GLOBALISATION AND THE NORTHERN IRELAND LABOUR MARKET

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Much attention has been given to the impact of international trade with developing economies on labour markets within the developed world. Some studies suggest that such trade is responsible, at least in part, for the widening earnings gap between the skilled and unskilled workers within developed economies. Given the high relative incidence in Northern Ireland of what are generally considered unskilled industries, and thus most susceptible to low wage competition, this paper seeks to examine the extent to which globalisation has influenced the relative demand for skilled labour within Northern Ireland manufacturing.

Earnings Inequality and the Demand for Skilled Labour

The 1980s and 1990s was a period of increased earnings inequality in many developed economies. A widening of the wage gap between skilled and unskilled workers was observed with the rise in inequality particularly rapid in developed economies with flexible labour markets. The ratio of the upper to the lower decile of the earnings distribution gives us a measure of wage inequality between the most skilled and the most unskilled workers within any particular economy[1]. The level of earnings inequality in Northern Ireland in 1994 was relatively high within an OECD context i.e. 12th highest from 16 countries (Table 1.). Chart 1 measures the change in the ratio of the top and bottom deciles of the earnings distribution over the 1987 to 1994 period. If the ratio becomes larger over time in any in particular country then we can conclude that the distribution of earnings in that country has become more unequal and vice versa. It is clear from Chart 1 that increased earnings dispersion is not a universal phenomenon and the experience differs substantially from country to country. Between 1987 and 1994 inequality has fallen in Canada, Germany, Belgium, Finland and Japan, whilst rising in France, Great Britain, New Zealand, Austria, Italy, Northern Ireland and the Republic of Ireland. Dispersion in Sweden, the Netherlands, and Australia remained relatively static over the period. The growth in inequality within Northern Ireland was particularly rapid and second only to the Republic of Ireland. The observed pattern of earnings dispersion in Northern Ireland suggests that there has been a fall in the relative demand for unskilled labour. This paper seeks to determine the extent to which any change in the

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relative demand for labour in Northern Ireland are likely to have been a response to increased trade with the developing world.

TABLE 1: Ratio of the Top to the Bottom Decile 1994 (All Workers)

Country	
Sweden**	2.13
Belgium**	2.24
Germany**	2.32
Finland	2.38
Netherlands	2.59
Italy**	2.80
Australia	2.87
Japan	3.02
New Zealand	3.05
France	3.28
Great Britain	3.31
Northern Ireland*	3.44
Austria	3.66
Canada	4.20
US	4.35
Ireland	4.54

* mean of Male and Female ratios ** 1993

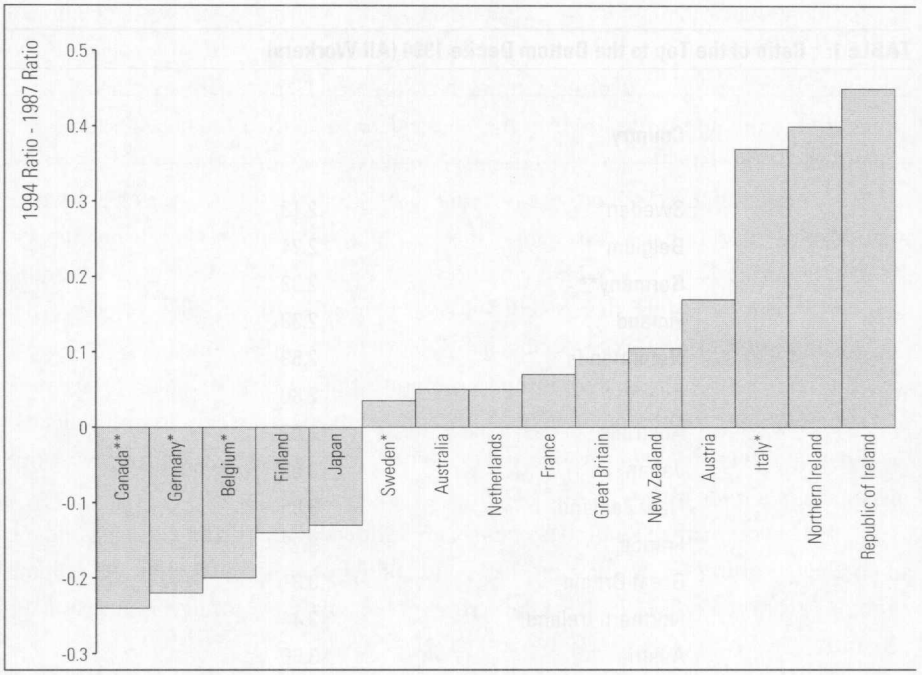
Source: OECD Employment Outlook (1996), Callan *et al.* (1997), NES

