

# **Trends in Disaggregated Import and Export Prices in Europe: Implications for the Trade and Wages Debate**

**Paul Brenton and Anna Maria Pinna**

## **Abstract**

We consider more carefully the evidence from traded prices (as proxied by unit values) concerning the transmission of the effects of globalisation to domestic labour markets. Using standard index number techniques we decompose changes in sectoral import and export unit values into movements due to changes in pure prices of the initial bundle of goods and changes due to upgrading of the bundle imported. Looking at the imports of selected European countries of textiles, clothing and footwear relative to engineering products we find evidence of strongly falling pure prices of the unskilled intensive products relative to the skilled products in the 1980s. This reinforces the view that import prices capture the impact of globalisation in terms of adverse relative price movements for products produced with the intensive use of unskilled labour. However, the trends are not common across all the unskilled sectors; footwear is clearly an exception. In the absence of detailed domestic data, we look for reactions by domestic firms to increased import competition in movements in the price and composition of exports. We find evidence of stiff price competition from imports being associated with similar movements in export prices and no support for the view that import competition from low-wage countries has led to upgrading of the quality of exports.

Key Words: import prices, globalisation, Tornqvist price index  
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## **1. Introduction and Background**

To what extent has trade with labour abundant low wage economies affected western labour markets? During the 1980s and 1990s there has been a well-documented increase in wage inequality between skilled and unskilled workers in the US and to some extent in the UK. In continental Europe the gap between skilled and unskilled wages has not widened appreciably. However, there has been a substantial increase in unemployment propensities for unskilled workers in these countries. The principal causes of these labour market developments have been subject to considerable debate and research but as yet no clear-cut conclusions have been reached.

Standard economic trade theory demonstrates that more open international trade can cause the sort of changes in labour markets in OECD markets that have been observed in the last two decades. It is changes in the price of low-skilled labour intensive goods relative to the price of skilled-labour intensive products that lie at the heart of traditional economic explanations of the impact of globalisation on domestic labour markets. However, trade is not the only identifiable culprit for the increasing wage inequality or falling employment opportunities to have bedevilled unskilled workers in the OECD countries. Much of the debate on the impact of globalisation has revolved around empirical analysis of the relative importance of trade with low-wage countries and the impact of changes in technology. In this paper we concentrate upon the trade explanation.

The main conclusion from existing empirical price studies is that although inequality across skills started to increase at the beginning of the 80s, subsequently the domestic prices of unskilled-labour intensive products have shown no clear decline relative to those of skilled intensive products (Slaughter, 1998). Movements in producer prices in the US, on the contrary, highlight the 70s as the Stolper-Samuelson decade (Leamer (1996)). The evidence for some European countries is perhaps even stronger (Lawrence, 1996; Lucke, 1997; Anderton and Brenton, 1998). Here producer prices of unskilled-labour-intensive goods did not fall by more than those of skilled-labour-intensive products in neither the 70s nor the 80s.

One possible explanation for these results is that sectoral producer prices are unable to capture the relevant trade shock faced by the industrialised economies because they are too aggregated. Wood (1997, 1998), for example, argues that heterogeneity of goods in standard statistical definitions of sectors and changes in quality over time (which maybe correlated with the skill intensity of production) could engender substantial errors into available producer price series. If sub-sectors within the industries are different, in terms of requiring different amounts of skilled and unskilled labour, then more open trade may reduce the prices of some goods but raise the prices of others, leaving the industry aggregate price unchanged. Ideally, one would use highly disaggregated series on producer prices to address this issue, but unfortunately they are not available.

In addition, although countries such as the NICs and other Asian economies initially emerged into the international context by penetrating unskilled-labour-intensive sectors, recently they have diversified their production to cover unskilled-labour-intensive activities in a range of unskilled and skilled intensive industries. Some countries (primarily the NICs) have also been able to shift into skilled-intensive activities. The use of producer price measures at the industry level will not enable such within industry adjustments to be discerned.

Wood points instead to changes in the prices of imports and exports, which do suggest a rising relative price of skilled-intensive products in the 1980s (but not in the 1970s). However, issues of measurement pertain to import and export prices, just as to producer prices. In particular, the problems of aggregating over sub-categories and of quality upgrading remain. For example, the rising relative trade price of skilled-intensive goods could reflect quality upgrading within this group of products relative to unskilled-labour intensive goods. Here, however, further analysis is possible since highly detailed trade data are readily available.

