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The Rise and Transformation of the UK Domestic Appliances Industry

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The UK domestic appliances manufacturing industry had its origin in the 19th century, when it was established as a nationally based and focused industry, aimed at the prosperous middle classes. By the 1930s and 1940s, ownership of production plants had become complicated, comprising subsidiaries of US multinationals or divisions of large diversified mainly British firms. Even by the 1950s, it was an industry that still focused on a largely middle class market. In the 1960s and 1970s, however, this structure of relations began to change, initially with imports from Italy, focused on the cheap end of the market which opened to the working class. By the 1980s, there had been a decline of nationally based domestic appliance producers and an increasing presence of international producers, selling their goods under a range of brands.

This paper examines the changing position of the UK domestic appliances industry with respect to a number of dimensions – consumption, production, ownership, trade relations and employment. It does so in the context of what might be called the ‘regional idea’. This is the idea that in the modern political economy ‘trade flows are dominated by exchanges within and between the three major regions of the global economy (the so-called triad): Europe, North America, and East Asia’ (Hoekman and Kostecky, 2001: 9); and that over the last two decades or more there has been a regionalisation of trade and foreign direct investment flows (Kozul-Wright, 1995; Ohmae, 1995).

Following an outline of the history of cooking and cooling products – which are two major constituents of the industry – it focuses on the industry over the last quarter of a century. To anticipate: this review points to the industry as one that has been in secular decline as far as employment is concerned. The now

mature domestic market is seen to be subject to continued foreign domination and high levels of ownership concentration. With respect to the regional idea set out above, both imports and exports are seen to have taken a largely (European) regional form. However, recent evidence also suggests that the source of imports has been shifting from the EU to the EU periphery and may now be beginning to move outside the region.

A Brief History of Domestic Appliance Production in the UK

The production of domestic appliances in the UK goes back to the late nineteenth century. As a new industry, it was in part an adaptation of more established industries, such as the general engineering industry, foundries and related product industries. One sequence of development was for existing engineering companies to move into domestic appliances, presumably in response to a perceived potential demand. To illustrate, Davis Gas Stove Company bought into T. and J. Jackson Ltd (electric lighting specialists) in 1912 and went on to produce the Jackson electric cooker (Corley, 1966: 30-31). For the first part of the twentieth century, the British market was dominated by foreign companies, via imports or by operations run through British subsidiaries. The industry has its roots in the beginnings of a broader based consumer market for such products, first among the middle classes and then slowly extended to the working classes in the first part of the twentieth century.

Cookers

The forerunner of the domestic appliances industry came in the form of cookers, first gas cookers and then electric. Sometime in the 1820s, following the supply of gas to houses, the first gas cooker was developed and used in the UK (Houghton, 1972). These early models were adaptations of the available cookers, the coal range. They were cast iron boxes, insulated with straw and heated by piped gas. There was little development and refinement

of these units for most of the century. However, by the First World War they had acquired a position as a prestige domestic good.

The development of the electric cooker was much later, and was dependent on the extension of electricity supply to households towards the end of the nineteenth century. In 1895, it was reported that the Gloucester Road School of Cookery, London was using a 'miraculous' method of cooking with 'trained lightning' namely electricity. In a public demonstration of these 'new' products, the demonstrator, a Miss Fairclough, claimed that it was possible to cook food 'without any apparent signs of heat' and she went on: 'no other means of cooking is so eminently satisfactory and free from all disagreeable accompaniments' (Conacher 1971: 1). This effectively was the beginning of electric cooking. Until this event, cooking was largely carried out in iron stoves, using wood and other combustible material, having developed over the centuries, from the open fire through to the enclosed fire and then to the bakers' oven.

The forerunner of the modern oven was a square metal box with a door. This so called Dutch oven stood on high feet or on a hob in front of the fire and contained a clockwork mechanism from which a joint hung and rotated while cooking (Conacher 1971: 1). The first electric stoves were unrefined. As with the gas cooker these units were slow to develop. Initially they were adaptations of the gas cookers that were available, simply involving the replacement of gas heating with electricity. By the turn of the century the electric cooker had begun to develop a distinctive form and appearance.

Cookers gradually evolved with the attributes and features that are taken for granted today. The Belling company, an early domestic appliances producer, developed the boiler grill, (heat above and below) for the electric cooker in 1915. Originally switch controls had only three settings, High, Medium and Low, and it was not until 1946 that the 'Simmerstat' was developed, which gave a choice of six different settings for boiler rings (Conacher 1971: 4)

As with many of the innovations on gas and electric cookers, wartime developments were important. To an important extent research development for war purposes in the First World War and particularly the Second World War resulted in initiatives that were later utilised in the domestic appliance area. Similarly, the now popular microwave technology has its origins in defence development, which was subsequently transferred to domestic household use.

Refrigeration

The development of refrigeration units occurred at a later stage and outside the UK. It began in the USA with the development of cooling systems, in the first instance insulated ice-boxes (e.g. Sears Roebuck), and then via kerosene powered units to the modern refrigerator. The modern refrigerator was created with the development in the 1920s of compressors and evaporative technology. The first residential electric refrigerator was developed in the 1920s by General Electric. In 1926 General Electric sold 2000, by 1928 the

company estimated there were over one million refrigerators in US homes. By 1937 it is estimated there were nearly 3 million. At first these 'luxury items' were for the few who could afford them but by 1950 90 per cent of Americans living in towns and 80 per cent living in rural areas owned domestic refrigerators (Russo 2002; Weightman 2003: 189-90).

By 1927, the United States provided the bulk of refrigerator imports into Britain (Corley, 1966: 107). In the same year, Electrolux began producing the first small gas refrigerator in Britain. This development foreshadowed the later move in Britain towards 'waist high' or small refrigeration units (Hardyment, 1988: 141 - 142). Demand for refrigerators remained low in part also because the American penchant for ice in the home (initially stimulated and supplied by the frozen ice trade) had no counterpart in the UK or in Europe generally (Weightman 2003: 144). Compression unit, an essential unit for electric refrigerators, was only introduced into Britain in 1933. Compressor production did not assume any major importance in the British market until after the Second World War, when a franchise was granted to L. Sterne of Glasgow by the American Tecumseh Co. to make its sealed units, which were small enough to be incorporated into the refrigerator (Corley, 1966: 107-108). By the mid-1960s Sterne supplied compressors to most refrigerator manufacturers in the UK, apart from Hotpoint, Frigidaire, Kelvinator and Lec, which all produced their own compressors.

Design and Users

Initially, these appliances were very utilitarian, with little emphasis on style. Until the 1940s, the design of domestic appliances was largely dominated by engineering, 'the layout of the appliance's chassis, or inside mechanism' (Corley, 1966: 105). The result was an approach to product development in which relatively little attention was given to users. In fact, it is claimed that the view amongst appliance manufacturers was 'that since appliances were finely engineered products, the housewife ought to value their qualities even if the specification did not exactly suit her needs' (Corley, 1966: 51). It was only in 1956/7 that Hotpoint (principal products –cookers, refrigerators, vacuum cleaners and washing machines) carried out market research with 'housewives' to see what they wanted in relation to their electrical domestic appliances, this being the first time that this had happened in the electric domestic appliance industry (Corley 1966: 51). Until relatively recently, these products were designed and developed by men for largely 'imagined' women (Cockburn and Furst-Dilic, 1994).

The Beginning of a Mass Market: 1950s - 1970s

The acquisition of domestic appliances was initially confined to the middle classes, and it was during the 1950s that the more affluent working class began to purchase such items. As reported by Goldthorpe and Lockwood (1969: 22), real earnings increased sharply during this decade, and this was reflected in the acquisition of consumer goods:

... it was estimated that the average real earnings of industrial workers had risen by more than 20 per cent between 1951 and 1958; and that by the spring of 1959 the average working-class household income was about £850 per year (gross), with nearly half of all employed working-class families having an annual income of over £1000. It was revealed further, as a result of national surveys, that by 1959 among this more prosperous half of the working class 85 per cent of all household had a television set, 44 per cent a washing machine, 44 per cent a lawnmower, 32 per cent a car and 16 per cent a refrigerator. In addition 35 per cent of the families in question owned, or were buying, their own house

Lockwood had noted in an earlier article that this was part of a desire to acquire the material goods now thought necessary for a relatively comfortable life. Rather than these working class families seeing such consumer durables as status symbols, he argued, they recognised that: 'A washing machine is a washing machine is a washing machine' (1960: 253). It was on this basis that

these consumer durables became an increasing feature of working class as well as middle class family life in Britain.

Nonetheless, during the 1950s and into the 1960s, the production of domestic appliances in Britain had remained largely focused on middle class families, with little attention paid to the potential of a broader consumer base (Corley, 1966: 54). It was an industry that in Paba's words was 'essentially one of unspecialised, over-fragmented, undynamic' firms (Paba 1986: 306). These firms had limited product lines. Many firms manufactured under licence, particularly for the large US firms that led the industry. It was an industry that had been led either by subsidiaries of US multinationals (Frigidaire, Hoover, General Electric and Kelvinator) or divisions of other large diversified firms (AEI-Hotpoint, English Electric, Thorn, Simplex (Tube Investments) and Electrolux). By the 1960s, in the context of competitive pressures around quality, development and innovation, the smaller entrepreneurial units began to withdraw from the British domestic appliance market (Paba 1986: 306-07).

Thus, the British industry was largely nationally based – in the sense that production took place in Britain largely for a British market - although shaped by the presence of multinational firms. The British market expanded as the acquisition and use of the basic domestic appliances increased throughout the early to mid-twentieth century, such products being popularised as labour-saving goods for the modern household (Slater 2000: 179-180). This expansion is reflected in the focus of advertising on the consuming households, predicated on an expanding 'affluent working class'.

The emerging affluent working class in western societies from 1950 onwards was seen as a new relatively undifferentiated 'mass' market by producers, department stores, advertisers and distributors of all types of what were termed 'consumer durables', such as televisions, washing machines, cars, transistor radios and record players.

(Bockock, 1992: 133)

Although the British market had begun to expand, it was an industry that for a number of decades was relatively closed to imports. One reason for this closure was that after 1946 imports were tightly controlled by the Board of Trade, against a pre-war background of an increasingly restrictive import policy for the electrical domestic appliance industry, so as to protect Britain's electrical industry. In 1932 an Import Duties Act placed tariffs on many goods based on preferential principles, with a first level of protection for British manufacturers, a second level for Commonwealth manufacturers and no protection for others. After the Second World War, these policies were liberalised, although imports from the dollar area were restricted until 1959. They had however had the effect of encouraging foreign firms to produce inside the UK domestic appliance market.

Government concern about the balance of payments led to policies to promote exports. In 1951, at the time of the Korean War, refrigerator manufacturers were required to increase their exports from 66⅔ to 85 per cent of production. The result was that aggregate appliance exports increased

to about 42 per cent of total production. While this formal requirement was a short-term measure and exports thereafter declined to 35 per cent in 1954 and were down to 19 per cent by 1964 (Corley, 1966: 122-23).

As far as imports are concerned, it is argued by Paba that the principal barrier to import penetration in the UK industry during this period was 'high product differentiation' (1986: 307). In brief, domestic appliances is an industry in which it is very difficult to judge the quality of the product before purchase and consumers were drawn towards known and familiar brands. Such a situation gave established brands a considerable advantage, making it difficult for new entrants to persuade consumers to try them out. Coupled with this resistance, as Paba (1986: 307-08) points out, it may also be the case that consumers had negative views about products from particular countries. During the 1950s and 1960s this may have constituted an additional barrier to import penetration.

During the 1960s and 1970s, the patterns of production and marketing of domestic appliances in Europe began to change, with major consequences for the UK in the 1980s and 1990s. One feature of this period was the growth of a few European based firms, principally, through merger and acquisition. In fact, it is argued by Paba that the domestic appliances industry in Europe was marked by an external pattern of growth, whereby the growth of a few large firms in the industry was accounted for by mergers and takeovers, rather than by increasing production or entering new markets (1991: 22 – 24).

As far as the UK domestic appliance industry is concerned, the development of the Italian domestic appliance industry is critical. The modern Italian domestic appliance industry (refrigerators, washing machines, freezers, and dishwashers) dates from the 1950s, when the industry was transformed by the entry of “new generation” specialised firms’, such as Zanussi, Ignis, Zoppas, Castor, Candy and Indesit (Paba, 1986: 308). During the 1950s and 1960s these few firms came to dominate the industry, with Ignis, Zanussi, Indesit and Zoppas accounting for 77.8 per cent of the total production in refrigerators in Italy in 1964. This level of concentration in domestic appliance production was quite unlike any other European country at the time (Paba, 1986: 309). Significantly, these firms, unlike their larger European competitors, focused on the emerging mass market, developing products that were ‘reasonably’ priced and produced at low costs. To achieve these goals, these firms built up their productive capacity, and capitalised on the relatively low cost of Italian labour. Thus this was an industry that was highly concentrated, aimed at the mass market, with products that were relatively cheaply priced.

The Italian firms pursued a then distinctive entry strategy aimed at the ‘low income segments of the market’ (Paba, 1986: 309). This strategy had two components to it. First, UK companies were provided with non-branded goods, which they then sold under their own name. Brand-naming involved General Electric, Hotpoint, English Electric, Frigidaire and Imperial. The appeal of this strategy to the British-based companies was that it helped them to widen the model range in a particular product. Sometimes companies also

used this method to open up new product markets. For example, Hoover, with 30 per cent of the domestic British market for washing machines pursued this approach in the mid-1960s to enter the refrigerator market.

Second, the Italian firms sought agreements with retailers and commercial houses to market the Italian goods under such firms' own labels, thereby assuring potential purchasers of the quality of these goods. Of the main Italian firms, Indesit, by contrast, always sold under the 'Indesit' label, attributed by Paba to the fact that the firm was closely linked to Fiat and influenced by this multinational company (1986: 312, fn 2).

The Italian firms were successful in pursuing these entry strategies across Europe. Paba notes that during the 1960s, Italy became the second largest producer of domestic appliances in the world, and the largest exporter of domestic appliances. In 1963, Italy became the largest European producer of washing machines and in 1966 of refrigerators (Paba 1986: 308). The Italians rapidly had developed an innovative, expansionist industry based on big plants with low-cost labour and more efficient mass production techniques.

During the 1970s, changes took place with implications for the pattern of production and consumer demand in Britain, as well as the other main European countries. On the one hand, the Italian industry began to lose its way. Paba argues that the European market began to show signs of saturation, replacement demand coming to the fore towards the end of the 1960s. In this situation, increased emphasis was placed on 'product

differentiation and after-sales service' rather than production skills, as had been the case earlier (1986: 312-13). On the other hand, after 1969 the Italian firms could no longer maintain the low wage levels that had characterised the earlier period, partly as a consequence of a resurgence of unions at this time. Their place was taken to a certain extent by East European firms, which began (as the Italians themselves had first done) by selling non-branded goods to European firms.

