BRUNO JETIN

GLOBAL AUTOMOBILE DEMAND

Major Trends in Mature Economies; Volume 1

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Major Trends in Mature Economies; Volume 1

Edited by

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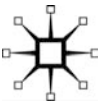

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To Michel Freyssenet, one of the founders of GERPISA, and always a source of intellectual stimulation

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Introduction

Bruno Jetin

1 Post-recession automobile demand: the shift from the West to emerging economies

The global automotive industry is experiencing a great transformation. The dynamic of global automobile demand is shifting from the mature economies of the West to the emerging economies. The phenomenon is recent. In 2005, around 20 million vehicle units[1] were sold in Asia, Oceania and the Middle East,[2] as much as in North America,[3] and more than in Europe.[4] This itself is a milestone because North America and Europe used to dominate the global market outrageously, with more than 70% of global vehicle sales until the end of the 1900s. In 2013, Asia sold 40 million new vehicles, more than twice the sales in North America (18.7 millions) and Europe (14 millions). It means that Europe and North America now account for only 43% of global sales, less than Asia (47%).[5] This is another spectacular illustration of the shift of wealth towards Asia and the advent of a multipolar world. Of course, much of the shift owes to China rise. The Chinese automobile market is now the biggest in the world. But if we exclude China, Asia still has a market of more than 18 million units, the same size as the North American market in 2013, and four million units greater than the European market. And if we also exclude Japan, Asia *still* enjoys vehicles sales of around 13 million units, about the same size as the European market. This is because many economies have emerged and now have a middle class, which buys automobiles.

This phenomenon is not confined to Asia. South America has doubled its automobile market in less than 10 years from around 3 million units in 2005 up to around 6 million units in 2013. This shift to the emerging markets was boosted by the Great Recession, which struck the United States and Europe in 2008–2009 and was still afflicting Europe in 2013.

In 2009, vehicles sales in North America were down 6.4 million units compared to 2007, one of the biggest falls ever, and in 2013, European sales were still 4.7 million units below their 2007 level. But the same crisis had the opposite effect on the emerging economies. There was no real downturn in the automobile market in this part of the world, and in 2010, vehicles sales were up 49% in Asia and 28% in Latin America, compared to their 2007 pre-recession level. In Africa too, sales were up 10% in 2011.

Even if the mature economies definitely recover in the near future, which is far from certain due to the uncertainties lying ahead, it is hard to imagine that the emerging economies – and especially China – can go back to their earlier sales levels in the early 2000s. The shift that we are witnessing is structural. Of course there will be sharp fluctuations in the automobile markets of the emerging economies, and among them, a hard landing for Chinese growth is a major concern. But nonetheless, there are reasons to believe that on the long-term automobile demand will again be on the rise for structural reasons. The most important one is the fact that in the emerging world, millions of consumers are still expecting to buy their first car. Although it is already the biggest automobile market of the world, in 2011 the number of vehicles per thousand inhabitants in China (69.9) was around the same level as the United States in 1919 (72.2). Brazil's numbers were comparable to the United States in 1925, Russia's to the states in 1947–1948, and India's to vehicles on American roads in 1914.[6] This low density of cars in these emerging economies shows the huge potential for growth in the automobile markets there, provided they maintain a reasonably high long-term growth rate, shared equally among the population, and green cars become affordable, so that pollutant emissions are drastically curbed. This raises the issue of the distribution of national income and the impact of income inequality on vehicle sales.

2 The role of income distribution and inequality in automobile demand

The relation between the level of income, income inequality and automobile demand is complex. Consumers start buying cars when their annual income exceeds the annual cost of car ownership. In a poor country, where the vast majority of the population earns less than this threshold, an increase in inequality will enable the emergence of automobile demand (Storchmann, 2005). It is the case in many African countries. If, on the contrary, the country is rich, and inequality starts increasing, some consumers will be excluded from the automobile market. As we will

see in Volume 1, this is the case in the United States and some European countries. So, when the level of income is low, there is a positive relation between inequality and automobile demand, and when the income level is high, the relation turns negative.

