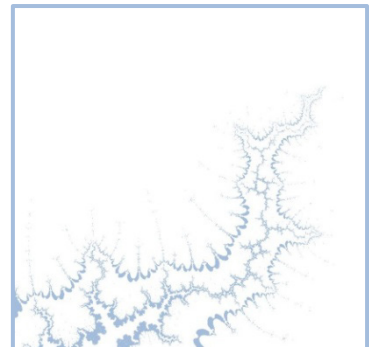# Consumer Prices in the UK: Explaining the decline in real consumer prices for cars and clothing and footwear

A report for BIS

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Executive Summary

Consumer prices for vehicles and clothing and footwear in the UK have experienced significant real reductions

Consumer prices in the UK for the purchase of vehicles and clothing and footwear have seen significant real price reductions in recent decades. This report was commissioned by BIS to undertake a detailed exploration of the various factors that have been driving the reduction in prices and, where relevant, the role that the Single Market has played in these factors. This report develops a methodological framework for assessing the key factors affecting UK consumer prices at a sectoral level. It considers the key drivers of any real price changes, presents a review of the available literature, and formulates an econometric analysis to quantify the drivers of change.

Regionalisation and increasing levels of FDI typify the UK automotive industry

Qualitative analysis of the motor vehicle industry during the period in question revealed that it was increasingly characterised by a process of regional integration. The UK's experience of such regionalisation is defined by the high levels of FDI it has received from manufacturers seeking a European production base. Key events include the opening of three Japanese owned, UK-based production plants in the run up towards full Single Market integration between 1986 and 1992, taking the number of UK high volume car producers from four to seven. With the opening of foreign-owned production plants came increased competition and exposure to new and innovative management practices and technological improvements. Without membership to the Single Market it is unlikely that the UK would have attracted such investment. In that sense, membership of the Single Market helped the UK keep up with the latest global manufacturing techniques and the pace of real price reductions observed elsewhere in the world.

Policy reform has also helped create a more competitive dealership market

Individual policy reforms at both the UK and EU level also helped create a more competitive car dealership market. At the turn of the millennium, it was generally accepted that UK car prices were significantly higher than car prices across the rest of Europe. Subsequent policy reform, such as the Supply of New Cars Order and reforms to the EU Block Exemption Regulation, led to significant price reductions in the UK car retail market, bringing prices in line with the rest of Europe and thus enabling consumers to benefit from the increased efficiency of automotive producers.

Increased globalisation in clothing and footwear has driven consumer prices downwards

Qualitative analysis of the clothing and footwear industry indicated the presence of several interrelated trends in the industry, which together combined to exert significant downward pressure on prices. The labour-intensive nature of the clothing and footwear production process gives manufacturers in lower wage countries a significant competitive advantage in global trade. Despite the existence of tariffs and quotas, namely through the 1974 Multi-fibre Arrangement (MFA), the UK experienced increasing import penetration throughout the 1970s and 80s. Competition from imports transformed the industry landscape and reduced consumer prices.

Structural change in the sector has also led to lower prices

The Agreement on Textiles and Clothing (1994) encouraged more imports through the gradual elimination of import quotas. Also, around this time, and likely encouraged by the establishment of the European Single Market in 1993, several large multinational corporations (MNCs) either entered or significantly expanded their operations in the UK clothing and footwear retail sector. Among the structural changes that this entailed was the emergence of the 'fast fashion' industry – characterised by low cost fashionable items produced on a mass scale. These developments were accompanied by a tendency toward vertical integration between producers and retailers, and ultimately this appears to have contributed to the continued decline in real prices. Lastly, there is also evidence that the fall in consumer prices has been driven in part by changing consumer tastes and preferences, with a shift in consumption expenditure shares away from clothing and footwear, and toward electronic goods, communication and services.

Unpicking quantitative estimates from the effects of various related and ongoing processes is challenging

For both sectors, methodological difficulties and data availability issues made quantitative estimates difficult to obtain. For example, there are no data available on non-tariff barriers to trade, which is one of the most likely routes by which the Single Market may have acted to reduce prices. Furthermore, the period of time covered by this study saw profound changes in the market structure, world trade patterns, and pace of technological progress in both sectors. Unpicking quantitative estimates of the effects of each of these individual ongoing processes is challenging. For example, the UK's entry into the Single Market was not a single event; rather it was a process of increasing legislative integration over many years that still continues today. As such, most of the price drivers cannot be identified and quantified separately.

Global factors were important in vehicle prices, although the Single Market played a role

That said, for the motor vehicle sector, a quantitative analysis of the data suggested that the majority of the reduction in real consumer prices since 1993 can most likely be attributed to a corresponding reduction in the global wholesale price of motor vehicles. The qualitative research indicates that this is mainly due to improvements in manufacturing efficiency and technological change. It cannot be excluded that the cumulative formation of the Single Market itself played a role in reducing global wholesale prices, although it was not possible to investigate this quantitatively in the context of this study. The impact of the Single Market was most apparent in the data in its effects on enhanced investment and competition, led by increased levels of FDI.

Globalisation and import prices were the key driver in clothing and footwear

For the clothing and footwear sector, quantitative analysis of the data showed that the major driver in the reduction of consumer prices was the simultaneous and corresponding reduction in import prices driven by globalisation. This is consistent with and generally supports the conclusions of the qualitative evidence.

1   Introduction

1.1   Introduction to the project

Background   In 2014, the Department for Business, Innovation and Skills (BIS) commissioned research to investigate the feasibility of assessing the effect of the EU Single Market on UK consumers. The resulting feasibility study developed a methodological framework for assessing the impact of the Single Market on UK consumers at a sectoral (expenditure category) level. In the motor vehicles sector, the study found some limited evidence of an impact of the introduction of the Single Market in 1992 on consumer car prices in the UK, and recommended further exploration of the individual driving factors behind car prices during the period.

This report   In August 2014, BIS commissioned Cambridge Econometrics (CE) to build on previous research by investigating what factors, including the EU Single Market but also others at the domestic and global level, contributed to the decline in real consumer prices for cars in the UK. The clothing and footwear sector was also included in the scope of the project as a second case study, given that this sector has experienced significant real consumer prices falls in recent decades that warranted further investigation.

The project brief was to deliver case studies which examine in detail the trends in real consumer prices in the two sectors, to seek to understand what has driven these trends; and then, subject to data availability, use this insight to construct and test an econometric model to estimate the impact of the identified drivers on real consumer prices.

1.2   Structure of the report

This report is structured as follows:

Explaining the trends in consumer prices   Chapter Two begins by outlining the potential drivers of price changes according to economic theory, including those factors related to domestic microeconomic policy, globalisation and the Single Market. The chapter then moves on to present a review of the available literature and a descriptive analysis of the relevant data to build up a narrative of the major developments and changes that have affected the clothing and footwear sector and the purchase of vehicles sector over the last 20-30 years. The evidence is used to identify the factors that have been important in driving the trends in UK real consumer prices and what their impact has been. These findings help to inform the specification of the econometric models that are developed in Chapter Three to explain changes in real consumer prices in the two sectors.

Modelling trends in consumer prices   Chapter Three reports on the work undertaken to build, test and apply econometric modelling techniques to explain real price movements in the clothing and footwear sector and the purchase of vehicles sector. The chapter describes the proposed approach, specification (based on findings from chapter two) and data to be used, before moving on to present and analyse the results of the econometric estimations, including their robustness, and then identify the implications.

Conclusions   Chapter Four brings together the analysis presented in Chapters Two and Three in order to present a summary of the findings and derive conclusions about the role of different factors in explaining the trend in real consumer prices for clothing and purchase of vehicles, including the role of the EU Single Market. It also points towards areas where more research could be undertaken to gain further insight into Single Market effects.

Bibliography   The bibliography lists the papers and sources that have been reviewed for this study, principally for the work in chapter three.

Appendices   Appendix A contains a list of the variables that were used in the clothing sector study and purchase of vehicles sector study, along with their descriptions and definitions.

Appendix B presents detailed econometric results.

Appendix C contains a summary of the preliminary analysis detailing the investigation into UK consumer price trends and identifying sectors for further analysis.

2 Explaining consumer price trends

2.1 Introduction

This chapter explores what factors have had an impact on the evolution of consumer prices in both the vehicles and clothing and footwear sectors. It considers what role the Single Market may have played amongst those factors and how these forces interact. These findings help to inform the specification of the econometric models that are developed in Chapter Three to explain changes in real consumer prices in the two sectors.

2.2 Approach

Price drivers in theory First, the potential drivers of price changes according to economic theory are set out, including those factors related to domestic microeconomic policy and globalisation, as well as the Single Market.

Second, nominal and real UK consumer prices are graphed for both the purchase of vehicles and clothing and footwear sectors. Price trends in two other countries – France and the US – are also included to give a simple visual indication as to whether the UK trend was mirrored elsewhere. Looking at the price trends before and after 1993 also gives an initial visual suggestion as to whether there was a marked difference in trend after the introduction of the Single Market.

Third, the results of a wide-ranging literature review are presented with the objective of developing a deep understanding and historical knowledge of the sectors in question and what factors may have been particularly important in driving prices.

Finally, the key drivers of prices in each sector, and their relationship with the Single Market, are summarised in tables and timelines.

2.3 Price drivers from economic theory

There are numerous factors driving changes in real consumer prices, many of which are interlinked and are occurring simultaneously. This makes it particularly difficult to single out the effects of any one factor. Using economic theory one can posit the following drivers of real consumer price changes:

Microeconomic policy Microeconomic policy may act to increase competition through market regulation and encouraging cross-border trade and FDI. Enhanced competition may temper the dominance of bigger players, where new entrants are able to charge lower prices for products of comparable quality. Such competition also erodes the ability of incumbents to set high prices.

Technology Technological progress may lower prices by increasing efficiency and productivity through factors such as advanced production techniques and supply chain logistics. This would lower unit labour costs, hence lowering the cost of production and lowering consumer prices in a competitive market.

Globalisation Globalisation leads to lower prices through the reduction of tariffs and non-tariff barriers to trade, and the more efficient allocation of resources to production. This could be achieved through increased FDI leading to greater competition and technological transfer, and economies of scale and consolidation leading to lower production costs. Furthermore, global supply chains allow manufacturers to produce more cost effectively and source resources for lower cost.

The Single Market The European Single Market should largely affect prices through increased integration leading to greater competition, and reduced non-tariff barriers to trade (tariffs had already been eliminated within the Single Market area before 1993). This would again lead to a reduction in consumer prices. A larger market on offer also provides producers with an opportunity to exploit any increasing economies of scale, thereby reducing unit costs, and consumer prices in a competitive market. Tariff barrier reductions may also have been influenced by the Single Market through reductions of the Common External Tariff.

Demand side factors On the demand side, prices could be affected by changes in consumer tastes and preferences, or by demand shocks.

The following diagram in Figure 2.1 maps the relationships, in a broad sense, between the drivers of change that have been identified thus far:

Figure 2.1: The economic drivers of change

EXOGENOUS FACTORS   **ECONOMIC DRIVERS**
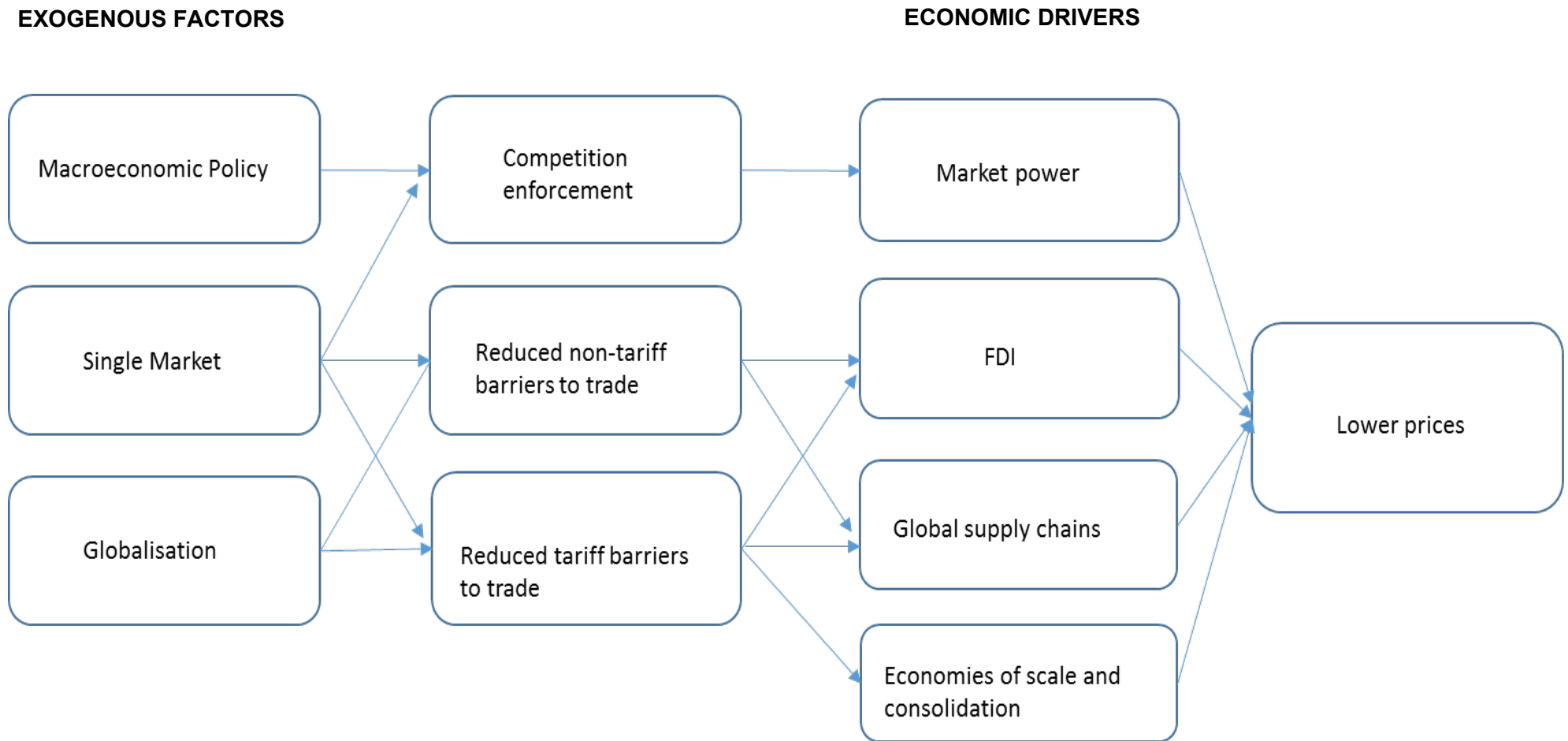
Source: Cambridge Econometrics (based on a previous version produced by BIS).

2.1   Visualising price trends

The following graphs illustrate the evolution of nominal and real consumer prices for vehicles and clothing and footwear in the UK and two comparator countries. France and the US were selected as an EU and non-EU country with similar levels of GDP per capita to the UK and for which reliable and comparable data was available.

The price data were collected from the E3ME[1] database for France, the MDM-E3 database for the UK, and the Bureau of Labor Statistics for the US. All price indices were converted to real values by dividing by the respective countries' general CPIs (obtained from OECD). The data were collected for the period 1970-2012 for all countries.

Quality adjustments   A consequence of improved technology and increasing wealth over time is that consumer goods tend to increase in quality. To account for this, price indices are normally adjusted for changes in quality in order to produce an index that can be used for meaningful price comparisons between different time periods. In the UK CPI, new car prices are quality adjusted using an option costing method[2], which takes into account the value of the components that have changed. A similar method is used in the US CPI[3].

Adjusting clothing for quality is particularly difficult due to fashion considerations. In the ONS CPI Technical Manual it is stated that the problem of rapidly changing consumer preferences in the clothing market is accommodated by using relatively wide product definitions[4]. Some countries, such as the US and Sweden, use hedonic regression through which products are valued using their measurable characteristics[5].

Definitions   The purchase of vehicles price data corresponds to the COICOP 'purchase of vehicles' category. The ONS was contacted to clarify the items counted in the UK purchase of vehicles price index. These items are:

- New cars
- 2 year old second-hand cars
- 3 year old second-hand cars
- Motorcycles
- Child's bicycle
- Adult bike

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[1] See www.e3me.com

[2] http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/economic-statistics/summary-quality-report-for-cpi.pdf

[3] http://www.bls.gov/cpi/cpiautoqaguide.pdf

[4] http://www.ons.gov.uk/ons/guide-method/user-guidance/prices/cpi-and-rpi/cpi-technical-manual/consumer-price-indices-technical-manual--2014.pdf

[5] http://www.ons.gov.uk/ons/guide-method/user-guidance/prices/cpi-and-rpi/review-of-hedonic-quality-adjustment-in-uk-consumer-price-statistics-and-internationally.pdf

The clothing and footwear category contains a wide selection of items such as clothing materials, garments, and repair of clothing and footwear. See Appendix A for more details.

The results from the visual analysis of the historical evolution of prices in the two sectors are presented below.

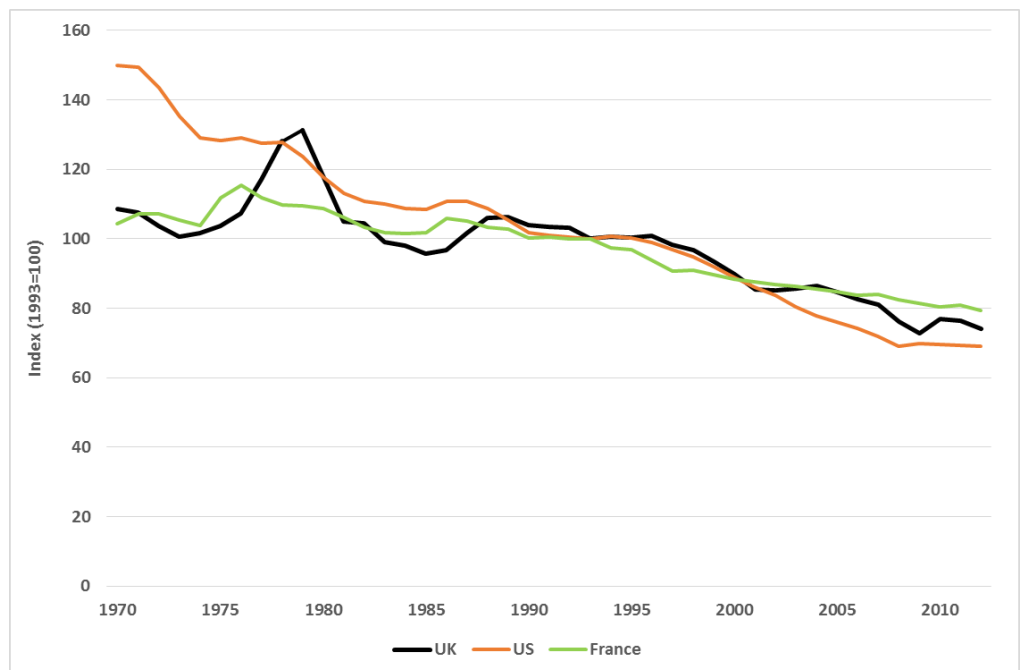*Purchase of vehicles* According to Figure 2.2, UK nominal vehicle purchase prices increased at a similar rate to the comparator countries. This may indicate the presence of common factors affecting prices across the comparator countries.
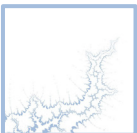
Figure 2.2: Nominal purchase of vehicles prices
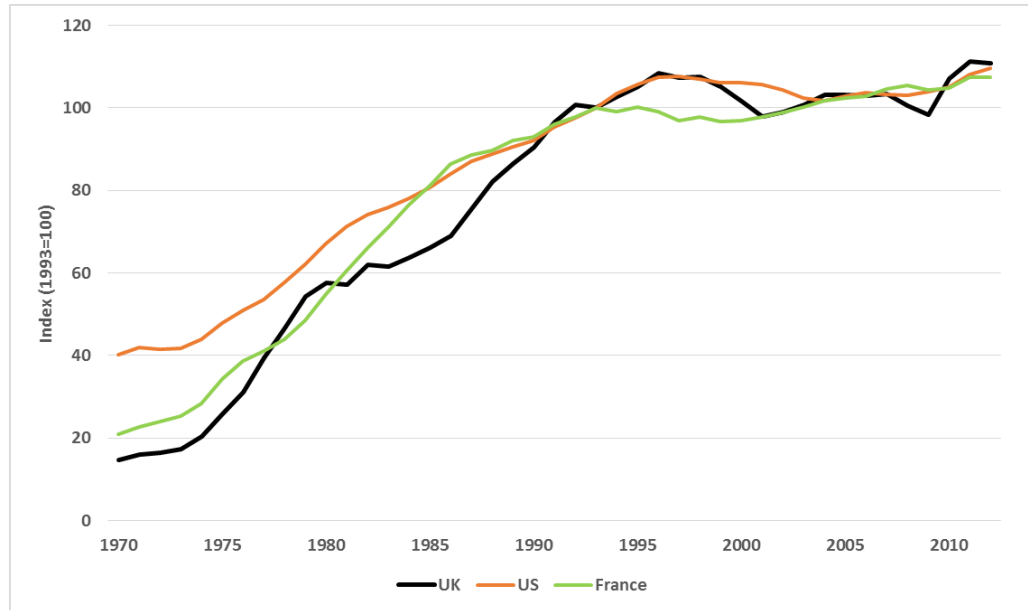
Source: Cambridge Econometrics.