There then followed a period where key Italian firms, such as Ignis and Zanussi, which were both actively involved in non-brand sales exports, were either absorbed as a managerial division of a multinational (Phillips in the case of Ignis) or part ownership (AEG-Telefunken in the case of Zanussi from 1973 to 1979) and subsequent takeover (Electrolux taking over Zanussi in 1984). Some firms, such as Smeg began to specialise in high quality products, which were still sold abroad through non-branded channels (Paba, 1986: 314-15). However, overall there was increased emphasis on branded goods.

Such developments had major implications for the British domestic appliance industry. In the process of becoming a mass market, the entry of Italian products, either non-branded or branded, had been crucial, as was the case elsewhere in Europe. It is to a more detailed account of the history of the UK Domestic Appliance industry in 1980s and 1990s that we now turn.

The UK Domestic Appliance Market: 1980s and 1990s

Most British households had a wide array of domestic appliances by the late 1980s. While a range of domestic appliances was more common in middle and upper class households, cooling appliances and washing machines were common in working class households (Table 1).

Table 1: Households with selected domestic appliances, 1988 (Percentages)

Households with:	Deep-freezers (incl. fridge-freezers)	Washing machines	Tumble drier	Microwave oven	Dishwasher
Professional Employers and Managers	88	93	60	51	32
Other non-manual Skilled and semi-skilled manual	91	95	62	60	27
Unskilled manual	84	89	45	50	19
Economically inactive	85	91	50	48	6
All	75	83	36	32	1
All (1999)	61	72	25	21	4
	77	84	42	39	10
	N/A	92	N/A	79	23

Source: Information on sources for Tables and Figures is provided in Appendix E.

By the 1980s, the UK market for cooling appliances, washing machines and cookers was mass-based, with the emphasis moving from first-time purchase to replacement. It is also the case that the class-based patterns of consumption were maintained as the range of domestic appliances was extended, from such items as refrigerators to microwave ovens, for a class-

based sequencing remained in the acquisition of new domestic appliances as they came onto the market.

However, the UK markets for domestic appliances saw no overall growth in value terms for core products such as cookers and cooling appliances. By this stage the market was a mature one with high levels of penetration for most products (Appendix A). It was also sensitive to changes in consumer demand. But whereas cyclical fluctuations made for falls in the market in the early 1980s and early 1990s, which were followed by upswings in each decade, this still left the overall market worth less in 2000 than it had been in 1979. At the start of this period the market had stood at £3,891 million at 1995 prices. It reached a highpoint of over £4,000 million in 1989 but was still only £3,500 million in 2000 (Figure 1).

A slight compositional shift took place over the 1980s with electrical appliances rising from 78 per cent of all domestic appliances in 1979 to 84 per cent in 1989. This share then remained stable throughout the 1990s.

Figure 1: UK Market for Domestic Appliances (£ Million 1995 Prices)

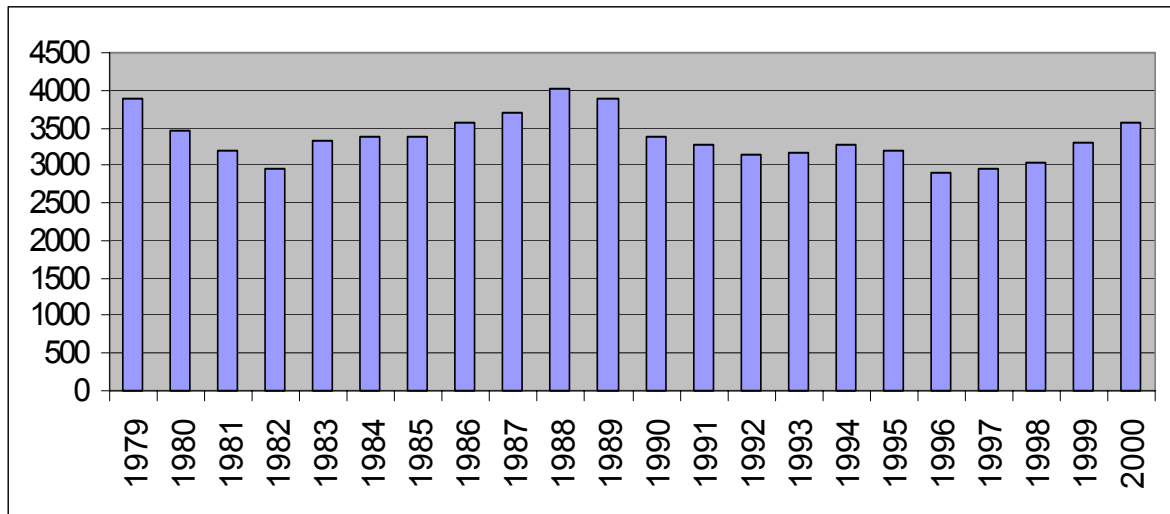
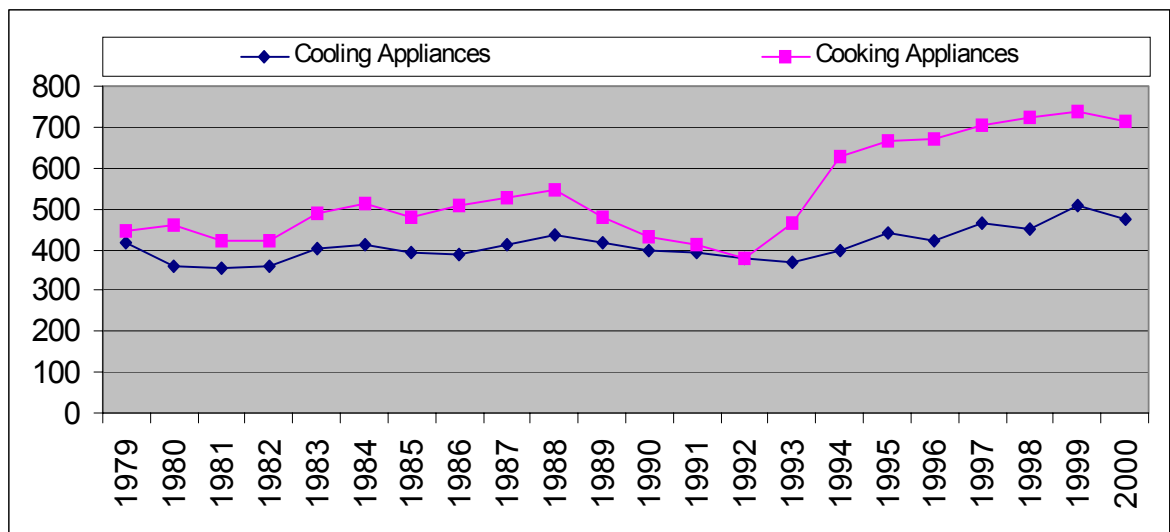


Figure 2: UK Market for Cooking and Cooling Appliances (£ Million, 1995 Prices)



*Note: The terms 'cooling appliances' and 'refrigeration appliances' are used interchangeably. Refrigerators are part of cooling appliances, together with freezers and fridge-freezers.

If this market is disaggregated for cooking and cooling appliances it can be seen that the two markets follow a similar pattern of movement to that of the overall domestic appliances market (cf. Figures 1 and 2). As with the overall

domestic appliances market, the declines at the beginning of each decade were followed by increases in later years (in fact domestic appliances are a good cyclical indicator). The most notable difference was in the performance of the cooking appliance market in the 1990s. In contrast to the fall in the domestic appliance market as a whole, these markets did see a small amount of growth. However, such growth was very limited. Over the entire period between 1979 and 2000 the cooking appliances market increased by only 23 per cent from £447 million in 1979 to £548 million in 2000. Cooling appliances increased by only 14 per cent from £415 million in 1979 to £475 million in 2000. These changes amounted to annual average rates of growth of only 1.07 and 0.68 per cent respectively.

Turnover and Value-Added

In 1979 total turnover of UK-based domestic appliances stood at £3120 million. In 2000, it was down to £2433 million. Only the second half of the 1980s saw year on year increases. This trend was not maintained in the 1990s, which were characterised by gradual decline (Figure 3). The share of electric domestic appliances in total turnover grew during the 1980s, declining slightly in the 1990s. On average electrical goods contributed 78 per cent over the whole period, a shift from 75 to 80 per cent having occurred 1979 to 2000.

Figure 3: Turnover in Domestic Appliances Manufacturing (£m)

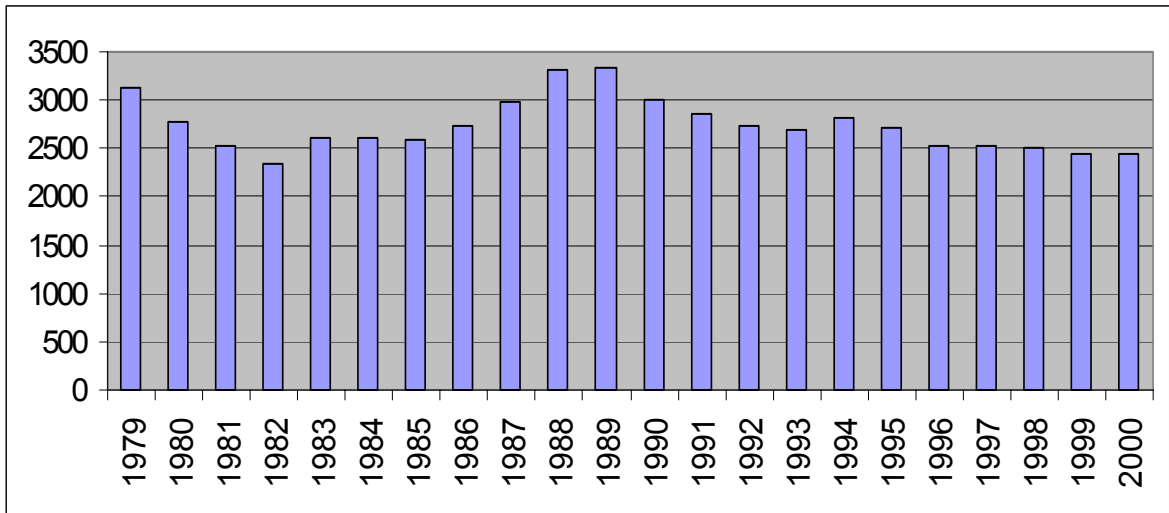
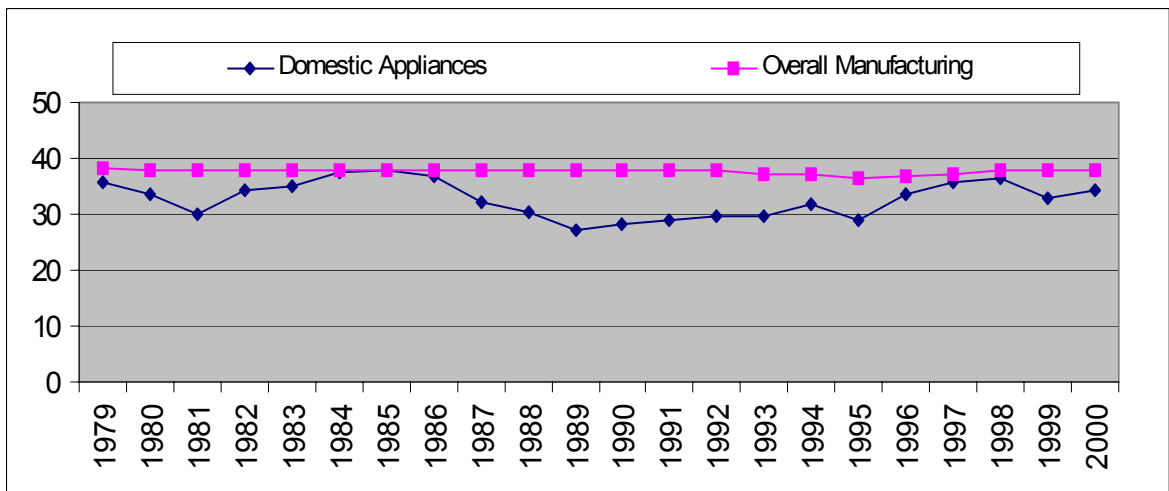


Figure 4: The Share of Value Added in Overall Turnover in Domestic Appliances and Overall Manufacturing (Percentages)

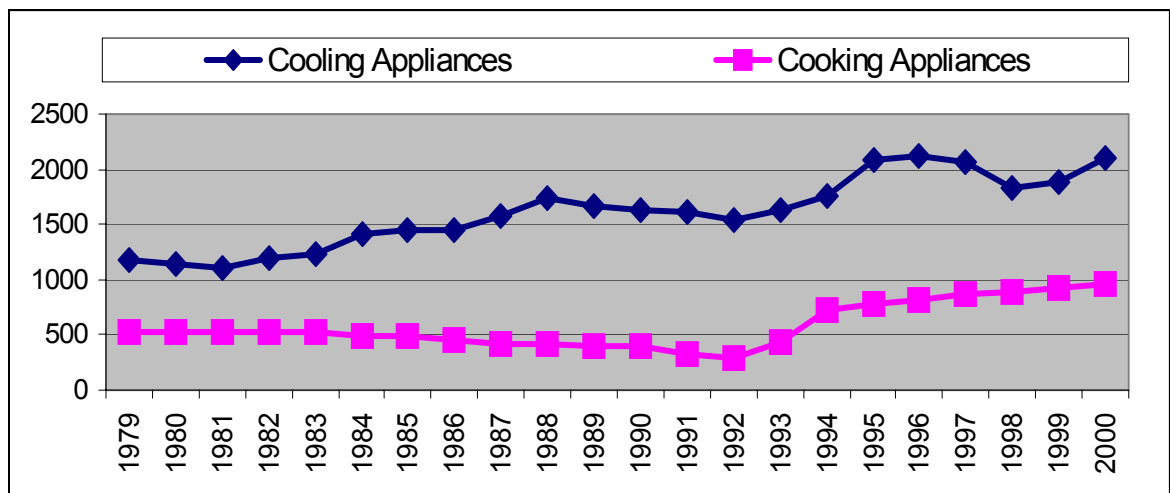


The unimpressive performance for turnover was matched by an equally unimpressive performance for share of value added in turnover (Figure 4). The weak share of value added performance in domestic appliances is clear when the share for domestic appliances is compared with that in manufacturing as a whole. The share of value added in domestic appliances turnover fell below that in manufacturing as a whole for the entire period. In manufacturing the share of value added remained remarkably stable with an

average of 38 per cent 1979-2000. In domestic appliances it averaged only 33 per cent for the entire period, the high points of 1984-86 and 1997-98 which approached the level for manufacturing as a whole proving transitory. This lack of a sustained upward movement in both turnover and the share of value added should be seen in the context of *increased* UK based production. More units have been produced but without significant benefit to the total value of production or the share of value added.