The Rationale for a Trade Effect

The rationale for a trade effect is based on the Hecksher-Ohlin theory of comparative advantage which states that countries will export goods which use the factors of production with which they are relatively abundantly endowed. Countries will therefore import goods that use factors which are relatively scarce domestically. Thus developing economies, should in theory, export goods intensive in unskilled labour and developed economies specialise in the export of highly skilled capital intensive goods and services. Recent decades have seen the evolution of an economic environment which is much more conducive to increased developed/developing trade. Barriers to trade have been substantially reduced with the removal of tariffs and the development of cheaper and faster transport and communication links.

The most ardent proponent of the trade influence Adrian Wood (1995) argues that differences in skill endowment are the underlying reason for developed/developing

Chart 1: Change in the Level of Earnings Inequality 1987–1994



*1993 **1988

Source: OECD Employment Outlook (1996), Callan *et al.* (1997), NES

trade. In recent decades trade has progressed, he argues, from a limited one-way flow to a much larger two-way flow. Developed countries have increased their production of skill intensive goods (both for export and domestic use) and their import of labour intensive goods. This has had the effect, argues Wood, of raising the demand for skilled labour relative to unskilled labour and widening the wage gap within developed nations. However, this is only the case where labour markets are flexible. In the presence of strong unions with the ability to protect the relative wage levels of unskilled workers, the impact is most likely to be felt through increased rates of unemployment amongst the unskilled. In support of his hypothesis Wood argues that, in the developed world, wage differentials widened between people with varying skill levels during the 1980s; i.e. between white and blue collar workers, professional and clerical and between skilled and unskilled manual. These labour market effects were most pronounced in the UK and the US where the political shift to the right diminished the influence of the trade unions. The effects were much less pronounced in other developed countries with less flexible labour markets. To summarise Wood argues that the changing composition of trade has resulted in substantial increases in the relative demand for skilled labour in developed

economies. This in turn has led to increased inequality within developed nations as wages adjust through the standard price mechanism and a steady reduction in the employment share of labour intensive sectors as manufacturing industries in developed economies continue to specialise along the lines of comparative advantage. Wood estimates that for manufacturing within the Northern Hemisphere as a whole, the cumulative reduction up to 1990 in the demand for unskilled labour caused by the expansion of trade with the Southern Hemisphere was between 6 and 12 million persons.

A study of OECD countries by Saeger (1995) found evidence of a clear inverse relationship between changes in manufacturing employment and changes in net imports of manufacturing from developing countries as a ratio of GDP. This would seem to support the trade effect and that unskilled workers are being displaced by imports from the developing world. However, the above correlation does not necessarily infer causality, and there could exist some other common influence on both import penetration and manufacturing employment. Wood (1994) states that it is not easy to find plausible candidates for this excluded variable and that the above results provide strong evidence in support of a trade effect.

However, many economists dismiss the influence of trade by emphasising the small change in import penetration. In 1990 manufactured imports from developing countries were under 3% of US GDP. How could this have a huge impact on the economy?

The case against Globalisation

Some papers have attempted to measure the impact of globalisation on the demand for skilled labour in manufacturing by conducting shift-share studies. These studies most commonly use a manual/non-manual distinction as a proxy for skills i.e. they assume that the higher the proportion of manual labour employed in any particular industry the lower is the skill intensity of that industry. Changes in the proportion of non-manual workers can be decomposed into changes in the size of industries of different skill intensities (the between industry effect) and changes in the skill intensity within each industry. The 'between industry' effect is due to any relocation of employment from manual/labour intensive to capital intensive industries and is generally attributed to globalisation. The between industry effect measures the extent to which workers are moving out of unskilled industries (those with a high proportion of manual labour) and into skilled industries (those with a high proportion on non-manual labour), such a development is in keeping with the trade effect which predicts that skill intensive industries will become increasingly dominant within developed economies as they adjust according to comparative advantage. However, the proportion of manual workers in manufacturing will also fall as a result of the introduction of labour saving technologies within industries i.e. new technology may eliminate certain manual activities. Such developments are assumed to be a function of technical progress and independent of the influence of globalisation. Studies of US and UK manufacturing