The aim of this paper is to evaluate more carefully the information contained in trade prices and to assess what this contributes to our understanding of the impact of globalisation. Trade prices are the conduit by which globalisation affects domestic labour markets. We look at movements in import and export unit values (which as usual

are used to proxy import and export prices) within two skilled-intensive sectors (electrical and non-electrical machinery) and three key unskilled intensive sectors (textiles, clothing and footwear). Machinery is typically taken as a skilled intensive sector in which OECD countries possess a comparative advantage. Textiles, clothing and footwear are more traditional manufacturing sectors where the intensity of unskilled labour in production is higher and it is generally accepted that comparative advantage has shifted to the labour-abundant developing countries. Textiles, clothing and footwear are generally those sectors expected to be more affected by increased competition from low-wage countries.

We utilise data, covering the period 1976-1994, at the most detailed (tariff-line) level of disaggregation for five European countries (UK, France, Germany, Belgium-Luxembourg and Italy). For each of these importing countries we consider trade with five regions: OECD, Central and Eastern European Countries, the NICs, other Asian countries and the rest of the world. If globalisation has had a significant impact upon labour markets in industrial countries this should be apparent in movements in prices for finely defined categories of traded products.

A key feature of our work is that we allow for quality upgrading within sectors by using fairly standard index number techniques to decompose movements in unit values into two components: pure changes in prices and variations across time in the bundle of goods. The paper has two key objectives. Firstly, we assess the extent to which the pure prices of unskilled-labour intensive products have changed relative to the pure prices of skilled intensive products. In other words we take the bundle of goods in each sector imported at the start of the period as fixed and investigate the extent to which the price of this bundle has changed relative to the price of the fixed bundle of other goods.

As mentioned above, the issue of the impact of globalisation would ideally be analysed using detailed data on domestic output prices. The second objective of this paper is, in the absence of such disaggregated information on domestic prices, to look to see whether we can identify responses to globalisation by domestic firms from changes in the price and composition of the bundle of goods exported. It is here that detailed

product specific data are available. In particular, we look to see if increasing import competition is associated with a response by domestic firms to raise the quality of the output they produce. The defensive innovation concept discussed by Wood (1994, 1998) explains the intra-industry skill upgrading of employment as a defensive strategy against increased competition in international markets. In this situation we should observe more quality upgrading precisely in those sectors characterised by more competition in international markets. We check for this by seeing whether there has been a tendency for import prices to be correlated with upgrading of the bundle of goods exported.

The paper commences by briefly reviewing the evidence regarding movements in relative producer prices and import prices over the past 30 years. We then proceed to analyse the very detailed tariff line trade data and discuss the implications of the information contained in these data for the debate over the role of trade in increasing inequality between skilled and unskilled workers in Europe and North America. The final section presents some conclusions.

## **2. The Price Puzzle: Trends in Sectoral Producer and Import Prices**

Figure 1 shows for 14 European countries and the US, indices of the domestic prices (price of value-added) of the two high skilled intensive sectors, non-electrical machinery and electrical machinery, relative to the price of textiles, clothing and footwear, unskilled intensive activities. There is some evidence of a slight upward trend in the ratio of the price of electrical machinery relative to textiles, clothing and footwear for certain countries. However, the picture from the non-electrical sector is even more clouded and no overall pattern across these countries can be deduced. In some countries the price ratio has fallen over a large part of the sample period!

Figure 2 shows relative import prices (unit values) for nine of these countries. The figures show the ratio of the import price of engineering products as a whole relative to the aggregate import price of textiles, clothing and footwear. We show separately the ratio of the import price of engineering products from OECD countries relative to the import price of textiles, clothing and footwear from non-industrial countries as well as

the price ratio of total engineering imports relative to total textiles, clothing and footwear imports. Interestingly, there do not appear to be significant differences between the two series suggesting that for these countries the import price of low skilled products is determined by trade with the South and that the import price of engineering products is determined by trade with the North.