UK-based production has of course undergone some changes in product mix over the past two decades. In the case of cooking appliances, for example, the 1990s saw some rise in gas cookers at the expense of electric ones and there have been changes in the share contributed by hoods. In the case of cooling appliances, the share taken by refrigerators has tended to fall and those of freezers and fridge-freezers has grown (further detail is provided in Appendix B). However, there was an increase in the number of both cooking and cooling appliances produced in the UK between 1979 and 2000 (Figure 5).

Figure 5: Production of Cooking and Cooling Appliances (Thousands of Units)



In the case of cooking appliances, the growth occurred in the 1990s and overall the number of cooking appliances almost doubled to one million. In the case of cooling appliances, the rise was steadier, but units produced again almost doubled rising from 1.2 million in 1979 to 2.2 million in 2000.

There was therefore a more or less continuous decline in the price of UK manufactured units over the past two decades (Figures 6 and 7).

Figure 6: Wholesale Unit prices of different cooking appliances, 1995 prices, (£s)

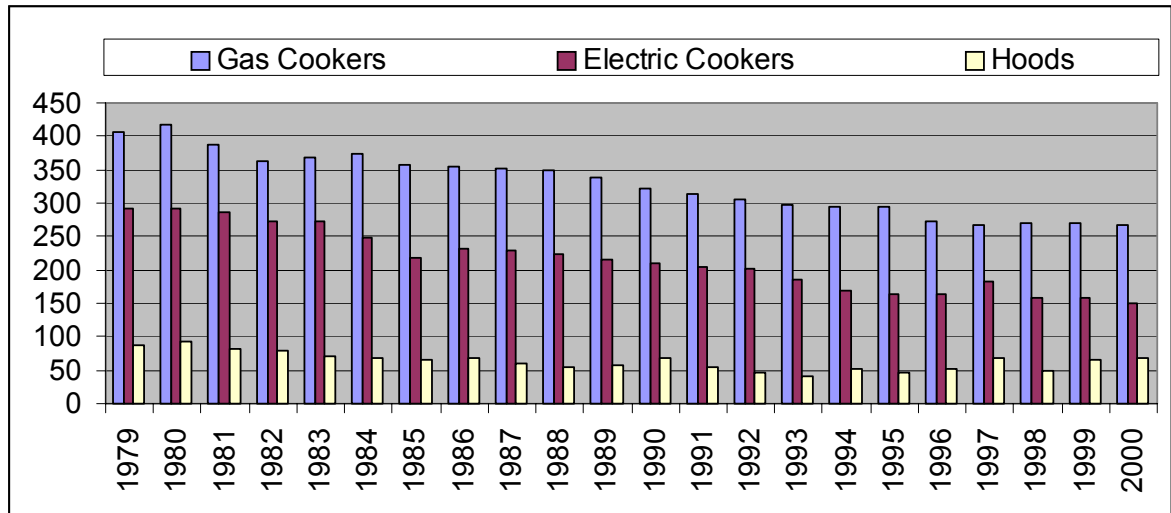
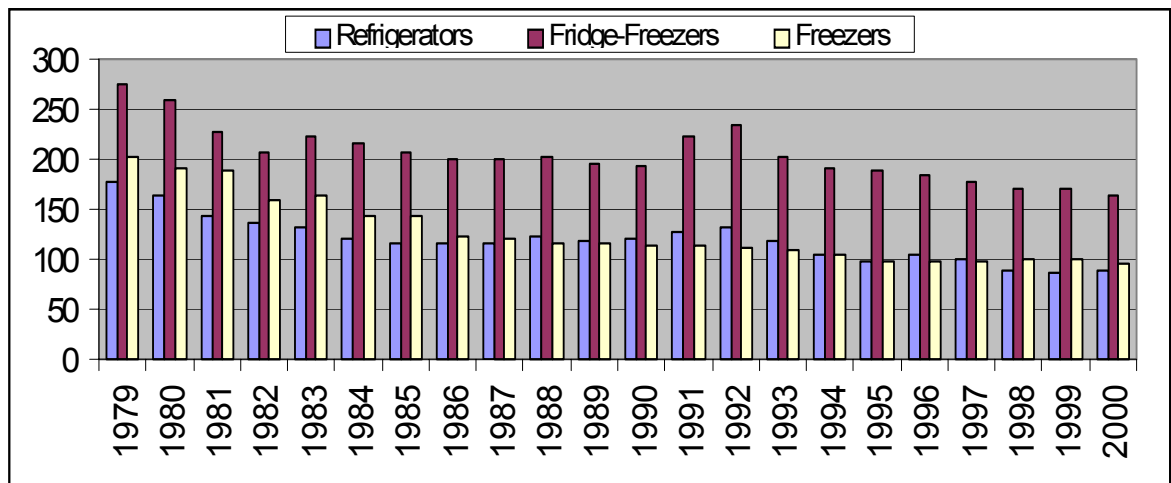


Figure 7: Wholesale Unit prices of different cooling appliances, 1995 prices, (£s)



In 1979, the average price for cooking appliances was £219 (all prices here are wholesale). By the early 1980s this had fallen to £167 and by 2000 it was more like £100. For cooling appliances average price followed a similar path –

from £203 in 1979 to £171 in 1983 and again to about £100 in 2000. While there are sometimes substantial price differences between the different sub-products, the general trend is born out in the major cases. Gas cookers have declined from £407 in 1979 to £268 in 2000. Electric cookers have declined from £292 in 1979 to £151 in 2000 (hoods, in any case a low price item, have held up better). Amongst cooling appliances, fridge-freezers fell from £274 in 1979 to £163 in 2000. The pricing of refrigerators and freezers underwent falls that are even more pronounced.

The problem of falling unit prices relates to a further problem that besets domestic appliance production in the UK. Prices have been driven downwards by cheaper and/or cheapening imports. In cooling appliances the prices of UK produced and imported products have been closely matched, but in both cooking (where imports have typically been cheaper) and in cooling appliances there has been a long-term downward trend in unit price, shown in Figure 8 and 9.

Figure 8: Cooling Appliances, Wholesale Unit Prices, 1995 Prices (£'s)

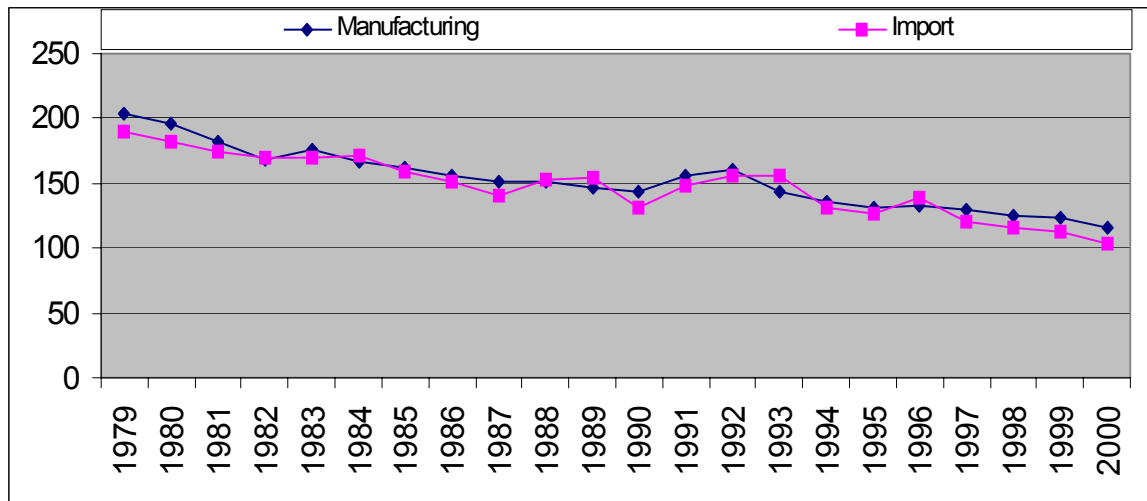
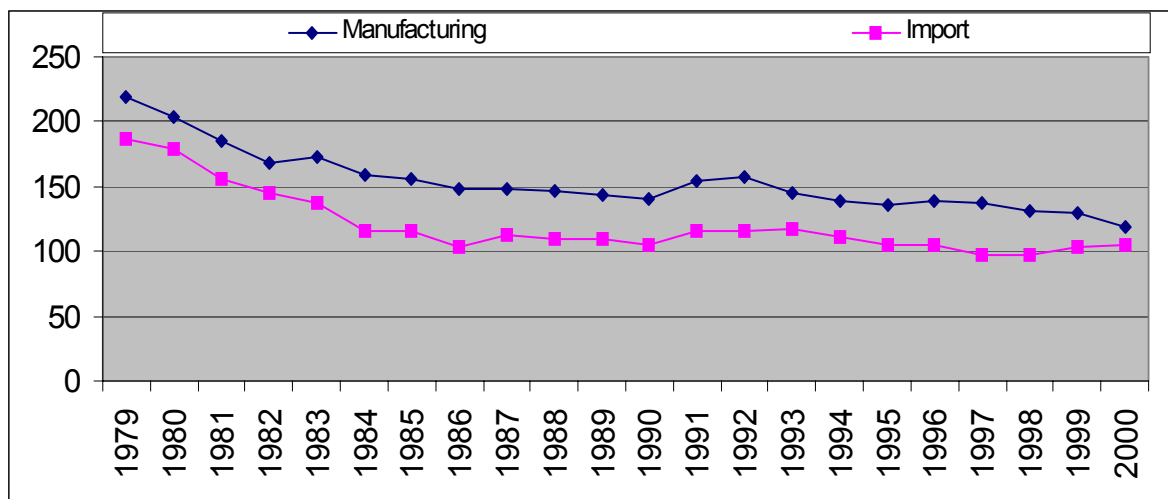


Figure 9: Cooking Appliances, Wholesale Unit Prices, 1995 Prices (£'s)



Reviewing the wider situation in 2001, Electrolux Chief Executive Michael Treschow commented that it was a 'very competitive environment in which customers are paying less and less for the products' (George 2001). This most certainly reflects the problem in the British-based industry.

Employment and Labour Costs

Employment in white goods has had already been falling in the UK. Aghast at the size of the cut work world-wide by Electrolux, the Swedish-based partner, a Business Week interviewer asked its CEO 'how can you get rid of 40,000 people? Was the company that fat?'(Business Week, 2002). In the United Kingdom, too, the pursuit of lower unit prices has been at a cost to jobs. Over the past two decades, the number of employees in domestic appliance manufacturing dropped from 70,000 in 1979 to 30,000 by 2000. In electrical domestic appliances 58 per cent of jobs had gone by 2000, in the smaller non-electrical part of the industry 54 per cent. Employment was still falling overall at the end of the 1990s (Figure 10). A more desegregated picture is presented in Table 2.

Figure 10: Total Employment in Domestic Appliances

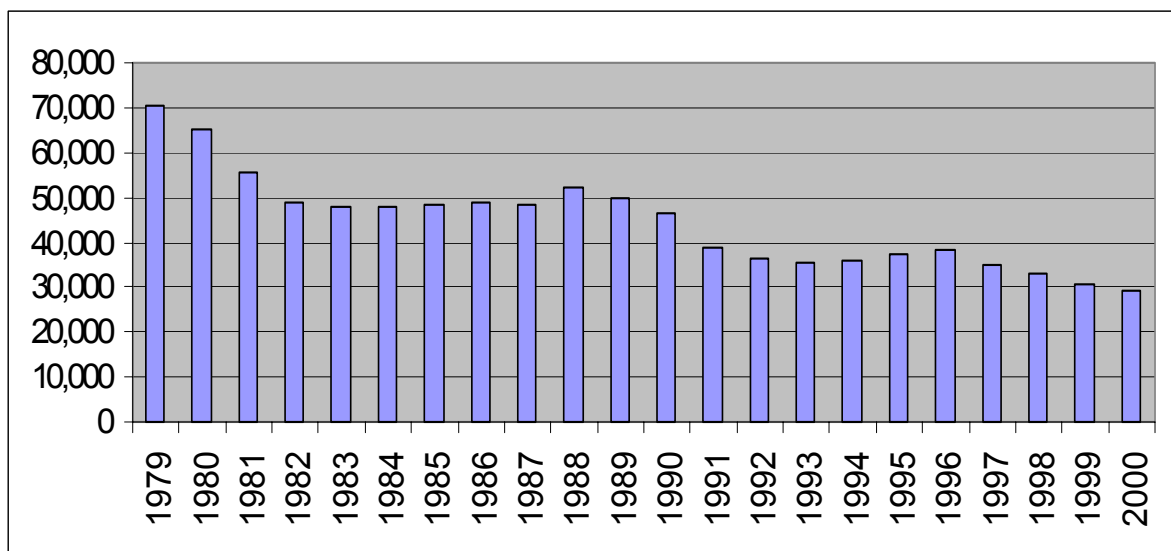


Table 2: Employment in Domestic Appliances manufacturing (000s)

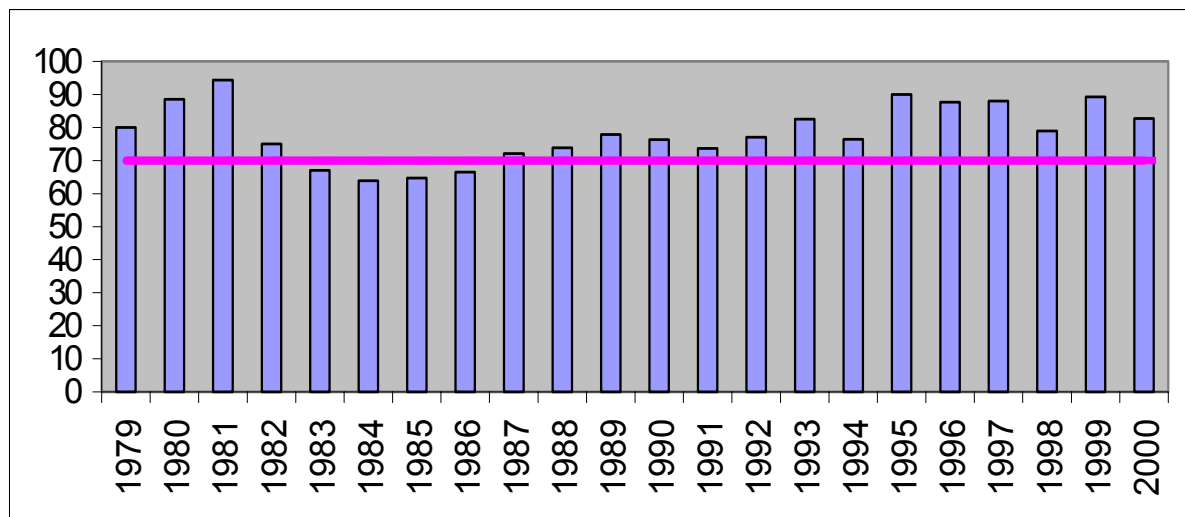
	Electric Appliances	Non-Electric Appliances	Total Employment in Domestic Appliances
1979	54.7	15.8	70.5
1980	50.8	14.4	65.2
1981	45.1	10.6	55.7
1982	38.3	10.4	48.7
1983	36.9	11.2	48.1
1984	37.9	10.1	47.9
1985	37.5	10.7	48.2
1986	38.1	10.6	48.7
1987	38.1	10.4	48.5
1988	42.1	10.1	52.2
1989	39.6	10.3	49.9
1990	36.9	9.4	46.3
1991	31.2	7.7	38.9
1992	29.2	7.4	36.6
1993	28.2	7.3	35.5
1994	28.6	7.2	35.8
1995	30.2	7.2	37.4
1996	31.0	7.3	38.3
1997	27.8	7.4	35.1
1998	25.9	7.3	33.3
1999	23.5	7.3	30.8
2000	22.2	7.3	29.6

Other things being equal, what has been said already – more units produced, fewer workers producing them – suggests a significant improvement in economic outcome. However, we have already seen that unit prices were falling and in addition to this, despite a loss of over 40,000 jobs in domestic appliances between 1979 and 2000, total employee compensation did not fall by a corresponding proportion. It fell only 22 per cent over the same period, compensation per employee rising (Appendix C).