industries by Machin (1995) and Bernard *et al.* (1994) indicate that most of the change in "skill intensity" is concentrated within industries. Machin reports that the non-manual employment share in UK manufacturing rose by 0.4% per annum between 1979 and 1990 and that 82% of this occurred within 3 digit industries. Berman reporting for the US estimates the annual change to be 0.55% between 1979 and 1987 of which 70% took place within four digit industries. Thus, they conclude that the majority of changes in the composition of skilled labour within manufacturing have occurred within industries as a result of increased technical progress and the substitution of capital for labour as apposed to a shift in product demand arising from globalisation.

However, it must be pointed out, that although economists such as Machin and Berman cite this as evidence rejecting Woods hypothesis, it does not necessarily reject a trade effect. It may well be the case that manufacturing industries have responded to competition from low wage economies by reducing costs through increased use of technology in the production process or increasing product quality to survive. In either case the proportion of manual workers within industries is likely to decline as a direct consequence of low wage competition. Therefore, the critical assumption that within industry changes in the proportion of non-manual workers are independent of competition from developing economies is highly suspect.

Secondly, both Machin and Berman use the ratio of production to non-production workers (or manuals to non-manuals) as a measure for skill intensity within a particular industry. This definition is far from satisfactory e.g. within the US airline pilots are classified as non-productive (skilled) whereas co-pilots are classified as productive (unskilled). Within a UK context experienced foremen would be cited as unskilled whereas junior office clerks are classed as skilled. A more acceptable means of classification for the UK is developed by Haskel and Jukes (1995) who use the LFS to classify eight socio-economic aggregates into skilled and unskilled categories e.g. junior non-manual and semi-skilled manual workers are grouped as unskilled whereas managers and foremen are grouped as skilled. Haskel and Jukes illustrate that resulting analyses will differ substantially depending on which definitional methodology is applied. They found that within the UK manufacturing employment loss was most severe in skill intensive industries, which is exactly opposite to what advocates of a trade effect predict. Applying the manual/non-manual definition, employment loss was found to be most severe in manual intensive industries which of course is in keeping with a trade influence. Secondly, as capital intensity and skilled labour are often found to be complements it has been suggested that increases in the demand for skilled labour are linked to capital accumulation. Haskel and Jukes found that capital accumulation was fastest in non-manual intensive industries which would suggest that capital and skilled labour are indeed complements. However, applying the more rigid definition of skill capital accumulation was found to be fastest within unskilled intensive industries. Thus there appears to be a need for a more exact approach to this issue.

Defining Skills in Northern Ireland

In this study we follow the approach taken by Haskel and Jukes (1995) by classifying the Labour Force Survey (LFS) occupational aggregates into skilled and unskilled categories. In this way we hope to overcome the difficulties associated with the manual/non-manual approach. A problem arises from the fact that after 1990 the LFS method of occupational classification changed from the KOS system to the more aggregated SOC system. Unfortunately, there is no adequate method of converting SOC to KOS, and as such, consistent data was available for the period 1984 to 1990 only. The KOS occupational aggregates were classified into skilled and unskilled categories as follows:

Skills Classifications under KOS

	Male	*Female*
Professional & related supporting management & admin	Skilled	Skilled
Professional & related in education, welfare & health	Skilled	Skilled
Literary, artistic & sports	Skilled	Skilled
Professional & related in science, technology & engineering	Skilled	Skilled
Managerial (excluding general management)	Skilled	Skilled
Selling	Skilled	Unskilled
Security and protective services	Skilled	Skilled
Processing, making & repairing (metals & electrical)	Skilled	Skilled
Construction, mining & related	Skilled	N/A
Clerical & related	Unskilled	Unskilled
Catering, hairdressing, cleaning & other personal services	Unskilled	Unskilled
Farming, fishing & related	Unskilled	Unskilled
Making & repairing (excluding electrical & metals)	Unskilled	Unskilled
Painting, repetitive assembly, packaging	Unskilled	Unskilled
Transport operating, moving & storing of materials	Unskilled	Unskilled
Miscellaneous	Unskilled	Unskilled

