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Trade with Developing Countries: Does it Increase Income Inequality in the North?

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In light of the forthcoming first Ministerial Conference of the World Trade Organisation, Barry tackles the vexed and timely question: "Is increased trade with developing countries the main cause of increasing income inequality in the developed world?" He presents the arguments in support of this view as well as an alternative hypothesis: what has really led to increased inequality is technological change, particularly the development and widespread dissemination of computers, reducing the demand for unskilled labour. Barry then analyses various attempts which have been made to quantify these arguments. The final section advocates increased investment in the education and skill levels of the labour force to combat the prospect of trade contributing to growing inequalities.

1. Introduction

Income inequality has increased substantially in the industrialised world in recent decades. In large part this is due to a drop in the demand for unskilled labour combined with an increased demand for skilled labour.

In the US, for example, the purchasing power of the wage earned by a worker with 12 years schooling or less fell by 20 percent between 1979 and 1993, while real wages earned by more skilled workers rose. In Europe, with its more comprehensive social welfare nets, the real wages of the low-skilled were prevented from falling. The reduction in demand for their services, however, led to sharply increased probabilities of their suffering spells of unemployment, if not of becoming members of the pool of long-term unemployed.[1]

That these developments occurred at the same time as trade increased substantially between developing and developed countries has lead to a fear in the industrialised world that this increased trade has caused growing inequality. The argument used to support this view is that cheap imports of manufactured goods produced by less skilled foreign labour has reduced the demand for such labour in the industrialised world.[2] Thus protectionist sentiment against developing country imports has grown. It has achieved a particularly high profile in recent elections in the US, representing an important plank in the political platforms of Presidential hopefuls Ross Perot and Pat Buchanan. In the UK the protectionist cause has been championed in recent times by the conservative billionaire, Sir James Goldsmith.

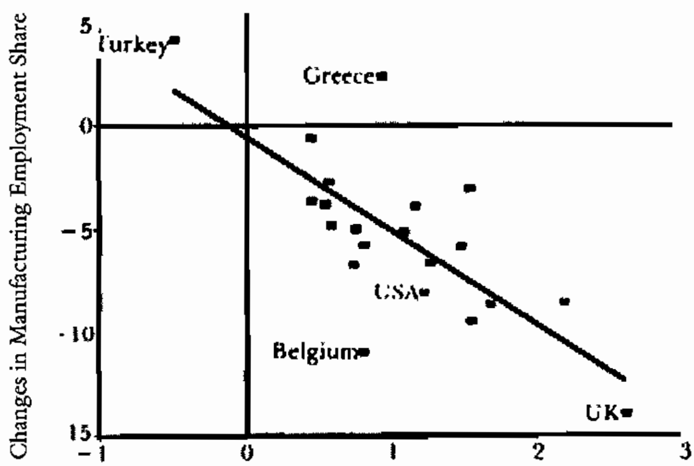
That protectionist sentiment should be growing in the industrialised North is cruelly ironic. Until recent times, many policymakers and influential commentators in developing countries, influenced by *dependencia* and other radical theories, feared that increased trade with the North would lead to their impoverishment. Outward orientation has undoubtedly been growth-enhancing, however, for the developing countries that have practised it consistently in recent times. A recent study for example concluded that "with the single exception of Haiti, there is no developing country that had substantially open trade and yet failed to grow by at least 2 percent per year in the period 1970-89".[3]

Now that export-orientation has indeed proved to be growth-enhancing for developing countries as a group, it would be extremely disheartening if the protectionist arguments to be heard increasingly in the developed world were to be put into practice.

The purpose of the present paper is to analyse whether increased trade with developing countries has been the main cause of increasing inequality in the developed world. In the next section the arguments in support of this view are presented; these have been argued most strongly by Adrian Wood of the University of Sussex.[4] In the following section I consider the attempts that have been made to quantify this argument and then examine the main alternative hypothesis about the source of the increased inequality. The final section looks at some policy responses which have been advocated to combat inequality.

2. The argument that trade is to blame

Wood (1994) presents three broad pieces of evidence in favour of his position. The first, summarised in Figure 1, is that the rate of deindustrialisation in OECD (Organisation for Economic Cooperation and Development) countries is related to the degree of import-penetration of their markets by manufactures from developing economies. Specifically, the more rapid has been a country's growth in net imports of manufactures from developing countries, the greater has been the reduction in the share of its labour force employed in manufacturing. Baldly stated, the argument is that such "cheap manufactured imports destroy OECD countries' manufacturing sector".