The share of employee compensation in gross value added in the domestic appliances industry underwent a sharp rise 1979-1981, reaching 95 per cent

in 1981. This was at a time when employment fell drastically from about 70,000 to 55,000 employees (employee compensation includes redundancy payments). It then fell, bottoming out in the mid 1980s and thereafter it has undergone a steady rise. By 1990 it was 76 per cent of gross value added and in 2000 it was 83 per cent.

Figure 11: Labour's Share of Gross Value Added (percentage)

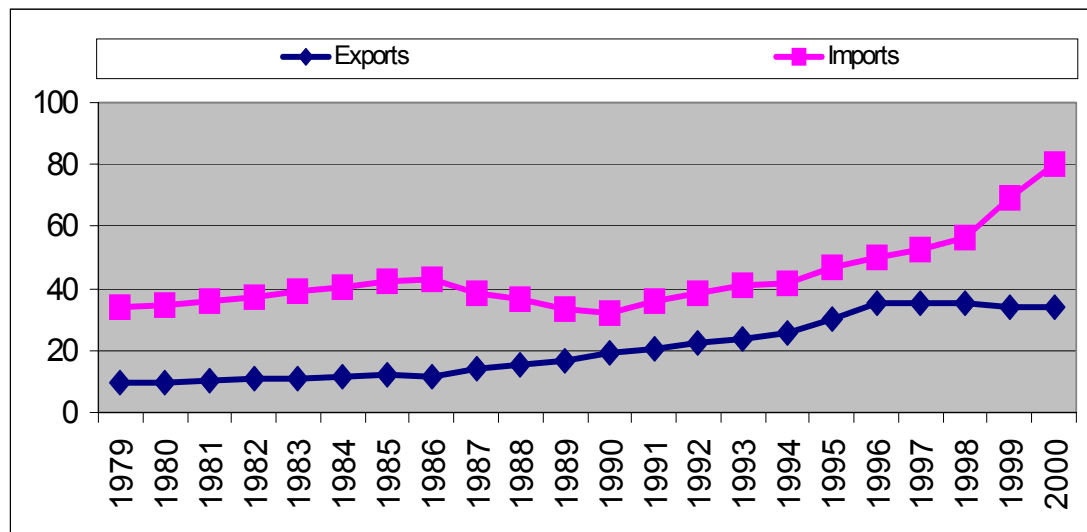


This pattern of labour's share of gross value added (Figure 11) is a measure of the trouble facing the UK-based domestic appliance industry. A financially successful firm or industry has been said to require a labour share in value added which is steadily 'at or below 70 per cent' (Williams *et al.*, 1994: 174). For much of the last two decades labour's share in value added has been at a higher level than this.

International Trade (Exports and Imports)

During the 1980s, imports of domestic appliances remained more or less stable at around 35 per cent of the domestic appliances market in the UK (data is only available for the domestic appliance industry as a whole). In the 1990s they then grew rapidly. In 2000 imports accounted for 80 per cent of the UK market with a value of circa £2 billion. To the problem of a lack of growth in the home market there therefore has to be added the problem of a growing percentage of imports (Figure 12).

Figure 12: Domestic Appliance Exports* and Imports**



* Exports as percentage of output of UK-based domestic appliance manufacturing.

** Imports as percentage of domestic appliances sales in the UK

Some growth has taken place in exports. In 1979 their share in the sales of UK-based manufacturers stood at 10 per cent. By 1990 this had risen to nearly 20 per cent. By 2000 it had reached 33 per cent, this growth having levelled out in the second half of the 1990s. Despite this increased share of UK production going to exports, UK-based producers could not hold on to the

home market. The giant share of the home market was made up of imports. In fact, it is reported that in 2001 the UK was the world's leading importer of refrigerators (*World Appliance Industry 2002: 8*).

Of importance to the export–import patterns, are the politics of trade arrangements. In this industry, there has been a strong regional basis toward trade within the EU. From the 1960s the international trade of the UK in domestic appliances has largely been carried out with other EU countries. However, especially during the 1990s, there was a fall in the EU contribution and a marked growth in the share of developing countries imports to the UK

In 2000 the UK imported 57 per cent of refrigerators from the EU countries. More than half of them (29 per cent) came from Italy, followed by Germany with 19 per cent. In the case of electric cookers, the EU accounted for a yet higher proportion of imports to the UK in 2000, 78 per cent. Italy was again the largest provider with 52 per cent of all electric cookers imported to the UK. Germany had a 10 per cent share.

Even so, British trade with the EU countries has undergone considerable changes: the share of EU countries in imports of refrigerators and electric cookers to the UK has declined. Although EU countries contributed just over 57 per cent of refrigerator imports in 2000 they had contributed over 70 per cent in 1990 (Table 3). In particular, Italy's share fell from 41 per cent to 29 per cent over the 1990s. In the case of electric cookers, EU countries contributed 91 per cent of imports into the UK in 1990 but 78 per cent in 2000

(Table 4). Italy's share again experienced a noticeable decline in this period, from 68 per cent to 52 per cent.

There has been little change in the share of North American imports to UK. The share of North America in refrigerator imports to the UK increased from 1.7 per cent of in 1985 to 4.7 per cent in 2000. In the case of electric cookers imports to the UK, the share of North America averaged about one per cent throughout the 1980s and 1990s (1.1 per cent in 1985 and 0.7 per cent in 2000).

The remarkable change in imports, especially of refrigerators, is the growth that has taken place in the share of the 'Rest of the World'. The countries so classified increased their share from 12 per cent to 38 per cent between 1985 and 2000. The major growth has come from Turkey, a low wage economy, with an increase from 9 per cent in 1985 to over 17 per cent in 2000. South Korea has also achieved an increase in share, from nearly 3 per cent to 7 per cent, with a similar increase for Hungary over these same years.

The increased share in imports from 'Rest of the World' countries is more modest in the case of electric cookers, from 16 to 21 per cent between 1985 and 2000, and this with some fall in the middle years. Here again, though, the contribution of Turkey is plain to see, with a rise from one per cent to 17 per cent over the decade till the end of the century (details for electric cookers only and refrigerators for particular countries are provided in Table 5). Turkish goods were first aimed at the bottom end of the market and sent direct to

large electrical retailers such as Comet. They were not to be found for sale in kitchen specialist outlets. But producers in the UK anticipate that they will attempt to climb the market. Already though there is a shift from imports being sourced from within the EU to them being sourced from the EU (itself undergoing enlargement) and the EU periphery, and to a smaller extent from right outside the European region.

Table 3: Direction of Trade for Refrigeration Appliances (As percentage of Total)

	1985		1990		1995		2000	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
EU	86.0	71.5	72.3	54.9	57.5	60.9	57.1	68.5
North America	1.7	2.4	2.8	8.8	4.4	7.9	4.7	8.9
Rest of the World *	12.3	26.1	24.9	36.3	38.1	31.2	38.2	22.6

* The shares of Japan, Australia, New Zealand and the non-EU countries of western Europe were of minor importance. Detailed information is available in the Tables for Direction of Trade.

Table 4: Direction of Trade for Electric Cooking Appliances (As percentage of Total)

	1985		1990		1995		2000	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
EU	82.5	86.5	91.1	77.1	87.5	85.3	78.1	83.6
North America	1.1	0.9	1.1	0.3	1.0	1.4	0.7	1.0
Rest of the World *	16.4	12.4	8.8	19.9	12.5	13.3	21.2	15.4

* As for previous Table.

Table 5: Direction of Trade by Countries (Percentage Contributions)

	Electric Cookers				Refrigerators			
	1990		2000		1990		2000	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Total EU	94.0	77.1	78.1	83.6	68.1	54.9	57.1	68.5
France	5.1	0.2	3.2		3.5	9.0	4.4	6.5
Belgium and Luxembourg					0.4	2.6	0.1	0.0
Netherlands				0.1	0.3	1.9	0.1	4.1
Germany	13.9		7.0		19.3	13.4	18.9	18.7
Italy	68.7	0.5	52.2		40.5	10.8	28.2	1.4
Irish Republic	2.5	75.9	2.5	83.4	0.1	12.0	0.1	31.4
Denmark						1.9	2.0	3.2
Portugal	0.3		11.0			0.4	2.2	0.4
Spain	0.5	0.1				2.9	0.3	0.3
Sweden							0.5	0.3
Austria	2.1		2.0				0.4	1.0
Finland							0.0	0.3
Greece		0.3				0.2	0.0	0.3
Total Non-EU Developed Countries	1.4	0.3	1.0	9.2	3.3	17.2	5.6	3.7
Norway	0.3					1.4	0.0	0.3
Switzerland			0.3		0.3	1.9	0.9	2.1
USA	0.7	0.3	0.7	1.0	3.0	8.8	4.7	1.2
Canada	0.4							
Japan						5.1	0.4	0.1
Australia				7.0				
New Zealand				1.2				
Rest of the World*	4.6	22.6	20.9	7.2	28.6	27.9	32.8	27.8
Turkey	1.0		17.7		9.1		17.4	0.9
Hungary			0.5		2.6		6.1	0.0
Poland	3.7		0.6					
Czech Republic	0.1		0.3				0.0	0.8
Slovenia					5.6	1.9	2.7	0.0
Romania					2.5	0.8	0.0	0.5
Russia					1.1			
Bulgaria					1.1			
South Korea					2.8		7.1	0.0
China							1.8	0.0
Nigeria						7.1	0.0	0.0
Kenya		15.1		0.8			0.0	1.2
Qatar		1.4						
Mauritius		4.2						
Tanzania		0.2		0.1		0.6	0.0	1.1
South Africa		0.1	1.2	0.3				

* List is of selected countries only

The pattern of exports from the UK can be seen from Tables 3 - 4. In 2000, EU countries accounted for about 69 per cent of refrigerator exports from the UK, 32 per cent going to Ireland, whose share had increased substantially over the decade and 19 per cent to Germany (Table 5). In the case of electric cookers, the EU accounted for 84 per cent of exports— nearly 100 per cent of these going to Ireland (which was described by a manager at one large manufacturer as part of the 'home' market). Australia, with 7 per cent was the only other export market that was at all significant.

Growing Concentration of Ownership (and the Hidden Face of Oligopoly)

Most of the world's regions are dominated by a few multinationals (further details on Regional Market Concentration are provided in Appendix D). These corporations are likely to implement their own production systems wherever in the globe they settle and this means that low wage overseas producers are therefore unlikely to be left behind in terms of technical and organisational innovation. In these circumstances the pressure is on to increase market share and volume, to develop common platforms and to gain from other economies of scale by further rationalisation and the purchase across sites of materials and components (not least of course components cheaply produced abroad). One case in point is Stoves, which was badly affected by imports from East Europe in 1999 and which, when faced with falling profits as a consequence of this, began to eagerly search for alliances with other white goods firms across Europe to get better prices for steel and components (Gracie 1999). Another is Glen Dimplex, an Irish-based company that also owns British production facilities (including Stoves which it took over in 2001). The company now buys in \$100 million of electrical components every year from China – and no less significantly it has had Chinese suppliers for 15 years (Brown, 2002).

To a significant extent, competition between firms in the UK is no longer competition between British-based companies or even between British firms and non-British ones. For the most part, the British white goods industry is owned and operated by non-British based companies, with the UK the site of

competition between global players. However, this development is not necessarily evident to the consumer. Brand names can make it difficult to tell which firm's products they are buying. The Swedish owned Electrolux has so many brands (25 different ones in Europe alone) that it has come to regard this as a marketing problem and plans to reduce the number to three (Brown-Humes 2002). The profusion of brand is of course a function of past growth by acquisitions. Over the last 30 years or so, Electrolux claims to have bought 450 companies (Business Week, 2002).

Such is the situation with respect to cooking appliances that in 2000 UK buyers were offered, among others, Cannon, Creda and Hotpoint machines (all from GDA, the last two at that time accounting for 12 and 9 per cent of the market respectively); they were also offered machines which were apparently made by firms called Zanussi, AEG, Electrolux, Tricity Bendix and Parkinson Cowan (all of which came from Electrolux, the first three accounting for 9, 8 and 3 per cent of the market respectively); and they could also choose Indesit machines, actually from Merloni (accounting for another 3 per cent of the market). In effect, despite the several brand names, five firms controlled over half the UK market in 2000 (Table 6). Concentration has proceeded yet faster since then. Until 2002, Marconi from the UK (previously called GEC) owned GDA on a 50/50 basis with GE from the US. But faced with mounting difficulties in its other operations, in that year Marconi sold its share to the Italian firm Merloni. At this point any British ownership was voided from the top five. Merloni also bought GE's 50 per cent stake, thus making for further concentration.