Figure 2.3: Real purchase of vehicles prices

Source: Cambridge Econometrics.

Real vehicle purchase prices declined reasonably steadily across the countries looked at from 1970 to 2012, as is illustrated in Figure 2.3. There was a spike in UK real prices around the years 1977 to 1979, which may have been driven by the fall in inflation that occurred at that time following the high inflation of the early 1970s.

Clothing and footwear From Figure 2.4 below, it is evident that nominal clothing and footwear prices in the UK experienced a remarkably large decline from the 1990s to the late 2000s. Neither the US or France experience a significant nominal price decline, suggesting a unique set of circumstances in the UK clothing and footwear retail market that made it particularly sensitive to changes in the wider structural characteristics of the industry.

Figure 2.4: Nominal clothing and footwear prices
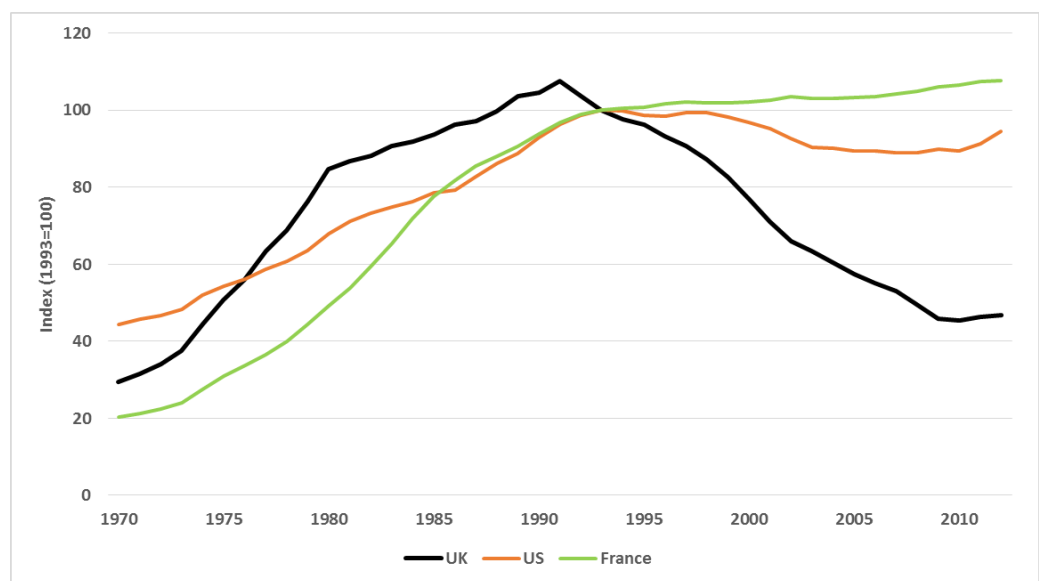
Source: Cambridge Econometrics.

Figure 2.5: Real clothing and footwear prices
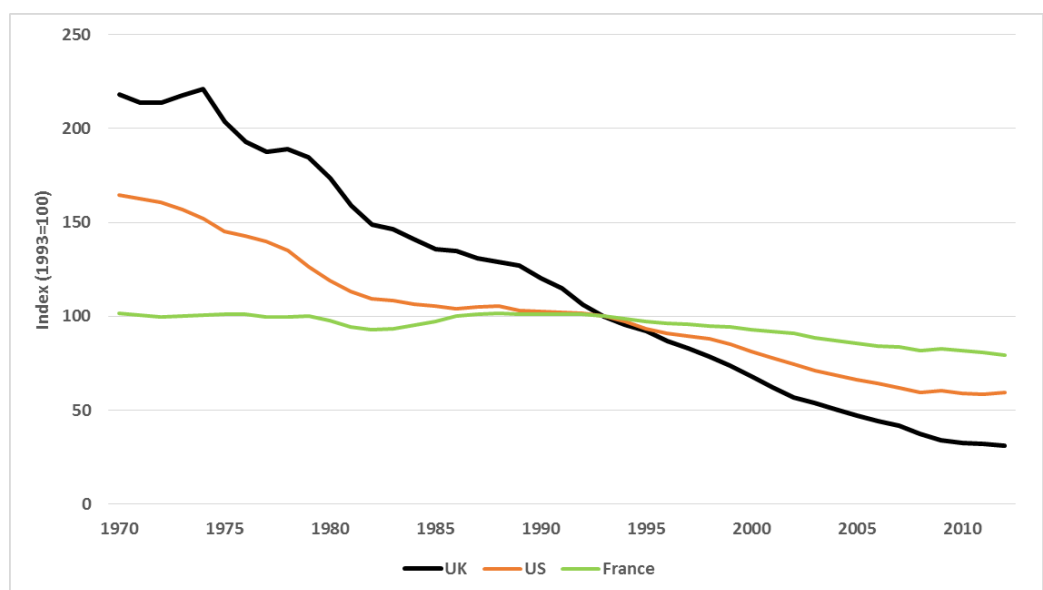
Source: Cambridge Econometrics.

The downward trajectory of nominal clothing and footwear prices in the UK translates into a steep and continuous decline in real consumer prices throughout the period analysed. The rate of decline in the UK is noticeably greater than in the US and France, as shown in Figure 2.5.

2.2   Review of literature

Having looked at the trends in consumer prices, the next stage of the analysis was to develop an understanding and historical knowledge of the sectors so as to further investigate the factors driving these prices in the UK. A wide range of literature was reviewed, including Cambridge Econometrics' own *Industry and the British Economy* forecast reports[6]. Given that there is a close link between industry and consumer prices, the review focused on factors behind *industry* prices as well as factors directly affecting *consumer prices*.

Purchase of vehicles

As was seen in the previous section, the purchase of vehicles real consumer prices declined steadily from 1970 to 2012. In the first part of this section the price movements will be explored, identifying the underlying drivers of price changes as well as factors that caused directly observable nominal price changes.

Regional integration and the Single Market

Since the 1980s car production has been characterised by regional integration. A study by Sturgeon et al (2009) notes that this is due to both reasons relating to economic efficiency and political sensitivities. On an economic level, the transportation of vehicle parts and final vehicles is costly due to their size, weight and fragility. Furthermore, the lean production techniques favoured by manufacturers require Just-in-Time (JIT) parts delivery in order to keep working inventories low. On a political level, automobile assemblers feel pressure to localise final assembly due to the potential backlash against high levels of car imports.

With this in mind, it is clear how the Single Market could be instrumental in facilitating the regionalisation of the industry across Europe, thereby increasing efficiency and competition. This is because the Single Market allows free movement of capital and labour within the region. In KPMG (2014) it is noted that 'the automotive industry is highly integrated across the EU and skilled engineers frequently move between plants or collaborate on research and development projects'. Furthermore, the Single Market has allowed manufacturers to refocus some of their production to economies in Eastern and Central Europe with cheaper labour costs. The option of outsourcing has been further enhanced by bilateral trade agreements with nearby countries such as Turkey and Morocco.

Inflation in the 1970s

Real purchase of vehicles prices rose during the mid-1970s, with a particularly steep rise from 1976 to 1978. This may have been driven by the high inflation the UK experienced for much of that decade. In a study by DG Rhys (1977), the author refers to the 'cycle of three monthly rises' that car makers followed during the years of rapid inflation between 1974 and 1977. When inflation and

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[6] In the following sections theses are referred to as, CE (1989), where for example the evidence comes from the 1989 *Industry and the British Economy* report.

wage increases slowed in 1977, vehicle manufacturers continued with their three-monthly price rises, until in the summer of that year when signs of consumer resistance to further price rises appeared, and the decision was made to hold prices constant. This lag between the slowdown of inflation and the decision to hold prices constant would have had an upwards accelerating effect on real prices.

1980s – Increasing import penetration

Cambridge Econometrics' *Industry and the British Economy* report for 1980 notes that there was a car purchasing boom from 1978 to 1979, with new car registration reaching a record 1.7 million in 1979. This could be due to the changing fortunes of the UK economy as the UK recovered from recession and inflation slowed. Against this background, UK car production dropped 13.2%. As a result, Britain's balance of payments in motor products went into deficit for the first time in 1979, with imports leaping 40% in value while exports rose a mere 5.1%.

Throughout the early 1980s the UK domestic industry output continued to decrease while imports increased as foreign manufacturers, in particular Japanese producers, emerged as serious competitors. In 1984 import penetration reached 50% of domestic demand in the first half of the year, while in 1986 import penetration had increased to just under 60%. Consumer expenditure on motor vehicles grew strongly throughout the decade, increasing by 10% in volume terms in 1987, perhaps explaining the slight increase in real prices between 1986 and 1988.

FDI in the UK

The motor vehicles sector in the UK experienced large inflows of foreign direct investment (FDI) from the major Japanese producers (Honda, Toyota, Nissan) in the 1980s (roughly £2bn by 1989), as they sought to build up a European production base (CE (1989)). Honda of the UK Manufacturing started production in 1989, while Toyota Manufacturing UK was also established in that year, increasing the number of domestic volume automotive producers from four to seven.

It was acknowledged in CE (1989) that the success of UK motor vehicle production depended on the opening up of European markets (which was anticipated to happen with the approaching formation of the Single Market) as the strong growth in private vehicle demand in the late 1980s was seen as unsustainable. CE (1991) reports that the UK government's strong support of Japanese manufacturers led to a dispute with other European governments, who were concerned about Japanese access to the European Single Market.

Microeconomic policy - car tax cut

In 1992 the government, reduced sales tax on new cars from 10% to 5% of the wholesale price in the Budget. The aim was for car dealers to pass on the benefits of the tax reduction to consumers. Indeed, CE (1992) reports that consumer car prices were reduced by about 4% that year as a result of the tax cut. The timing of this tax cut could act as a distortion of the Single Market effect.

Microeconomic policy - Block exemption

A major barrier to competition that kept prices high in the UK (and European) car market was the Block Exemption Regulation no.1475/95, which took effect from October 1995 to September 2002. The regulation granted the industry exemption from certain EU anticompetitive agreements, handing suppliers the

freedom to impose vertical restraints on their franchised dealers. Though the first block exemption was introduced in 1985, the 1995 version allowed suppliers more control over dealers than ever before. As a consequence, selective and exclusive (SED) dealerships were established across Europe. Suppliers were able to select dealers to distribute their products according to their own criteria, and to grant them with exclusive geographical areas in which to operate. Thus, cross border trade was restricted, and markets were segmented and susceptible to price discrimination. The regulation was justified with the argument that manufacturers would compete via product quality and provision of regular maintenance. However, Colino (2010) notes that the regulation 'received harsh criticisms for being over protective of manufacturers'.

UK and EU price differentials

In 1999 the European Commission published a comparative analysis of prices showing that the UK was the most expensive for 57 out of 76 best-selling models. The survey also showed that a Ford Mondeo was almost 60% more expensive in the UK than in Spain and that an Alfa Romeo 156 cost almost 50% more in the UK than in Ireland. In April 2000 the Competition Commission published its own report in which they concluded that UK manufacturers had been operating a complex price fixing monopoly. UK new car prices were estimated to be 10-12% higher on average than in similar EU markets. The uncompetitive UK market may have been facilitated by the Block Exemption's intra-EU trade restrictions together with the fact that it was costly for consumers to source their own cheaper deals abroad. A complicating factor may also have resulted from the position of the UK as the sole consumer of right-hand-drive vehicles within the EU. The additional cost of converting between drive types may have resulted in the inhibition of direct competition between UK and continental manufacturers and dealers.

*Microeconomic policy - regulatory reform*

Following the Competition Commission's April report, the Supply of New Cars Order was introduced in the UK in September 2000. Pike (2004) argues that this was the only possible immediate response of the UK government as the block exemption could only be reformed by EU law. The most important recommendation of the Order was that producers must allow dealers to make bulk purchases on the same terms as fleet buyers. Also, manufacturers were prohibited from refusing to sell to dealers on the grounds of the prices the dealer is advertising. By June 2001 (CE (2001)) most major UK-based manufacturers had cut their UK list price for new cars by between 8-10% in response to the new government measures.

In 2002 the EU reformed the block exemption by introducing Regulation 1400/2002. The new regulation ended the SED distribution system, with manufacturers having to choose either an exclusive distribution system or a selective system for a particular market. Both systems would allow for increased levels of international trade, either by independent resellers if exclusivity was chosen, or by the authorized dealers themselves if selectivity was chosen. However, under pressure from manufacturers, the EU did not ban the location clause until October 2005. This effectively preserved existing exclusive territories and postponed the possibility of cross-border trade until the clause expired.

Figure 2.6 exhibits a marked decrease in producer prices of motor vehicles between 1999 and 2001, consistent with the evidence presented above:
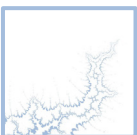
Figure 2.6: Motor vehicles UK nominal producer prices
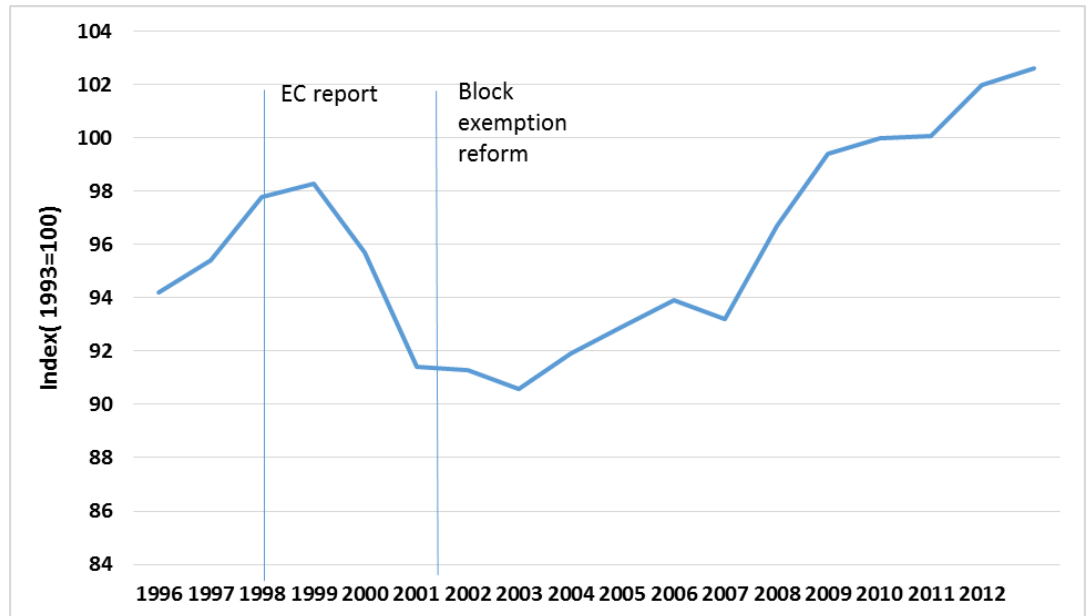
Source: ONS.

Exchange rates It has been argued that fluctuations in the exchange rate are the main cause of price differentials in the EU. Indeed, in 1999 a House of Commons Trade and Industry Committee report concluded that a significant of cause of price differentials with other EU markets was the result of the depreciation of sterling in the 1990s. Colino (2007) argues that the high cost of motor vehicles in the 1990s is best explained by the fall in the pound resulting from Britain's withdrawal from the ERM in 1992, after which prices remained constant as the currency recovered. On the other hand, Pike (2004) argues that the general trend in price changes is not merely the result of an exchange rate fluctuation, as by May 2003 sterling had returned to almost exact parity with its value in 1998. It's possible that the tendency of car importers in the EU to price to market may help to explain this. For example, in a paper exploring the convergence of car prices in the EU, Goldberg and Verboven (2004) use econometric analysis to estimate that only 24% of an exchange rate change gets passed on to local prices in the short run.

Microeconomic policy - environmental and safety regulation Since the 1960s regulators have imposed increasingly stringent rules on car manufacturers regarding safety, emissions and fuel efficiency. This has had an impact on manufacturing costs as the development and installation of new technology has been required to meet regulatory standards. For example, the development and widespread installation of catalytic converters in the 1970s, and the increased use of electric components since the early-2000s in order to meet further tightening emissions standards. The impact of these costs on consumer prices is disputed in the literature and dependent on many factors. In the European Commission (2011) study, the quantitative analysis does not

provide any conclusive evidence of the relationship between vehicle emissions standards and car prices. The extent to which the cost of regulatory compliance is passed on to consumers is attributed to market conditions and competitiveness.

Franckx (2014) investigates through a review of existing studies, the application of the Porter hypothesis – the hypothesis that environmental regulation can increase efficiency and encourage innovations that help improve commercial competitiveness – to automobile and automobile component production. He finds that 'historically, emission standards have had important effects on innovation at different levels in the supply chain', and that 'stringent changes in regulation have led to radical technological change'. Hence, it is possible that the manufacturing costs of developing and installing new technology could have been offset to some extent by increased efficiency.

Technology Economic theory tells us that a fundamental driver of falling prices is technological progress. This is because through reducing production costs, prices should fall in a competitive market. One of the most influential technological advances of manufacturing in the car industry began in the 1940s with the development of Toyota's Toyota Production System (TPS). This alternative approach to production, which became known as 'lean manufacturing', was based around a set of principles through which waste was eliminated in the production process. According to Holweg (2008) productivity in the best Japanese factory in the late 1980s was estimated to be around twice that of their US counterparts. As the US and European markets began to compete with Japanese imports, lean manufacturing was adopted by the rest of the industry, marking a radical change in production techniques and efficiency.

A key recent technological trend in the industry is that manufacturers are increasingly turning to platform sharing technologies in order to cut costs. Platform sharing entails using a common vehicular architecture across a wide range of models. This allows manufacturers to reduce costs through economies of scale and reduced development costs of design and engineering (Brylawski (2010)). According to Holweg et al (2009), platform sharing has become increasingly important to manufacturers as 'the volume sold per model has been significantly reduced over time'. This is due to an increase in the number of models available on the market and a general reduction in the duration of product life cycles (perhaps due to changing consumer preferences). The growing importance of the platform sharing strategy is highlighted by GM's announcement in 2010 to halve its platforms from 30 to 14 by 2018.

Clothing and Footwear In the second part of this section the analysis turns to real consumer prices in the clothing and footwear sector. The analysis is approached in the same way as with purchase of vehicles prices, providing an exploration of a wide range of factors affecting consumer prices.

Microeconomic policy – the Multi-fibre arrangement

In the current economic climate the majority of clothing and footwear products sold in the UK are imports. However, the process of increasing import penetration has historically been restricted by developed countries wishing to protect their domestic industries. Since the 1970s this was largely achieved through the WTO Multi-fibre Arrangement (MFA). The MFA came into force in 1974 and expanded the coverage of the 'Long-term Arrangement Regarding International Trade in Textiles' (LTA), which provided for the unilateral imposition of quotas on cotton-based textiles and clothing. Furthermore, the MFA allowed the conclusion of bilateral treaties, allowing developed countries to tailor quantitative restrictions according to their own particular requirements. As a result of this, the MFA was highly restrictive of developing countries exporting their produce at low prices. Hence, the potential gains to consumer prices from increased imports were stifled. Naumann (2006) notes that the MFA 'violated the original word and spirit of some of the basic principles contained in the General Agreement on Tariffs and Trade (GATT)'.