For middle-income countries, there are several possibilities. For a country with a huge population and a high growth of income per capita, the increase and persistence of high-income inequality is not an obstacle to the emergence of a mass automobile market and may even boost sales. This is the case of China in the 1990s and 2000s. But now that the Chinese growth rate is decelerating, a reduction in income inequality will be necessary in the future to maintain buoyant vehicle sales. India, on the other hand, which has a population of the same magnitude, combines a much lower household consumption per capita with less income inequality than in China.[7] As a consequence, vehicle sales growth in India was about three times lower than in China. Brazil, which has a comparable level of household consumption ($3,587 at purchasing power parity in 2005) to Russia ($3,794), has a lower density of vehicles (179) than Russia (240) because of a much higher level of inequality (Gini coefficient of 53.5 versus 39.7). On average, this is also true elsewhere in Latin American compared to Central and Eastern European countries (Dadush and Ali, 2012).

Of course, inequality is not the only factor that explains the difference in vehicle density. The population density and the degree of urbanisation are also relevant factors. Rich countries with large density may suffer from congestion, and people may opt for public transport when available as an alternative to vehicle ownership. Very rich, very small states and territories like Hong Kong and Singapore are extreme cases where very high population density negatively affects vehicle ownership density, but this may also be the case in Japan and South Korea, for example. At the same time, cities provide more qualified and well-paid jobs than rural areas, so a country with a significant territory (not a city-state) that has a high degree of urbanisation may be favourable to vehicle ownership. Vast countries like the United States or Canada have a low density of population (respectively 34 and 4 persons per square kilometre), but a high level of urbanisation (around 80%). On the other hand, India has a rather high density of population (405) and a low level of urbanisation (31%). To grasp these various and contradictory effects, the number of cars per 1,000 people is regressed on household per capita in purchasing power parity in constant 2005 dollars; inequality is measured by the Gini coefficient, population density and the level of urbanisation for the year 2010. The sample includes 80 countries for which homogeneous data was available. The results are shown in Table I.1.

Table I.1 Passenger cars ownership on household consumption per capita, Gini coefficient, population density and degree of urbanisation

Dependant variable: Number of passenger cars per 1,000 inhabitants			
Observations: 80			
R square: 0.74			
	Coefficients	**Student-t**	**P-value**
Intercept	197.54	2.9407	0.0044
Household consumption per capita	0.0119	6.9951	0.0000
Gini coefficient	–6.0317	–4.1529	0.0001
Population density	–0.0398	–3.7234	0.0004
Degree of urbanisation	2.8488	4.0762	0.0001
Cars per 1.000 inhabitants = 197.54 + 0.0119 household consumption per capita – 6.0317 Gini coefficient – 0.0398 population density + 2.8488 degree of urbanisation.			

Note: All independent variables are significant at 1%.
Source: World Development Indicators (2014) for all variables except Gini coefficients for OECD members.

They show that car ownership is positively correlated with the level of household expenditure and urbanisation, and negatively correlated with inequality and population density. In other terms, even when controlling for other factors, inequality tends to lower the number of passenger cars per inhabitant. These results confirmed those of Storchmann (2005), Ali and Dadush (2012), and Chamon et al. (2008), who have also highlighted a relationship between inequality and automobile demand.

3 Outline of Volume 1: main trends in automobile demand in mature markets

The cross-section analysis gives only a broad picture of the factors that influence automobile demand at the global level. The objective of the book is to analyse in much finer detail the role of income distribution along with other structural factors on automobile demand in each specific national market. Other issues examined are the financing of vehicle purchase; the importance of new and used vehicles imports; the role of taxation on consumer choice and thereby on carmakers specialisation; changes in long-term consumption patterns and the share dedicated to automobile outlays; demographic changes – and in particular the ageing

of population – and their impact on vehicle demand; and policies implemented by states to support the automobile industry during the Great Recession. Finally, a last contribution of the book is to assess public policies that foster the development of "green cars". These various issues of automobile demand are analysed in the context of mature economies in Volume 1 and in the context of emerging economies in volume 2 so that the reader may compare the common and diverging trends.

Regarding the role of income distribution, Volume 1 shows how it affects the volume of new vehicle sales but also the various segments of the market and the types of vehicles. One consequence of increasing inequalities in many countries is an increasing polarisation of the product range.