Table 6: Ownership and Brand Shares of Retail Volume: Cooking Appliances, 2000

Ownership	Country of Brand Owner	Brand names	Brand share in retail volume (Per cent)	Company share in retail volume (Per cent)
General Domestic Appliances Ltd	USA / UK	Creda	12.1	21.4
		Hotpoint	9.3	
Electrolux UK Ltd	Sweden	Zanussi	9.2	21.1
		AEG	8.4	
		Electrolux	3.5	
Whirlpool UK Ltd	USA	Whirlpool	4.1	4.1
Merloni Domestic Appliances Ltd	Italy	Indesit	3.5	3.5
Bosch Home Appliances Ltd	German	Bosch Siemens	3.0	3.0
SHARE OF TOP 5 COMPANIES				53.1
Private Label*			3.4	3.4
Others			43.5	43.5
Total			100.0	100.0

*Exclusive to certain retailers

In cooling appliances the market is even more concentrated than in cooking (Table 7). In 2000 the top five companies held 68 per cent of the refrigeration appliances market. Again, Marconi's sale of its 50 per cent share in GDA to Merloni voided British ownership from the top five and Merloni's purchase of GE, previous share in GDA has further increased market concentration. In fact, Merloni's acquisition of GDA has now given it 30 per cent of the UK white goods market, making through what many regard as the traditional, British, Hotpoint brand (Marsh, 2003).

Table 7: Ownership and Brand Shares of Retail Volume: Refrigeration Appliances, 2000

Ownership	Country of Brand Owner	Brand name	Brand share in retail volume (Per cent)	Company share in retail volume (Per cent)
General Domestic Appliances Ltd	USA / UK	Hotpoint	22.0	22.0
Lec	Malaysia	Lec	12.5	12.5
Electrolux	Sweden	Zanussi	11.5	21.5
		Electrolux	10.0	
Merloni	Italy	Indesit	7.2	7.2
Bosch	Germany	Bosch	5.0	5.0
SHARE OF TOP 5 COMPANIES				68.2
Private Labels			6.9	6.9
Others			24.9	24.9
Total			100.0	100.0

World-wide there are moves by the major domestic appliance manufacturers to enter low cost producer countries. In Eastern Europe for example Merloni completed building plants in Poland and Russia in 2000 and has acquired another refrigerator plant in Russia. Candy of Italy, which took over Hoover in 1995, announced the construction of a refrigerator and freezer factory in the Czech Republic in 2002 and is setting up plants in Turkey, China and other countries. Polar SA, a major Polish producer was bought by Whirlpool in 2002. By the December of that year it was planned to transfer production of the group's washing machines to Poprad and to cut jobs at Amiens, France (FT.com 2002). The next year Whirlpool announced that production in its PolarSA factory in Wroclaw was to be moved to Slovakia where its factory in Poprad was already producing washing machines. In 2001 Bosch consolidated its shareholdings in a subsidiary in Romania and also in one in Portugal. In the first half of 2003 Merloni's Lodz-based cooker plant, in which it had \$60m invested since 1999 and which was due for another \$20m to start production of a new type of cooker, exported almost 80 per cent of its total production (Polish News Bulletin 2003).

Inside the UK, in 2002 the Turkish firm Arcelik bought out the brand names, 'Leisure' and 'Flavel' from the British oven producer Leisure Consumer Products. The ultimate owner of these products, Glynwed International, changed its name to Aga Foodservice in 2000, its decline having rightly been said to signal 'the further decline of the once-mighty Midlands metal-bashing industry' (Guthrie 2001). As already reported, the turn of the century also saw

Glen Dimplex, a private Republic of Ireland firm, take over Stoves, which had manufactured cooking products on Merseyside under various brands and ownership since 1920, and which had bought the loss making Valor Cookers from Yale and Valor ten years earlier and more recently New World. Stoves thereby joined Belling, another well known brand name, and a producer of cooling and cooking appliances and other white goods brands which Glen Dimplex had taken over in 1992. And of course, Merloni is now the major player in the UK white goods market.

The Future of Domestic Appliance Manufacture in the UK

In many ways the industry has performed worse than British manufacturing as a whole. The bare bones of this adverse comparison are that whereas in the 1990s turnover remained flat in manufacturing as a whole, even showing a slight increase, it actually fell in domestic appliances (Figure 13); that the share of value added in turnover in domestic appliances also trended below that in manufacturing for the whole of the period; that whereas in the 1980s labour's share in value added generally ran at a lower level in domestic appliances than in manufacturing as a whole, it ran at a higher level in the 1990s (Figure 4); and that whereas in the case of manufacturing as a whole imports increased from 15 per cent in 1979 to 46 per cent in 2000, in domestic appliances the same years saw a rise from 34 per cent to 80 per cent.

Figure 13: Turnover in Domestic Appliances Manufacturing and Overall Manufacturing (Index for 1995 Prices, 1979=100)

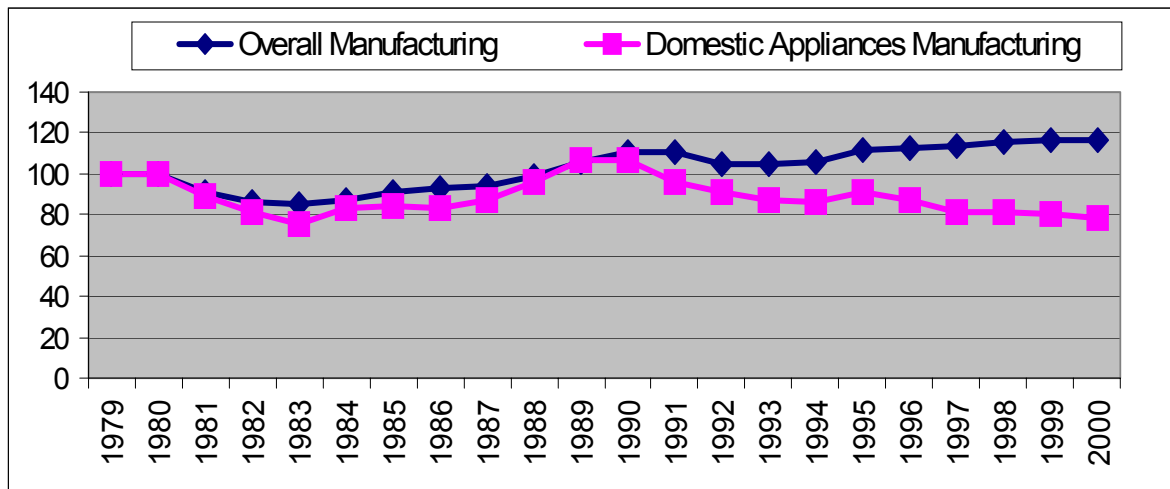
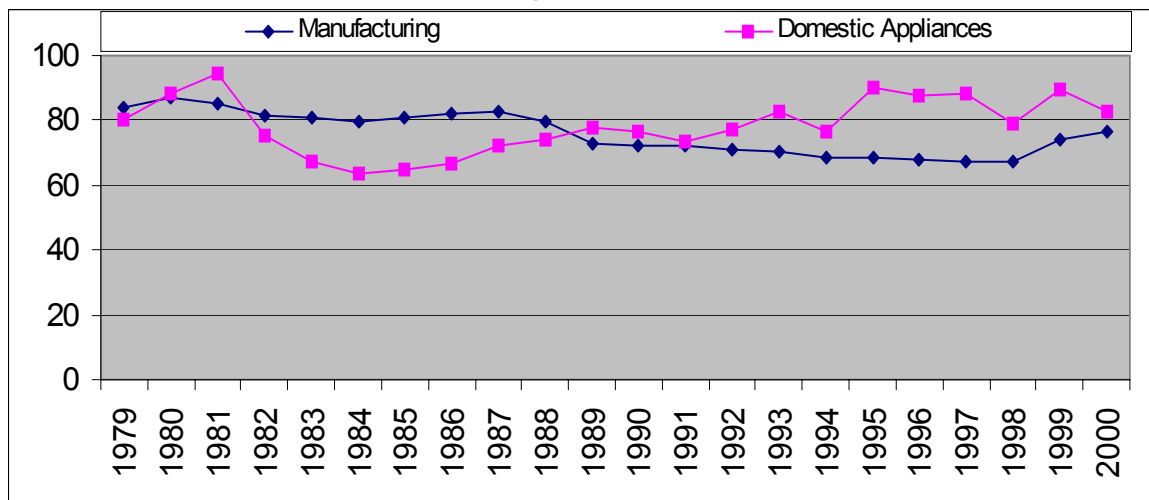


Figure 14: Employees' Total Compensation Compared to Gross Value Added (Percentages)



It is difficult to attribute this comparatively worse performance to any special characteristics of the work force. According to LFS data although in 2002 trade union density was slightly higher in domestic appliances (34 per cent) than in manufacturing as a whole (26 per cent), the industry's employment profile was rather similar. Temporary workers of all kinds – contracted workers, agency workers, casual workers and others – amounted to 3 per

cent of the workforce in domestic appliances and 4 per cent in all manufacturing. Part-time workers amounted to 8 per cent of the work force compared to 9 per cent. The industry was not even a bastion of white male workers – not to a greater extent than manufacturing as a whole anyway. In domestic appliances 30 per cent of the labour force were women, compared to 27 per cent for all manufacturing; similarly 6 per cent were non-white compared to 5 per cent for all manufacturing. The key difference is that wages in domestic appliances are lower. In Autumn 2002 average gross weekly earnings for domestic appliance workers stood at £355 compared to £410 in manufacturing as a whole and they were 10 to 20 per cent lower than for manufacturing as a whole for the whole of the decade (Appendix E). The problem is that although wages in domestic appliances are lower than for UK manufacturing as a whole, they are not low compared to some of the international competition.

The UK-based industry first suffered from the invasion of the European region by Italian producers. Then it was exposed to increased imports from Turkey and other countries on the periphery of the EU (some of which will soon be politically incorporated, a fact not lost on Whirlpool and other giants of the industry who are moving in). Now it is also being exposed to competition from right outside the region, from East Asia. Whatever else these countries have offered – and Italy contributed design just as today South Korea contributes electronics – the common element has been cheap labour. Indeed in the case of South Korea – which performs the remarkable fact of exporting to the UK despite current transportation costs- labour is not simply cheaper but highly

flexible. One leading Korean white goods firm operates on 50 per cent agency labour, and with a company union (Nichols *et al*, 2004). Other firms operate with no union at all. And China has begun to make an appearance in the import figures, and a further contribution, not so visible, through the provision of components for the domestic appliances that are still made in the UK.

In the 1990s the redundancy pay that swelled labour costs squeezed value added. If redundancies ceased this would therefore make for some reduction in labour costs. Even then, compared to Turkey, East Europe and East Asia wages would still be 'too high'. It is most unlikely that they will be driven low enough to compete with foreign imports– or indeed that redundancies will cease.

Attempts to modernise methods of production have been carried out. British companies have stripped down their plants already. As an industry trade union official put it:

Oven factories used to have their own foundries, paint shops and machine shops. Today, they're like big Meccano shops.

In the 1980s, Hotpoint, owned by GDA, faced by increasingly aggressive and sophisticated competitors, changed its work methods. A Total Quality programme was started in 1989 and after an initial failure was then pushed further. The number of reporting levels was reduced; company plans were cascaded down into departmental and individual plans; an appraisal system

was introduced; shop floor training audits were instituted; and team work was introduced. As a result substantial cost savings were claimed at the Peterborough factory, which was recognised as an Investor in People, and company managers claimed response times for customer order to delivery fell from 19 weeks to 8 days, with Peterborough Hotpoint claiming to achieve results equal to those at general Electric's Louisville plant. In another development, in the 1990s the oven producer, Stoves, was celebrated in the business press for the introduction of a flexible manufacturing system which offered customers 2000 or so variants (Gracie 1999) . But highly flexible as this was, trade union officials report that within months of Glen Dimplex taking over that it had cut the number to less than half.

Especially in cooking appliances, there are niche markets that established and more often, small new companies can enter. Custom-made iron ranges are a case in point (Marsh, 1998). But to flourish in volume production is much more difficult. Prominent strategies that have been attempted already are to specialise in fridges/fridge freezers/chest freezers or to specialise in built-in or free-standing cookers or to add some bells and whistles or do both. And of course branding remains central to the operation of the industry. Such is the profusion of models that has resulted that in February 2003 Comet, the high street electrical retailer, offered around 310 different cooling appliances priced from £150 to £1,300 and around 360 different cooking appliance items priced from £500 to £1900. Products now vary in terms of colour, height, width, electronic technology, energy use and styling (though this is very much a minimum list) and in the case of cookers, that is now gas or electric or dual

use. Amongst the cooling appliances that Comet offers there are 134 Fridge-Freezers including 13 different types of American style larger Fridge-Freezers, 89 Fridges, 68 upright Freezers, 15 Chest Freezers, and four Chillers (for drinks). Brands on offer include Hotpoint, Bosch, AEG, Beko, Lec, Liebherr, LG, Indesit, Hoover, Candy, Daewoo, Miele, Neff, Proline, Samsung, Scandinova, Servis, Siemens, Tricity, Whirlpool, Zanussi, Asko and Brandt. In cooking appliances, there are 126 different types of Electric/Dual fuel Range Cookers, 114 Free-Standing Electric Cookers, 91 Gas Free-Standing Cookers, 19 Dual Fuel Free-standing cookers, 11 Electric built-in ovens. Brands include Rangemaster, Belling, Stoves, Cannon, DeLonghi, Leisure and Zanussi. Such is the strategy for brand loyalty that producers place a great deal of emphasis on after-sales service agreements, through which they seek to tie-in customers and which, in any case, according to unquantified claims by some company managers are a more profitable use of time than the business of actually producing domestic appliances.

Another strategy to counter high margins is to get into the high value end of the market – but this by definition is only part of the market and various firms are there already – the ovens producer Aga for example. In fact, the UK white goods product market is now so differentiated that part of it even caters to the buyer who wants something like an Aga but can't afford the real thing. Yet another strategy is to get into the market for fitted kitchens, which are stocked with a range of a particular producer's white goods – the oven, washing machine, fridge-freezer, even small appliances such as kettles. But here, too, there is competition.

Continued foreign dominance of the UK market and further concentration of ownership and contraction of employment look likely. The UK home market, is dominated by imports and imports from low wage countries have been on the rise. This market lacks any significant expansion in refrigerators and to a lesser extent in cookers. In this situation, UK-based producers face a number of difficult choices if they are to remain in this highly competitive market. The industry has been in secular decline. A strategy that remains to be tried to any great extent in cooking and cooling appliances is the one recently pursued by Dyson, the vacuum cleaner producer. In 2002, in the pursuit of cheap labour, the company switched production of its bag-less cleaner from Malmesbury, Wiltshire to Malaysia with the loss of 800 local jobs (Gibbs 2002); it made a further such switch in 2003. It remains to be seen whether other manufacturers in the industry will begin to take this option and reverse out of the UK and indeed the EU region into its periphery and beyond. Even if this does not occur, the pattern of imports is now such that the importance of the EU region has declined, albeit this decline has to be seen in the context of a double process of restructuring whereby the political form is catching up with the economic, Turkey having joined the EU Customs Union in 1996 and Hungary and other 'EU 15' countries being scheduled to join the EU from 2004.

