective bargaining; the right to vocational training; the right of men and women to equal treatment; the right to information, consultation and participation; the right to health and safety in the workplace; the protection of children and adolescents in employment; the protection of elderly persons; and protection of persons with disabilities.

20. The *Single European Act* allows social-policy measures relating to the health and safety of workers to be adopted by qualified majority, while requiring unanimity in other areas of social policy. The Commission has accordingly defined a working-time directive (which requires a maximum 48 hour week and 4 weeks annual paid vacation) as a ‘health and safety’ measure. Of course, in Europe a key *quid pro quo* to members with lower wage levels is access to the cohesion fund.

to their domestic counterparts. But they have not tried to constrain the domestic policies of sovereign nations.²¹

Are the calls for international labour standards justifiable? It is useful to distinguish conceptually three types of effects that labour policies might have:

- those that are purely local;
- those that operate on international markets through market spillovers; and
- those that operate on international markets through direct spillovers.²²

5.1 Local Effects

Where nations effectively control their borders and prevent migration, most labour standards will either be confined to local effects or operate through market channels to affect international trade and investment flows. In fact, despite the widespread perception that such policies have repercussions on trade and investment flows, there are many cases in which government intervention in the labour market will have purely local impacts.

First, policies such as sick leave, maternity leave, and family leave are usually financed by payroll taxes. It is often assumed that such taxes on labour raise employment costs, thereby affecting resource allocation. However, unless all elements of the compensation package, including wages, are subject to minimum standards, when such standards are imposed, employers can adjust other elements of the package to keep their total costs from rising substantially. Indeed, the evidence suggests that, in general, the supply of labour is fairly inelastic and that over the long run, most payroll taxes are borne by labour (OECD 1993). This implies that such taxes result in lower wages rather than higher compensation costs.²³ Second, many labour measures actually reflect decisions which might have been taken in the marketplace anyway, and are thus not binding constraints. This could be the case with rules about work hours and vacation and minimum wages. In addition, in many countries compliance with binding measures is low and enforcement weak. Under some circumstances evasion takes the form of employment in the informal sector.²⁴

These considerations are important since they remind us that the basic presumption that differences in labour standards will affect trade and investment flows is not necessarily valid.

21. Measures for deeper integration do not necessarily involve harmonisation of standards or policies. In some cases, 'mutual-recognition' might suffice.

22. I owe this classification scheme to Richard Cooper's analysis of global environmental policies. See Cooper (1993).

23. Actually, some labour standards may actually increase the supply of labour and enhance productivity. Thus a safer workplace, may raise workforce participation and the increased unionisation and worker participation in decision making could increase productivity.

24. Ehrenberg (1994) notes the substantial differences in benefit levels which prevail across the United States and indicates that even within an integrated market there is considerable scope for exercising local preferences. Maximum weekly UI insurance varies from \$154 in Nebraska to \$468 in Massachusetts.

5.2 Market Spillovers

In practice, however, many-labour market policies will not be perfectly neutral. Indeed, their impact can be quite subtle. Ehrenberg (1994) gives the example of payroll taxes with ceilings, which can shift demand towards more highly-paid workers. Similarly, some employment standards are not all fully shiftable: for example, a binding minimum wage, or child labour laws. If the value employees place on health and safety benefits are less than the employers costs of complying, only part of the costs will be shifted.

In general, therefore, groups seeking to raise labour standards will find their case becomes more difficult, the higher the costs they impose on society. It should, therefore, come as no surprise that such groups will be against trade, particularly of the kind that is with trading partners which have very different preferences. However, if labour standards reflect the legitimate preferences of a particular nation, it is unclear why others should be entitled to impose their views.

The traditional theory of international trade demonstrates that when costs differ, countries gain from free trade by specialising along the lines of comparative advantage. When Ricardo invoked the principle of comparative advantage, he referred to productive differences that were due to climate (or technology).²⁵ But in stating his theory, Ricardo could as easily have ascribed the productive differences between nations to the 'social climate' as to the physical climate and his conclusions would have been unchanged: *taking climactic conditions as given*, free trade will maximise global welfare.

The choices of sovereign nation states are reflected in part in their rules and regulations. These regulatory decisions influence relative costs and thus patterns of comparative advantage. Given diversity of national conditions and regulatory preferences, therefore, it will be optimal for nations to have *different* regulations and norms. A strictly level playing field, or a common set of standards, would be inappropriate.