Increasing import penetration and restructuring of UK production

Import penetration in the clothing and footwear industry in the UK has been increasing over the entire period of this analysis, putting downward pressure on clothing and footwear prices, and instigating an ongoing process of rationalisation and strategic and structural adjustment. CE (1983) reports that in 1983 domestic output in clothing and leather declined by 25%. By October 1988 half of domestic demand was being met by imports, with competition from low cost suppliers in the Far East. The footwear industry, which was not protected by the Multi-Fibre Agreement (MFA), was arguably more significantly impacted. Output fell 9% in 1989, with imports accounting for 65% of the footwear market in that year.

In the early-1990s, many UK producers began to move production overseas; in October 1994 Courtaulds Textiles announced its first move into China. The industry continued to restructure throughout the decade. In 1998, Marks and Spencer estimated that the proportion of its clothes manufactured in the UK would drop from 70% to 50% by 2001.

As a cumulative result of a number of effects, including the offshoring of production to low cost countries and the move towards fast fashion retail (discussed below), the traditional high street middle market retailers began to lose market share and profits to low cost, fast fashion retailers based primarily in large premises on out-of-town sites, and this triggered a price war in the sector in 1999, which further increased pressure on domestic producers (CE (2000)), forcing them to further reduce their mark ups or go out of business due to import competition, resulting in further consumer price reductions.

Microeconomic policy - The ATC phase out

The Agreement on Textiles and Clothing (ATC) was set into motion on January 1st 1994 after the GATT Uruguay Round had been completed the previous month. Under the deal, the series of bilateral quotas between developed and developing nations would be gradually phased out over a ten-year period. Also, other impediments to free trade such as tariffs, subsidies and dumping were to be reduced. In Naumann (2006) it is pointed out that 'the flexibility of the ATC, despite its guiding principles, was certainly fully exploited'. The ATC listed a broad range of products, many of which had not actually been restricted with quotas. Hence, many countries could engineer

the ATC such that its effects were not felt until close to the end of the phase out in 2005.

In a study by Francois et al (2007) it was found that the ATC quota liberalisation had a substantial impact on both producer and consumer prices across the EU15 (members of the EU on 1995 or before[7]). Changes in import prices across EU Member States, linked to ATC liberalisation stages, led directly to changes in producer prices, on a comparable order of magnitude, within the European industry. From their econometric analysis it was estimated that on average 60% of the drop in import prices (a mix of extra-EU import price changes and intra-EU prices driven down by competing Extra-EU imports) is passed through to consumers in terms of lower consumer prices. It was concluded from the econometric analysis that the pass-through of low import prices to consumers is substantially greater in countries where the retail sectors have a combination of a large foreign presence through FDI, large stores and a sufficient variety of retailers to ensure a competitive environment and low concentration. In particular, the UK had the second largest pass-through coefficient after Ireland – a result that reinforces the importance of import prices in explaining the consumer price decline.

Figure 2.7 shows the volume index of clothing and footwear imports from 1998 to 2012. Both increased significantly with clothing imports approximately doubling. Notably, clothing imports begin to increase in volume faster than footwear from around 2005. This could be because the ATC was completed around this time (footwear was not subject to the MFA). Increased imports will of course have had a significant effect on prices due to the far lower costs of production enjoyed by manufacturers in developing countries.

Figure 2.7: UK clothing and footwear import volumes
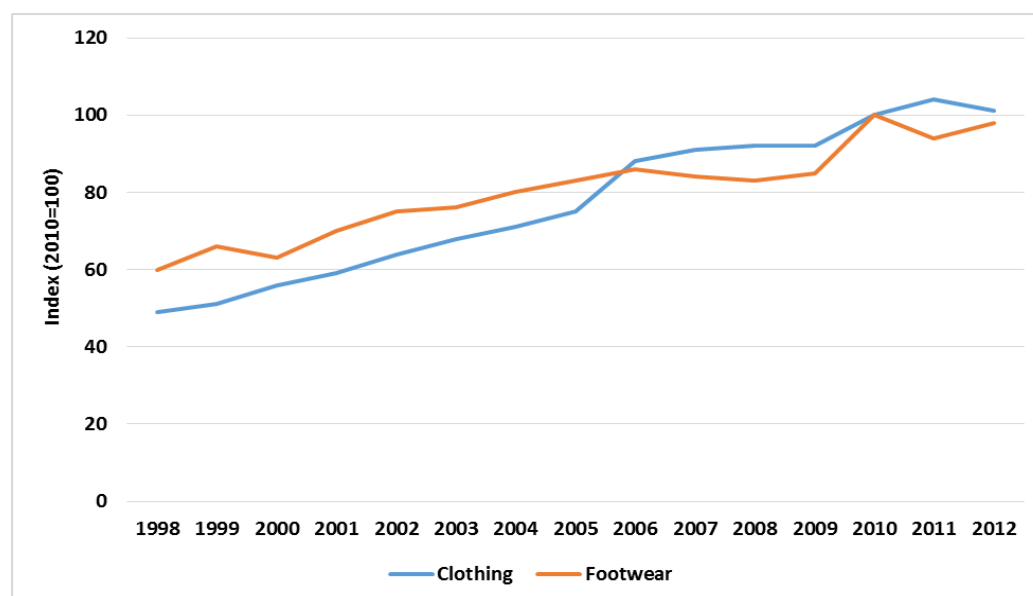
Source: EconStats.

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[7] The EU15 countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom.

Competitiveness - Retail markets in the EU and UK

Dunford (2004) observes the trend of increased concentration in the EU clothing retail markets in the late 1990s and early 2000s. Between 1997 and 2000 there was an almost fourfold increase in mergers and acquisitions in which the buying company was from the EU15 or the US. The high level of concentration in the UK retail market is often commented on in the literature. CE (1990) observes that the British retail sector is highly concentrated; dominated by high street multiples selling similar merchandise in standardised environments. With little product differentiation, retailers must compete on price in order to gain and maintain market share, putting downward pressure on prices. Also, it is stated that the retailing sectors in both Italy and France are far more fragmented and fashion oriented. Dunford (2004) notes that in the 1996 UK retail market the combined share of specialised chain stores, department and variety stores, supermarkets and mail order stood at 76% compared with just 15% for independent retailers. Dunford (2004) also notes that retail concentration is the greatest in the UK out of all EU countries.

Consumer tastes and preferences

There has been a long term decline in consumer spending on clothing and footwear. While this can be partly attributed to the falling price levels, it may also be a cause of lower prices in itself. In TEXMEDIN (2004) it is stated that, as quality and price of clothing increases consumers are not becoming more sophisticated or demanding – their demands are targeted at other parts of consumption like IT-related appliances, communication and services. In the EC (2011) report the decline in consumer purchases in developed countries is attributed to several factors. Firstly, the status of apparel as a social marker is 'ever receding' – clothing purchases are increasingly driven by individual tastes and habits and are no longer signals of socioeconomic status. Secondly, there is increasing consumer dissatisfaction with the available products on the market for reasons including poor sizing, insufficient quality and excessive uniformity. Thirdly brands have become increasingly important to consumers regardless of price.

Fast fashion

Fast fashion refers to set of fashion principles adopted by international retailers that have shaped the evolution of the clothing industry since the 1980s. According to Tokatli (2008):

'The idea is to beat the high-fashion houses and ready-to-wear designers to the market. This requires greater integration of the supply chain, a development which has already had profound implications for the structure and geography of the clothing industry, the distribution of value-added along the chain and the nature of the power relationship.'

The growth of international fast fashion retailers (such as Zara and H&M) who have thousands of stores worldwide has changed the nature of the clothing industry – fast fashion items are inexpensive compared to traditional fashion items and are available on a mass scale. Fast fashion sales increased by more than 45% between 2001 and 2005 compared with a market average of 3%.

Fast fashion retailers do not directly invest in design but are inspired by trends spotted at fashion shows and cues taken from mainstream consumers. The resulting products are put on the market almost immediately, freeing producers from the 'season collection trap' and changing the conditions

surrounding production. Thus, the overall effect of prices is not only a reduction in the unit price of the goods, but an improvement in their quality (as measured in terms of fashion) that can be seen as a further price reduction if adjusted for.

The global value chain

The proliferation of large international retailers and the increased concentration in retail markets has transformed the value chain from a producer driven value chain to a buyer driven value chain. This means that distributors are able to put increasing pressure on manufacturers' margins as they themselves compete in price sensitive consumer markets. Tokatli (2008) points out that since the 1980's increasing numbers of firms from partially industrialized countries such as China, Morocco and Turkey have learned to produce high quality products. Thus, due to the labour intensive nature of the industry such low-wage countries have gained a competitive advantage in production. In the TEXMEDIN (2008) report it is noted that global retailers often keep control of all strategic functions, while sub-contracting production. 'Even high value brands are produced in low wage countries under strict control of the leading companies'. Furthermore, consumer preferences (fast fashion) have demanded lower priced products. TEXMEDIN (2008) notes that 'consumer behaviour is heading towards a culture of cheap disposable fashion'.

Globalisation of Trade

Aside from the ATC, the globalisation of trade in clothing and footwear has been driven by the proliferation of Preferential Trade Agreements (PTAs) and the establishment of free trade areas. Most notably, the EU established a Customs Union with Turkey from 1996 onwards and agreed to a number of bilateral trade agreements with important trading partners such as Morocco that same year, Tunisia in 1998 and Mexico in 2000. By direct consequence of being in the European Single Market, the UK was able to access these markets and import textile goods from these countries with greatly reduced trade barriers.

Another important development occurred in 2001 when fifteen years after negotiations first began, China, the biggest exporter of clothing in the world, joined the WTO. This meant trade restrictions on China were lifted in several ways. Yeung and Mok (2004) list the major trade liberalisation factors relevant to the industry as:

- The accession deal incorporated the ATC meaning that the MFA export quotas would be phased out, though there would be safeguard mechanisms against Chinese export surges for 12 years after accession.
- Tariffs were to be reduced from the 2001 average of 25.4% to an average of 11.7% by January 2005.
- Foreign financed firms would be granted comprehensive trading and distribution rights in China progressively over three years.
- Sales and purchases of state-owned enterprises (SOEs) and state-invested enterprises (SIEs) would be based solely on commercial considerations rather than 'government procurement'.

An increase in Chinese imports to the UK market may further have downward pressure on prices through increased competition from lower-cost imports.

2.3 Summary of main economic drivers

This section presents a summary of the drivers of change in real consumer prices identified from the qualitative research. Then, a number of variables are suggested that may be important for the econometric analysis stage of the investigation.

The following tables list the key drivers of change and the mechanisms through which they may have affected prices, as well as the possible Single Market influence and the direction of the price effect:

Table 2.1: Drivers of change in UK real purchase of vehicles prices

Key driver	Mechanism of change	Single Market influence	Price effect
Exchange rate fluctuations	Affecting the price of imports	Indirect effect through increased trade	Price fluctuations
Globalisation	Increased imports (intra-EU and extra-EU) leading to increased competition	Potential effect through reduction in EU Common External Tariff	Lower prices
Microeconomic policies	Car tax cut in 1992	No effect	Lower prices
	Block exemption leading to uncompetitive market	No effect	Higher prices
	Block exemption reform and other pro competition laws	Indirect effect through increased price transparency	Lower prices
	Environmental and safety regulations increased production costs.	EU regulation may have had an effect	Higher prices
	Environmental regulation may have stimulated innovation leading to efficiency gains	EU regulation may have had an effect	Lower prices
FDI	Leading to increased competition, and improved productivity from new manufacturing techniques such as lean production.	Direct effect as Europe / UK became more attractive to inward investment	Lower prices

Key driver	Mechanism of change	Single Market influence	Price effect
Regionalisation	Increased production efficiency through free movement of capital and labour.	Direct effect from legally enabling regional integration.	Lower prices
Technology	Manufacturing technologies such as lean production and platform sharing reduce costs	Indirect effect – could have encouraged technological progress and transfer through free movement of highly skilled workers and capital.	Lower prices

Table 2.2: Driver of change in UK real clothing and footwear prices

Key driver	Mechanism of change	Single Market influence	Price Effect
Competitiveness in the UK retail market	UK retail market has a high concentration of large retailers who compete on price	Indirect effect through encouragement of mergers and acquisitions in the retail sector	Lower prices
Consumer tastes and preferences	Receding status of apparel as a social marker, share of consumer expenditure declining	No effect	Lower prices
Globalisation	Increased imports, particularly from East Asian countries leading to increased competition	Potential effect through reduction in EU Common External Tariff	Lower prices
	The global supply chain - production subcontracted to low wage countries	Indirect effect through integration with low wage economies.	Lower prices
	China's accession to the WTO – increased competition	No effect	Lower prices

Key driver	Mechanism of change	Single Market influence	Price Effect
Microeconomic policies	The MFA	No effect	Higher prices
	ATC phase out of the MFA and other trade restrictions	No effect	Lower prices
	Other bilateral trade agreements between the EU and external trading partners.	Indirect effect as access to the Single Market was on one side of the trade negotiations.	Lower prices
Technology	Fast fashion industry – mass production of high quality 'fashion' products led by international retailers	No effect	Lower prices

Explaining the timing of price changes

When considering the timing of certain effects on prices it is important to make the distinction between factors that have an identifiable time period of effect and factors whose effects are ongoing and are difficult to separate out.

Figures 2.8 and 2.9 below display timelines of key events that affected purchase of vehicles prices and clothing and footwear prices.

There are factors affecting prices in both categories whose effects are ongoing and cannot be attributed to any one point in time. Examples include globalisation, exchange rate fluctuations and technological advance. While these factors may have had a stronger effect on prices at certain times compared to others, this is difficult to detect. Furthermore, some of the effects on the timelines above will have had a short, immediate impact (e.g. car tax cut). On the other hand, some events such as the formation of the Single Market will have had effects that arose gradually, but ended up leaving a more significant long term impact.

Chapter 3 develops these variables and their inter-relations further in the context of forming a structural modelling framework for assessing the effects of various factors on consumer prices, including, where possible, the impact of the Single Market.
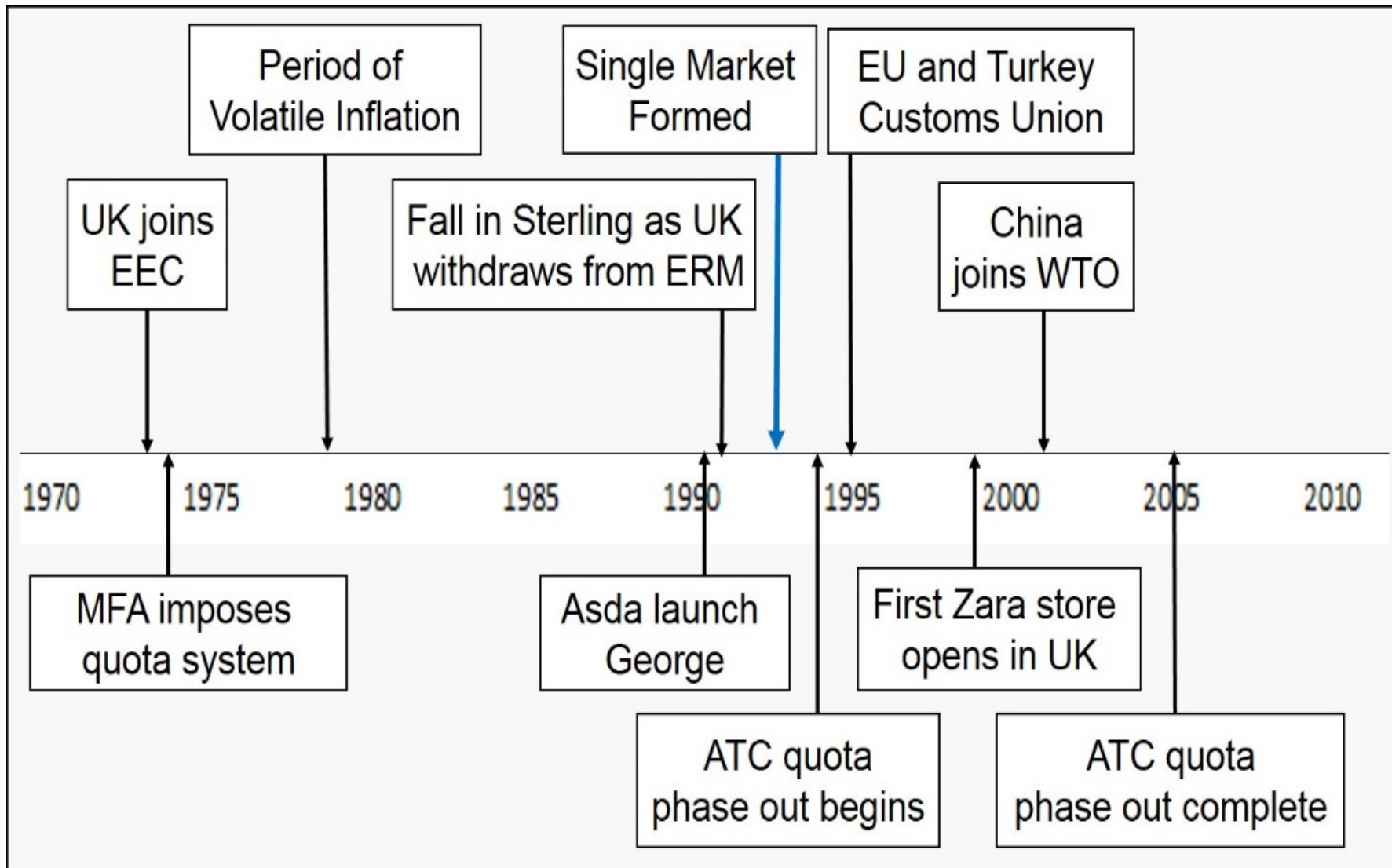
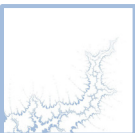**Figure 2.8: Purchase of Vehicles Timeline**
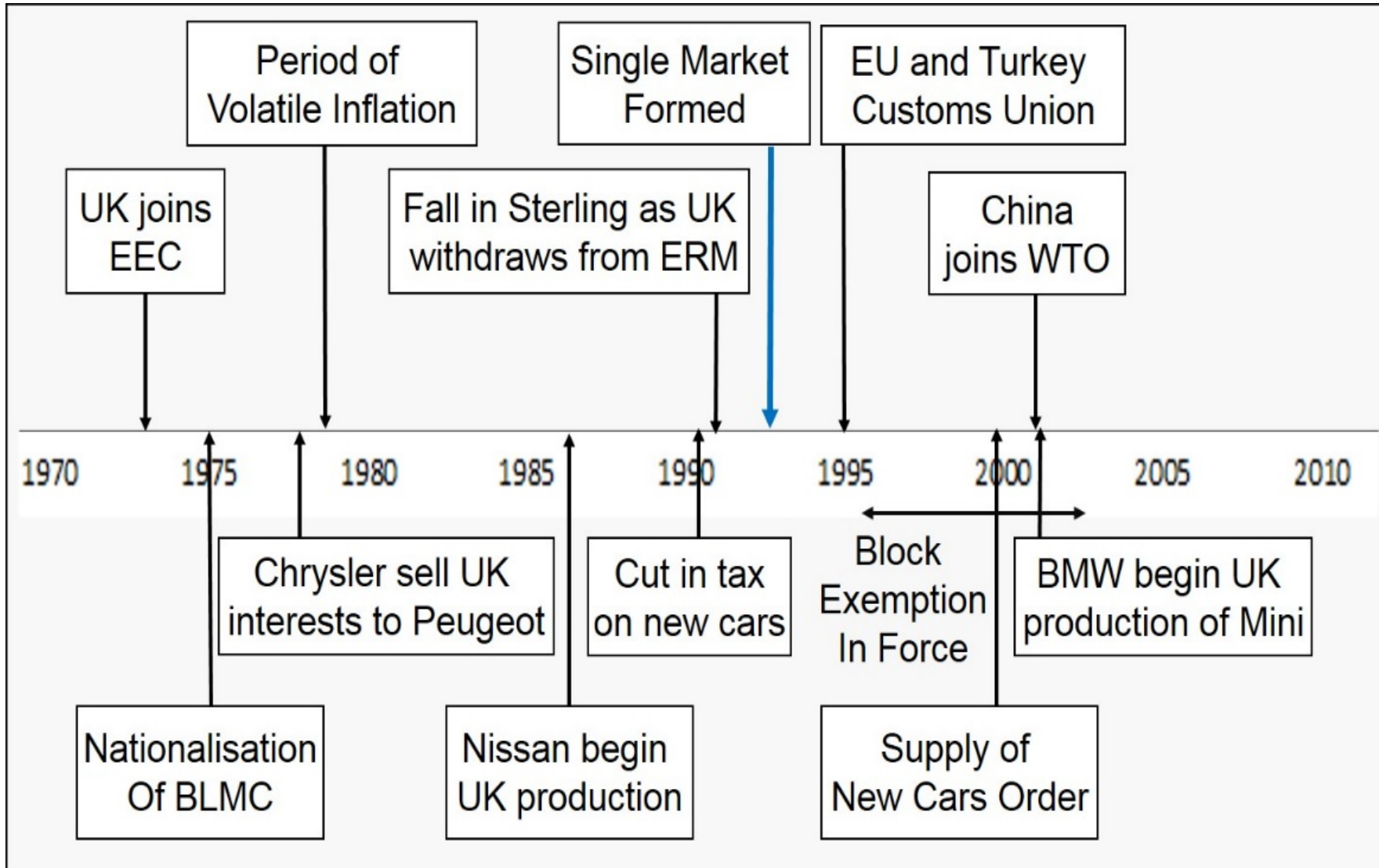
Source: Cambridge Econometrics.