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Appendices

Appendix A: Market Characteristics

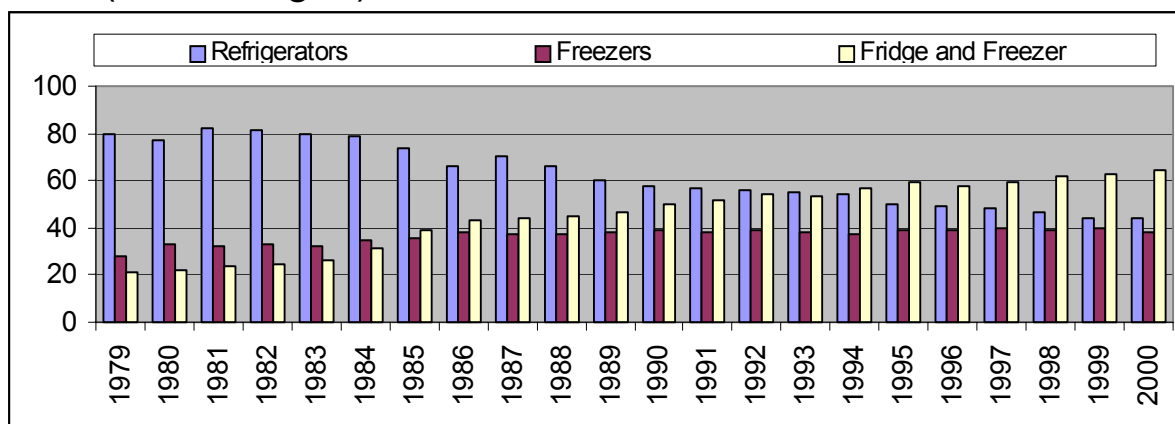
Penetration rates for domestic appliances in the UK have increased in recent decades. By 2000, 99 per cent of households had refrigeration and cooking appliances (Table A.1). This is basically in line with the penetration rates of many other domestic appliances. For example, telephones 96 per cent, washing machines 93 per cent, central heating 91 per cent. Yet although there is certainly a sense in which both cooking and cooling appliances may be said to constitute 'mature' markets, significant changes have also taken place within them. In the case of cooling appliances, for example, while the proportion of households which had fridge-freezers increased from 27 per cent to almost 40 per cent between 1979 and 2000, the proportion for refrigerators actually declined from 80 per cent in 1979 to 42 per cent in 2000 (Figure A.1).

Table A.1: Percentage of Households with Durable Goods

	Car / Van	Central Heating	Washing Machines	Telephone	Cooling Appliances	Microwave	Cooking Appliances*
1970	52	30	65	35	66	-	-
1975	57	47	72	52	85	-	-
1980	60	59	79	72	95	1	-
1985	63	69	83	81	98	19	-
1990	67	79	86	87	98	52	-
1995	70	85	91	91	99	70	-
2000	74	91	93	96	99	80	99

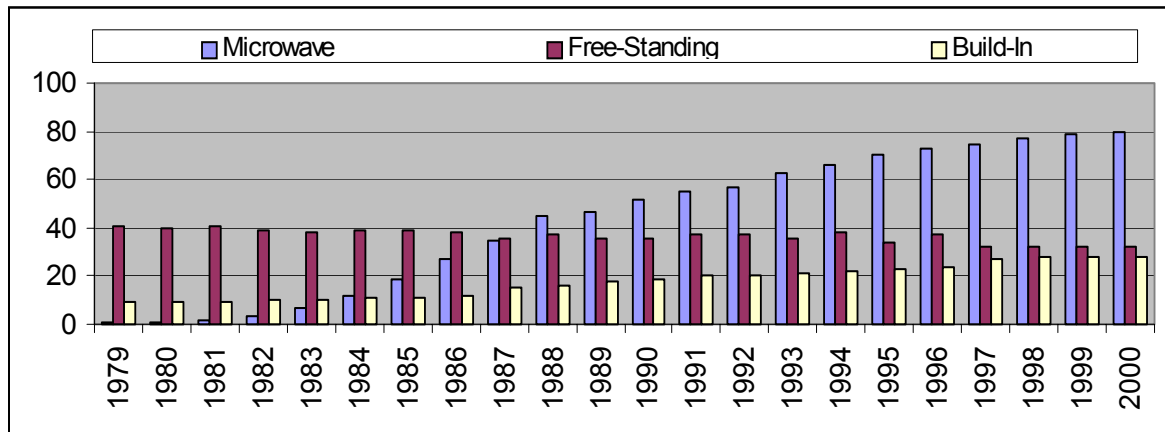
*Data incompatibility in various years means that long-term time series for aggregated cooking appliances data is not available for household penetration rates.

Figure A.1: Cooling Appliances Household Penetration Rate (Percentages)



Similar changes are evident in the case of cooking appliances. The data for historical trends is available only for free-standing and build-in cookers, but this suggests important changes have occurred in the sorts of cooking appliances used by households. Thus, the penetration rate for build-in gas and electric cookers rose from 8 per cent to 25 per cent between 1979 and 2000 but that for free standing cookers actually declined from 40 per cent in 1979 to 30 per cent for the same years (Figure A.2). Moreover, although microwaves are not included in the statistical category for cooking appliances in this study, it should be noted that there was a continuous growth in the household penetration rates of microwaves in the 1980s and 1990s with obvious implications for some other products.

Figure A.2: Cooking Appliances Household Penetration Rate (Percentages)



Market dynamism in white goods is not only a function of aggregate market penetration or even the penetration of more tightly defined sub-products however. There are various demographic factors that also play a part. Some of these run counter to the major fact that the British population is relatively stable compared to the population of some 'emerging market' economies. For example the UK has seen a growth in the number of households (Table A.2). This reflects a decline in the average size of households- down from 2.9 in 1970 to 2.3 in 2000. The growth of one-person households is particularly notable both in relative and absolute terms –up from 3.1m in 1970 to 7.2m in 2000. To a potential increase in demand from this source and from an increase in the stock of dwellings has to be added the increase in the number of paid females – up by over 40 per cent between 1970 and 2000. Changes in the number of property transactions have perhaps been less helpful in the generation of demand over the long term and –despite manufacturers' attempts to attract consumers with increased energy efficiency and other innovative and design features – the fact remains that domestic appliances

purchases in the UK are now largely for replacement rather than first time buys. This is particularly so for cooking and cooling appliances. In 2000, 80 per cent of sales of cooking and cooling appliances were replacement compared to 75 per cent of laundry appliances, and 15 per cent of dishwashers.

Table A.2: Demographic/Social Factors on the Market

	One-Person households (m)	One-Person Households As % of All Households)	Average Household size	Number of Households (m)	Women Workers (000)	Property transactions (000)	Stock of Dwellings (m)
1970	3.1	17	2.91	18.3	8,962	1,407	16.1
1975	3.7	20	2.78	18.8	9,719	1,391	16.9
1980	4.3	22	2.70	19.5	10,347	1,292	17.5
1985	5.1	24	2.56	21.1	10,173	1,796	18.5
1990	5.9	26	2.48	22.4	11,604	1,620	19.4
1995	6.6	28	2.40	23.5	11,599	1,318	20.3
2000	7.2	29	2.29	24.5	12,647	1,471	21.1

Replacement is not a frequent event. The majority of people in the UK cannot afford to replace an expensive item such as a cooker or a washing machine until it breaks down or poses a threat to health. Further, the life of domestic appliances tends to increase not only because of technological improvements, but also because of changing life styles. In the cooking appliances sector, for instance, consumer use is changing, and even people who enjoy cooking are less likely to prepare a meal at home every night. Eating out, buying takeaways or microwave meals are all more common in the UK today than they were five or 10 years ago. This means that the cooker is used less than ever, and will therefore last longer. Replacement rates are now 11 to 13 years for the majority of large kitchen appliances (Table A.3).

Table A.3: Replacement Cycles of Selected Large Kitchen Appliances by Sector 2000

Number of years:	1 to 5	6 to 9	10	11 to 13	14 to 16	over 16
Refrigeration appliances	–	–	X	–	–	–
Home laundry appliances	–	–	–	X	–	–
Dishwashers	–	–	–	X	–	–
Large cooking appliances	–	–	–	X	–	–
Microwaves	–	X	–	–	–	–

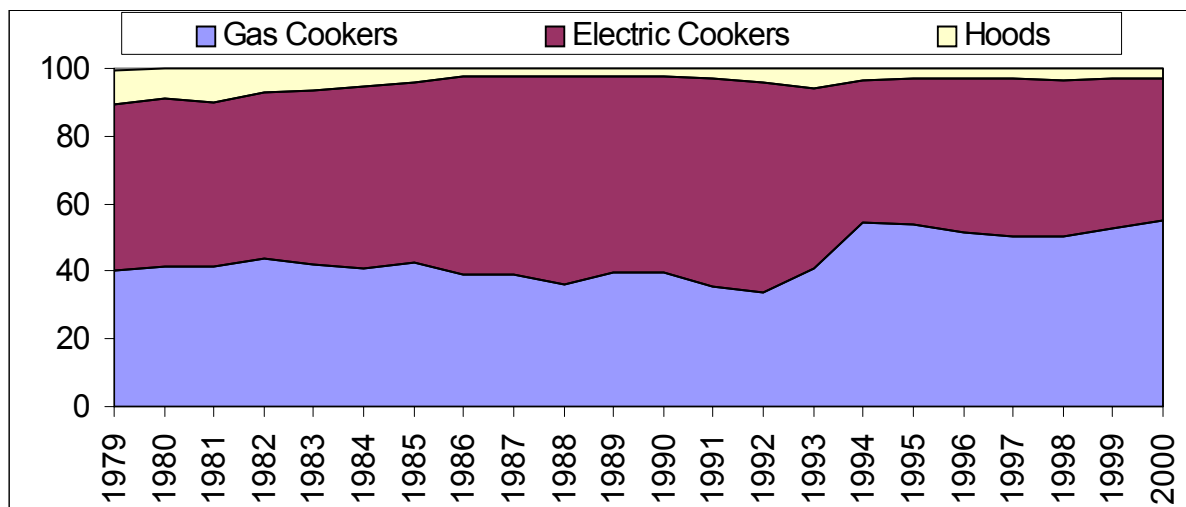
Appendix B: Product Composition

In general, the composition of cooking appliances manufactured in the UK has undergone some change over the past two decades in terms of type of product.

Cooking Appliances.

The 1980s witnessed a rise in electric cookers and a decline in the much smaller market for hoods (Figure B.1). The 1990s, on the other hand, witnessed a rise in gas cookers at the expense of electric cookers.

Figure B.1: Share of the Different Types in Cooking Appliances manufacturing (As percentages of total unit numbers)



Although we are not concerned with microwaves, the opportunity is taken here to document their rise. The number of microwaves manufactured in the UK increased from 119,000 in 1984 to 805,000 in 2000 (Figure B.2). In these years total turnover also rose in real terms, from £25m to £65m (Figure B.3). Even so, a slower growth in the latter compared to the former reflected on a decline in unit prices for microwaves -down from £210 in 1984 to £80 in 2000.

It can be seen, then, that microwaves have also experienced a problem of falling value.

Figure B.2: Microwaves, UK-Based Manufacturing, Number of Units, (Thousands)

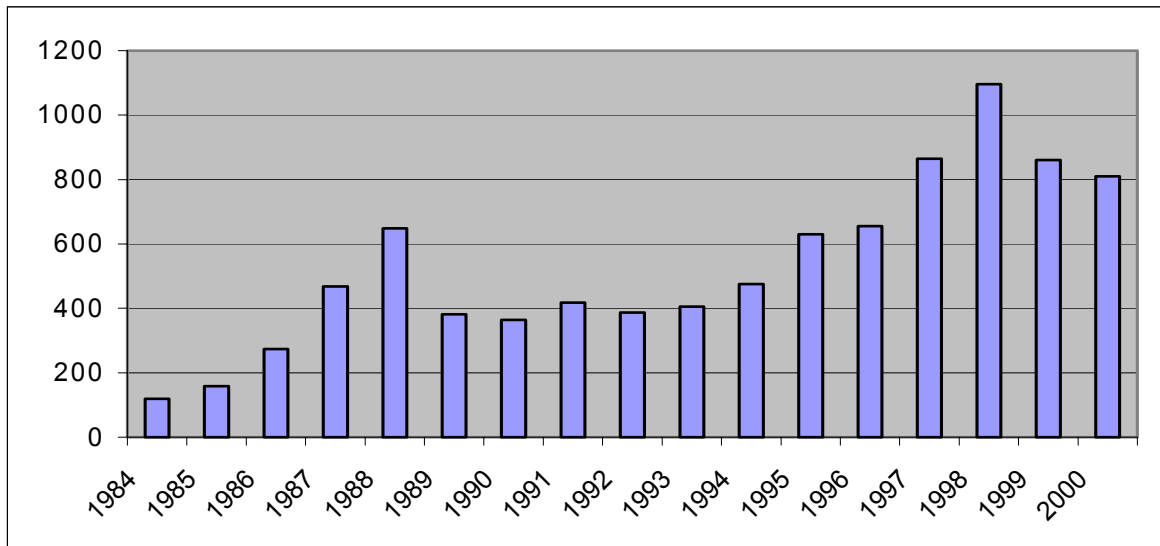
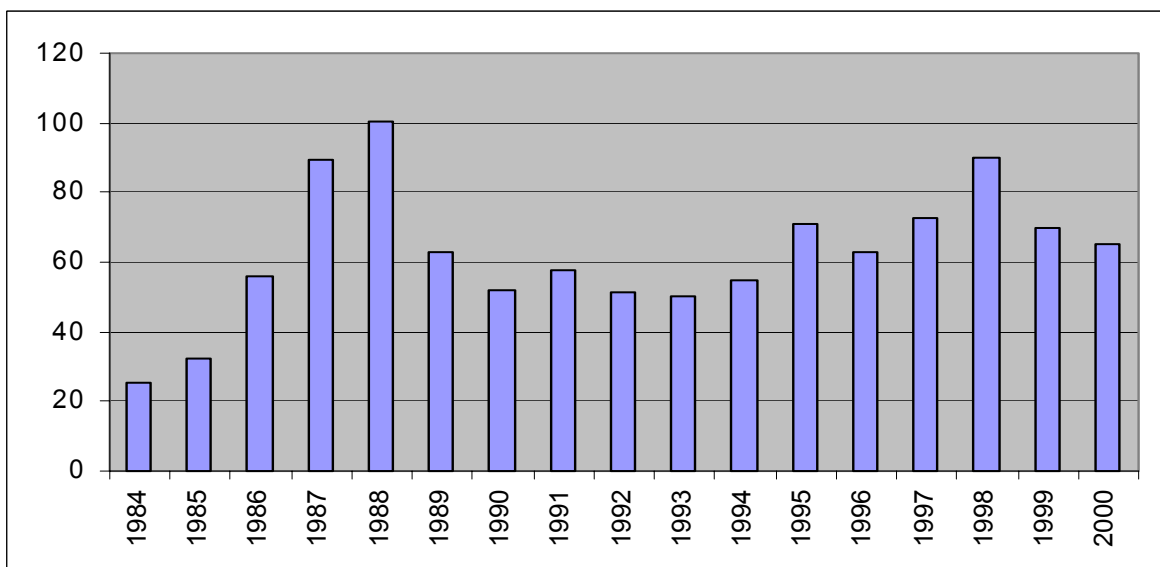