At the top end of the market, there is the growing importance of expensive vehicles such as German and Japanese premium cars or American sport-utility vehicles (SUVs) and crossovers.[8] In Chapter 1, Jetin shows that the rise of inequality in the United States in the 1980s, for instance, was followed by the emergence of ever-bigger and heavier vehicles, which mimicked the trend of "McMansions" observed in the housing market. In Germany, where polarisation of income has grown, (see Blöcker and Hildermeier, Chapter 4), the authors found that "the higher the vehicle segment, the larger the share of commercial and institutional car holders". On the whole, in 2011 these commercial and institutional holders bought 60% of all new cars – up from 40% in 1999. This means that the majority of new cars are not meant to be sold to private individuals who cannot afford to buy them. This is the case of many low-income earners and young people. At the other extreme, expensive cars are becoming part of the revenue package offered by companies to their highly qualified workforce. The same phenomenon is observed by Pardi in the United Kingdom (see Chapter 2) where "fleet and business sales have progressively supplanted private sales as the main market for new cars". Again, this reflects the privilege of highly paid employees whose share of national income has risen since the implementation of neoliberal policies during the Thatcher and Blair years. In France, private sales amounted to 55% in 2010, down from around 80% in the early 1990s (see Jullien, Chapter 3).

Another aspect of the polarisation of the product range is what Chung describes in the Korean case as a "middle squeeze" in the car segment, which reflects a squeeze on the middle class: low- and top-segment vehicles increase their share at the expense of the middle segment (see Chung, Chapter 7). Other contributors observe the same trend in other countries. In France, the success of Renault Dacia, the firm's

entry-level brand, is precisely due to its lower price, which customers can afford. More than 80% of Dacia's sales are to households (see Jullien, Chapter 3). What's more, the exclusion of many wage earners from the new car market has triggered what Jullien describes as a vicious circle of excess quality. Instead of reducing their sale prices to match the lower purchasing capacity and an increasing number of customers' willingness to pay, carmakers try to retain them by "accelerating sophisticated innovations to give people a sense that their products were becoming obsolete", to lure them in to buying new models. This strategy, which can be successful for mobile phones (which are much less onerous), did not work well for cars, which are much more expensive. It led firms to increase the price of new vehicles at a time when a decrease was needed.

The difficulty of buying a new vehicle explains the growing importance of the secondary market, where used vehicles are sold. Buying one new vehicle per household may be affordable, but many households need one vehicle per working parent, and sometimes for young adult children, when public transport is deficient. In more affluent households, one of the vehicles will be new and the other ones used. In the UK, "new cars have been mainly sold during the last 20 years to the same households that already had access to a company car for the head of the family, as their second or third car" (see Pardi, Chapter 2). For the lower end of the middle class and low-income earners, all the vehicles of the household will be used ones. These structural factors have long been present in mature markets and explain why the secondary market is by far the biggest automobile market in many countries. In the United States, Jetin in Chapter 1 shows that over the period 1990–2013, there were 2.7 used vehicles sold for one new. During the period of crisis like the "Great Recession", customers try to save money on cost and the ratio exceeded three to one. The result is that prices of used cars soared and households may not save as much as they expected. A similar pattern is observed with the same order of magnitude in other mature countries with some exception like Spain and Korea where until the Great Recession the primary market was dominant (see Köhler and Calleja Jiménez, Chapter 4 and Chung, Chapter 7. At the opposite, the UK has the biggest European secondary market with a long-term ratio of new to used cars exceeding three (see Pardi, Chapter 2).

Another critical aspect of automobile demand is financing. In mature countries, low-interest loans have been available for a long period of time. In the United States, the average real interest rate of car loans has been decreasing since the middle of the eighties due to accommodating

monetary policies from around 10% to 2%. Carmakers have sometimes used their financial arms to outmatch banks by offering zero interest rate to "push metal", to use a popular expression. Competition between various financial actors and financial innovation has also played a role in the availability of cheap car loans. Longer loan terms and higher loan-to-value ratio help enlarge the automobile market to low-income earners and poor.