Figure 2.9: Clothing and Footwear Timeline

Source: Cambridge Econometrics.

3   Modelling consumer price trends

3.1   Introduction

This chapter moves on from the descriptive and qualitative assessment in Chapter 2 and develops an econometric model for consumer prices in each of the two consumer categories being studied. The influence and effects of the Single Market are considered on the various factors seen to be driving the trends in consumer prices, and wherever possible, this effect is quantified.

3.2   Approach

The quantitative methodology is built upon a framework in which it is assumed that for any given sector, the final retail prices seen by UK consumers represent the combined effect of the UK domestic industry prices in that sector and the price of related goods imported to the UK, these comprising the two routes by which a consumer good arrives at market. When considering the effects of the Single Market on the prices of imported goods, a key question to be considered is whether the imported goods come from within the European Union (and are therefore free from import duties) or outside.

The data are presented and evaluated through charts and the results from the modelling process are reported. The means by which the variables identified as important drivers of industry prices and import prices can be linked to the Single Market, either directly or indirectly, are also highlighted.

The chapter ends with a conclusion of the modelling results and the methodological difficulties encountered, particularly regarding the ability of the model to empirically identify Single Market impacts on UK consumer prices.

Key relationships   Figure 3.1 below shows a general overview of the structure of the model and the directionality of flow between the three main price series.

Figure 3.1: Overview of the model
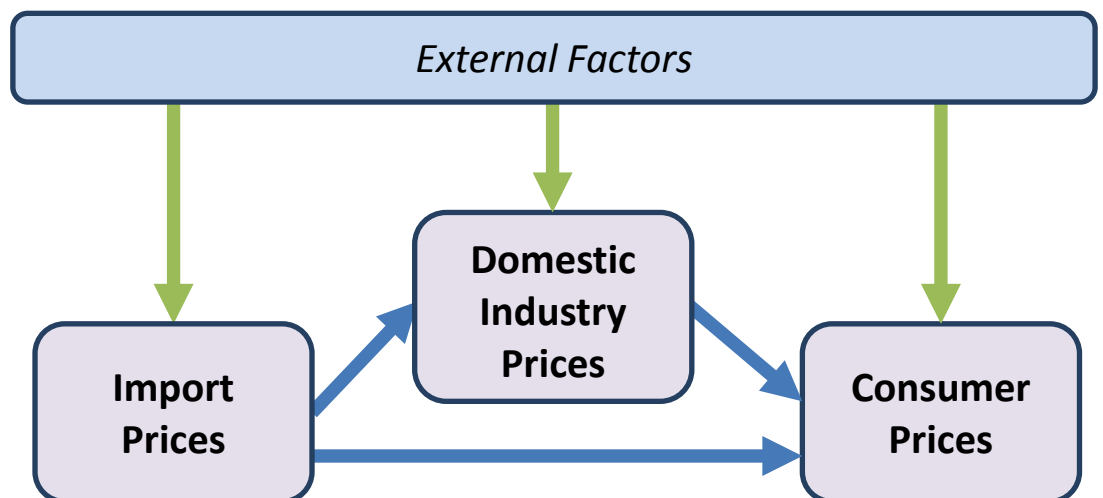
Import prices The prices of imported goods affect consumer prices both directly through imported finished goods (direct to market) and indirectly through imported intermediate goods, and by providing competition with domestic producers.

Import prices are determined by a number of exogenous factors, including world exchange rates, and industry prices in exporting countries outside the UK (which are in turn affected by changing global commodity prices). In addition, having imports can bring about increased competition in the UK consumer market, putting downward pressure on the mark-ups of domestic producers and retailers. Finally, import prices are also affected by import duties – which represent a mark-up on the import price in the form of a government tax – and non-tariff barriers to trade.

Within the Single Market, import duties on all goods traded between EU member states have been fully removed since 1968, when the customs union was established by the European Economic Community. Hence, the effect on intra-EU import prices from the full formation of the Single Market in 1993 would be on the reduction of non-tariff barriers. Alongside this, there is a common external tariff imposed on extra-EU imports. Changes in the level of the common external tariff may reflect the process of global trade liberalisation rather than a specific Single Market effect.

Industry prices Domestic industrial prices refer to the average wholesale price charged by domestic producers to domestic retailers. They are affected by the costs of production (including import costs) as well as the price mark-up that producers charge. The industry mark-up depends on the extent of industry competition and resultant market power.

There is evidence in the literature that, depending on the sector, the Single Market had a downward effect on industry mark-ups as it fostered higher levels of competition and enabled greater economies of scale to be realised through unrestricted access to a larger market.

Foreign Direct Investment into the EU may have increased as a way of circumventing the external tariff by locating production facilities within the customs union. As noted previously, this effect may have been stronger on purchase of vehicles prices due to the regionalized nature of the automotive manufacturing industry.

Consumer Prices Consumer prices of a certain good/service are those that the final consumer pays at the point of transaction with a retailer. Hence, they will be affected by domestic industry prices, import prices, and the retail mark-up as well as any consumption taxes (VAT in the case of the UK).

The main effects of the Single Market are likely to be felt through its impact on industry and import prices, although it is conceivable there could be an effect on retail mark-ups through increased competition in the retail sector itself.

Figure 3.2 below presents the key price drivers identified both above and in Chapter 2 (particularly in Figure 2.5) by identifying the key relationships and inter-relationships between domestic industry, import and consumer prices. It also attempts to separate out those factors considered as exogenous or outside UK influence from those which are more likely to be endogenously determined within the model.

Figure 3.2: Industry, import and consumer price inter-relationships
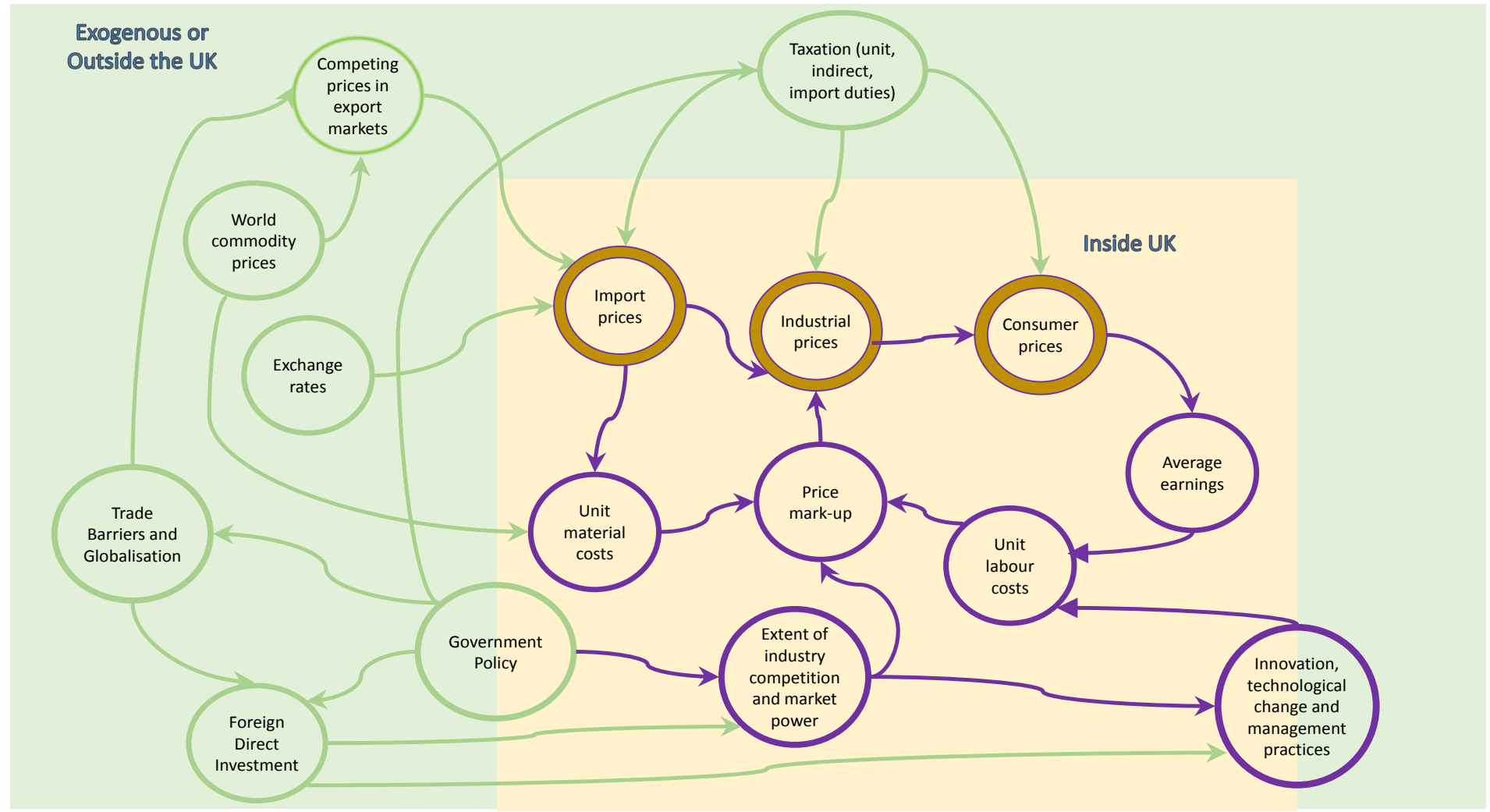
3.3   Findings: motor vehicles

Data Analysis   This section includes plots of the main data series and reports on correlations among the key variables of interest for the motor vehicle sector. Further details on data availability, the econometric modelling specification and the estimation results can be found in Appendix B.

Import prices   For the study of motor vehicle import prices, three key variables were analysed:

- Real import prices (in £)

- Real world wholesale prices (in £)

- Import duties (in %)

A time series plot comparing real import prices and real world wholesale prices is shown in Figure 3.3 below. The main feature evident in the chart is the noticeable commonality of pattern up until 2007:

Figure 3.3: Real import and world wholesale prices for Motor Vehicles
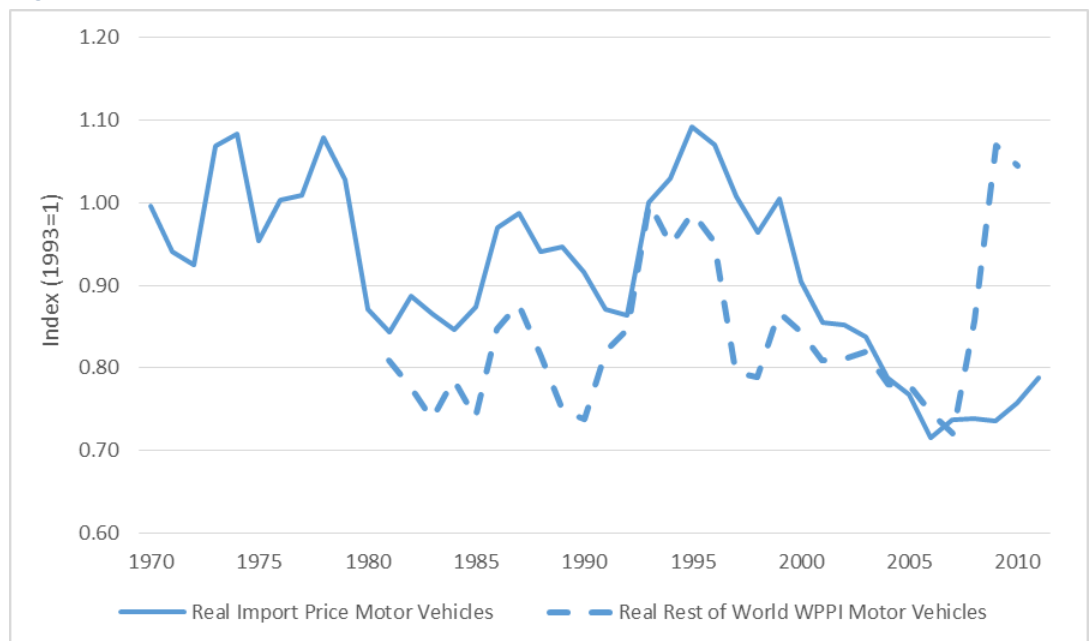
Figure 3.4 below shows the limitations of the data available on import duties into the EU from external markets. However, a reduction in the average import duty is evident after the introduction of the Single Market in 1993, eventually arriving at a new level by the year 2000. This does also correspond with the reduction in import prices seen over this period, although this is also clearly related to movements in world wholesale prices.

**Figure 3.4: Average import duty for Motor Vehicles**
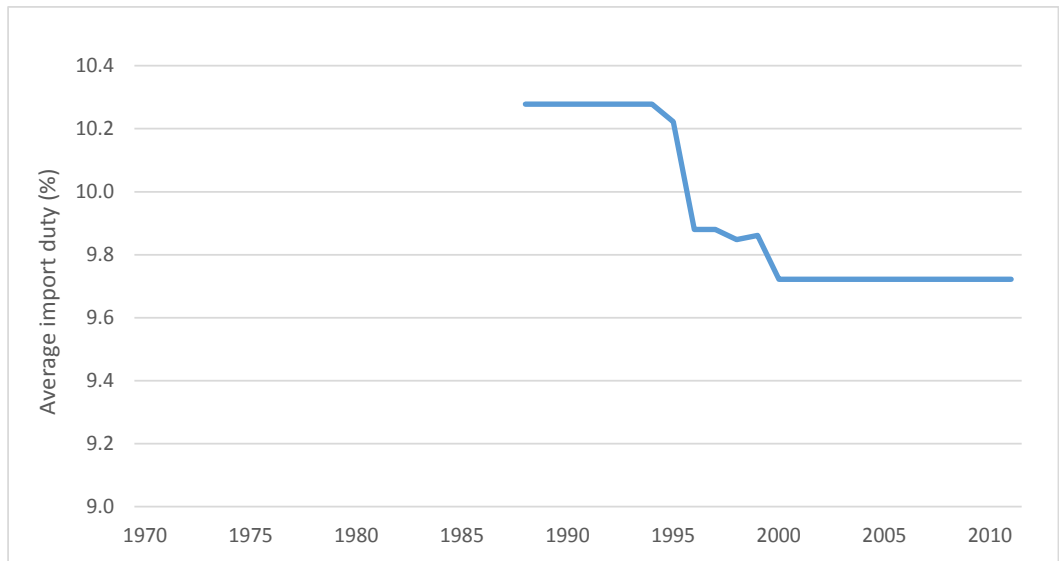
After restricting the data period until 2007[8] to exclude the effects of the financial crisis, correlation analysis reveals a strong and significant (at the 5% level) association of 0.7 between import prices and world wholesale prices and 0.5 between import prices and import duties.

The lack of data for import duties rules out an estimated approach to determining the impact of the Single Market on import prices, although equation results are still reported in Appendix B. Instead, the Single Market effect on import prices is calculated using the shift in import duties combined with historical import penetration rates. This is discussed in more detail below.

Industrial prices Figure 3.5 shows the evolution of domestic investment in the transport production sector (a suitable proxy for the motor vehicles sector) and also the Foreign Direct Investment (FDI) stock, which evidence suggests was brought in by the advent of the Single Market attracting foreign entrants to the UK to act as an export base to the rest of the EU.

The FDI data reveals a strong increase firstly in the late 1980s as Nissan entered the UK market, and then a second spike in the late 1990s. It is likely that the first peak and a significant portion of the second peak represents the investment in UK production plants from the three Japanese manufacturers, although other foreign investors were also investing in the UK at this time.

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[8] Adding in the remaining years (which span the financial crisis and can henceforth be considered outliers) would cause the correlation between import prices and world wholesale prices to become insignificant.
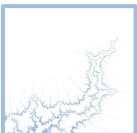
Figure 3.5: Domestic and Foreign Investment in the Motor Vehicles sector
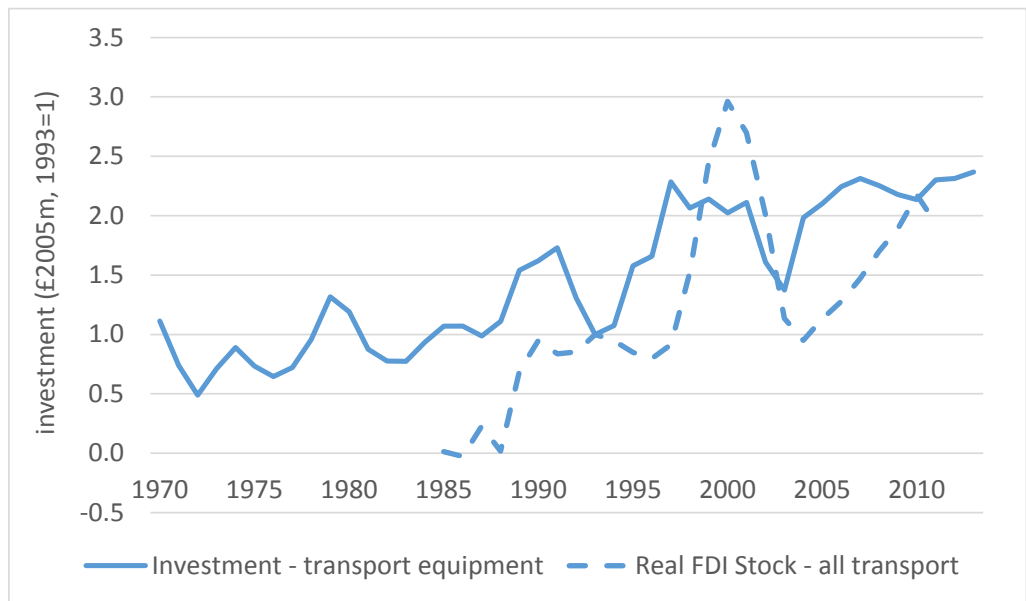
From 1970 to 2010

The data for domestic investment exhibits clear cyclical trends around a visible upward trend. Although it is difficult to confidently attribute either of the peaks between 1990 and 2000 to the effect of entry into the Single Market, by studying the non-cyclical long term trends present in the data, it is possible to form a quantitative estimate of the impact of Single Market entry on domestic investment. Figure 3.6 shows the change in long term trend before and after 1986, the year the first Japanese factory opened in the UK in anticipation of the EU Single Market. There is a clear and distinct difference in trend gradient before and after this year. The qualitative evidence suggests that this increased trend was either wholly or partly in response to the entry of foreign firms into the UK motor vehicle production market around this time, as new manufacturing technology became both visibly available and necessary to compete with the hi-tech Japanese entrants into the market.