Manufacturing Employment and Import Competition

Supporters of the trade effect argue that unskilled jobs within manufacturing have been taken up by foreign low wage producers i.e. it is predicted that competition from low wage economies will eventually drive domestic producers of labour intensive goods out of business. Thus, we would expect that within Northern Ireland industries such as clothing, which is particularly susceptible to import competition, would experience persistent downward pressure on wage rates and high levels of employment loss as more and more businesses are continually forced out of operation. This hypothesis is tested by Plotting the percentage change in employment 1984–1994 against the percentage change in the industry import penetration ratios (imports/home demand) for the UK between 1984 and 1989 (Table 2, Figure 2). Drawing a best-fit line through the graph we see that it has a negative slope indicating that employment loss has been most severe in those industries most susceptible to import penetration.

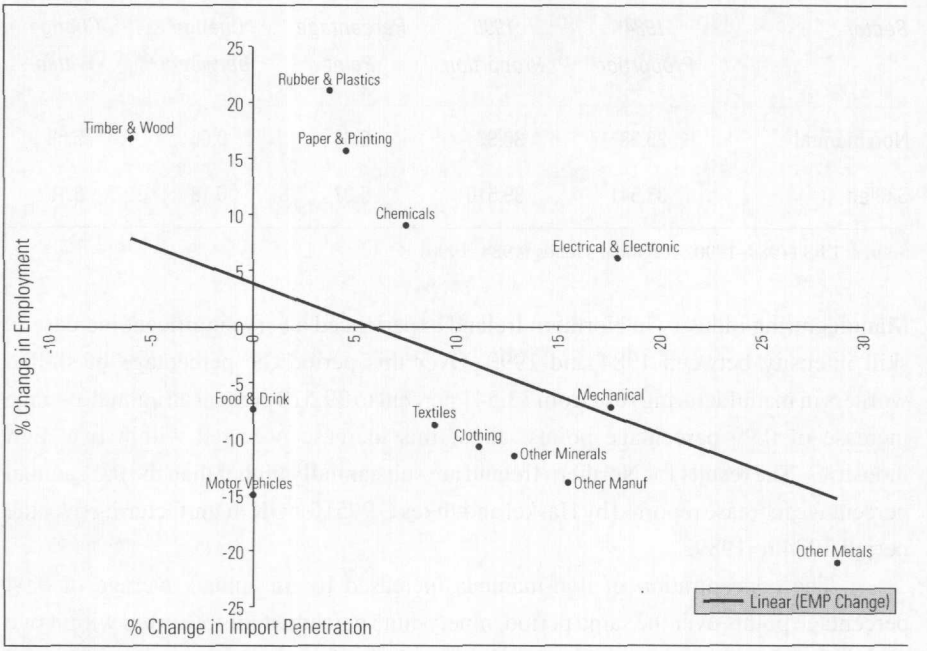
There is however a wide scatter of industries around the best fit line and the relationship is barely statistically significant. Nonetheless, employment loss has been greatest in Northern Ireland manufacturing within those industries with the highest increases in import penetration into the UK as a whole. This result does seem to support the Wood hypothesis i.e. that trade is indeed displacing local production, hence the employment loss in those industries most susceptible to foreign competition. However, it is not necessarily the case that those industries which are most open to foreign competition are slowly moving towards a position of nonexistence as the globalisation hypothesis predicts. It may also be the case that firms within industries most prone to foreign competition seek to remain competitive by moving into higher value added markets and/or reducing costs through the use of labour saving technology. Such activities would also result in an positive relationship between employment loss and market openness.

TABLE 2: Employment and Import penetration Change by Industry for 1984–1994

	Employment (000s) in Northern Ireland		*% Change in Employment*	*Import Penetration*
	1984	*1994*	*1984–1994*	*1984–1989*
Metals	0.35	0.45	28.6	
Other Minerals	6.56	5.81	-11.4	13.3
Chemicals & man made fibres	3.8	4.14	8.9	7.7
Metal goods	2.04	1.61	-21.1	28.5
Mechanical Engineering	8.18	7.63	-6.7	17.6
Office machinery	0.08	0.29	262.5	-9.5
Electrical & electronic engin.	7.0	7.46	6.57	18.2
Motor Vehicles	3.07	2.6	-15.3	0
Other transport equipment	11.42	8.69	-23.9	-3.9
Instrument engineering	1.16	1.07	-7.8	5.3
Food, drink & tobacco	20.87	19.35	-7.2	0
Textiles	11.1	10.11	-8.9	9.1
Leather & leather goods	.45	0.18	-60.0	18.18
Clothing & footwear	16.55	14.81	-10.5	11.1
Timber & wooden furniture	4.78	5.58	16.7	-6.2
Paper, printing & publishing	5.49	6.36	15.8	4.8
Rubber & plastics processing	3.91	4.74	21.2	4
Other Manufacturing	0.44	0.38	-13.6	15.4