Changes in Net Imports of Manufactures from Developing Countries as Ratio of GDP

Figure 1: Deindustrialisation and developing country import penetration
Source: Wood (1995)

The second broad piece of evidence is that unskilled workers fared worst in those countries where developing country import penetration rose most.[5]

Wood's third piece of evidence is that countries that experienced higher degrees of import-penetration from developing countries also experienced higher unemployment, when allowance is made for differences in the degree of wage flexibility.[6] Therefore, under this analysis structural change in the US, which has a high degree of wage flexibility, will be rcflected in lower wages for the unskilled rather than in increased unemployment, while the European countries with least wage flexibility will suffer more unemployment per unit increase in import penetration.

It has to be said at the outset that most economists will find this type of reasoning very familiar and perhaps persuasive, as it reflects some of the most important results in the theory of international trade.

These results are based on the notion of "comparative advantage".[7] The conventional view is that a country's comparative advantage comes from the relative scarcity or abundance of productive factors such as capital, labour and labour skills.[8] Think of the industrialised North as possessing high levels of skilled labour, and the developing world as possessing relatively more unskilled labour. Before trade takes place then, skill-intensive products will be relatively expensive in the South, where skills are in short supply, while unskilled-labour-intensive products will be relatively inexpensive. This is equivalent to saying that the South has a comparative advantage in the latter products. (Henceforth, for ease of exposition, let me call them skill-intensive and (unskilled) labour-intensive products.)

When trade opens up between developing and developed countries, then, the North will be able to buy labour-intensive products from the South cheaper than it can produce itself. This fall in the price of labour-intensive goods of course decimates the North's labour-intensive industries (such as textiles and clothing, for example, and less-sophisticated electrical equipment). Unskilled workers lose their jobs, and their real wages fall. The skill-intensive sector expands however, since this is the North's export sector (recall that its comparative advantage lies in these goods); the increased demand for skilled workers pushes up their real wages. Wages for unskilled labour fall relative to those of skilled labour, therefore both sectors, the expanding skill-intensive sector and the declining labour-intensive sector, would be expected to increase the proportions of unskilled to skilled labour which they employ.

This process, by which trade reduces the real wage of a country's relatively scarce factor, is known as the Stolper-Samuelson theorem. Underlying it is the notion that even if factors of production are not internationally-mobile, trade effectively makes them so, since in a sense we export our abundant factors embodied in the goods we export. Trade therefore has a tendency to equalise factor prices internationally. It is clear that this is the intellectual underpinning for Wood's argument that trade has impoverished the North's unskilled workers.

3. Quantifying the argument that trade is to blame

We have seen in the last section that there is at least a prima facie case that trade is to blame for the increase in inequality in the North. A problem, however, is that the extent of increased trade penetration is, in fact, surprisingly small. Net import penetration (i.e. imports into developed from developing countries minus exports from developed to developing countries) from 1970 to 1990 averaged only around 1 percent of Northern GDP, while even gross developing copuntry import penetration (i.e. imports from developing countries, ignoring developed-country exports to the developing world) was only around 2 percent of Northern GDP.[9]

In a number of respects, however, Wood would respond, these statistics are misleading. One reason is that these imports are highly labour-intensive, so that the proportion of workers displaced by them may be much greater than the share of these imports in GDP. Secondly, the fall in the world price of labour-intensive goods as developing countries start exporting will hurt developed-country unskilled workers even if their industries remain able to resist import penetration. And thirdly, developed country firms under attack from imports may undertake "defensive innovation", changing their production technologies and shedding unskilled labour in an attempt to stave off competition.

We need to try to quantify each of these effects in turn. The first issue, of the labour- versus skill-intensity of developing country imports is analysed through the use of "factor content analysis". This looks at how much skilled and unskilled labour is used in producing a developed country's exports, and at how much would have been used in the developed country if its imports had been produced at home instead.[10]

A recent US study uses this technique and finds that developing country imports have led to a 6 percent fall in the demand for unskilled labour in the US.[11] Wood, the leading proponent of the "trade is the eause" argument, objects. He argues that imports are less skill intensive than domestic goods even in the same industrial eategory, so the unskilled labour content of imports is underestimated by this approach.

Wood looks directly at the factor proportions used in the developing economies (though he adjusts for the fact that were these goods produced in the OECD, their price would be higher, because the price of unskilled labour is higher there; demand would therefore be lower, which would reduce the amount of unskilled labour displaced by imports). His methodology comes up with a much higher estimate; increased imports, he calculates, reduced the demand for unskilled labour in industrialised countries by 22 percent, rather than the 6 percent that the other approach estimates.