Figure 3.6: Linear Trends in Domestic Investment in the Motor Vehicles Sector
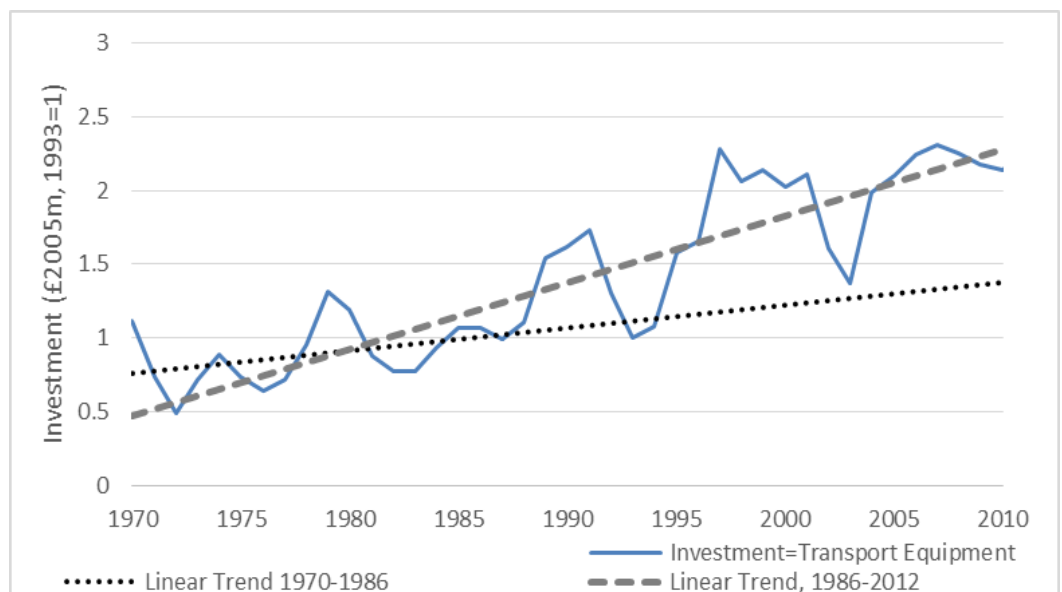
For robustness testing, similar calculations were performed with the trend-line splits occurring in 1989 and 1993. Similar results were found, with significantly higher gradients seen in the latter period, suggesting that the events over this period, including the build-up to Single Market entry in 1993, did have a lasting impact upon levels of domestic investment in the UK. The predicted possible long-term effects of these increases in trend range between a 10% and 50% increase in the levels of domestic investment, with the distribution centred on a value of 30%.

Competition also clearly increased after the introduction of the Single Market. The concentration ratio in Figure 3.7 shows a marked decline from the early-1990s onwards, indicated by a falling market share for the four largest firms, dropping almost 40pp as Nissan, Toyota and Honda entered the domestic market. The ratio rebounded in the mid-2000s following the onset of the world economic crisis. According to car production data, most manufacturers cut back output during this period whilst Nissan maintained pre-crisis output levels. Hence, market concentration was temporarily higher during this period.

Figure 3.7: Four-firm concentration ratio for Motor Vehicles
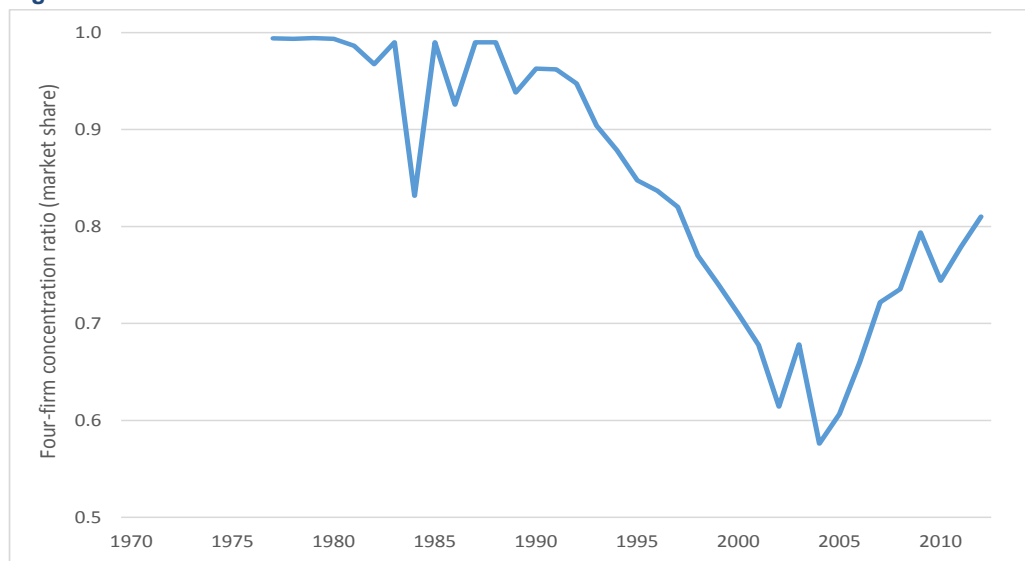
Consumer prices In the absence of retail mark-up data for motor vehicles, the remaining indicators link consumer prices to domestic and import prices. Figure 3.8 shows the co-evolution of these three series over the sample time period.
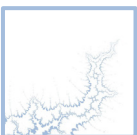
Figure 3.8: Real consumer, import and domestic producer prices for Motor Vehicles

The correlations between the variables, as the time series plot would suggest, are all positive (0.3 between consumer and domestic prices, 0.7 between consumer and import prices) and significant at the 5% level, suggesting no reason not to proceed to the estimation stage, the results of which are presented in Appendix B.
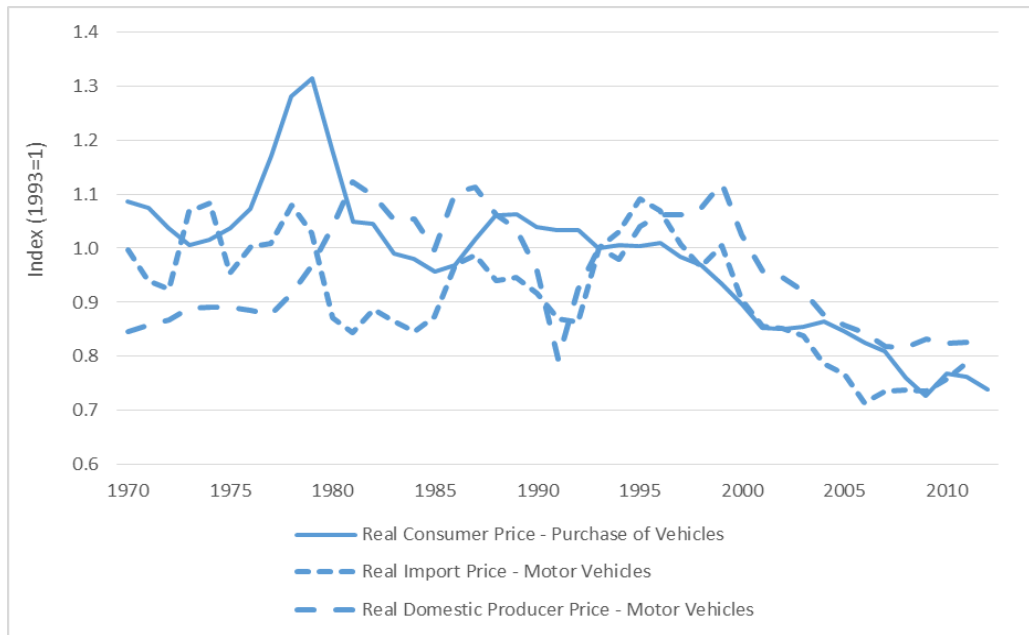
Quantifying the price drivers

This sub-section takes the findings so far and shows how the impact on consumer prices can be calculated, and how elements of the impact of the Single Market could be quantified. Each impact is traced through the three effects of import prices, industry prices, and ultimately to consumer prices.

Import prices

Import duties on extra-EU goods fell from an average of 10.3% in 1988 to 9.7% in 2000, a reduction of 0.6% in duties, which translates to a reduction of 0.54% in resulting prices. Extra-EU imports averaged 16% of total imports from 1988 to 2000[9]. If one assumes that the average import price is a weighted average of the Extra-EU and Intra-EU import prices, then this equates to a reduction of only 0.1% in total import prices (i.e. 0.54*0.16). Assuming that all of this reduction is due to bilateral EU trade agreements and not due to any other global trade agreements that also benefited non-Single Market members then, ceteris paribus, this number can be taken as the maximum Single Market effect on import prices to feed through into the other equations. Hence we can conclude that the direct effect of the lowering of import duties on goods and services around the time of Single Market entry did not have a major impact on the prices seen by consumers. However, there are other mechanisms by which the entry into the Single Market may have translated into a more significant effect.

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[9] WITS Comtrade database
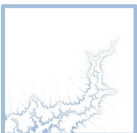
Table 3.1: Effect of external import tariffs on average import prices

Variable	Estimate	Coefficient	Contribution
External Import Tariffs	-0.5%	0.16	-0.1%
Total			**-0.1%**

Industry prices   The regression analysis for domestic industry prices gives a coefficient of 0.29 on import prices (for regression analysis results see Appendix B). Combined with the import duty effect, the direct effect of import price reduction (through decreased production costs) on domestic industry prices gives a long-run domestic price effect of -0.1 x 0.29 = -0.03%

In addition to this direct effect, there are also the effects of increased competition and increased FDI on unit labour costs and domestic investment to consider. The number of UK based motor vehicle producers increased from four to seven between 1986 and 1992 as three Japanese owned firms (Nissan, Honda and Toyota) sought to build up a European production base (CE (1989)). The suitability of the UK for such a European base was dependent upon the increased ease of exporting to the rest of Europe, as was anticipated to happen with the approaching formation of the Single Market. Without membership to the Single Market it is unlikely that the UK would have attracted such investment.

On FDI, the long term increases in domestic investment have been quantified as being approximately 30%, with lower and upper bounds of 10% and 50%. Using the estimated regression coefficients (from table B7 in Appendix B), a 30% increase in domestic investment translates to a 4% decrease in domestic prices.

On competition, the effect on market concentration ratios has been estimated as a 20% decrease due to the Single Market. However, the relationship between market concentration and industry prices proved to be statistically insignificant over the period in question when considered simultaneously with domestic investment, and therefore it was not possible to include both effects in the final analysis.

Adding together the import price and investment effects together yields an overall long-term effect on domestic industry prices of -4.03%.

Table 3.2: Estimated impacts on domestic industry prices

Variable	Estimate	Coefficient	Contribution
Import Prices	-0.1%	0.29	0.0%
Investment	30.0%	-0.13	-4.0%
Concentration	-20.0%	N/A	N/A
Total			**-4.0%**

Consumer prices   In order to build up a final picture of how movements in import prices and domestic industry prices impact on final consumer prices, we assume that the consumer price is made up of a weighted average of import and domestic prices. We base the weights on empirical data of import volume penetration

rates over the time period in question, which indicate a 60:40 split between the impact of import and domestic prices on consumer price movements[10]. Using this information the overall impact is derived based on the import and domestic producer price effects.

A reduction of 0.1% was inferred for import prices, combined with the coefficient value of 0.6. For domestic producer prices the effect of lower import prices and increased domestic investment due to the Single Market was a reduction of 4.03%, combined with a coefficient value of 0.4.

Thus the overall long-run effect on consumer prices is the direct effect of import prices of -0.06% added to the indirect effect of reduced domestic industry prices of -1.6%, which give a final change of around -1.7%.

Table 3.3: Estimated impacts on consumer prices

Variable	Estimate	Coefficient	Contribution
Import Prices	-0.1%	0.60	-0.1%
Domestic Prices	-4.0%	0.40	-1.6%
Total			**-1.7%**

This is of course only a partial estimate of the impact of the Single Market on consumer prices, since data availability limitations meant that it proved difficult to quantify the impact of other factors such as increased competition and falling non-tariff barriers, which may have been significant.

3.4   Findings: clothing and footwear

Data Analysis: This section includes plots of the main data series and reports on correlations among the key variables of interest for the clothing and footwear sector. Further details of the exact econometric modelling specification and estimation results can be found in Appendix B.

Import prices The same approach was applied to import prices in the clothing and footwear sector as for the motor vehicle sector. Movements in the world wholesale price index were not as closely tied to movements in the consistently downward trending import price index, as is evident in Figure 3.9 below:

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[10] SMMT World Automotive Statistics

Figure 3.9: Real import and world wholesale prices for Clothing and Footwear
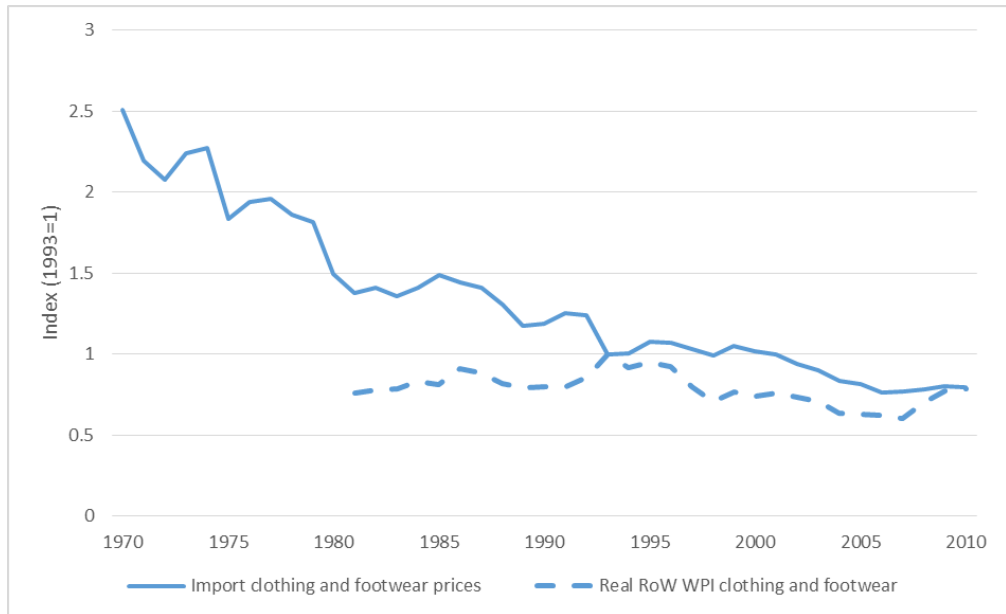
One can observe a similar downward trend in the two indices from 1993 onwards, suggesting the expected relationship between world producer prices and import prices. As seen in the motor vehicles analysis, there is an upward turn in the wholesale price index at the end of the 2000s driven by the exchange rate effect of the financial crisis.

The changes in clothing and footwear import duties are illustrated below:

Figure 3.10: Average import duties for Clothing and Footwear
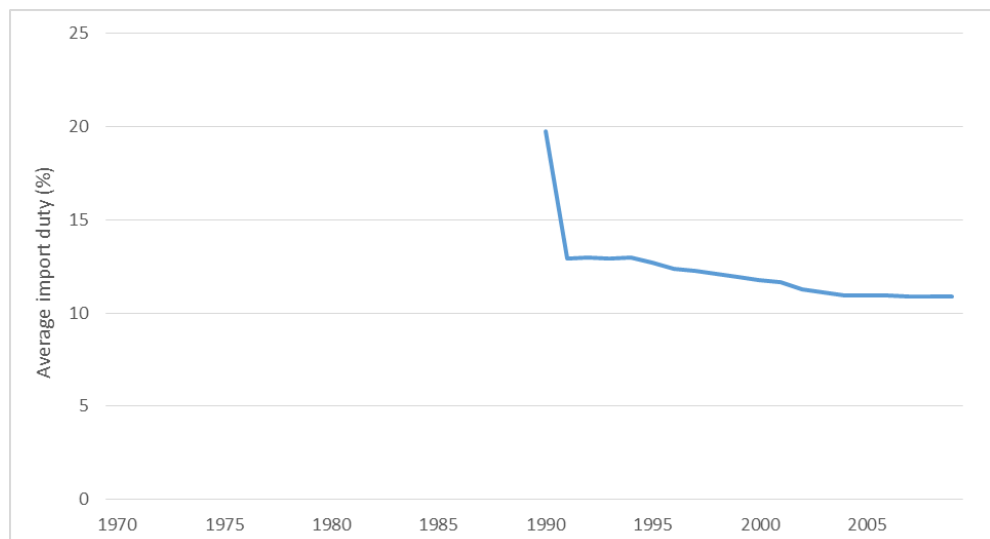
There is a sharp drop in import duties in 1992, though as was established earlier in the report this can be more convincingly attributed to the global trend towards trade liberalisation in the sector rather than any specific Single Market effect.

After restricting the data to before 2008, the correlation between import prices and the rest of the world wholesale price is again highly significant, strong and positive at around 0.8. The correlation between import prices and import duties is low and statistically insignificant. This is probably explained by the relative lack of variation in the import duties time series beyond the sharp drop in 1992.

Industry prices Figure 3.11 illustrates the relationship between domestic prices, unit labour costs and import prices. The contrast between import and domestic price changes is clear; while domestic prices and unit labour costs have fallen at a similar rate, the fall in import prices was much greater, particularly in the period from 1970 up to the mid-1990s.

Figure 3.11: Real prices and unit labour costs for Clothing and Footwear
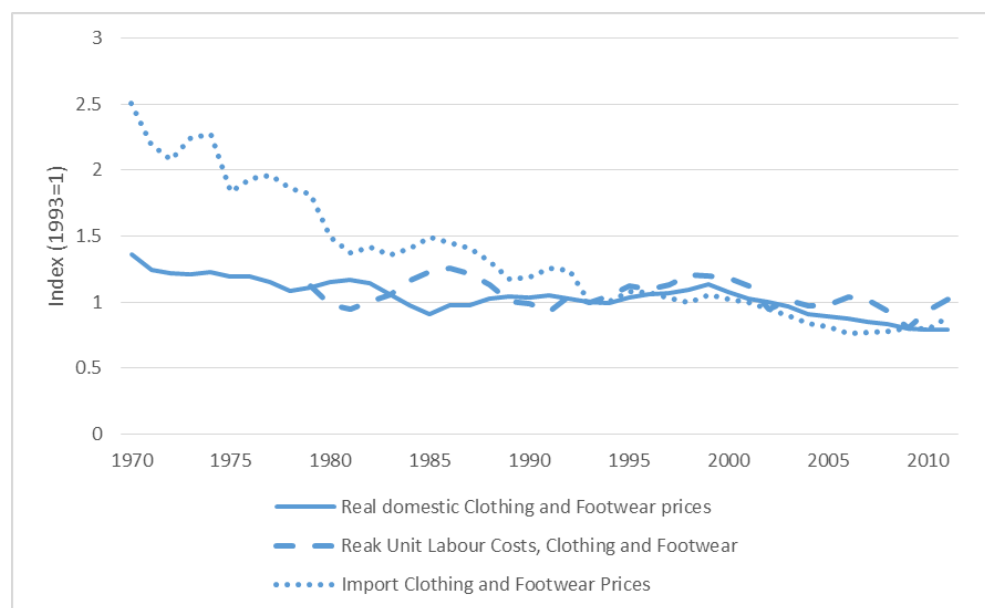
Figure 3.12 below illustrates a falling rate of domestic investment in the sector. This is perhaps best explained by the restructuring of the UK clothing and footwear industry since the 1970s. Falling levels of investment are to be expected as the domestic industry reduced in size, with more production outsourced and higher import penetration. The increased FDI over the 2000s is interesting, but it is important to note that the levels of FDI are still very low, and hence it is difficult to identify the sources of such FDI. The overall conclusion from analysing domestic prices is to reinforce the position of import prices as the dominant force behind the fall in clothing and footwear consumer price levels.