With the exception of France, Portugal and Spain, these figures suggest more strongly an upward trend in the relative price of engineering products, at least since the early 1980s. Hence, as in previous studies the information from the import prices is more indicative of a fall in the relative price of unskilled intensive products. We now proceed to investigate more carefully the extent to which changes in these aggregate unit values capture the true competitive effect from imports, and hence the potential impact of trade upon the domestic labour market. We do this by investigating the extent to which movements in import prices might be clouded by changes in the product composition of the sectoral indices.

### **3. Price Movements and Quality Upgrading**

Adjustments for quality are crucial when computing price movements for the skilled intensive sectors, particularly if sector-biased technological change is prevalent, as previous studies would suggest. As we shall see quality upgrading may also be an important feature of sectors typically thought of as unskilled intensive.

We start from the observation that the price (proxied throughout by unit value – value per unit of volume)<sup>1</sup> of an imported or exported commodity often varies across different countries (or regions). Such price differences are a first indication that, even for fairly standardised products, product differentiation and differences in quality are important. This implies that care must be taken in interpreting changes in the price of traded products across countries. Anderton and Brenton (1998), for example, show that for both the UK and Germany movements in import prices for many sectors over the 1980s would have been different from that observed if the share of the different country suppliers of imports had remained constant.

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<sup>1</sup> Import and export prices are not available for most European countries at a detailed product level.

When considering total imports of a particular product it is not possible to distinguish whether an increase in the price mirrors a pure price increase or the switch to a more expensive supplier, which is able to provide a higher quality variant of the product. In the following analysis we crudely control for this country composition effect by considering several different regions as sources of imports or as export destinations, but take each region to be relatively homogeneous in its country composition. That is we assume that products from the different countries within the same region are very similar in terms of quality. Shifts in the country composition of imports from a particular region, *ceteris paribus*, are not expected to have a substantial impact upon the unit value for that region.

Changes in sectorally aggregated unit values for each region also need careful interpretation. Changes in the indices can be caused by pure price movements at the disaggregate commodity level but also by quality upgrading in terms of changes in the commodity composition of the bundle imported from the region, that is, by a move towards commodities characterised by higher prices. The unit value index for imports from, or exports to, a particular country for a sector  $g$  at time  $t$  is:

$$P_g(t) = \frac{\sum_{i=1}^n V_i(t)}{\sum_{i=1}^n Q_i(t)} = \frac{\sum_{i=1}^n P_i(t) \cdot Q_i(t)}{\sum_{i=1}^n Q_i(t)} \quad (1)$$

where  $V_i$  and  $Q_i$  are respectively the value and quantity traded of each commodity  $i$  in the sector, and there are  $n$  commodities in the sector. The change in the aggregate unit value index is measured by:

$$\Delta P_g(t) = \ln P_g(t) - \ln P_g(t-1) \quad (2)$$

Let's consider the case where the total quantity traded in the sector is constant in time. A price change from  $t$  to  $t+1$  for the aggregate can therefore be caused either by a change in any of the  $P_i$  or by a change in any of the  $Q_i$ . The latter being a change in the



composition of sectoral imports or exports. So a shift in the domestic or foreign demand towards more expensive commodities in the sector will lead to an increase in the aggregate import or export price even if none of the individual prices ( $P_i$ ) change. In this paper we attempt to identify from changes in sectoral import or export prices movements due to adjustments to the composition of the bundle of commodities and changes due to movements in actual prices. That is, we seek to derive a measure of pure price changes within the sector analysed together with a quantification of quality upgrading in the sector.

To achieve this we have applied the Divisia index number methodology introduced by Chinloy (1980) and applied by Aw and Roberts (1986) to calculate the impact of quantitative restrictions in promoting substitution within the imported bundle towards higher-priced products and sources. The Tornqvist price index for a group of products is defined as the value-share weighted sum of the growth of the individual import product prices:

$$\Delta P_g^*(t) \equiv \sum_i^n S_i(t) \Delta P_i(t) \quad (3)$$

where

$$S_i(t) \equiv \frac{1}{2} \left[ \frac{V_i(t)}{\sum_i^n V_i(t)} + \frac{V_i(t+1)}{\sum_i^n V_i(t+1)} \right]$$

and

$$\Delta P_i(t) \equiv \ln \left( \frac{V_i(t+1)}{Q_i(t+1)} \right) - \ln \left( \frac{V_i(t)}{Q_i(t)} \right)$$