Source: NIERC & Annual Abstract of Statistics

Figure 2: Change in Employment 1984–1994 by Change in Import Penetration 1984–1989



Note: There is no import penetration data available in the SIC80 format after 1989

Source: NIERC & Annual Abstract

Shift Share Analysis

In order to estimate the extent to which skilled labour has risen in the manufacturing sector, the following shift-share equation is estimated:

$$\Delta Sn = \sum \Delta Si \; Sni + \sum \Delta Sni \; Si$$

where I (=1,....,N) are manufacturing industries, Si is the employment share of industry i and Sn is the share of skilled workers in employment in industry i (a bar denotes a mean value). As pointed out earlier, the first term measures the between industry effect due to any relocation of employment from low-skill to high skill industries (the trade effect). The second term measures the component due to an increased use of skills within industries which can be attributed to production labour saving technical change. The above equation was estimated for both skilled and non-manual workers to allow a direct comparison of both methodologies. The results are given below:

TABLE 3: Changes in the level of skill intensity within Northern Ireland manufacturing 1984–1990

Sector	*1984 Proportion*	*1990 Proportion*	*Percentage Point*	*Change between*	*Change within*
Non manual	25.28	30.92	5.64	0.06	5.58
Skilled	33.541	39.510	5.97	-0.18	6.15

Source: LFS (1984–1990), Regional Trends (1984–1990)

Manufacturing industry in Northern Ireland experienced a very significant increase in skill intensity between 1984 and 1990. Over this period the percentage of skilled workers in manufacturing rose from 33.541 percent to 39.510 percent an annual average increase of 0.99 percentage points, all of this increase occurred within two digit industries. The results for Northern Ireland are substantially higher than the 0.04 annual percentage increase reported by Haskel and Jukes (1995) for UK manufacturing over the period 1984 to 1989.

The concentration of non-manuals increased by an annual average of 0.94 percentage points over the same period, ninety-nine percent of this occurred within two digit industries. Again the results for Northern Ireland are far in excess of the annual increase of 0.367 percentage points in UK manufacturing reported by Machin (1995) for the period 1979 to 1990. Thus, three general observations arise directly from the shift-share study;

- There were significant rises in the level of skill intensity (however it is defined) over the period within Northern Ireland manufacturing, virtually all of which can be attributed to technological change. There is certainly no evidence of a between industry reallocation of employment towards high skilled industries as the Wood hypothesis would imply. However, as pointed out earlier, import competition may be one factor influencing the introduction of new technology within the manufacturing industries as firms strive to remain competitive.
- The annual increases in the proportion of skilled workers within Northern Ireland manufacturing, under both methodologies, are substantially higher than those reported in comparable studies of UK manufacturing. This may well be due to the fact that unskilled industries are over-represented within Northern Ireland manufacturing with the result that companies here are more likely to be proactive in the introduction of labour saving technology as a response to low wage competition.
- Applying the less rigid manual/non-manual definition of skill we can see that although the within and between industry changes are broadly similar, this methodology tends to under-estimate the level of skill intensity within manufacturing industry.

Analysing Changes in Skills Levels Within Northern Ireland Industry

The level of skill intensity for 1984 and 1990 by industry are given in Tables 4 and 5. In 1990, the most skill intensive sectors within the economy were Metals, Manufacture of Other Transport Equipment, and Mechanical Engineering. The most unskilled sectors in 1990 were Clothing, Footwear & Leather, Textile and Timber and Wooden Furniture.

Over the six year period 1984 to 1990, nine of the fourteen manufacturing sectors improved their skill levels. What is particularly noticeable is that, with the exception of Food Drink and Tobacco, all industries with a skills concentration level of less than 40 per cent in 1984 made significant gains over the period. This again leads us to the conclusion that those industries in Northern Ireland most susceptible to import competition from low wage economies have are becoming more high-tech and less labour intensive, and that within industry changes skill concentration levels are likely to be a function of low wage competition.