Figure 3.12: Investment in Clothing and Footwear
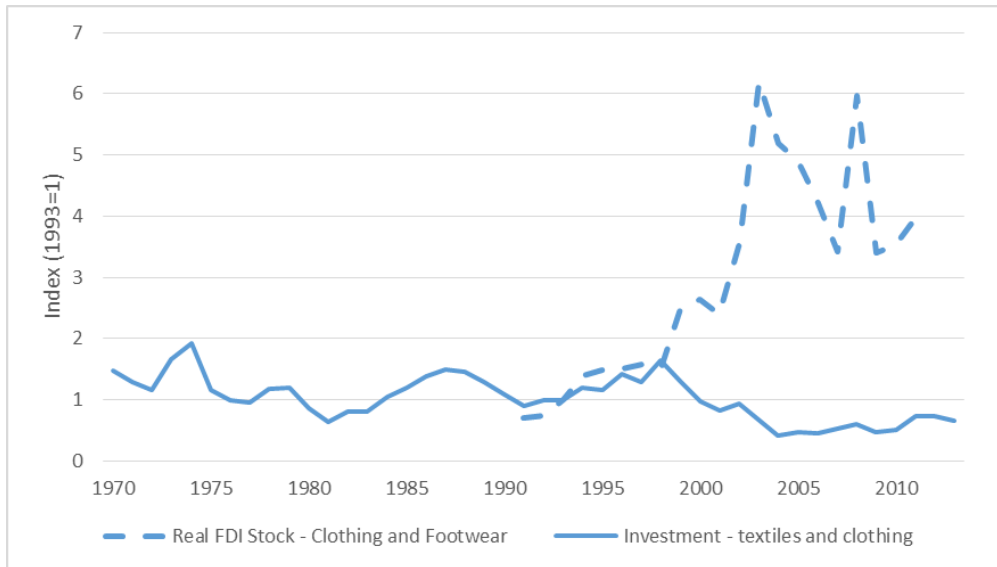
Consumer prices Lastly, a comparison between consumer prices, import prices and domestic prices is graphed in Figure 3.13 below. A clear correlation between falling consumer prices and falling import prices is apparent from the graph from 1970 to the mid-1990s. After that, consumer prices continue to fall while import prices fall at a slower rate. This may be explained by the demand-driven and structural changes in the fashion industry noted in Chapter 2, namely increasing preferences for low cost clothing and the emergence of low cost fast fashion retailers, and is consistent with an increasing import penetration and move towards relatively cheaper imported goods. Both the domestic price index and import price index are strongly and significantly correlated with consumer prices, as is evident from the graph. This is encouraging for further econometric analysis.

Figure 3.13: Real consumer, import and domestic producer prices for Clothing and Footwear
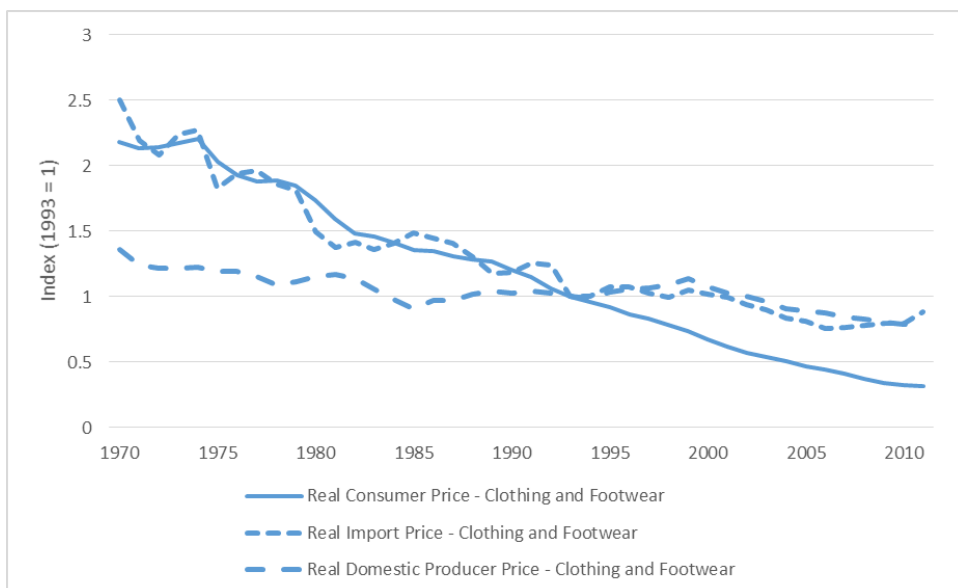
Quantifying the price drivers

The econometric analysis of the clothing and footwear category showed that the falling consumer prices were mainly related to falling import prices, as is detailed below.

Import prices

As with motor vehicles, there was a significant reduction in import duty levels in the 1990s (in fact it was much larger for clothing and footwear). Duties fell from 19.8% in 1990 to 11.8% in 2000, translating to an approximate 6.7% fall in import prices from outside the EU. As an average of 68% of UK clothing and footwear imports originated from outside the EU during this period[11], this results in a 4.6% drop in overall import prices. However, the qualitative analysis suggests that the fall in import duties in this sector is more attributable to the ongoing process of globalisation through global trade agreements, rather than EU trade agreements specific to Single Market members. Chapter 2 details the rapid process of trade liberalisation and industry evolution that transformed the global industry over the last 40 years, with the dominating trend toward production in low cost countries in Asia driven by large retail companies with global supply chains.

Table 3.4: Effect of external import tariffs on average import prices

Variable	Estimate	Coefficient	Contribution
External Import Tariffs	-6.7%	0.68	-4.6%
Total			**-4.6%**

Industry prices

Industry prices in clothing and footwear proved to be difficult to connect to import prices econometrically. The restructuring of the domestic industry is likely the reason; with the industry becoming more focused on high quality niche products, for which it does not need to compete with mass imports.

Due to a lack of available data on individual companies, it was also not possible to model any change in the structure of the industry as was done using concentration ratios for motor vehicles.

Consumer prices

The lack of available concentration ratio data for retailers also restricted the feasibility of obtaining a quantitative impact of competition on consumer prices, since changes in market structure were identified in Chapter 2 as a possible channel through which the Single Market may have lowered prices. Aside from this, the prevalent force behind falling consumer prices in the sector has been identified as falling import prices. Hence, any Single Market effect on clothing and footwear prices derived from the model depends on whether the Single Market can be credited with lowering import prices. As 80% of UK clothing and footwear were imported during this period, a drop of 4.6% in import prices would lead to a 3.6% drop in consumer prices. Although entry into the Single Market was directly responsible for Britain being party to trade agreements with a number of countries, it is impossible to ascertain what would have been the case in an alternative scenario.

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[11] WITS Comtrade database

Table 3.5: Effect of external import tariffs on average import prices

Variable	Estimate	Coefficient	Contribution
Import Prices	-4.6%	0.80	-3.6%
Domestic Prices	N/A	0.20	0.0%
Total			**-3.6%**

3.5   Robustness testing

In order to fully assess the validity of the quantitative analysis, robustness testing was carried out in which upper and lower bounds on our limited quantitative findings were calculated.

This was done by critically appraising the assumptions made in the quantitative section of the work, and alternative values considered. The cumulative effect of several adjustments being made to a number of scenarios was then calculated, and its overall effect on the final impact quantified.

For the motor vehicles sector, the effect of import duties on import prices were considered, and a figure of a 0.6% reduction was used. As this assumes the entire fall was due to the Single Market and had a proportionate effect on import prices, this is effectively already the upper bound on this figure. The lower bound could be considered to be a 0% change; that is to say, either the drop in import duties is not attributable to the Single Market entry, or it did not translate into any effect on the import prices of motor vehicles into the UK.

The effect of increased domestic investment on industry prices was also investigated, with a figure of a 30% ascribed to the long term trend increase in domestic investment in the motor vehicle production industry, with lower and upper bounds of 10% to 50%. These figures translate to a range effect of between 1.3% and 6.7% on domestic industry prices.

It is then possible to combine these with the 40% weighting of domestic industry prices, taken from the historic important penetration data, and get final effects on consumer prices of 0.5% and 2.7%.

Combining all of the aforementioned effects implies a lower bound of 0.5% and an upper bound of 2.7% in the motor vehicles sector.

The figure of -3.6% calculated for the effect of reduced external tariffs on the final consumer clothing and footwear prices was in itself an upper bound. The lack of quantitative data for this sector makes the calculation of more extensive bounds inappropriate.

3.6   Conclusions

Outline of the final modelling approach Modelling consumer prices presents a complex challenge due to the numerous price driving forces that interact with each other in different ways for different sectors. By mapping the interactions between such forces, this report arrived at an intuitive approach centred on the relationship between import prices, domestic prices and consumer prices, for which each of the respective

indices feeds into the next. Elements of the Single Market effect on consumer prices that could be quantified were estimated by identifying the effect on domestic prices and import prices, and feeding it through the model to obtain direct and indirect effects on consumer prices, which were then aggregated to produce a total long-run effect.

Purchase of vehicles   Given methodological difficulties and data limitations, it was only possible to quantify the impact of the Single Market through falling import duties and increased domestic investment. The combined long-run effect of these two factors on motor vehicles prices was estimated at -1.7%. While this appears to be quite a small effect, it cannot be attributed as the total impact of the Single Market as the model only takes into account possible Single Market effects that could be identified with the available data. For example, the impact of the Single Market on reduced non-tariff barriers to trade, increased competition, and technological development, were not quantified in our analysis. The combined impact of all these factors was likely to have been large. On non-tariff barriers, one particular example of note is that if the UK had not entered the Single Market the UK motor vehicle industry may not have benefited from the block exemption reform that took place during the early 2000s. Yet capturing this effect within the modelling parameters was not feasible. This example highlights the problem of identifying a Single Market effect without a reliable counterfactual with which to compare the modelling setup. It is not feasible to say what the price would have been if there had been no Single Market due to the many possible consequences of such a situation.

Clothing and footwear   The clothing and footwear consumer price category proved difficult to model econometrically due to data limitations and the huge change in the structure of the sector over a relatively short period of time. It was clear from the model that the major factor behind falling prices is import prices, which was identified as the key explanatory variable in the consumer price equation that was estimated. Import prices fell at a similar rate to consumer prices for much of the period of analysis. A figure of -3.6% was calculated for the effect of reduced import duties on consumer prices, although the extent to which the Single Market was responsible for this reduction is difficult to ascertain. Some evidence was found in the qualitative analysis of the possible channels through which the Single Market may have had an effect. The quantitative evidence offers some support for the theory that globalisation was the main driving force behind the reduction in consumer prices in the clothing and footwear category.

4   Conclusions

4.1   Summary of key findings

This report sought to identify and explain the causes of real consumer price changes in the purchase of vehicles sector and the clothing and footwear sector. Qualitative research was undertaken to uncover the historical economic developments and events that are likely to have influenced prices, and to inform the model specification for the quantitative analysis. The quantitative analysis utilised econometric and data analysis techniques to apportion numerical estimates to the different factors affecting prices.

However, due to data limitations and the complex nature of the mechanisms behind the price changes, the quantitative approach could not capture all the possible factors affecting prices. Therefore, this conclusion will bring together the findings from both sections of analysis, to provide a more comprehensive assessment of the Single Market effect on consumer prices in the two sectors of interest.

Motor vehicles qualitative analysis   The development of the automotive sector in the UK and Europe through the 1980s and 1990s was characterised by the increased regionalisation of production across the continent, leading to increased economies of scale and other efficiencies of production. This was accompanied by high levels of foreign direct investment, particularly from Japanese manufacturers into the UK. Honda, Toyota and Nissan opened UK-based production plants between 1986 and 1992 and are today three of the UK's major vehicle manufacturers. Foreign direct investment brought new and innovative management practices and technological improvements (such as the lean manufacturing techniques pioneered by Toyota) to motor vehicle production, leading to higher productivity and lower industry prices. This would have most likely not been the case had the UK not been in the Single Market, as it would have greatly reduced the UK's attractiveness as an export base (foreign firms might have instead located to other European countries).

Meanwhile, reforms to the block exemption reduced the power given to manufacturers by Selective and Exclusive Dealership system, thus allowing more cross border competition between dealers, and other policy reforms including the Supply of New Cars Order (2000) increased domestic competition. These reforms had a particularly strong effect on lowering UK car prices due to the previously low competitiveness of its dealership market compared to most of the rest of Europe. Hence, such reforms are to some extent another consequence of the Single Market, which increased price transparency and encouraged the harmonisation of market practices across Europe.

This report concludes that the key factor driving down real car prices was technological progress, which has reduced production costs and increased efficiency over the period of interest. As is noted above, lean manufacturing techniques pioneered by Toyota's Toyota Production System revolutionized

the efficiency of car manufacturing in the UK in the 1980s and 1990s. In recent years platform sharing technology has been similarly important, allowing manufacturers to reduce costs by using a common vehicular architecture across a wide range of models.

Motor vehicles quantitative analysis

The quantitative analysis sought to explain price changes in the purchase of vehicles consumption category with a focus on quantifying a Single Market effect. The fall in prices observed in the data was determined to have largely been driven down by imports. Isolating the Single Market's full influence on import prices was not feasible within the model parameters, with the main quantifiable effect coming from falling import duties on extra-EU imports. In addition, the Single Market did influence the liberalisation of cross border trade through the block exemption reforms, and will have also reduced import prices through the lowering of other non-tariff barriers to trade, such as administrative procedures and environmental regulations. The primary Single Market effect derived from the quantitative analysis was the investment effect, which was estimated to have caused a 4% reduction in real domestic industrial car prices and a consequent 1.6% reduction in consumer prices. This was calculated by combining an estimate of the Single Market effect on investment with an econometric estimate of the historical average investment effect on industry prices, and how this translates through to consumer prices.

The table below lists the main factors affecting prices and whether or not it was possible to isolate a quantifiable effect:

Table 4.1: Quantifiable and non-quantifiable vehicle purchase price drivers

Key driver	Quantifiable	Single Market influence	Price effect
Increased investment	Yes	Yes	-1.6%
Reduced common external tariff	Yes	Yes	-0.06%
Reduced non-tariff barriers to trade	No	Yes	Likely large
Increased competition	Yes (concentration ratios available for motor vehicles)	Yes	Likely large
Technological development	Partly captured by investment in the model	Some	Likely very large

Clothing and footwear qualitative analysis

Qualitative analysis of the clothing and footwear industry indicated the presence of several interrelated trends in the industry, which together combined to exert significant downward pressure on prices. The labour intensive nature of the clothing and footwear production process gives manufacturers in lower wage countries a significant competitive advantage in

global trade, despite the existence of tariffs and quotas, namely the 1974 Multi-fibre Arrangement (MFA). It was documented in the Cambridge Econometrics Industry Reports that the UK experienced increasing import penetration throughout the 1970s and 80s. The shift in demand toward foreign imports transformed the industry landscape during the 1980s, with especially rapid rationalisation in the footwear industry – which was not covered by the MFA.

The Agreement on Textiles and Clothing (1994) liberalised imports through the gradual elimination of import quotas. Also, around this time, and likely encouraged by the establishment of the European Single Market in 1993, several large multinational corporations (MNCs) either entered or significantly expanded their operations in the UK clothing and footwear retail sector. The proliferation of large international retailers transformed the global value chain from a producer driven value chain to a buyer driven value chain – allowing distributors to put increasing pressure on manufacturers' margins. Among the structural changes that this entailed was the emergence of the 'fast fashion' industry – characterised by low cost fashionable items produced on a mass scale. These developments were accompanied by a tendency toward vertical integration between producers and retailers, and ultimately this appears to have continued the decline in real prices. Finally, there is also evidence that the fall in consumer prices has been driven in part by changing consumer tastes and preferences. Evidence in the literature indicated that clothing purchases are far less frequently seen as signals of socioeconomic status, and there has been a shift in consumption expenditure shares away from clothing and footwear, and toward electronic goods, communication and services.

Clothing and footwear quantitative analysis As was expected, the quantitative analysis of clothing and footwear prices pointed to the importance of import prices in reducing consumer prices. The effect of import prices on consumer prices is in fact likely to have been understated in the econometric analysis, since just by looking at price indices – the only price data available - the effect of increased import penetration could not be incorporated in the model. Nevertheless, the role of import prices in driving down consumer prices was the main conclusion from the quantitative analysis.

Table 4.2: Quantifiable and non-quantifiable clothing and footwear price drivers

Key driver	Quantifiable	Single Market influence	Price effect
Removal of import quotas	No	No	Likely large
Reduced common external tariff	Yes	Some	-3.6%
Reduced non-tariff barriers to trade	No	Yes	Likely small
Increased competition	No (concentration ratios were not available for clothing and footwear)	Yes	Likely large
Technological development	No	No	Likely large

For both sectors, methodological difficulties and data availability issues made the estimation of a definite quantitative effect difficult to obtain. The UK's entry into the Single Market was not a single event, rather it was a process of increasing legislative integration and enhanced trade that began in earnest after the Second World War and is still and ongoing process today. Hence it is econometrically impossible to identify any one single event that had a significant impact upon the prices seen by UK consumers.

The period of time covered by this study also saw profound changes in world trade patterns and technological improvements which saw wholesale changes in the way in which both motor vehicles and clothing and footwear were both manufactured and retailed. Unpicking any impact of the Single Market from the effects of these ongoing processes proved challenging.

4.2 Recommendations for further work

The following recommendations are proposed for further analysis of the Single Market's influence on consumer prices:

Recommendations specific to the outcomes of the study

- A more detailed investigation into the motor vehicles and clothing and footwear sectors in other EU countries could be performed to assess the extent to which the cumulative effect of the Single Market formation may have impacted upon global wholesale prices, and hence affected consumer prices in the UK through that channel.

- A further investigation into concentration ratios and horizontal and vertical integration in the clothing and footwear section could be undertaken, to ascertain the extent to which these changes were influenced by the advent of the Single Market, and whether this had a quantifiable effect on UK consumer prices.

- A more detailed microeconomic investigation could be undertaken into the relationship between FDI, technology and management practices, and productivity at individual UK motor vehicle producers in order to gain further insight into the exact mechanisms by which the Single Market affected UK domestic industry production.

More general recommendations

- The analytical and methodological template that has been developed for the motor vehicles and clothing and footwear sectors could be utilised to investigate real price dynamics in other potentially interesting sectors in a consistent and comparable manner.

- The Cambridge Econometrics E3ME model can capture bilateral trade between 53 global regions (including all individual EU Member States) and has already been used to look at the impacts of free trade agreements in Asia at sector level between China, Japan, Korea and other TPP members. The impacts are captured through both lower bilateral export prices making the exporting region's goods more price competitive (compared to other trading partners); and a region's average import prices being lowered, which feeds through to consumer prices and rest of the economy. This could potentially be used to analyse the Single Market and its impacts in a similar way.

- Another alternative would be to undertake a detailed analysis of price behaviour in the UK economy, studying the interactions between prices in different industries and the costs of 'primary' inputs (labour, capital and imports, including the effect of exchange rate changes). This could then be used to decompose changes in the output price of any industry into the impact of changes in the costs of each of the primary inputs and the impact of total factor productivity growth in each industry. The analysis could potentially be extended to explain retail prices, taking account of the additional impact of changes in the prices of imported consumer goods, changes in product taxes, and changes in distribution margins. In this way it would be possible to examine whether the nature of these relationships has changed over the historical period, and test whether the tendency of producers to absorb or pass on cost increases changed after 1992.