As shown by Aw and Roberts (1986) the difference between the aggregate unit value index, (2), and the Tornqvist index, (3), will measure the growth in imports and exports prices due to the recomposition of the bundle among products. When there is a shift towards relatively more expensive goods in the bundle index (2) will be higher than index (3). In other words the distance between the two indices provides a measure of the bias created from the fact that the unit-value index is a quantity-weighted average where greater weight is given to the prices of those goods whose change in quantity between  $t$  and  $t+1$  has been highest.

#### **4. The Data**

We consider five trade regions: OECD, CEEE (Central and Eastern European Economies), NICs (4 tigers), RoA (Rest of Asian Countries) and RoW (Rest of the World). The last four groups are chosen to capture the competitive pressure from low-wage economies amongst heterogeneous regions. For each region we have computed the standard import and export unit values (as in (2)) and then corrected for changes in the commodity composition of the bundle of traded goods belonging to each sector (as in (3)). Within each region the difference between (2) and (3) will be interpreted as a measure of within industry quality upgrading since it reveals changes in the composition of the bundle of goods traded towards more expensive varieties of the goods.

Data have been collected at the highest level of disaggregation (6-digit-Nimexe for the 1976-87 period and 8-digit-CN for the 1988-94 period) on all values and quantities of imports and exports in 2 skilled and 3 unskilled labour intensive sectors. More precisely 853, 560 and 67 activities belonging respectively to the textiles, clothing and footwear sectors enter our calculations whilst 1698 and 847 activities define the non-electrical and electrical machinery sectors in the period 1976-87. Following the revision of the trade classification used by the EU, 815, 451, 95, 1041, 749 activities enter our calculations for the period 1988-94 for the textiles, clothing, footwear, non-electrical and electrical machinery respectively<sup>2</sup>.

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<sup>2</sup> The difference between the number of products belonging to the same sector is due to a change in the international trade classification adopted by Eurostat. In 1988 the Combined Nomenclature was introduced, replacing the previous Nimexe classification. The CN is an extension of the Harmonised

We assume implicitly that products are homogeneous at the tariff line level and that quality upgrading is reflected only by shifts between products at the tariff line level. If the quality of the individual tariff line products were to change this would be captured as a movement in price. It should be remembered, that here we are using the most detailed data that is available, further disaggregation is not possible.

## **5. The Results**

We have considered movements in relative import prices between the sub-periods 1976-81, 1981-87 and 1988-94. Such temporal decomposition is aimed to capture better the differences between the 70s and the 80s suggested by the changes in aggregate imports and exports prices, but also reflects the change of trade classification in the EU in 1988. Our aim here is to disentangle pure price and quality upgrading effects due to increased international competition within aggregate import and export price movements.

### *5.1 Corrected Relative Unit Values – Movements in Pure Prices*

In Figure 3 we compare changes in unit values of imports corrected for quality upgrading in the skilled intensive sectors from the OECD countries with those of imports of unskilled intensive products from the 4 low-wage regions (comparison sets will be defined as OECD-NICs, OECD-RoA, OECD-RoW and OECD-CEEE).<sup>3</sup> In each histogram we relate, non-electrical machinery and electrical machinery with textiles, clothing and then footwear. The first objective is to assess whether these changes in ‘pure prices’ have been larger for the skilled intensive sectors relative to the unskilled intensive sectors. Price changes for imports from OECD in both skilled and unskilled intensive sectors (Figure 3e) are also presented in order to allow movements in the prices of unskilled intensive products imported from the South to be compared to movements in the prices of the same products imported from the North.

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System, whereby additional codes with 2 digits added, are used. Therefore each commodity in the CN is characterised by an 8-digit code.

<sup>3</sup> Calculations have also been performed using unit values of exports of skilled products to OECD countries. The use of either export or import unit values to compute movements in prices in the skilled intensive sectors leads to the same broad conclusions.