Even this dramatic fall, however, is still only half the size of the fall required to explain the change in wage differentials that has actually occurred in the North.[12] Where does the other half come from? Wood provides two answers to this. The first is "defensive innovation", and the second is through service-sector imports from developing countries.

The "defensive innovation" hypothesis holds that Northern firms will spend research and development funds in the less-skilled sectors in order to develop techniques that will allow them stay competitive. This will reduce the demand for unskilled workers still further. There is indeed some evidence that this has occurred. Several studies have shown faster technical change in low-skill than in high-skill Northern sectors.[13]

The second part of Wood's argument concerns services. Data on services are much less reliable than data on manufacturing, and so the services sector often tends to be overlooked. However, there is no doubt that Northern "imports" of low-skill Southern services such as shipping, tourism and keypunching have boomed in recent times. Since service-sector exports of developing countries are estimated to amount to around 50 percent of their manufacturing exports, this point can clearly raise the total estimate of the reduction in demand for Northern unskilled labour substantially.[14] So Wood concludes that virtually all of the increased inequality in the developed world over recent decades can be ascribed to increased trade with developing countries.

4. The alternative hypothesis

The competing hypothesis about what has caused the increased inequality is that technological developments in general, including the development and widespread dissemination of cheap computers, has caused the demand for unskilled labour to collapse.

Before presenting the evidence in favour of this competing alternative, I shall outline the criticisms that have been directed against Wood's analysis.

(1) The first issue concerns whether imports from developing countries have really been the main factor behind deindustrialisation. Undoubtedly, trade deficits in manufactures will lead to a shrinking of manufacturing, since a £1 increase in manufactured exports leads to a £1 increase in sales by domestic firms, while a £1 increase in imports, at a first approximation, can be thought to displace £1 of domestic sales. Krugman and Lawrence (1994) point out that part of that £1 increase in imports, had it been spent on domestic manufactures instead, would have been payments for service-sector inputs to the manufacturing process. Taking this into account and working through the numbers, they find that the decline in US manufacturing as a proportion of GDP would still have been 86 percent as large as it actually was, had the US maintained trade balance in manufactured goods throughout the 1970-90 period. So only a small proportion of deindustrialisation can be ascribed to increased trade deficits in manufactured goods.

The bulk of the deindustrialisation they explain as a shift of spending away from manufactured goods and towards services. In fact "the physical ratio of goods to services purchased remained almost constant during that period"; the decline in the share of spending on manufactures arose because their price fell so strongly relative to services; this occurs because productivity growth is much more rapid in the manufacturing sector.

The main concern in this paper, though, is with income distribution issues rather than with deindustrialisation per se. I now present the criticisms that have been made against Wood's work on this issue.

(2) Wood's analysis implies that the low skill sectors of Northern industry should have experienced the greatest increases in skill-intensity. This would arise for two reasons: first, since competition from developing countries is in the least skilled segments of each industrial sector, it should cause the least-skilled activities in each sector to contract, thereby raising the average skill-intensity of the remaining activities, and second, because of defensive innovation, which increases skill-intensity.

In fact, the opposite happened. The greatest increases in skill-intensity were in the most highly skilled segments of Northern industry.[15]

(3) In discussing his "factor content analysis", it was mentioned that one needs to take into account that were the imported goods produced domestically instead, their price would be higher, demand would be correspondingly lower, and the amount of unskilled labour estimated to be displaced by imports would be reduced. The impact of these higher prices on demand depends on the responsiveness of demand to prices, (i.e., price elasticities of demand). Wood tends to work with price elasticities that are considered low by many economists. If the elasticities he worked with were doubled, he would end up finding that there was almost no displacement of unskilled workers in the North by trade with the South!

(4) In fact, the whole "factor content" methodology can be criticised. According to the conventional trade theory model outlined in Section 2 above, which is the model on which Wood's analysis is based, all one needs to look at to study the effects of trade on the wages of various factors of production are the price movements induced by trade. The conventional model holds that if trade leads to a reduction in the price of low-skill-intensive goods, then unskilled labour in the North will suffer.[16]

Some studies have therefore asked "what happened goods prices?", and here the answer may be somewhat surprising. Lawrence and Slaughter (1993) find that the price of less skill-intensive imports (relative to the price of skill-intensive goods) has not been falling; this is primarily due to the dramatic reductions in computer prices and in the cost of automation. Therefore the mechanism on which the standard trade model relies has not even been in operation!

Sachs and Shatz (1994) argue that the massive reductions in computer prices distort the overall pattern, and they therefore exclude computer prices. When they do so, they find indeed that the relative price of less skill-intensive imports has fallen. So the standard mechanism may operate.