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Appendix A Data classifications and sources

Table A1: COICOP 2-digit and 3-digit category

COICOP 2-digit category	COICOP 3-digit category
Food Drink and Tobacco	1. Food
	2. Drink
	3. Tobacco
Clothing and Footwear	4. Clothing and Footwear
Housing, water, electricity, gas and other fuels	5. Actual rentals for housing
	6. Imputed rentals for housing
	7. Maintenance and repair of the dwelling
	8. Water supply and miscellaneous services relating to the dwelling
	9. Electricity
	10. Gas
	11. Liquid Fuels
	12. Other Fuels
Furnishings, household equipment and routine household maintenance	13. Furniture and furnishings, carpets and other floor coverings
	14. Household textiles
	15. Household appliances
	16. Glassware, tableware and household utensils
	17. Tools and equipment for house and garden
	18. Goods and services for routine household maintenance
Health	19. Medical Products
	20. Medical Services
Transport	21. Purchase of Vehicles
	22. Petrol etc.
	23. Rail Transport

	24. Air Transport
	25. Other Transport
Communications	26. Communications
Recreation and culture	27. Audio-visual, photographic and information processing equipment
	28. Other major durables for recreation and culture
	29. Other recreational items and equipment, gardens and pets
	30. Recreational and cultural services
	31. Newspapers, books and stationery
	32. Package Holidays
Education	33. Education
Restaurants and Hotels	34. Catering Services
	35. Accommodation Services
Miscellaneous goods and Services	36. Personal care
	37. Personal effects n.e.c
	38. Social Protection
	39. Insurance
	40. Financial Services n.e.c.
	41. Other services n.e.c
	42. CVM Residuals
	43. Unallocated

The E3ME Model

E3ME model E3ME is a large-scale econometric model of the world's economic and energy systems and the environment. It was originally developed through the European Commission's research framework programmes and is now widely used globally for policy assessment, for forecasting and for research purposes, and was also used in one of the early (ex-ante) Single Market Studies (Employment and Labour Costs in Manufacturing)[12]. One of the principal features of the E3ME model is its degree of disaggregation, with

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[12] See http://ec.europa.eu/internal_market/economic-reports/docs/studies/stud30_en.pdf

around 70 industry sectors identified for EU Member States, over 40 for non-EU countries[13], and 43 consumer expenditure categories.

E3ME database – sources and procedures

Given that it is largely an econometric model, one of the most important inputs to the E3ME model is the data, which must be consistent across countries and sectors. Comprehensive updates are carried out once a year. For European countries, data sources are investigated and used based on the following priorities:

1) The Eurostat national accounts branch data are the primary source for European countries and provides a consistent data source across countries. The OECD's STAN data set also provides some sectoral disaggregation where needed.

2) Data from the AMECO database are used to provide macroeconomic figures and to check totals in the Eurostat data.

3) When Eurostat data are not available or need to be improved, other internationally available sources such as the IMF are consulted.

4) Once these international data sources have been exhausted, national statistical agencies and other sources are used to update any remaining series and/or gaps in the data.

The dataset downloaded from the E3ME dataset was downloaded from the Eurostat website in 2013. While the data has since been revised by Eurostat, more recent data is available only from 1990 onwards. E3ME fills in the gaps by estimating the historical time series 1970 onwards (see Appendix A on how gaps are interpolated for the E3ME model database).

How E3ME fills in the data gaps

The team at CE has developed software-based processing routines to interpolate data gaps in any of the E3ME time series. This uses growth rates and shares between sectors and variables to estimate missing data points, both in cases of interpolation and extrapolation.

Interpolation

The most straightforward case is when the growth rates of a variable are known (e.g. from another source) and so the level can be estimated from these growth rates, as long as the initial level is known. Sharing is used when the time-series data of an aggregation of sectors are available but the individual time series is not. In this case, the sectoral time series can be calculated by sharing the total, using either actual or estimated shares. When no external source is available, interpolation is also used to estimate the path of change during an interval, at the beginning and end of which data are available.

Extrapolation

In the case of extrapolation, it is often the case that aggregate data for a number of sectors are available, although the sectoral disaggregation at the level E3ME requires is not; for example, government expenditure is a good

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[13] See
http://www.camecon.com/EnergyEnvironment/EnergyEnvironmentEurope/ModellingCapability/E3ME/Sectors.aspx

proxy for the total growth in education, health and defence. A special procedure has been put in place to estimate the growth in more disaggregated sectors so that the sum of these matches the known total, while the individual sectoral growth follows the characteristics of each sector.

The MDM-E3 Model

MDM-E3 is maintained and developed by Cambridge Econometrics (CE) as a framework for generating forecasts and alternative scenarios, analysing changes in economic structure and assessing energy-environment-economy (E3) issues and other policies. MDM-E3 provides a one-model approach in which the detailed industry and regional analysis is consistent with the macroeconomic analysis: in MDM-E3, the key indicators are modelled separately for each industry sector, and for each region, yielding the results for the UK as a whole. MDM-E3 is one of a family of models which share the same framework, general design, methodology and supporting software. The scope of the E3ME model is European, while the scope of E3MG is global. MDM-E3 sources data from the Blue Book[14] published by the ONS.

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[14] The Blue Book was first published in August 1952 and presents a full set of economic accounts (national accounts) for the United Kingdom. These accounts are compiled by the Office for National Statistics (ONS). They record and describe economic activity in the United Kingdom and as such are used to support the formulation and monitoring of economic and social policies.

Appendix B   Econometric results

B.1   Model specification

The specification of the equations used to explain import, domestic industry and consumer prices are initially those used in Cambridge Econometrics' MDM model of the UK economy. These are, to some extent, generic equations designed to cover all sectors of the economy and therefore wherever possible these equations are modified both to reflect the specificities of the motor vehicle and clothing and footwear sectors and also with the purpose of identifying the impact of the Single Market in mind. All prices (including exchange rates) are assumed to be real (i.e. made relative to the appropriate deflator) unless otherwise stated.

Initially the focus is on the ideal general specification, which corresponds to the expected long-run influences on prices. Consideration of data availability, dynamic effects and the precise method of estimation are of secondary order at this stage.

Import prices   The import price function can be written as follows:

$$PQM_{iz} = f(PQE_{iz}, EX_z, PQMD_z)$$

where for industry i, and area z (where z is either EU or extra-EU),

PQM = real prices of imports (relative to total UK producer price index)

PQE = real rest of the world wholesale price index

EX = real (trade-weighted) exchange rate

PQMD = import price duty

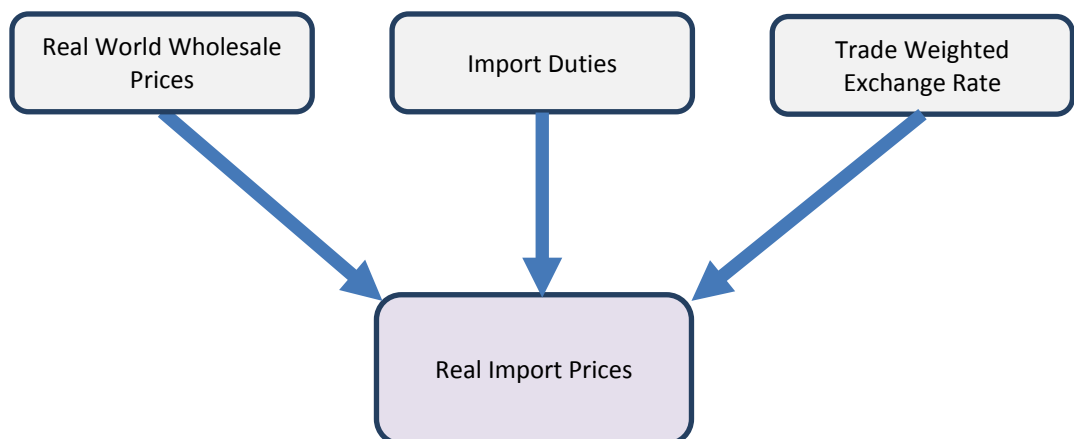**Figure B.1: Import price equation**

Table B.1 summarises the variable definitions, their expected (long-run) impacts and any suggested influence from the Single Market. Evidently, it is difficult to identify a Single Market impact from the variables in this equation. This is because the most likely Single Market effect on import prices is through the reduction of non-tariff barriers, for which there is limited data available.

Table B.1: Variable descriptions for import price equation

Variable	Definition	Expected Impact	Single Market Impact?
PQM	Real import price (1993=100)	n/a (dependent variable)	
PQE	Real world wholesale price index (1993=100)	Positive	None
EX	Real effective exchange rate (1993 = 100)	Negative (stronger exchange rate leads to lower import prices)	None
PQMD	Import price duty (% rate)	Positive	Negligible/Uncertain

Industry prices The domestic industry price function can be written as follows:

$PQHH_i = f(YUC_i, PQHX_i, PQM_i, YKE_i)$

where for industry i,

PQHH = prices of home sales by home producers

YUC = industrial unit costs

PQHX = industry mark-up by home producers

PQM = effective price of imports

YKE = cumulated investment and R&D

Figure B.2: Industry price equation

Table B.2 summarises the variable definitions, their expected (long-run) impacts and any suggested influence from the Single Market. Most explanatory variables could expect some influence from the Single Market, although being able to pinpoint this effect is more difficult for some than for others. Variables such as unit labour costs and investment are quite general and have many influences. Industry competition and mark-ups may be more identifiable, particularly with additional knowledge about how the industry changed around the time of the Single Market inception.

Table B.2: Variable descriptions for industry price equation

Variable	Definition	Expected Impact	Single Market Effect?
PQHH	Real price of home sales by home producers (1993=100)	n/a (dependent variable)	
YUC	Real unit labour cost index (193=100)	Positive	Possibly lower as firms gain economies of scale through larger market access and increased import competition makes them more competitive (productive)
PQHX	Industry mark-up (%	Positive	Should lower due to

Variable	Definition	Expected Impact	Single Market Effect?
	over cost)		increased competition
PQM	Real import price (1993=100)	Positive	Negligible/Uncertain
YKE	Cumulated investment (enhanced with R&D)	Negative	Possibly higher as more competition leads firms to invest, innovate and adopt new practices in order to remain competitive

Consumer prices The consumer price function can be written as follows:

$PQC_j = f(PQM_i, PQHH_i, PQHX_r)$

where for consumer category j,

PQC = consumer price

PQM = prices of imports

PQHH = prices of home sales by home producers

$PQHX_r$ = retail industry mark-up

Figure B.3: Consumer price equation
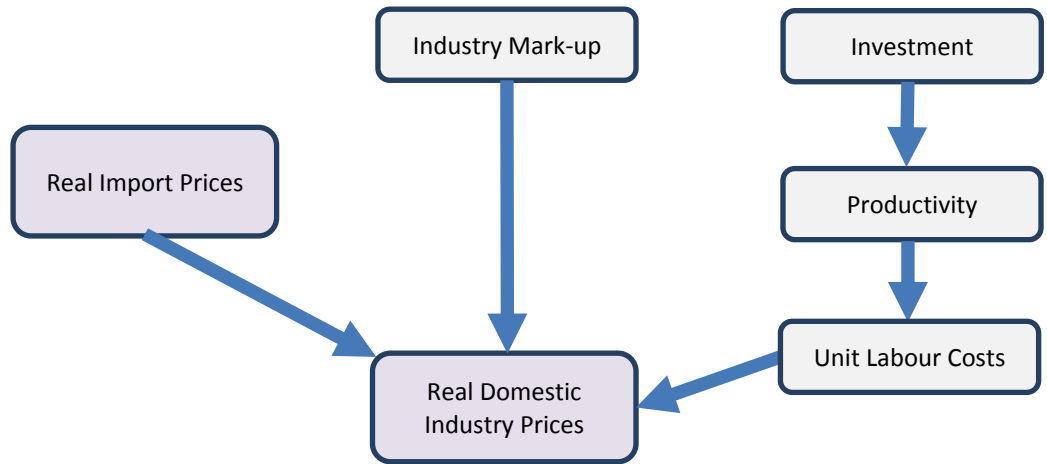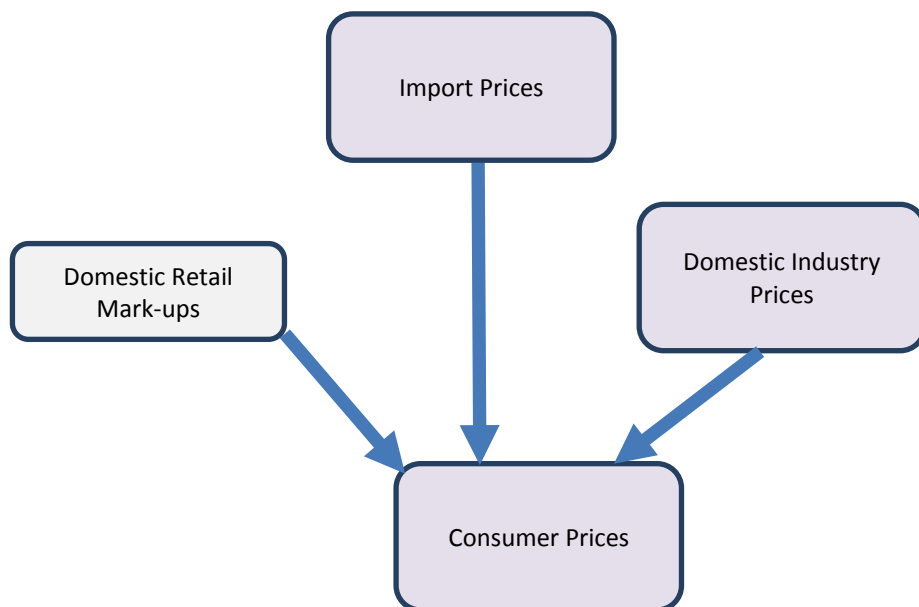

Table B.3 summarises the variable definitions, their expected (long-run) impacts and any suggested influence from the Single Market. Feed-through of Single Market effects from the other equations (import and domestic industry prices) can be expected, as well as some possible effect on retail mark-ups, although this latter effect may be more difficult to identify and capture.

Table B.3: Variable descriptions for consumer price equation

Variable	Definition	Expected Impact	Single Market Effect?
PQC	Real consumer price (1993=100)	n/a (dependent variable)	
PQM'	Real import price (1993=100)	Positive	Indirectly (negative for EU, undetermined for extra-EU) through tariff changes
PQHH'	Real price of home sales by home producers (1993=100)	Positive	Negative, indirectly through industry mark-ups, unit labour costs and firm innovation
$PQHX_r$	Retail industry mark-up (% over cost)	Positive	Should lower due to increased competition

B.2   Model estimation

This section presents the estimation method for the price equations, based on the relationships identified above.

Single (separate) equations   The equations were estimated separately on the basis that import prices are not affected by industry and consumer prices, while industry prices are only affected by import prices and consumer prices are affected by both. In other words there are no feedback loops between the prices to consider, so the model structure can be said to be *recursive*. This means there are very limited efficiency gains to treating the equations as an inter-dependent system.

Partial adjustment model   The *error-correction model* is a common method used in the estimation of dynamic time series models in order to quantify key long-run elasticities and determine both short and long-run effects. This method is closely related to the concept of *cointegration,* a term used to describe two or more non-stationary time series which exhibit long-term co-movement of variables revealing a long-run relationship between them. A typical model could be represented as follows:

Where $Y_t = f(X_{1t}, X_{2t}, etc)$ is the general long-run specification

The dynamic model is estimated as:

$$dY_t = a_0 + a_{1i} \sum_0^n dX1_{t-i} + a_{2i} \sum_0^n dX2_{t-i} + \cdots + \gamma \sum_1^n dY_{t-i} + b_1 Y_{t-1}$$

$$+ \, b_2 X1_{t-1} + \, b_3 X2_{t-1} + \cdots + u_t$$

Where, for any time period t:

Y is the dependent variable, usually in logs which means DY is the (natural) annual growth rate.

X1, X2, etc are the independent, explanatory variables (also in logs where possible) which are part of the long-run specification for the dependent variable.

If data limitations do not permit a full dynamic estimation, alternatives can be considered such as *fully-modified least squares* (FMOLS), originally proposed by Phillips and Hansen (1990). This is an estimation method, again based around the concept of cointegration, which allows estimation of a single long-run relationship between the different data series without the need to estimate the dynamic components (if they are not required). Given that it is the long-run effects of the Single Market that are of most interest in this investigation, the FMOLS method could be the best technique to use in this situation..

B.3 Data availability

Having laid out the stylised relationships and estimation method for consumer, industry and import prices in section 4.2, this section reviews data availability. Data considerations are critical, because for an econometric study the availability and quality (e.g. need to use proxy or replacement variables) is often critical in determining and attributing effects in a proper manner.

CE database A key source of data for analysis is the Cambridge Econometrics MDM-E3 database, which has data going back to 1970 for detailed sectors and consumer classifications. Relevant data from the database that can be used are as follows:

- Prices (import price, domestic industry price, consumer price).

- Industrial unit labour costs.

- World commodity price index

- Investment

As well as general ease of availability, these data have added bonus of having been checked by CE's quality procedures and so can be seen as a good source of data.

Import Prices Import price data was not available disaggregated into EU and extra EU prices. The best import duty data was downloaded from the UNCTAD TRAINS database, which provides EU tariff levels going back to 1988. EU MFN tariffs

(tariffs imposed on all member of the WTO unless they are part of a preferential trade agreement) for motor vehicles and clothing and footwear. A simple average of the tariff levels for each year was calculated to produce two time series of tariff levels – 1990-2009 for clothing and footwear and 1988-2011 for motor vehicles.

For the commodity price variable it was decided to use the world steel price for the motor vehicles equation and the world cotton price for the clothing and footwear equation, because these commodities are particularly relevant to production in the respective industries. The effective (trade-weighted) exchange rate was constructed using data from the Bank of International Settlements. It was weighted by total trade as industry specific data wasn't available. The world wholesale price index was constructed for each sector by combining the PPIs of major UK importers from the E3ME database. The PPIs were combined using weights based on the volume of imports from each importer for each year, based on data from the UN Comtrade database.

Industry Prices   For the domestic industry price equation, the domestic price data and investment data was available from the MDM database. Industrial unit labour costs were also available from 1979. A data source could not be found for direct industry mark-ups of home producers.

FDI inflows and cumulative stock data are available for the years 1994 to 2012 in the 'motor industry' and 'textiles and wearing apparel' categories from the OECD website. The more general 'all transport' series is available going back to 1985 and a detail inspections suggests that it offers a suitable proxy for the

Concentration ratios corresponding to motor vehicle production and clothing and footwear retail exist but the ONS only has them for 2003 (calculated using the Annual Business Survey and the ONS Pink Book input-output tables).

Information about UK motor vehicle manufacturing output and new vehicles registrations by company is available on a yearly basis on the SMMT website back to 1999, and to 1977 in the Cambridge University Library. This data was used to construct a historic time series of concentration ratios of UK motor vehicle manufacturing to act as a proxy for industry mark-ups. Comparative manufacturing productivity rankings are also available from the early 90s onwards.

Some information on the UK clothing and footwear retail and manufacturing sector is available from the British Fashion Council website, and dates of the founding and expansion of different retail businesses can be found on individual corporate websites. Although this is sufficient for a qualitative assessment, there is unfortunately not sufficient data available to be able to construct a full market share analysis for the UK clothing and footwear sector.

Consumer Prices   For the consumer price equation there was a similar lack of data available for measuring mark-ups. Although the qualitative analysis suggests that this should not have a significant impact on the modelling of motor vehicle prices, this may have a more detrimental effect on the clothing and footwear price modelling due to the changes in the composition of the supply chain that have occurred over time.
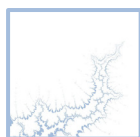
The following table summarises the data that was collected:

Table B.4: Data availability table

Variable	Source	Detail	Period
Real purchase of vehicles price	MDM	MDM car price series divided by CPI	1970-2012
Import motor vehicles prices	MDM	Motor vehicle imports at current price divided by imports at constant price	1970-2012
Domestic motor vehicles producer prices	MDM	PQHH - Prices of home sales of motor vehicles by home producers	1970-2012
Domestic clothing and footwear prices	MDM	PQHH - Prices of home sales of wearing apparel by home producers	1970-2012
Import clothing and footwear prices	MDM	Wearing apparel imports at current price divided by imports at constant price	1970-2012
Consumer clothing and footwear prices	MDM	MDM wearing apparel price series divided by CPI	1970-2012
Industrial unit labour costs	MDM	Constructed from MDM data for wages and output	1970-2012
Cumulative investment	MDM	Cumulative investment enhanced by R&D	1970-2012
Rest of world wholesale price index	E3ME/UN Comtrade database	Wholesale price index weighted by volume of imports by major importers	1970-2012
FDI - other transport equipment	OECD	UK FDI inflows GBP, millions	1985-2011
FDI - motor vehicles	OECD	UK FDI inflows GBP, millions	1993-2011
CPI	OECD	Consumer Price index (rebased to 1993=100)	1970-2012
Cars import duties	WITS	Simple average of EU MFN tariff levels across products in the motor vehicles category, obtained from the UNCTAD TRAINS database	1988-2011
Clothing import duties	WITS	Simple average of EU MFN tariffs in clothing and footwear	1990-2009

Variable	Source	Detail	Period
		categories, obtained from the UNCTAD TRAINS database	
UK Real Effective exchange rate	Bank of International Settlements	The geometric trade weighted average of bilateral exchange rates between 27 world leading economies adjusted by relative consumer prices	1970-2012
GDP per capita	OECD	GDP per Capita, US $, constant prices, constant ppps, real, index reference year 2005	1970-2012
Concentration Ratios for UK automotive industry	SMMT	Concentration Ratios C1 and C4 constructed from historical production data for UK based car manufacturers	1977-2012
Steel price	World Bank	Real 2010$, levels	1970-2012
Cotton price	World Bank	Real 2010$, levels	1970-2012

B.4   Estimation results – motor vehicles

The estimation results and equation tables are presented here for the purchase of motor vehicles category.