Figure B.3: Microwaves, UK-Based Manufacturing, £m, 1995 Prices

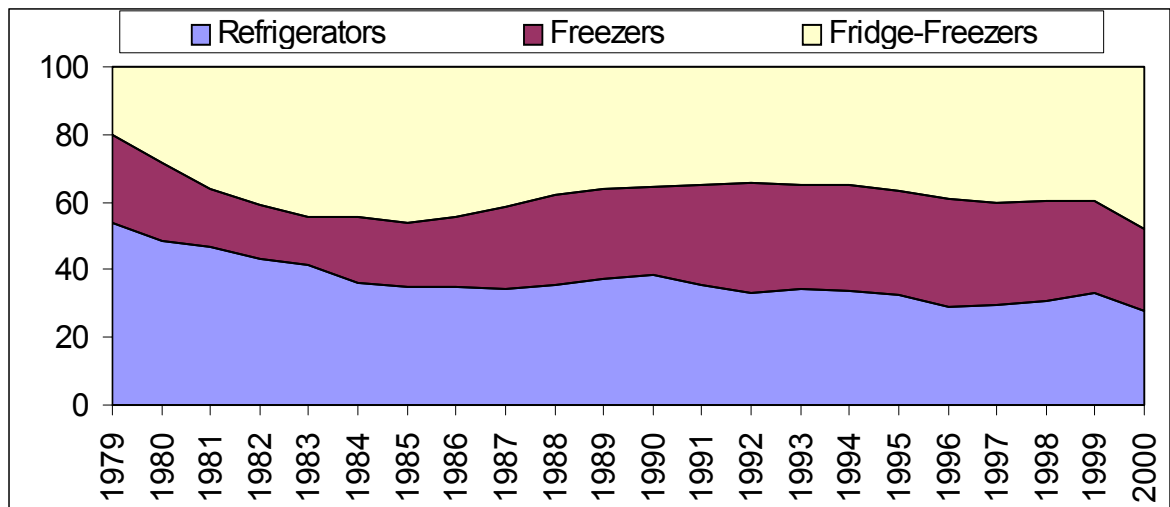


Cooling Appliances

As noted in Appendix A, the 1980s and 1990s saw a long-term growth in the share of fridge-freezers in total cooling appliances units manufactured in the UK, despite a decline in the second half of the 1980s. This growth in fridge-freezers was largely at the expense of refrigerators whilst the production of freezers have largely remained stable in relation to total production.

During the 1980s, there was a decline in the proportion of refrigerators in the total number of cooling appliances manufactured in the UK; it went down from 53 per cent in 1979 to 38 per cent in 1990 (Figure B.4). This decline has been opposed by an increase in the share of fridge-freezers production in the total; it increased from 20 per cent in 1979 to as high as 45 per cent in 1985, although it declined to 36 per cent in 1990. Despite some fluctuations, on the other hand, there was no substantial change in the share of freezers in cooling appliances manufacturing with an annual average of 24 per cent during the 1980s.

Figure B.4: Share of the Different Types in Cooling Appliances manufacturing (As percentages of total unit numbers)



In the 1990s, cooling appliances production has maintained its shift to fridge-freezers at the cost of refrigerators. Fridge-freezers represented 47 per cent of the total in 2000. Refrigerators' share in total unit production of cooling appliances on the other hand declined to 28 per cent -from 38 per cent in 1990. Despite some fluctuations, there was no substantial change in the share of freezers in the cooling appliances manufacturing with an annual average of 26 per cent during the 1990s.

Appendix C: Compensation and Compensation per employee

In domestic appliances manufacturing, it was not possible to produce time series for wages as opposed to employees' compensation since the data is not strictly comparable for each year. It should be noted therefore that employees' compensation covers pay for redundancies and the contribution employers to social security. Data for redundancy payments are subject to inconsistent definition and we have not been able to quantify their contribution. In the case of employers' contribution to social security there was a decline in the proportion of employers' contribution to wages in the 1980s – from 18 per cent in 1979 to 13 per cent in 1990. In the 1990s, on the other hand, this proportion did not decline but remained basically stable.

Compensation per Employee

Despite a relative sluggishness in the 1980s and early 1990s, there has been a noticeable growth in compensation per employee in domestic appliances overall. This has been so in both electric and non-electric domestic appliances.

Table C.1: Compensation Per employee, Annual Averages, (£, 1995 Prices)

	Manufacturing	Domestic Appliances	Electric Domestic Appliances	Non-Electric Domestic Appliances
1979	13749.4	12603.0	12626.7	12521.1
1980	13606.8	12594.8	12684.8	12277.2
1981	13934.7	12860.0	12900.4	12688.2
1982	14080.2	12471.3	12470.8	12473.2
1983	15152.8	12645.7	12672.9	12556.0
1984	14897.6	13021.6	12791.0	13888.4
1985	15435.4	13174.1	13121.9	13357.3
1986	15781.2	13679.8	13651.4	13781.8
1987	17431.6	14249.0	14311.3	14020.9
1988	17175.9	14450.3	14283.9	15143.9
1989	16382.9	14171.3	14168.2	14183.5
1990	16232.2	14019.8	13895.4	14507.9
1991	16224.6	15618.2	15361.6	16664.9
1992	16609.3	17084.9	16991.1	17457.4
1993	17044.9	18623.4	18734.7	18193.3
1994	18905.9	19255.4	19405.3	18663.0
1995	18986.0	18917.9	18972.4	18847.9
1996	18551.9	19445.1	18520.3	23207.2
1997	18815.4	22837.2	21935.9	25030.4
1998	18947.7	21858.8	20831.8	24610.6
1999	21324.2	23448.8	22937.9	24162.6
2000	23135.2	23701.9	23269.8	24047.4

The yearly average compensation per employee in domestic appliances was £12,603 in 1979 (Table C.1). There was no significant difference between the electrical and non-electrical sub-sectors. No substantial change ensued during the 1980s. But there was a definite increase starting in 1993 and continuing during the rest of the 1990s. Compensation per employee was £17084 in 1993, it had reached £23701 in 2000. This growth was largely comparable in electrical and non-electrical domestic appliances. In electricals it grew from £16991 in 1993 to £23268 in 2000. In non-electricals it grew from £17457 to £24047.

Total Compensation of Employees

The massive job losses in British domestic appliances have meant that total employee compensation has followed a different path to that of compensation per employee. Total compensation of employees had actually declined 1979-2000.

Total compensation of employees in domestic appliances went down from £888m in 1979 to £600m in 1991, implying a decline of more than 30 per cent (Table C.2). This was more pronounced than the 10 per cent decline for British manufacturing in the UK, which fell from £10bn to £9bn.

Within domestic appliances, electric domestic appliances were most responsible for the decline in the total compensation of employees in the 1980s. It represented 74 per cent of this decline, diminishing from £690 in 1979 to £475 in 1991. However, there was a proportionate decline in the (smaller) non-electrical domestic appliances that went down from £197m in 1979 to £132m in 1991.

In the 1990s, the curve of total compensations in domestic appliances turned up. It grew from £475m in 1991 to £690m in 2000. Yet this was still lower than the £888m level of the 1979. (In this regard, domestic appliances differ from the overall British manufacturing in the UK where the total compensation of employees went up back to the 1979 £10bn level in 2000 –from £9bn in 1991.

The growth in total compensation of employees in non-electrical appliances was noticeably higher during the 1990s than in electrical appliances. It grew by 38 per cent up from £127m in 1991 to £175m in 2000, compared to only 8 per cent growth in electrical domestic appliances, up to £518m in 2000 from £474m in 1991.

Table C.2: Employees' Total Compensation, £m, 1995 Prices

	Manufacturing	Domestic Appliances	Electric Appliances	Non-Electrical Appliances
1979	101676.5	888.5	690.6	197.8
1980	96349.5	821.1	644.3	176.7
1981	88694.1	716.3	581.8	134.4
1982	84551.5	607.3	477.6	129.7
1983	85825.3	608.2	467.6	140.6
1984	87329.4	624.7	484.7	140.0
1985	91593.5	634.9	492.0	142.9
1986	93676.9	666.2	520.1	146.0
1987	99046.5	691.0	545.2	145.8
1988	102471.6	754.3	601.3	152.9
1989	97855.2	707.1	561.0	146.0
1990	96224.1	649.1	512.7	136.3
1991	91912.4	606.7	479.2	127.4
1992	89723.3	623.7	495.4	128.3
1993	90422.6	660.6	527.9	132.6
1994	92204.1	688.7	554.0	134.7
1995	93392.2	708.4	572.0	136.4
1996	93724.0	743.8	573.2	170.5
1997	94190.0	796.2	609.0	187.1
1998	94946.8	720.1	540.4	179.6
1999	104189.9	714.9	538.8	176.1
2000	109660.6	694.2	518.7	175.5

Appendix D: Regional Market Concentration

Three of the world's biggest six appliance companies are American – Whirlpool, General Electric (known as General Electric Appliances or GEA) and Maytag (Table D.1). Whirlpool and Sweden's Electrolux are prominent players in most world regions.

Table D.1: Leading Major Appliance Companies in the World, Revenues 2001

	Country	Revenue (US\$bn)
Whirlpool	USA	10.3
Electrolux	Sweden	8.9
General Electric Appliances (GEA)	USA	5.8
Bosch and Siemens Hausgerate	Germany	4.8
Haier	China	4.5
Maytag	USA	4.1
Merloni	Italian	1.8

North America

Among the different world regions the domestic appliance market is most concentrated of all in North America. Whirlpool is the leading player in the North American domestic appliance market, holding (according to 1998 data) 28 per cent of the regional market (Table D.2). General Electric is the second largest player, followed by Electrolux. Just five companies share nearly 80 per cent of the market.

Table D.2: North America Domestic Appliances Market
1998 (Percentages)

Whirlpool Corp	28.0
General Electric	22.8
Electrolux AB	12.0
Maytag Corp	10.6
Raytheon Co	4.5
Private label	1.7
Others	20.4
TOTAL	100.0

Western Europe

Electrolux leads the domestic appliances market in Western Europe. It had 19 per cent of the regional market in 1998 (Table D.3). BSH was the second largest player. These were then the only two companies holding more than 10 per cent of the regional market. But the situation has changed, with Merloni now at 15 per cent (Marsh, 2003). The top five companies hold well over 50 per cent of the market between them.

Table D.3: Western Europe Domestic Appliances Market 1998 (Percentages)

Electrolux AB	19.1
Bosch-Siemens Hausgeräte GmbH	15.1
Whirlpool Corp	6.0
Miele & Cie GmbH & Co	5.5
Merloni Elettrodomestici SpA	5.2
EL.FI SpA	4.5
Candy Group	4.1
General Electric	3.0
Quelle Schickedanz AG & Co	2.9
Moulinex SA	2.9
Groupe SEB	2.2
Arçelik AS	2.0
MCC Mondragón Corporación Cooperativa	1.8
Dyson Appliances Ltd	1.1
The Gillette Co	1.0
Philips BV	0.8
Private label	2.9
Others	19.9
TOTAL	100.0

Asia-Pacific

The domestic appliances market in Asia-Pacific is one of the least developed and the least concentrated. Only one manufacturer – Japan’s Matsushita - commands a market share exceeding 10 per cent (Table D.4). Apart from Haier Group (China), all of the top five players – who have 43 per cent of the market between them - are Japanese manufacturers. The development of the market in China has been characterised by the emergence of a considerable number of small Chinese companies, there being in the region of 40-50 of these. Here as elsewhere it is likely that the big fish will eat the little fish. On one estimate there will be only four or five of these left in the next few years (Euromonitor, 2002).

Table D.4: Asia Pacific Domestic Appliances Market, 1998 (Percentages)

Matsushita Electric Industrial Co Ltd	14.2
Toshiba Corp	7.9
Hitachi Electronics Ltd	7.2
Sharp Corp	7.0
Haier Group	6.9
Sanyo Electric Co	5.9
Kelon Group	2.0
Meilin Refrigerators Ltd	1.7
Xinfei Refrigerators Ltd	1.7
Jinan Washing Machines Ltd	1.5
Mitsubishi Electric Corp	1.5
Rinnai Corp	1.3
Wuxi Washing Machines Ltd	1.2
Paloma Industries	1.2
Shanglin Refrigerators Ltd	1.1
Harman Industries Int	1.1
Guangdong Gelanshi Microwave Ltd	1.0
Guangdong Shunde Aide Washing Machines Ltd	1.0
LG Group	1.0
Others	33.6
TOTAL	100.0

Latin America

Whirlpool has a leading position in the Latin American domestic appliances market. Electrolux has nearly 10 per cent (Table D.5). The top five companies again account for more than half of total sales.

Table D.5: Latin America Domestic Appliances Market 1998 (Percentages)

Whirlpool Corp	17.8
Grupo Vitro	9.7
Electrolux AB	9.3
Organización MABE	8.3
Bosch-Siemens Hausgeräte GmbH	7.7
Philips BV	5.0
General Electric	4.1
Black & Decker Corp	3.9
Vistar SA de CV	2.3
Sunbeam Mexicana SA de CV	2.2
Enxuta	2.1
Groupe SEB	1.9
Others	25.7
TOTAL	100.0

Eastern Europe

As in China, local manufacturers played an important role in the development of the market in Eastern Europe. But eastern Europe has proved attractive to the large international groups. In 1998, Polar of Poland was the largest manufacturer in central Europe (Table D.6). In 2002, it was taken over by Whirlpool. The American Whirlpool is the second largest company in the regions' markets for domestic appliances with a share of almost 12 per cent. The top five accounted for just under half the market (46 per cent).

Table D.6: Eastern Europe, Domestic Appliances Market 1998 (Percentages)

Polar SA	12.3
Whirlpool Corp	11.9
Amica Wronki SA	8.2
Zelmer Sp zoo	7.2
Bosch-Siemens Hausgeräte GmbH	6.6
Mora AS	6.5
Candy SpA	6.2
Wrozamet SA	3.4
Gorenje Group	3.3
Eta AS	2.8
Merloni Elettrodomestici SpA	2.7
Electrolux AB	2.5
Ardo	2.4
Groupe SEB	1.9
Moulinex SA	1.8
Philips BV	1.4
The Gillette Co	0.8
Others	18.1
TOTAL	100.0

Note: Shares in Central Europe (Poland, Czech Republic, Hungary) only. Russia excluded.