In the first period (76-81) the picture revealed by all comparison sets in all importing countries is similar. Corrected unit value changes for unskilled intensive commodities were, on average, higher than the corresponding changes in the skilled intensive sectors. This is particularly true for imports of clothing and footwear from the NICs. A similar picture emerges for imports from RoA, RoW and CEEE, but for these countries it is either the clothing sector (RoA and RoW) or footwear (CEEE) which typically show a lower increase in pure price relative to the other unskilled activities.

These results suggest that the relative price of skilled intensive products decreased rather than increased in the second part of the 70s in all the importing countries and trading regions considered here. However, the figures do reveal a varied picture for the different unskilled intensive activities. The increase in the pure price component of footwear import unit values was generally the highest, whilst a comparison between textiles and clothing suggests that competitive pressure from the NICs was mostly apparent in the textile sector with competition from RoA, RoW and CEEE being particularly important in clothing products. The aggregate import prices discussed in Section 2 do not reveal these trends. They suggest, in general, a slow upward trend in the ratio of skilled to unskilled import prices, reflecting, in part at least, the contrasting movements in pure price changes between different unskilled intensive activities from low-wage economies.

The analysis of the data for the later periods suggests an opposite trend in movements in pure prices within the aggregate import unit values for each region. Changes in import prices for textiles and clothing from the low-wage regions were generally much lower than the equivalent price changes for imports in the skilled sectors from the OECD countries particularly in the 1981-87 period. In some cases the price of the bundle of unskilled intensive goods imported at the start of the period actually fell in absolute terms. The 1988-94 period suggests some continuity of this trend, although there is an indication that the difference between changes in pure prices for skilled and unskilled intensive products was slightly smaller. It is interesting that the conclusion of a decline in the relative pure price of unskilled activities in the 1980s and 1990s is evident in the comparison between electrical machinery and the unskilled intensive activities. This

machinery sector includes products of the computer industry, the prices of which are generally deemed to have fallen strongly during these periods.<sup>4</sup> Our simple data analysis would therefore suggest that, in contrast to Leamer (1996), the 80s, and not the 70s, are the Stolper-Samuelson decade in terms of movements in the price of skilled intensive products relative to unskilled intensive products.

It is also clearly apparent from the figures that for the 1980s and 1990s there is a considerable difference between the changes in prices for footwear and the changes for the other unskilled activities. Changes in unit values are always higher for footwear than for textiles and clothing and in many cases changes in footwear prices have been as high as changes in prices for the skilled intensive commodities. Accordingly, the movement in relative prices with respect to this sector would suggest a rather different picture, with no change or even a decrease in the import prices of the skilled intensive industries relative to footwear. Initially, we speculate here that this may have something to do with the structure of the footwear industry and the increasing importance of sports footwear and the role of companies such as Nike and Adidas. But this is an issue that requires more serious attention.

Another interesting feature that is evident from the graphs concerns the differences between regions in movements in prices. In the textile and clothing sectors it is clear that relatively stronger import competition, in terms of falling relative pure prices, came first from the RoA region and then subsequently from the RoW region (particularly in the textiles sector where large declines in prices are recorded). Not surprisingly more intense competition from the CEEE region is most apparent for the 1988-94 period. In this environment the role of the NICs in the textiles and clothing sector is somewhat obfuscated by the developments in the other regions.

Looking at developments for the OECD region (Figure 3e) shows that both in the skilled and unskilled intensive sectors important differences appear particularly with

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<sup>4</sup> Computers and computer components are included in sector 85 (electrical machinery). The literature has extensively discussed whether computers should be included in the price analysis, since computer prices appear more sensitive than other sectors' prices to the influence of quality upgrading. For example, Sachs and Shatz (1994) introduce a dummy for the computer industry in their regression analysis whilst Feenstra and Hanson (1997) omit the computer industry from their sample.

respect to the 1988-94 period. Pure prices of imports of textiles and clothing from the OECD increased more or less in the same order of magnitude as the changes in the prices of the skilled intensive products until 1987. In the last period, in contrast, textiles and clothing imports from the OECD in all the European countries have been characterised by a relative and absolute decline in pure prices.