From the standpoint of this view, therefore, the playing field of international competition will, and should never be, strictly level. Competition between firms based in different nations can never be fair in the same way as competition between firms based in the same economy. Both traditional determinants of costs such as relative factor endowments, technology and tastes and social determinants of costs such as regulations, institutions and government policies should affect competitive performance. Thus firms producing labour-intensive products *should* find it easier to operate in economies in which labour is more abundant and less costly. Similarly, firms producing in economies with lenient and less costly labour standards *should* find it easier to produce with labour-intensive production methods. If, for example, relatively unsafe activities shift away from countries that place a higher value on safe workplaces towards those with a lower value, global welfare will be enhanced.

25. These explanations for trade have been so widely invoked that it is sometimes treated as a major 'refutation' of the principle of comparative advantage when it is discovered that institutions and policies can also affect comparative advantage so that comparative advantage can actually be 'created' by governments.

In the light of this paradigm, therefore, those seeking more ‘level playing fields’ based on constraining domestic economic policies simply fail to understand that the benefits of international trade come from allowing nations to be different, rather than requiring them to be similar.

As with most paradigms, however, this view of the world rests on some basic assumptions. If these assumptions are violated, free trade may not be globally optimal. In particular, two assumptions are crucial. The first is that the world consists of perfectly functioning, competitive markets – that is, there are no international market failures. And the second is the normative proposition that no constraints should be imposed on sovereign national choices (an assumption analogous to consumer sovereignty).

The assumption of competitive global markets is important because it rules out the use of strategic labour-standard policies – that is, policies designed not only to achieve a given impact on the labour market but also on the nation’s terms of trade. As Brown, Deardorff and Stern (1993) demonstrate, with market power, a labour standard could operate like an optimal tariff and shift the terms of trade. For example, South Africa could raise the price and reduce the supply of gold in the world by raising safety standards in its gold mines.²⁶ In the presence of this potential, international controls on standard setting might be required.

In the real world, however, most labour-standard policy decisions are not motivated by terms of trade considerations and accusations of the use of labour standards for such purposes are rare. Indeed, exporters of labour-intensive products are actually likely to have lower standards, and importers higher standards, because concerns about employment tend to dominate those of maximising aggregate national income.

The assumption that nations should be completely free to impose whatever policies they chose, may also be questioned. Some have tried to advocate tougher international labour standards on the grounds that these have positive economic effects. These include the alleged labour-income raising effects of capital-labour substitution, productivity enhancement effects of workforce harmony brought about by increased worker participation and the notion that a more equal distribution of income is necessary to stimulate consumer spending (Collingsworth *et al.* 1994). But the existence of these effects is controversial and in any case, it is unclear why firms and/or nations should be forced to take actions which are in their own interest.

Instead, the more compelling assaults on complete national sovereignty are based on: (a) the notion that there exist basic universal human rights; and (b) the ‘psychological externalities’ which occur when citizens of one country find practices in other countries morally reprehensible. But to what degree and under what circumstances should nations in one country try to change the behaviour of others, through measures involving trade?

In some cases, the policies in poor countries which offend the sensibilities of those in rich nations actually result from different income levels (i.e. income effects) rather than different preferences or values. Thus those in extreme poverty may permit activities which under other circumstances they themselves would regard as abhorrent (for example, child labour or a lack of pollution controls).

26. Exporting countries have incentives to set standards too high globally because they receive this secondary terms of trade benefit. Importing countries would do the opposite. This counter-intuitive result implies that labour-intensive exporters should set standards too high (see Brown *et al.* (1993)).

The long-run solution to these problems is clearly to raise incomes. Indeed, refusing to trade with such nations could actually retard rather than improve their abilities to provide worker rights. In the short run, however, some of these conflicts can be dealt with through explicit compensation schemes and subsidies. For example, the EC has a set of social funds which allow poorer countries to meet the labour and social standards applied by more affluent members. Similarly, 'debt for nature' swaps allow richer nations to support environmental activities in poorer countries.

In other cases, countries may trade off their adherence to particular practices by obtaining concessions in other areas. For example, in the Uruguay Round, some developing countries agreed to the introduction of intellectual property rules in return for increased access in textiles, and agriculture. The NAFTA provides another example in which Mexico signed a (side) agreement on labour standards in return for preferential market access. As already noted, the US has conditioned access to preferential arrangements such as GSP on adherence to basic labour standards.