Unfortunately for the further implications of the argument based on the standard model, however, there is no "magnification effect". What this means is that the standard model (as in "the Stolper-Samuelson theorem") predicts that when the price of labour-intensive goods falls, there should be a more-than-proportionate fall in the wage paid to unskilled labour. For the period they look at, and for their definition of unskilled labour, Sachs and Shatz (1994) find a 9 percent fall in the relative price of labour-intensive imports, but a smaller fall in the relative wages of unskilled labour. So again there appears to be something other than the standard mechanism in operation.

(5) Something else has also occurred which is not consistent with the standard model. It was pointed out in Section 2 above that according to this view, when the price of unskilled labour falls, all sectors should thereby be induced to economise on the use of skilled labour, and so to become somewhat more intensive in the use of unskilled labour. This has definitely not happened.

In fact, across all sectors of the economy, the proportion of skilled workers employed relative to unskilled workers has been rising. Particularly problematic for Wood's argument is the fact that this has been occurring also in sectors insulated from the effects of international competition (many service sectors for example). If Wood were right, we might expect to see unskilled labour being priced out of the internationally-tradeable goods sectors, but in a highly-flexible wage economy like the US at least, we would expect this low-priced low-skilled labour to affect production techniques in the non-(internationally)-traded sectors. Even these sectors have been growing in skill-intensity however![17]

(6) There is a further possibility ignored by Wood, but which we are led to focus upon by the empirical evidence that trading economies grow more rapidly than protectionist economies. This is that even if the standard model operates, unskilled workers may still be better off from trade. Unskilled workers lose their jobs in the sectors decimated by competition from developing country imports; they suffer a period of unemployment, and if/when they return to work, they do so at lower wages than they were receiving in their previous jobs. But their new jobs are in more rapidly expanding sectors (because of the growth-effect of trade). So if they do succeed in finding new work, in the longer-term their incomes may be higher. This is undoubtedly tenuous, and is unlikely to occur in an economy like Ireland's, where long-term unemployment is so high.[18] On the other hand, however, there is evidence that exporting

establishments pay higher wages to both skilled and unskilled labour than do non-exporting establishments.[19]

(7) We have now gone through a number of the criticisms directed at Wood's hypothesis, which suggest that many aspects of recent economic performance are not consistent with his argument that rising inequality has been due to increased trade with developing countries. Most of these developments are, however, consistent with the alternative hypothesis that technological developments have been at fault. There are two further pieces of evidence in support of this latter view.

Firstly, looking at individual earnings, wages are found to be positively associated with the use of computers. The increased use of computers, therefore, which is concentrated on more skilled workers, has contributed to the increase in wage inequality.[20] Secondly, looking now at industrial sectors rather than at individuals, the sectors with the largest share of investment in computers as a proportion of total investment also have the largest decline in the cost share going to unskilled labour. So it appears, as many would have expected, that computers have been crowding-out unskilled labour.

5. Concluding comments

At first glance it appears reasonable to argue that increased imports from developing countries have reduced the demand for unskilled labour in the North, and that this has led to growing inequality. When we look carefully at the argument however we see many developments that are not consistent with the view that trade is the major determining factor.

At the very least the trade hypothesis has to be combined with a recognition that technological developments have also reduced dramatically the demand for unskilled labour. The consensus among economists at present appears to be that perhaps 10 percent of the rise in income inequality is ascribable to increased trade with developing countries.[21]

Even if the proportion turns out to be much larger however, can this justify increased protectionism? Here the traditional answer is still appropriate: even if trade does damage certain groups, society gains more than these groups lose, and so the winners can potentially compensate the losers.

What form might such compensation take? In Europe there are already some compensating mechanisms in place, in the form of the welfare state. This ensures that no-one's income can fall below the basic minimum. In the words of the current slogan, however, the welfare state should offer "a hand up rather than a hand out". The major task facing society is to ensure that everyone has the possibility of working for a reasonable income, and crucially, that everyone has access to education so as to attain marketable skills.

Here, then, though many disagree strongly with his analysis, the policy conclusions put forward by Wood (1995) may command a wider degree of support. He argues for income supplements for the working poor in the US, and subsidies for the employment of low-skilled workers (and the long-term unemployed) in Europe. This is sometimes met with the criticism that it slows down the adjustment process; by raising the relative well-being of the unskilled it reduces the incentive to them and particularly to younger people to acquire skills. In response he makes the important point that the offspring of the socially excluded, whether the working poor in the US or the long-term unemployed in Europe, are least likely to benefit from the educational system, and are therefore most likely to end up as the unwanted unskilled labour of the future.