Import prices   As previously mentioned, limitations on import duty data availability meant that estimation was unlikely to yield robust results. However, an OLS[15] regression of import price on the world wholesale price and import duties (up until 2007) did provide some intuitive findings, as shown in Table 4.6.

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[15] The estimation is not simple OLS but FMOLS, which is used as a single equation approach for cointegrating regressions, allowing for serial correlation and potential endogeneity of regressors. Cointegration has not been tested, however, due to insufficient observations to make such a test worthwhile.

Table B.5: Import price equation estimation

Dependent Variable: PQM
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1989 2007
Included observations: 19 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PQE	0.921286	0.263362	3.498178	0.0030
PQMD	0.156124	0.087770	1.778797	0.0943
C	-1.428037	0.812136	-1.758371	0.0978
R-squared	0.558620	Mean dependent var		0.906466
Adjusted R-squared	0.503447	S.D. dependent var		0.111198
S.E. of regression	0.078358	Sum squared resid		0.098238
Durbin-Watson stat	0.446350	Long-run variance		0.007534

Given the limitations of the data, it is encouraging that the coefficients are correctly signed, show (some limited) significance, and also when summed together are close to unity (which is what one might expect if the explanatory factors are both proportional and are the main drivers of the dependent variable).

Industry prices From the plotting of variables shown earlier it is clear they are all non-stationary, while further unit-root tests showed they were first-difference stationary. A test[16] for cointegration (see Table B.6 below) which included all variables in the potential specification revealed the potential for a cointegrating equation to exist, supporting the validity of proceeding with estimating a cointegrating equation (see Table B.7).

Table B.6: Industry price cointegration test

Sample: 1970 2014
Included observations: 31
Series: PQHH YUC PQHX PQM YKE
Lags interval: 1 to 1

Selected
(0.05 level*)
Number of
Cointegrating
Relations by
Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	3	1	1	2	2
Max-Eig	0	0	0	1	0

*Critical values based on MacKinnon-Haug-Michelis (1999)

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[16] This table reports a summary of cointegration tests performed in EViews 8 (Johansen test). Lag intervals were left limited due to the lack of long data series, while all other defaults were also accepted. Given the data limitations, finding evidence of a single cointegrating relationship seems worthwhile pursuing.

Using the same method (FMOLS) as for the import price equation, again due to lack of observations preventing anything more sophisticated, the results initially showed most explanatory variables were significant and correctly signed, with the exception of the industry concentration variable which was both incorrectly signed (negative) and insignificant. This result, once the industry mark-up proxy is removed, means that the main link through which the Single Market effect can be empirically identified is through import prices, linking in with the result obtained previously through import duty reductions.

Table B.7: Industry price equation

Dependent Variable: PQHH
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1980 2011
Included observations: 32 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth=4.0

Variable	Coefficient	Std. Error	t-Statistic	Prob.
YUC	0.203366	0.037067	5.486401	0.0000
PQM	0.296005	0.097765	3.027725	0.0052
YKE	-0.045506	0.015564	-2.923741	0.0068
C	0.533599	0.082144	6.495869	0.0000
R-squared	0.800935	Mean dependent var		0.976171
Adjusted R-squared	0.779607	S.D. dependent var		0.106146
S.E. of regression	0.049832	Sum squared resid		0.069529
Durbin-Watson stat	1.110261	Long-run variance		0.001727

In a bid to try and incorporate other effects such as FDI and increased industry concentration, which are known to be a direct result of the Single Market, the impact on unit labour costs and investment was also considered in terms of a counterfactual, i.e. what would unit labour costs and investment have looked like in the absence of the Single Market. This is a very difficult question to answer and one for which, in the current framework, there is only a crude method that can be employed.

The drop in real domestic industry prices from 2000 onwards can be attributed to a combination of factors, including a decrease in market concentration, increased levels of investment (both domestic and FDI) and a corresponding increase in productivity. The evidence from the literature suggests that the initiation of the Single Market in 1993 is likely to have had a real and significant impact on both of these factors, however this impact may have been delayed from translating through into domestic industry prices by anti-competitive practices prevalent until the New Car Orders were brought into force in 2000.

Consumer prices The results of cointegration analysis revealed no evidence of any cointegrating regression. Nonetheless, in order to establish the Single Market impact of domestic and import prices on consumer prices some method is required to apportion effects. This being the case, a FMOLS regression was estimated as before, with the results shown in Table B.8.

Table B.8: Consumer price equation

Dependent Variable: PQC
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1971 2011
Included observations: 41 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.0

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PQHH	0.071413	0.256249	0.278685	0.7820
PQM	0.890184	0.239524	3.716470	0.0006
C	0.093791	0.252405	0.371591	0.7123
R-squared	0.477234	Mean dependent var		0.979367
Adjusted R-squared	0.449720	S.D. dependent var		0.130814
S.E. of regression	0.097039	Sum squared resid		0.357828
Durbin-Watson stat	0.413991	Long-run variance		0.021976

As can be seen from the table, the impact of domestic industry prices on consumer prices is insignificant, suggesting that an alternative method is required to estimate the relative proportional effects of import and domestic industry prices on the final consumer prices.

In the event, volume import penetration data are available which reveal an import penetration of between 50% and 70% over the time period in question. Therefore it is reasonable to assign values of 0.6 to the import prices and 0.4 to the domestic industry prices when considering their relative effects on consumer prices.

B.5   Estimation results – clothing and footwear

The estimation results and equation tables are presented here for the clothing and footwear category:

Import prices   With even less observations available than for motor vehicles, estimating an import price equation for clothing and footwear was always likely to pose more of a challenge. After some investigation it was decided that combining the wholesale price and import duty variables was appropriate, and the value of the coefficient (close to unity and significant) gives a reasonable result. This way, a change in the import duty that might be attributed to the Single Market could go through this coefficient into an effect on import prices, although making the assumption of unity would probably be just as useful given the data limitations.

Table B.9: Import price equation for Clothing and Footwear

Dependent Variable: PQM
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1991 2007
Included observations: 17 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth
    = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PQE*PQMD	0.941243	0.250404	3.758897	0.0019
C	0.267048	0.194557	1.372592	0.1901

R-squared	0.441242	Mean dependent var	0.986172
Adjusted R-squared	0.403991	S.D. dependent var	0.141863
S.E. of regression	0.109521	Sum squared resid	0.179922
Durbin-Watson stat	0.945614	Long-run variance	0.015844

Industry prices The industry price relationship for clothing and footwear is not particularly satisfactory, with both unit labour costs and investment having no discernible effect on the development of domestic prices, and no proxy for industry concentration available to measure the impact of the increased competition highlighted in the qualitative analysis.

The only link that could be established was with import prices (a significant, positive effect as might be expected). However, no cointegration was observed when tested, which could be symptomatic of a sector undergoing rapid structural change due to the rapid increase of imports which undermined the domestic sector throughout this period and means that no stable historical relations exist.

Table B.10: Domestic producer price equation for Clothing and Footwear

Dependent Variable: PQHH
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1971 2007
Included observations: 37 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth
    = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PQM	0.189910	0.039848	4.765857	0.0000
C	0.797842	0.056585	14.09983	0.0000

|			
R-squared	0.594826	Mean dependent var	1.057552
Adjusted R-squared	0.583250	S.D. dependent var	0.104270
S.E. of regression	0.067313	Sum squared resid	0.158586
Durbin-Watson stat	0.442972	Long-run variance	0.011120

Consumer prices The estimated relationship between consumer prices, domestic producer
prices, and import prices is shown in Table B.11 below.

Table B.12: Consumer price equation for Clothing and Footwear

Dependent Variable: PQC
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1971 2011
Included observations: 41 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth
     = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PQM	1.178064	0.131153	8.982399	0.0000
PQHH	0.421161	0.468967	0.898062	0.3748
C	-0.824284	0.367113	-2.245311	0.0306
R-squared	0.940526	Mean dependent var		1.160925
Adjusted R-squared	0.937396	S.D. dependent var		0.600111
S.E. of regression	0.150152	Sum squared resid		0.856739
Durbin-Watson stat	0.632286	Long-run variance		0.052513

As with the domestic producer price equation there is only very limited
evidence of a stable long-run relationship existing over the sample period.
Also as before, what evidence can be gained through an econometric
approach points to the main link being between consumer prices and import
prices, with domestic producer prices having a weak and insignificant effect.
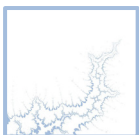
Appendix C   Summary of report identifying consumer price trends

C.1   Introduction

This chapter outlines the approach taken for selecting an additional sector of interest to be taken forward for further detailed analysis in the rest of the study alongside the vehicles sector.

C.2   Approach

Identifying sectors for further analysis

The approach to identifying an additional sector of most interest for further analysis involved the following key steps:

- First, a review was conducted of the availability and quality of data, principally for consumer prices, but also on product quality.

- The composition of UK consumer spending was then analysed to identify the sectors that account for the largest shares of consumer spending and/or have seen substantial changes in their shares of consumer spending over the historical period.

- This was followed by a descriptive analysis of historical trends in consumer prices to identify sectors that have experienced a fall prices that would be worthwhile investigating.

C.3   Findings

Data availability

Consumer price data are available[17] in sufficient quantity (1970-2013)[18] and quality. As such access to consumer price data is not considered to be a limiting factor in the study.

Analysis of spending shares:

Major elements of consumer spending

The sectors that traditionally account for the largest share of consumer spending centre around housing (actual and imputed rents), food (food, catering services) and transport (purchase of vehicles, petrol etc.). The other major component of spending is clothing & footwear. This is shown in Figure C.1 below.

Large increases in service categories

The sectors that have shown the largest increases in their shares of consumer spending over the historical period are a mixture of services and goods categories, with the largest percentage increases coming in the service sector categories (financial services, education, air transport, medical services).

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[17] From Cambridge Econometrics' E3ME and MDM-E3 databases, which are based on Eurostat and ONS data respectively and have undergone rigorous processing before finalisation.

[18] 1970-2012 for EU excluding UK and 1963-2013 for UK.

Large increases in electronic goods and other recreational goods

Amongst goods categories, electronic goods and other recreational goods (toys, games, sports and camping equipment, plants and pets) experienced the largest increase in their share of consumer spending. Communications, which includes both communications services (e.g. postal services) and communications goods (e.g. telephones), also experienced a large increase in its share of consumer spending.

Figure C.1: Top 25 household expenditure shares, 1970 and 2013
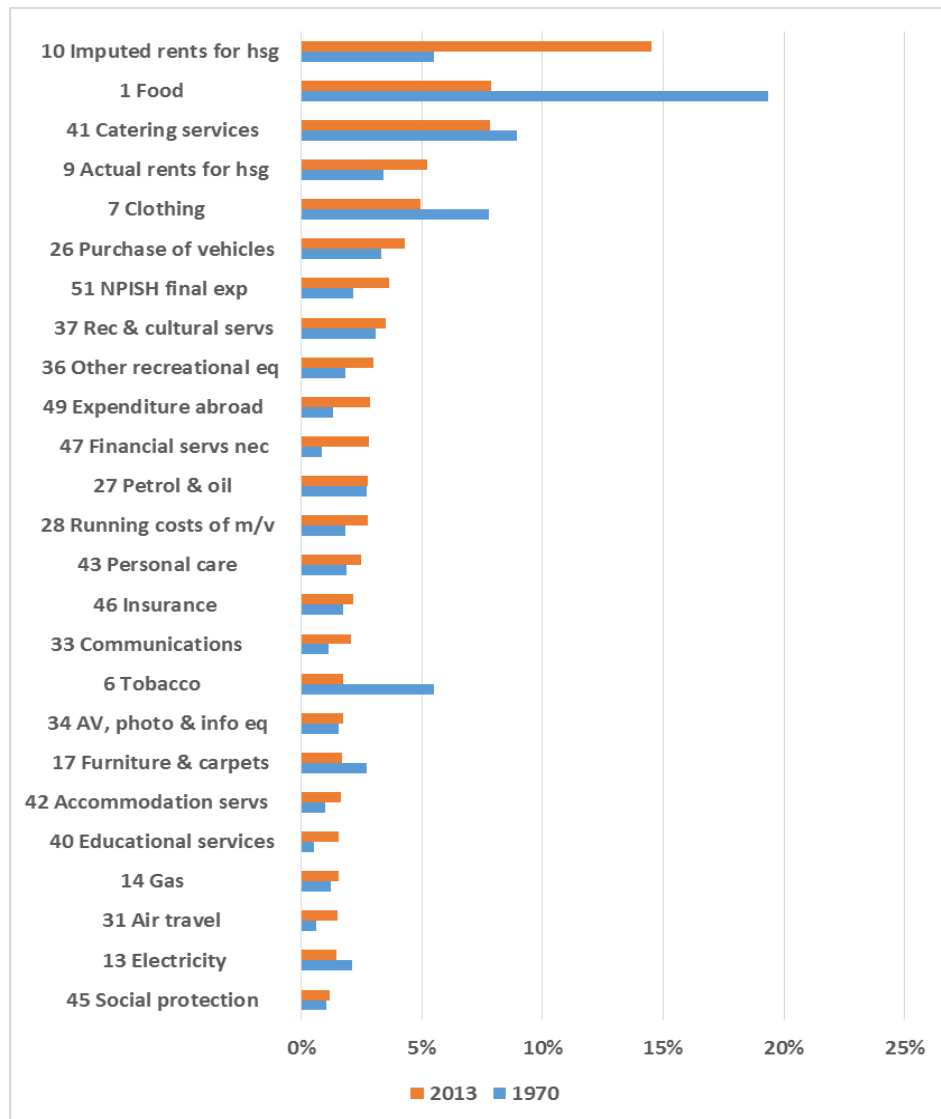
Source: Cambridge Econometrics.

Consumer price trends

UK consumer prices for different 3-digit COICOP categories (see Table A1 in Appendix A) were downloaded from the MDM-E3 database (see Appendix A for further details on MDM-E3). Graphs showing the evolution of prices in each sector are given in Appendix A. Prices for most consumer sectors seem to be on a rising trend. Only the following sectors have seen prices fall noticeably over the period of available data:

- Purchase of vehicles;

- Communications;

- Electronic goods;

- Clothing and Footwear;

- Household appliances;

- Household textiles;

- Glass tableware; and,

- Tools & Equipment.

Consumer sectors of further interest Combining this information with the household expenditure categories singled out from Figure C.1, two sectors (in addition to the purchase of vehicles) for potential further analysis were identified:

- Clothing and footwear;

- Electronic goods;

These sectors have significantly large or rising shares of consumer spending and the availability of data to study them further is good. The communications sector was discounted since it no longer makes up a large share of consumer spending and this category is a mix of both services and manufacturing. The other sectors (household appliances etc.) were omitted because they account for some of the very smallest shares of household spending and their shares have declined over the historical period. The figures below graph real consumer prices over time for the two sectors identified above:

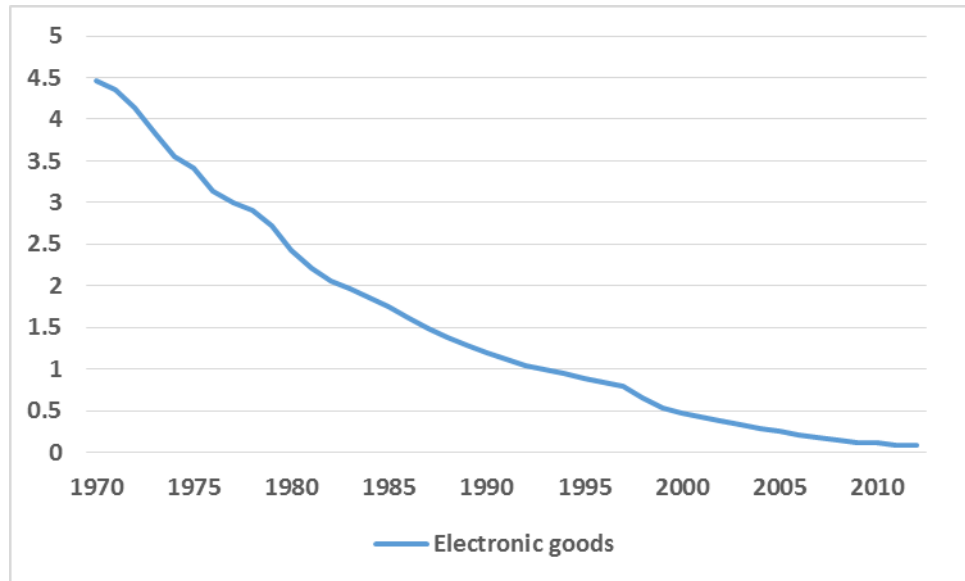**Figure C.2a Real Clothing and Footwear Prices**
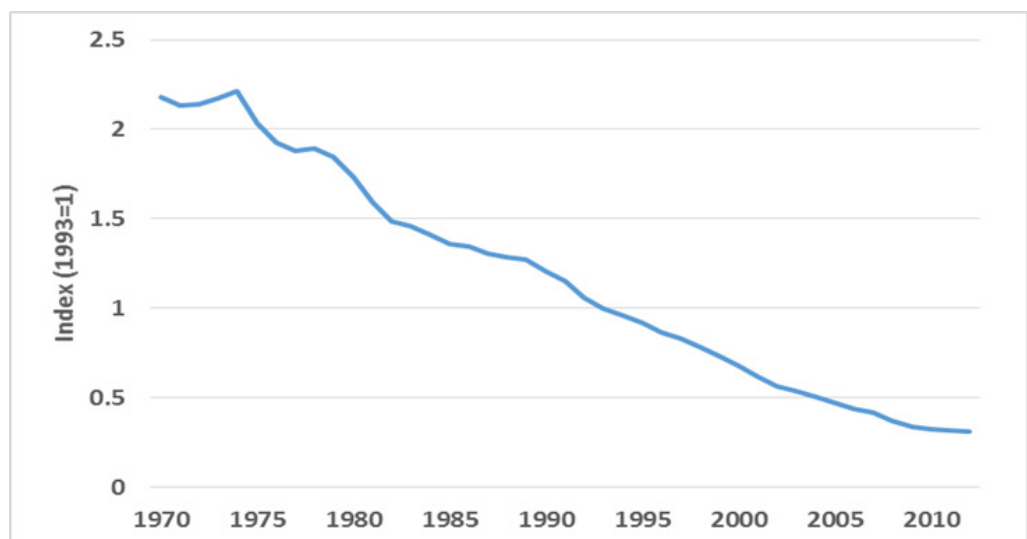
Source: ONS.

The real clothing and footwear price index fell sharply and consistently over the last 40 years, from around 2.2 in 1970 to 0.3 in 2012.

Figure C.2b: Real Electronic Goods Prices

Source: ONS.

As with clothing and footwear, the real electronics fell sharply throughout the last 40 years. In 1970 the index was at 4.5, and by 2012 the index level was around 0.1.

C.4   Recommendations

Decision on sectors to study

The other sector identified for further analysis was clothing and footwear. This decision was made after a comparison of price trends between the clothing and footwear and electronic goods sector, revealed that UK prices in this sector have fallen significantly further than in other EU and non-EU countries. Furthermore, it was felt that attempting to compare the price of electronic goods over time could cause difficulties, as the sector is driven by rapid technological change resulting in the frequent introduction of new products to the market (and the withdrawal of old products).