Where sufficient compensation is not forthcoming, however, there is danger in trying to impose such standards under conditions in which they may damage economic growth. Moreover, there will remain cases in which divergent practices reflect divergent beliefs about the desirability of such standards so that compensation will not be possible – for example, the conflicts between the United States and the Soviet Union over Jewish emigration and those between the United States and China over human rights. Under these circumstances free trade may be difficult to obtain. And indeed, by revealed preference both nations may be better off without such trade.

Trade intervention is of course not the only means of responding to labour measures found to be reprehensible in other nations. An alternative might be insistence on labelling (e.g. 'made with union workers', or 'made using ecologically sound standards') that would allow private citizens to exercise their preferences.

On the other hand, where nations actually agree on basic standards, international agreements can help make such standards more credible domestically and reduce the opportunity costs of imposing them alone. In addition, the presence of a reasonable set of mutually agreed minimum standards could help reduce the ability for political interests to exploit these concerns opportunistically for protectionist purposes.

5.3 Direct Spillovers

Labour-market regulations and programs in one country may directly affect conditions in a second country through induced labour flows. Immigration creates problems for example, when workers from one country can receive benefits, but not pay the costs of such benefits in a second. Under these circumstances, since the spillovers are not simply pecuniary, the case for an increased harmonisation (or mutual recognition) of policies is considerably stronger. It is thus perhaps not surprising that as it perfects its internal labour market, the European Union has moved to implement more extensive sets of common standards.

In sum, in general there is a strong case for allowing individual nations a wide scope for differentiation in applying labour standards, particularly when the costs and benefits of such standards are fully borne by the nation itself. Even where these standards do affect others through market forces, in principle, given diverse social preferences, the existence of diverse standards will raise global welfare. There is, however, a case for international standards where:

- there is a strong danger that nations would act strategically in their absence;
- nations can agree on what those standards should be; and/or
- nations share a common labour market.

Where the failure to maintain certain standards impinges on notions of fundamental human rights they are more difficult to deal with. One solution is to induce poor nations to comply by offering them compensation. A second is to use labelling and other forms of moral suasion. The denial of trading opportunities should probably come only as a last resort and only in the most egregious cases.

5.4 A Race to the Bottom?

If labour-market policies do not affect total labour costs, there is no reason to believe there will be economic pressures for a convergence of standards. In addition, if these standards reflect choices that nations are willing to make, they will not be changed, even if they do have allocative consequences. As Ehrenberg (1994) has pointed out, there are noteworthy differences in minimum wages, occupational standards, and other labour standards across the 50 states of the US; indeed prior to the early 1970s, the US did not have national occupational health and safety standards.

6. Concluding Comments

International trade enhances potential national welfare. It frees up resources to be put to alternative uses in which they are more productive. However, a necessary condition for these benefits to be realised, is that these resources do not remain unemployed. In several labour markets, particularly in Europe, the loss of a job is viewed with considerable anxiety. The result is that increased trade, or technological progress, is seen as a threat, rather than an opportunity. In this paper, however, I have shown that there is considerable empirical evidence that the sources of poor labour-market performance, particularly in the US are essentially domestic. They reflect ongoing technological shocks that would be present even if the US economy was closed. The role of developing-country imports and the sourcing activities of US multinationals both remain too small to account for a significant share of the relative wage changes that have occurred in the US. This evidence suggests that neither international differences in wage rates, nor in labour standards, are the major factors in OECD labour-market behaviour that many believe them to be.

These findings suggest the major challenges to policy are:

- to educate the public on the nature of the changes;
- to emphasise the need for worker training and education to take advantage of the opportunities new technologies afford; and
- to develop measures such as earned-income tax credits which redress earnings inequality while preserving and increasing wage flexibility.

Where nations share a common consensus on labour standards, as most do with respect to minimum standards, there is probably merit in reinforcing the credibility of domestic policies through international agreement. International agreement might also help to define the terms of the debate and thus limit the ability of particular interests to obtain trade protection. Nonetheless, there are also gains to be had in allowing considerable scope for the application of different policies, particularly where effects are either borne locally or operate only through international markets. Nations that share a common labour market because of free immigration flows might find a greater interest in increased harmonisation, although even in this case, as the US experience indicates, a considerable diversity in standards and practices can be sustained within a single market.

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