So competitive pressure from RoA and RoW countries in the early 1980s, as reflected by large negative pure price changes in textile and clothing imports, may have led to declining relative prices of unskilled intensive products in industrial countries. This may then have contributed to the decline in the relative wage, or the fall in relative employment opportunities, of unskilled labour in those countries. The decline in the price of textiles and clothing imports from the OECD in the most recent period may also reflect the increasing role of outsourcing in industrial countries. OECD countries have responded to more intense competition by moving the unskilled activities of the production process in textiles, clothing or footwear to low-wage economies. This has led to prices falling for those products, given that the weight of unskilled activities is particularly high in these sectors.

### *5.2 Responses to International Competition - Quality Upgrading*

In this part of the analysis we briefly look at the evolution over time of changes in the sectoral unit value index which are due to shifts in the composition of the bundle imported, which we refer to as quality upgrading. We expect that the nature of foreign competition, whether exercised in terms of downward pressure on prices for the unskilled intensive products or in terms of quality upgrading, will have different implications for domestic labour markets. In a perfect competition framework wages are clearly anchored to product prices. However, with product differentiation it is more complex to predict the effects of import competition either in the form of lower prices or in the form of quality upgrading on domestic wages. On the one hand relative wage rates are linked to relative product prices. Whether relative domestic prices are influenced by developments abroad (as for example via an increase in the availability of cheap labour) depends on how much imports compete with the domestic varieties of a product. If, in the face of the increased competition from low-wage economies,

domestic production moves towards unskilled intensive commodities of a higher quality than the relevant product price for unskilled wages at home is that of the domestic variety<sup>5</sup>. Here we also present data on quality upgrading of exports (the move to more expensive varieties in the bundle) to proxy changes in the domestic production structure.

We proceed firstly by looking at the strength of any associations between changes in the pure prices of the bundle of goods imported and the composition of that bundle in terms of quality upgrading. We then try and identify if there are any significant links between price and quality movements of imports and changes in the price and composition of the bundle exported. This is an indirect approach, given the lack of suitable domestic data, to assessing how domestic production might have reacted to changes in the nature of import competition.<sup>6</sup>

For this part of the analysis we use data aggregated across all the trading regions since a change in competitive conditions due to movements in the price and quality of imports from one particular source may not necessarily be reflected in changes in exports to that specific destination. Therefore we now calculate pure movements in price as changes in unit values after netting out quality upgrading due to changes in both the country and product composition of imports. Thus, our index (3) is calculated as

$$\Delta P_g^*(t) \equiv \sum_c^5 \sum_i^n S_{ci}(t) \Delta P_{ci}(t) \quad (3')$$

where,  $c$  refers to each of the 5 regions considered. The difference between (3') and index (2) calculated for total trade will give us the change in unit value due to quality movements resulting from a change in supplier or a change in the composition of the bundle.

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<sup>5</sup> As pointed out by Slaughter (1998) the Stolper Samuelson theorem also applies under the assumption of imperfect competition as long as price-cost markups are constant. In our scenario there can still be a negative effect on wages for the unskilled if the move to higher quality and higher priced varieties is also associated with higher price-cost margins.

<sup>6</sup> Brenton and Pinna (1999) provide a more detailed graphical analysis of quality upgrading by sector and by importing region.

Table 1 shows, for the unskilled intensive sectors, simple correlation coefficients between changes in the pure price of imports and exports ( $P_{imp}$ ,  $P_{exp}$ ), between changes in the quality of imports and exports ( $Q_{imp}$ ,  $Q_{exp}$ ) and between changes in the price of imports and changes in the quality of imports, and likewise for exports. The coefficients in the upper left-hand matrix in the table are based on the data for all five importing countries, all three sectors and all three periods (76-81, 81-87, 88-94). The correlation coefficients have therefore been calculated with 45 observations. The coefficients are not high but those which are significant (at the 5% level) indicate that movements in pure prices of imports are positively correlated with changes in pure price of exports (a coefficient of 0.58) and that movements in the quality of exports are correlated with quality upgrading of imports (a coefficient of 0.43). There is no evidence here that increasing import price competition is associated with significant upgrading of the quality of exports. Pure price movements are positively and significantly correlated with quality upgrading of exports.