The flip side of this financial engineering in many countries is a growing household debt. One stellar case is the United States that Jetin (Chapter 1) describes as a case "debt-driven growth regime" whereby growing debt has substituted income growth during two decades and fuelled a housing and automobile bubble until the "subprime" crisis and the Great Recession entailed a sobering return to reality. Since then, the recession has forced US households to pay away their debt which in 2013 amounted to 100% of disposable income down from around 120% in 2007. It is still a high level but it enables households to take new loans to finance automobile purchase. In Europe, two countries, Spain and the UK, stand out from the others by their much higher households' indebtedness (respectively 140% and 170% of disposable income in 2007) versus less than 100% for France, Germany and Italy. In Spain, the reason is to be found in the role of housing construction and private consumption which were the driving force of growth before the Great Recession, much alike the United States (see Chapter Köhler and Calleja Jimenez, Chapter 5). The crisis hit hard Spanish households with the unemployment skyrocketing to 26% in 2013 and leaving many of them over indebted with a housing cost representing more than 40% of disposable income. In Asia, South Korea experienced the same process of indebtedness as the United States since the Asian crisis of 1997–1998 but the Great Recession did not lead Korean households to deleverage. Quite the contrary, their debt has increased at a faster pace than their wage between the years 2008 and 2013 to achieve an incredibly high 160% of disposable income in 2013. This not only constrains the future capacity to buy cars but also poses a threat to the economy (see Chung, Chapter 7).

Another concern for the automobile demand in the mid and long-term is the ageing of the population of some major countries. It is especially the case of Japan, Korea and Germany which will have the highest share of people aged 60 years and over in 2050 in the world (between 40% and 45%.[9] At the opposite, the United States, Brazil and Mexico will have a much lower share of old people between 20 and 30% at that time, France, the UK and China being at an intermediate level. Ageing

is a critical issue for the future of automobile demand because on the one hand elder people have less mobility needs, dedicate a higher share of their income to other expenses such health and tend to replace less their old cars. In Japan, the demographic change is already present and will stay the single most important factor for the present and future development of the car market (Holger, Chapter 6). According to Holger domestic car sales are already decreasing due to the demographic change. In Germany, people aged up to 39 years represented 40.6% of total registrations in 1990 but they were only 19.9% in 2010 (see Blöcker and Hildermeier, Chapter 4). On the second hand, young people are less numerous and have less money to spend on automobile due to economic hardship and may prefer to spend more on other items such as communications. The various contributions of volume 1 analyse the long-term evolution of households' spending and observe that the share dedicated to automobile is shrinking while the share dedicated to communication is rising. This is especially the case among young people. This raises the issue whether there is a structural change of consumer demand away from automobile and in favour of communication services (internet and mobile phones etc…). In short is online communication a substitute at least in part to mobility? While it is tempting to answer positively, there is in fact no evidence to support this idea and it may be argued that the decrease in automobile spending reflect a short-term factor, in particular the impact of the Great Recession, and that there will be a return to the traditional pattern once the labour market improves. In many countries people still depend on automobile to work and face their basic necessities.

Finally, volume 1 describes the measures taken by the government to promote green cars. Ideally, one would expect the Great Recession to build a momentum and usher in a new era of environment-friendly cars of new forms of mobility. Electric cars in particular have raised great expectations. In mature and emerging economies, government have offered subsidised loans to innovative companies, and to electric cars buyers; they have instructed public companies to buy green vehicles" and so forth. But the truth is that the "great push" of electric vehicles has not yet occurred for reasons that are analysed in the various chapters.

Notes

1. By vehicles, we consider passenger cars, light trucks and commercial vehicles. We do not focus on passenger cars only, because in some countries, like the United States, light trucks amount to around half of the market. In 2013, at

the world level, the share of passenger cars amounted to 73% of total vehicles (OICA).
2. Hereafter, Asia. *Source*: OICA, "Registrations of all types of new vehicles", updated 12 March 2014. http://www.oica.net/category/sales-statistics/.
3. North America comprises Canada, the United States and Mexico.
4. Europe includes here Western, Central and Eastern Europe.
5. The share of passenger cars sales in Asia is even higher. In 2013, it amounted to 51.2% of global sales.
6. Source: US Department of Energy Data Book 2013, table 3.01.
7. According to the World Bank, the Gini coefficient in India in 2010 was 33.9, versus 42.1 in China. The Gini coefficient measures inequality between a range of 0 (perfect equality) and 100 (perfect inequality). In 2010, household consumption per capita in India was US$599 in purchasing power parity (PPP) constant 2005 prices, and US$1,025 in China. *Source*: World Development Indicators 2014, the World Bank.
8. Sport-utility vehicles (SUV) appeared first in the 1980s in the United States as a new type of light trucks. They soon became an important segment of the market in itself and became more comfortable, powerful and luxurious. Built initially on light-truck chassis, they were later built on platforms like cars to improve their urban usage. Crossovers are the ultimate hybridisation of light-trucks and passenger cars, and distinctions have been blurred.
9. *Source*: United Nations Population Division estimates, 2012 revision.