Comparing the skilled and non-manual approaches it is obvious that the non-manual methodology results in significant underestimates of both the rank and the concentration of skills in industries which contain a high proportion of skilled manual workers, such as Metals, Mechanical Engineering, Electrical and Electronic Engineering etc. However, the technique performs more favourably when it comes to estimating the rank and level of skill concentration of the more labour intensive industries such as Textiles, Clothing and Wooden Furniture. Therefore, due to the fact that craft workers within manufacturing are defined as being unskilled, the non-manual approach is likely to result in significant underestimates of skill concentration both at the sectoral and aggregate levels.

Conclusion

There exists no evidence of any reallocation of employment away from labour intensive industries towards skill intensive industries. However, the proportion of skilled labour within Northern Ireland manufacturing industry increased substantially over the period 1984 to 1990, and this is likely to be have been a contributory factor to the rise in earnings inequality during the 1980s. These increases are entirely attributable to within industry changes stemming from the introduction of labour saving technology, although the extent to which such developments are a response to low wage competition is uncertain. The growth in the demand for skilled labour within Northern Ireland manufacturing is much higher than for the UK generally, however, this can be explained by the higher relative incidence of labour intensive industries in Northern Ireland which creates a greater need for economic rationalisation. Finally, from a methodological perspective, the manual/non-manual approach to skill measurement adopted by some American and British economists is prone to underestimate the proportion of skilled workers within an industry but adequately estimates the extent to which globalisation and technological

TABLE 4: % Skill and % Non-manual Concentration by Industry 1984

INDUSTRY	*Skills intensity*	*Skills rank*	*N. manual intensity*	*N. manual rank*
Metals	88.2	1	43.4	1
Mechanical Engineering	71.4	2	29.4	9
Manufacture of Metal Goods Not Elsewhere	71.1	3	31.9	6
Manufacture of Motor Vehicles & Parts	68.6	4	35.7	4
Electrical and Instrument Engineering	59.1	5	24.7	10
Manufacture of Other Transport Equipment	58.4	6	30.1	7
Manufacture of Paper & Paper Products; Printing	35.8	7	43.1	2
Food, Drink & Tobacco Manufacturing Industries	30.4	8	40.6	3
Chemicals and Man-Made Fibres	29.5	9	16.6	11
Other Manufacturing	23.5	10	32.4	5
Other Minerals and Mineral Products	19.0	11	29.9	8
Textile Industry	10.2	12	10.1	13
Clothing, Footwear and Leather	8.5	13	10.0	14
Timber & Wooden Furniture industries	9.6	14	14.0	12

Source: LFS

TABLE 5: % Skill and % Non-manual Concentration by Industry 1990

INDUSTRY	*Skills intensity*	*Skills rank*	*Non-manual intensity*	*Manual rank*
Metals	80.1	1	45.0	2
Manufacture of Other Transport Equipment	78.0	2	30.5	10
Mechanical Engineering	70.8	3	40.6	5
Electrical and Instrument Engineering	64.3	4	33.5	7
Manufacture of Metal Goods	58.6	5	41.0	4
Manufacture of Motor Vehicles & Parts	53.0	6	26.8	11
Manufacture of Paper & Paper Products;	45.3	7	57.3	1
Chemicals and Man-Made Fibres	42.3	8	32.2	9
Other Minerals and Mineral Products	36.7	9	34.3	6
Other Manufacturing	32.6	10	44.0	3
Food, Drink &Tobacco Manufacturing Industries	25.3	11	32.3	8
Textile Industry	24.3	12	24.8	12
Timber & Wooden Furniture industries	21.4	13	21.7	13
Clothing, Footwear and Leather	14.7	14	15.8	14

Source: LFS

progress impact on labour markets. In addition it is not clear that, within industry, changes in the proportion of skilled workers are independent of the influence of foreign competition as these studies imply.

Note

1 The highest paid ten percent of the working population earn a wage greater than the top decile of the earnings distribution whereas the lowest paid ten percent of the working population earn a wage less that the bottom decile. The ratio of the top and bottom deciles of the earnings distribution is a widely used measure of earnings inequality as it gives us a broad measure of the gap between the highest paid (and presumably most skilled) and lowest paid (and presumably most unskilled) members of the working population.

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