Thus, we find that where import competition has been strongest in terms of pure prices there have been smaller pure price increases of exports, and a smaller degree of quality upgrading of both imports and exports. Moreover, when imports have been characterised by strong quality upgrading there has been also upgrading of exports. We also present separate correlations for each of the three unskilled intensive sectors, but here are limited to 15 observations only. All the sectors are characterised by the positive association between movements in pure import prices and changes in the pure price of exports. But only in textiles and clothing is there a correlation between changes in the price of imports and the upgrading of imports and exports. No correlation between quality upgrading of imports and exports is revealed in the footwear sector.

We have made some limited attempts to check the robustness of these associations. What we find is that the key price-price and quality-quality correlations remain, firstly, when imports from the OECD are excluded so as to calculate movements in import price generated only from lower wage regions (right hand column of Table 1), and secondly, when bilateral associations are investigated (results are not reported here but



are available). The latter case provides for an increase in the number of observations in each period and in each sector.<sup>7</sup>

This correlation analysis is rather weak and further work is required to extend the data to provide for more the formal testing of hypotheses regarding the impact of globalisation. However, we interpret these results as indicating possible important linkages between developments in the international and national markets. In general import price competition seems to have been positively associated with movements in the price of exports, whilst quality upgrading of imports seems to be linked to movements in the quality of exports.<sup>8</sup> We do not find any convincing evidence from the structure of exports of defensive innovation leading to a higher quality bundle of exports in response to stiff price competition from imports.

## **6. Conclusions**

In this paper we have sought to delve into sectoral import and export prices to separate out changes due to pure prices movements for a given bundle of goods and changes due to adjustments to the bundle of goods imported or exported. We feel this is useful in attempting to identify more clearly whether the price of unskilled intensive activities has fallen relative to that of skilled intensive activities. It has also allowed us to consider the nature of the response to more intense international competition, as reflected in falling relative pure prices and upgrading of the quality of imports, in terms of changes to the price and composition of the bundle of goods exported.

Specifically we report three key conclusions:

1. With respect to the issue of relative prices our analysis reveals important differences between the 70s and the 80s in the impact on European countries of trade with low-wage countries. When looking at relative import prices, the 1980s seem to be the Stolper-Samuelson decade when the price of unskilled intensive products fell relative to that of skilled intensive goods. Relative prices of unskilled compared to

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<sup>7</sup> Germany was the only country where none of the correlations in any sector were significant.

<sup>8</sup> We very simply considered the issue of causality by assessing the links between movements in import prices in one period and movements in export prices in the following periods. Both at the aggregate and the sectoral level the correlations were higher when the import data were associated with the export data of the following period.

skilled intensive goods changed little in the 1976-81 period. However, in the period 1981-87 our analysis of pure price changes suggests a drastic fall in the relative price of imports of textiles and clothing, particularly from the NICs and the rest of Asia regions.

2. Pure price movements in the imported bundles have generally been accompanied by price movements in the same direction in the exported bundle of the same sector. A positive association is also apparent between the upgrading of the quality of imports and changes in the quality of exports. In other words, import price competition seems to be associated more with movements in the price rather than the quality of exports. Along the same lines, when and where imports have been characterised by quality upgrading there has been also upgrading of the quality of exports.
3. Considerable heterogeneity among unskilled intensive sectors is revealed. The impact of trade with low-wage countries on relative import prices is not common across all unskilled intensive sectors. We find behaviour in the footwear sector to be quite different to that in the textiles and clothing sectors.

In general, our results support the view that using relative import prices identifies more clearly an impact of globalisation in Europe. An issue for further reflection is why these changes in import prices do not show up in changes in relative domestic output prices; is it simply a matter of data or does it reflect the nature of production and distribution in European countries?

In this work we have not been able to link the changes in relative import prices to developments in domestic factor markets in Europe. However, our analysis would suggest caution in rejecting globalisation as a significant factor in explaining the outcomes for unskilled workers in European countries over the past 20 years. Substantial movements in relative prices revealed by the import data are consistent with trade having played a significant role in affecting the fortunes of unskilled workers in Europe. From a policy perspective we subscribe to the view that even though trade may have played an important role in affecting these workers in Europe the most suitable response is in terms facilitating adjustment of these workers to alternative areas of activity. Appropriate intervention would appear to be of the form of retraining,

enhancing labour market flexibility and promoting the mobility of labour via, for example, measures affecting the housing market.

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