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1

The US Automobile Market after the "Great Recession": Back to Business as Usual or Birth of a New Industry?

Bruno Jetin

1 Introduction

Between December 2007 and June 2009, the US economy was hit by the "Great Recession", the worst economic crisis since the Great Depression of the 1930s. As a consequence, the US automobile industry has gone through a crisis of unrivalled magnitude: during the recession, light-vehicle sales lost 6 million units and two of the "Big Three" automakers – GM and Chrysler – went bankrupt. Since then, the US economy has recovered progressively and the automobile market is bouncing back to its pre-recession level. In fact, the automobile industry has better recovered than the rest of the economy, the growth of which is weak and uncertain. GM and Chrysler emerged from bankruptcy as new slimmed-down companies with fewer brands, plants and workers, and less debt and market share. The rejuvenated Big Three returned to profit in 2009 (Ford) or 2010 (GM and Chrysler) when the US market was still below 12 million vehicles sales a year. These companies are making bigger profits now that the market is expanding again and are on the way to reaching 16 million units in the near future. GM and Chrysler have repaid their loans and have gone public again, a move that has given the US government a way to sell part of its stake in the companies' stock.

These events may suggest that the crisis is over and that the US automobile industry is back to the pattern that prevailed before the Great Recession. This chapter will show that there is more to this situation than meets the eye. There are short-term factors that are indeed acting positively

for the automobile market. But in the medium- to long-term, the structural problems that have led the US economy to the crisis have not been resolved and will weigh heavily again. First, although the US economy is recovering slowly, unemployment levels are still high, unlike after previous recessions. A new jobless recovery seems to be underway, as after the dotcom bubble burst in 2001. Family income has dropped, poverty has risen and inequality has worsened. Second, structural factors such as the slower growth of the number of licensed drivers and a change in consumer expenditures due to growing costs of education, health and accommodation is negatively affecting car demand. In this context, the rebound of the automobile market is no doubt fragile. The temptation is strong to go back to the traditional recipe of household indebtedness to stimulate car demand. Banks, captive finance automobile companies and independent finance companies have loosened their credit standards and are originating loans actively. The subprime automobile credit market is back, thanks to the revival of asset-backed securities market that played such a critical role in the build-up of the Great Recession. The danger is the return of the dependency of the automobile market on bad loans to increase sales.

This chapter will analyse these contradictory tendencies. The first part comes back to the analysis of the Great Recession to see how much it was the consequence of an unsustainable growth regime, whereby a decreasing labour income share, coupled with growing social inequalities, have led US households to take on even more debt to maintain their consumption pattern. This growth regime has modelled car demand and car financing in a way that parallels the housing market. In a second part, we analyse the rebound of the automobile market to see why there are many reasons to think that it will be short-lived. The fundamental reason is that the US growth regime has not changed. Other important reasons are more structural: the changing demographics, consumption pattern, gas prices, and the absence of breakthrough innovation in alternative fuel cars likely to reduce dramatically the cost of motoring when it is most needed.

2 A debt-driven growth regime paved the way to the Great Recession

The automobile industry usually follows the fluctuations of growth cycles. In the United States new vehicle sales have been especially buoyant during the growth cycles 1961–1969, 1982–1990 and most particularly in the cycle of the so-called new economy 1992–2000 (see Figure 1.1).