Africa & the Middle East

A local manufacturer Defy Appliances, based in South Africa leads the domestic appliances market in Africa & the Middle East (Israel and South Africa). Kelvinator taken over by Electrolux in 1986, is the second largest regional player. Electrolux has also its own extension in the African and Middle Eastern markets, Electrolux AB as the fourth largest player after the third largest Tadiran Ltd (Table D.7). Thus, the total share of Electrolux in effect adds up to over 20 per cent -roughly equal to that of the largest single company, Defy Appliances Ltd.

Table D.7: Africa And Middle East, Domestic Appliances Market 1998 (Percentages)

Defy Appliances Ltd	19.8
Kelvinator	12.8
Tadiran Ltd	11.3
Electrolux AB	8.3
AMAP Holdings Ltd	6.8
Whirlpool Corp	2.8
Fridgemaster	2.8
Ampa Ltd, Hargaz Ltd	2.0
General Electric	1.6
Nu-World Holdings Ltd	1.9
Masterfridge Ltd	1.7
Hitachi Ltd	1.6
Philips BV	1.3
Samsung Electronics Co Ltd	1.0
Private label	5.7
Others	18.6
TOTAL	100.0

Appendix E: Data Sources and Technical Notes

Households with selected Domestic Appliances

Breakdown by the *Standard Classification of Occupations* (SOC, 1982).

Source: Central Statistical Office, *Social Trends*, 1991, Table 6.4, p. 101

UK Market for Domestic Appliances

UK market for domestic appliances is the total sales of domestic appliances in the UK calculated as $[(T-E)+I]$ where 'T' is total turnover of manufacturers as defined by their sales in domestic appliances, 'E' is exports of domestic appliances, 'I' is the imports of domestic appliances.

Information about the definitions and sources of total turnover, exports and imports in domestic appliances is provided in the related parts of this appendix as separate titles

UK Market For Cooking and Cooling Appliances

Cooling Appliances include refrigerators, freezers, and fridge-freezers. Data is re-chained by the latest year of the available series. Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, pp.4-9; 1992, pp.6-9; 2001, pp.6-10.

Cooking Appliances include electric cookers, gas cookers and hoods (Microwaves are excluded). Data is re-chained by the latest year of the available series. Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, pp.8-11; 1992, pp.11-14; 2001, pp.11-15.

Domestic Appliance Exports and Imports

As given MQ10: 1 and MQ10: 2 by ONS (Office for National Statistics) on

<http://www.statistics.gov.uk/statbase/tsdtimezone.asp>

Updated on 4/ 3/2003

Imports

Seasonally Adjusted

Electric Domestic Appliances QGQA (SIC '92)

Non-Electric Domestic Appliances QGQB (SIC '92)

Exports

Seasonally Adjusted

Electric Domestic Appliances QBQP (SIC '92)

Non-Electric Domestic Appliances QBQS (SIC '92)

Direction of Trade for Refrigerators

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1988, p7; 1992, p6; 2001, p5.

Direction of Trade for Electric Cooking Appliances

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1988, p4; 1992, p6; 2001, p6.

Direction of Trade by Countries (Percentage Contributions)

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1992, p6; 2001, p6.

Ownership and Brand Shares of Retail Volume: Cooking Appliances

Data Source: Euromonitor, *Global Market Information Data Base, Large Kitchen Appliances*, December 2001, Part II, Table 16 & 17

Ownership and Brand Shares of Retail Volume: Refrigeration Appliances

Data Source: Euromonitor, *Global Market Information Data Base, Large Kitchen Appliances*, December 2001, Part II, Table 10 & 11

Turnover in Domestic Appliances Manufacturing

Turnover is the total sales of manufacturers as defined by ONS (Office for National Statistics). For further Information about definition of turnover and some other relevant concepts, see ONS, *Blue Book: Glossary*, 2001, pp.326-336.

AIEO IOP: Industry 29.7 (SIC '92): *Manufacturing of Domestic Appliances: KPSA*, 1995 Constant Prices, Seasonally Adjusted

NOS (National Office for Statistics)

<http://www.statistics.gov.uk/statbase/TSDtimezone.asp>

Updated on 24/ 1/2003

The Share of Value Added in Overall Turnover in Domestic Appliances and Overall Manufacturing

Turnover

Overall Manufacturing

DIOP: A1: CKYY: IOP: Industry: D, KPSA 1995 Constant Prices, Seasonally Adjusted

NOS (National Office for Statistics)

<http://www.statistics.gov.uk/statbase/TSDtimezone.asp>

Updated on 24/ 1/2003

Domestic Appliances

AIEO IOP: Industry 29.7 (SIC '92): *Manufacturing of Domestic Appliances: KPSA*, 1995 Constant Prices, Seasonally Adjusted

NOS (National Office for Statistics)

<http://www.statistics.gov.uk/statbase/TSDtimezone.asp>

Updated on 24/ 1/2003

Value Added

Domestic Appliances Industry:

AIEO IOP: Industry 29.7 (SIC '92): *Manufacturing of Domestic Appliances: KPSA, 1995 Constant Prices, Seasonally Adjusted*

NOS (National Office for Statistics)

<http://www.statistics.gov.uk/statbase/tsdtimezone.asp?vlnk=pgdp>

Updated on 24/ 1/2003

Overall Manufacturing

CKYY IOP: Industry D: Manufacturing: KPSA 1995 Constant Prices, Seasonally Adjusted

NOS (National Office for Statistics)

<http://www.statistics.gov.uk/statbase/tsdtimezone.asp?vlnk=pgdp>

Updated on 24/ 1/2003

Production of Cooking and Cooling Appliances

Cooling Appliances:

Cooling are Refrigerators, freezers, and fridge-freezers. Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, pp.4-9; 1992, pp.6-9; 2001, pp.6-10.

Cooking Appliances:

Cooking are Electric Cooker, Gas Cooker and Hoods (Microwaves are excluded). Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, pp.8-11; 1992, pp.11-14; 2001, pp.11-15.

Wholesale Unit Prices of Different Cooking Appliances

Current values given in the original source were converted to constant prices by using the Producers Price Index (1995=100)

Electric Cookers

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, p8; 1992, p11; 2001, p9.

Gas Cookers

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, p9; 1992, p10; 2001, p8.

Hoods

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, p14; 1992, p16; 2001, p12.

Wholesale Unit Prices of Different Cooling Appliances

Current values given in the original source were converted to constant Prices by using the Producers Price Index (1995=100)

Refrigerators

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, p23; 1992, p21; 2001, p18.

Freezers

Freezers are chest freezers and upright freezers (Data is aggregated by AMDEA)

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p22; 1992, p23; 2001, p24.

Fridge-freezers

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, *Annual Industry Report*, 1985, p23; 1992, p25; 2001, p27.

Cooling Appliances, Wholesale Unit Prices

Current values given in the original source were converted to constant Prices by using the Producers Price Index (1995=100)

Cooling Appliances are Refrigerators, freezers, and fridge-freezers. Data is re-chained according to the available series of the latest year.

AMDEA, *Annual Industry Report*, 1985, pp.4-9; 1992, pp.6-9; 2001, pp.6-10.

Cooking Appliances, Wholesale Unit Prices

Current values given in the original source were converted to constant Prices by using the Producers Price Index (1995=100)

Cooking Appliances are Electric Cooker, Gas Cooker and Hoods (Microwaves are excluded). Data is re-chained according to the available series of the latest year.

AMDEA, *Annual Industry Report*, 1985, pp.8-11; 1992, pp.11-14; 2001, pp.11-15.

Total Employment in Domestic Appliances

Industry 29.7 (SIC '92): Domestic Appliances Industry

Data from 1995 to 2000 is taken from *Annual Business Inquiry (ABI)*, Subsection DK - Manufacture of Machinery and Equipment. Information about the ABI of ONS is available on:

<http://www.statistics.gov.uk/CCI/article.asp?ID=74&Pos=2&ColRank=1&Rank=224>

Data for the period of 1979 and 1995 years are extracted from the employment indices given by ONS at

<http://www.statistics.gov.uk/statbase/tsdtimezone.asp?vlnk=lms>

Whole period of 1979 and 2000 are re-chained according to 2000 Employment Index Series

Employment In Electric and Non-Electric Domestic Appliances Manufacturing

Electric Domestic Appliances: Industry 2971 (SIC '92)

Non-Electric Domestic Appliances: Industry 2972 (SIC '92)

Data from 1995 to 2000 is taken from *Annual Business Inquiry (ABI)*, Subsection DK - Manufacture of Machinery and Equipment. Information about the ABI of ONS is available on:

<http://www.statistics.gov.uk/CCI/article.asp?ID=74&Pos=2&ColRank=1&Rank=224>

Data for the period of 1979 and 1995 years are extracted from the employment indices given by ONS at

<http://www.statistics.gov.uk/statbase/tsdtimezone.asp?vlnk=lms>

Whole period of 1979 and 2000 are re-chained according to 2000 Employment Index Series

Labour's Share of Gross Value Added

Employees' total compensation is taken as percentage of gross value added in domestic appliances and overall manufacturing. Information about employees' compensation and gross value added is provided in the relevant parts of this appendix.

Labour Market Data from LFS

LFS, *Labour Force Surveys*, Not Seasonally Adjusted

Data is extracted from the 2002 Autumn Data Set

<http://www.data-archive.ac.uk/findingData/lfsAbstract.asp>

Households with Durable Goods

ONS, Office for National Statistics, *Family Spending, 2000-2001*, Table 9.3

Demographic/Social Factors on the Market

Female Employment

Figures are based on the number of those who are currently in employment,

ONS, Office for National Statistics

<http://www.statistics.gov.uk/statbase/tsdtimezone.asp?vlnk=emp>

Updated on 24/ 1/2003

Household Figures

Data from 1990 to 2000:

ONS, Office for National Statistics, *Social Trends 2001*, Table 2.1 and 2.4

Data from 1979 to 1990:

[http://www.statistics.gov.uk/statbase/explorer.asp?CTG=3&SL=4110&D=4116
&DCT=32&DT=32#4116](http://www.statistics.gov.uk/statbase/explorer.asp?CTG=3&SL=4110&D=4116&DCT=32&DT=32#4116)

Number of Dwellings

Data from 1990 to 2000:

ONS, Office for National Statistics, *Social Trends 2001*, Table 10.3 and 10.4

Data from 1979 to 1990:

[http://www.statistics.gov.uk/statbase/explorer.asp?CTG=3&SL=4110&D=4116
&DCT=32&DT=32#4116](http://www.statistics.gov.uk/statbase/explorer.asp?CTG=3&SL=4110&D=4116&DCT=32&DT=32#4116)

Replacement Cycles of Large Kitchen Appliances by Sector

Euromonitor, *Global Market Information Data Base, Large Kitchen Appliances*, April 2001, Table 5

Share of the Different Types in Cooking Appliances Manufacturing

(Microwaves are excluded from the data)

Electric Cookers

Data is re-chained according to the available series of the latest year.

AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p8; 1992, p11; 2001, p9.

Gas Cookers

Data is re-chained according to the available series of the latest year.

AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p9; 1992, p10; 2001, p8.

Hoods

Data is re-chained according to the available series of the latest year.

AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p14; 1992, p16; 2001, p12.

Microwaves, UK-Based Manufacturing

Number of units

Mintel, 'Microwave Ovens', *Market Intelligence*, November 2000, Figure 3
(Data from 1994 to 2000)

Mintel, 'Microwave Ovens', *Market Intelligence*, October 1999, Figure 4
(Data from 1988 to 1994)

Mintel, 'Microwave Ovens', *Market Intelligence*, March 1988, Table 3
(Data from 1984 to 1988)

Figures are re-chained according to the latest year,

Real Prices

Mintel, 'Microwave Ovens', *Market Intelligence*, November 2000, Figure 3
(Data from 1994 to 2000)

Mintel, 'Microwave Ovens', *Market Intelligence*, October 1999, Figure 4
(Data from 1988 to 1994)

Mintel, 'Microwave Ovens', *Market Intelligence*, March 1988, Table 3
(Data from 1984 to 1988)

Figures are re-chained according to the latest year.

Current Values given in the original source are converted to constant prices by using producers' price index

Share of the Different Types in Cooling Appliances Manufacturing

Refrigerators

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p23; 1992, p21; 2001, p18.

Freezers

Freezers are chest freezers and upright freezers (Data is aggregated by AMDEA)

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p22; 1992, p23; 2001, p24.

Fridge-freezers

Data is re-chained according to the available series of the latest year.

Data Source: AMDEA, Association for the Manufacturers of Domestic Appliances, *Annual Industry Report*, 1985, p23; 1992, p25; 2001, p27.

Employees' Compensation

Compensation Per Employee

Employees compensation covers all payments made for employees (including pay for redundancy compensation).

Compensation per employee is an average estimation. It is produced by dividing the total compensation of employees by the total number of employees in domestic appliances industry and overall manufacturing.

Information about the total number of employees and their total compensation is provided in the related parts of this Appendix.

Employees' Total Compensation

ONS, Office for National Statistics, *Annual Employment Survey: Employee Analysis*

For the data from 1979 to 1983, 1984 Edition, Table 1

For the Data from 1983 to 1991, 1992 Edition Table 2

For the Data from 1991 to 1998, 1999 Edition Table 1

For the Data from 1998 to 2000, 2001 Edition Table 2

Figures are re-chained according to the latest series available.

Current values given in the original source are converted to constant prices by using retail price index (1995=100)

Leading Major Appliance Companies in the World, Revenues

Appliance, 'World Appliance Companies', 2002, Illinois, p.21

North America Domestic Appliances Market 1998

Euromonitor, Global Market Information Data Base, Corporate Strategies,
April 1999, Table 11.10

Western Europe Domestic Appliances Market 1998

Euromonitor, Global Market Information Data Base, Corporate Strategies,
April 1999, Table 11.11

Asia Pacific Domestic Appliances Market, 1998

Euromonitor, Global Market Information Data Base, Corporate Strategies,
April 1999, Table 11.12

Latin America Domestic Appliances Market 1998

Euromonitor, Global Market Information Data Base, Corporate Strategies,
April 1999, Table 11.13

Eastern Europe, Domestic Appliances Market 1998

Euromonitor, Global Market Information Data Base, Corporate Strategies,
April 1999, Table 11.14

Africa and Middle East, Domestic Appliances Market 1998

Euromonitor, Global Market Information Data Base, Corporate Strategies,
April 1999, Table 11.15