His policy conclusions are in line with those of Nickell and Bell (1996) who find that Germany has avoided many of the adverse consequences, apparent in the US and the UK, of the decline in the demand for unskilled labour. Germany's success in this regard they ascribe to the strong emphasis in the German schooling system on "sustaining a high level of performance on the part of the bottom half of the ability range", plus the comprehensive German system of vocational training.

Barry and Hannan (1996), in their discussion of recent changes in Irish society, argue that social cohesion requires that those who have gained from the massive change in the relative demand for skilled and unskilled labour must compensate those who have lost, and contend that this can best be achieved through funding very dramatically improved access to high-quality basic education.

In summary, whether increased income inequality in the industrialised world stems primarily from cheap, developing country imports, or as I have argued, from technological change, the same basic response is called for. Protectionism is a game of "beggar thy neighbour" (and thyself). Upgrading the educational qualifications and skill levels of the labour force, on the other hand, allows a much more even distribution of the benefits that arise from trade.

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Footnotes

1. See Barry and Hannan (1996) for a discussion of the Irish unemployment problem in this light.
2. The impact of trade on labour markets in developing countries is clearly at least as important an issue. Since the protectionist impulse with which we are concerned comes from the North however this lies outside the scope of the present paper. References to the literature are provided in Wood (1995; footnote 1).
3. Sachs and Warner (1996).
4. It should be stressed that Wood does not support the protectionist policies to which his arguments have sometimes been thought to lead.
5. Wood, 1994, pp.265-9
6. Wood, 1994, pp.309-21
7. This is an important concept, and is therefore worth going into in a little detail. The argument is that even if one country is more efficient at producing all goods, it is still to its benefit (and to that of its trading partners) to engage in trade. Consider two types of goods: beer and cloth, for example. If the UK can produce a barrel of beer with the labour of four workers and a ton of cloth with the labour of two, and if it takes Ireland five workers to provide either, then clearly the UK is more efficient at producing both. Each country can, however, gain from trade, as follows: if Ireland produces one less ton of cloth and uses the labour to produce a barrel of

beer for export to the UK, this releases sufficient labour in the UK to produce two tons of cloth. The UK can then export one and a half tons back to Ireland, so that both countries are better off through trade! There is such a thing as a "free lunch" in economics after all!

8. These factors can obviously be accumulated over time, allowing economies climb the "ladder of comparative advantage"; indeed this is the most common usage among economists of the term "economic development".
9. Wood, 1995
10. The usual way to do this is to take some industrial category such as "household electrical appliances", of which say £20 million worth is produced at home for the domestic market, and say another £200 million is imported. If 100 skilled and 200 unskilled workers are engaged in the production for the domestic market, then by assumption 10 times these amounts would be required if the imports were replaced instead by domestically-produced goods.
11. Sachs and Shatz (1994).
12. Freeman, 1995, p.25
13. e.g. Sachs and Shatz (1994), Lawrence and Slaughter (1993) and Leamer (1994).
14. Wood, 1995, p.68
15. Barry and Hannan (1996) confirm that this is true for the Irish case also. Defining the skill-intensive sectors as those with above average skilled to total employment ratios, that study finds for manufacturing that within the skill-intensive sectors the ratio rose by 2.4 percentage points between 1979 and 1990, compared to a rise of 1.7 points in the less skill-intensive sectors. For services, between 1981 and 1991 the study found that the ratio rose by 5 percentage points in the skill-intensive sectors, compared to a rise of 1.6 percentage points in the less skill-intensive sectors.
16. For a trading economy, a fall in the price of less skill-intensive imports will lead to a fall in the price of equivalent goods which are produced domestically, since otherwise demand for domestically produced goods would disappear completely.
17. Barry and Hannan (1996) for the Irish case found that between 1979 and 1990, the proportion of skilled workers to total employment rose from 10-13 percent for the much less internationally-traded private services sector.
18. Even for an economy like the US workers displaced by trade have been found to be suffering income losses as late as 6 years after severance from their initial job.
19. Richardson, 1995, pp.47-9
20. A piece of evidence from Kearney (1996) proves fascinating in terms of what it suggests about computer skills and wages in Ireland. In 1979 across all manufacturing sectors clerical workers were paid basically the same as unskilled workers. By 1990, when virtually all clerical staff had become computer-literate, their relative wage had risen to 1.16. Thus clerical staff as a group appear to have made the transition from being essentially unskilled to being valued as more highly skilled workers.
21. Richardson (1995; page 36)