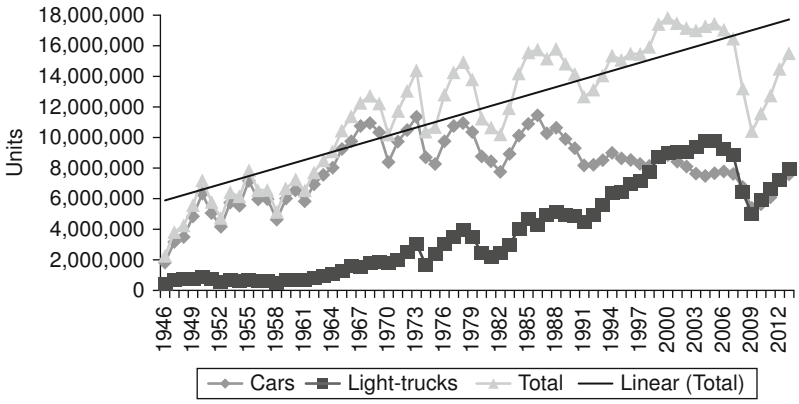

Figure 1.1 New cars and light-trucks sales in the United States (1946–2013)

Source: Computed by M. Freyssenet with data from WMVD, Automotive News 100Y, GERPISA & CCFA, (1946–2007) updated by B. Jetin with data from BEA.

The automobile industry decoupled from growth at the time of the "feeble recovery" of 2001–2007 (Bivens and John, 2008) which followed the dot.com bubble burst (March 2000–June 2003)[1] The gross domestic product (GDP) and employment growth were at the time the weakest since 1949, but new vehicle sales stayed at a high level, above 16 million units (see Figure 1.1). Sport and utility vehicle (SUV) sales topped at almost 10 million units while they are usually more expensive than passenger cars. With 17.4 million units in 2005, vehicle sales were not far from the historical record of 17.8 million of 2000, when the "new economy" reached its apex. There was obviously something wrong in the boom of the automobile market during the growth cycle 2001–2007 that cannot only be explained by the fall of the interest rate to zero after the 11 September 2001 attacks, which revived the economy. Nor can the Great Recession, which was triggered by the "subprime crisis", explain the fall of the automobile market. The Great Recession officially began in December 2007 and ended in June 2009, but vehicle sales had started to decrease in 2005.

The origin of this disconnection is to be found in the structural changes of the US growth pattern introduced by supply-side economics, launched by Ronald Reagan in 1980. Since then, the percentage gap between labour productivity and real compensation has widened (see Figure 1.2).

The gap was closed to zero between 1947 and 1973 (0.2%). It almost doubled in the 1980s (0.8%) compared to the 1970s (0.5%). It narrowed

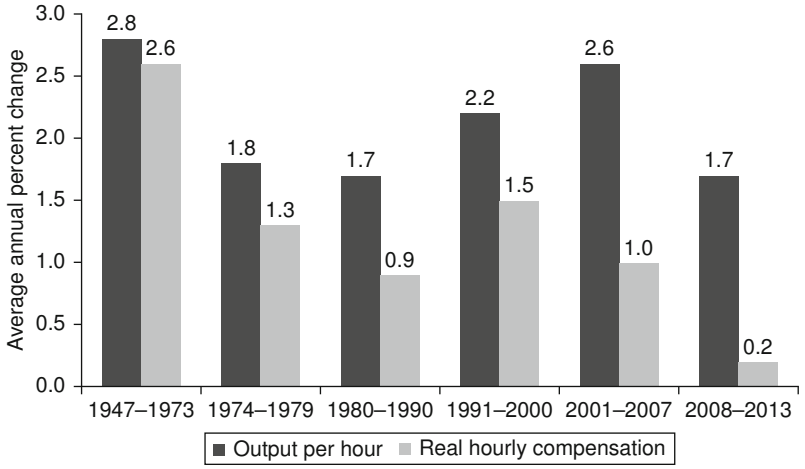

Figure 1.2 Labour productivity and real compensation gap in the US (1947–2013) non-farm sector

Source: Author's calculation with data from the Bureau of Labor statistics, extracted on 2 October 2014.

a little bit during the growth cycle of the 1990s (0.7%). But during the "feeble recovery" of the years 2001–2007, it more than doubled again (1.6%), and after the Great Recession, the gap stayed at the same level. In the long term, this means that American households did not benefit as much as they could have in real compensation. In particular, since the Great Recession, real compensation remained flat, while companies were profiting much more from productivity gains. Besides, the income distribution got more and more unequal.

Data on income concentration going back to 1913 show that the top 1% of wage earners now hold 23% of total income, the highest inequality level in any year on record, bar one: 1928. In the last few years alone, $400 billion of pre-tax income flowed from the bottom 95% of earners to the top 5%, a loss of $3,660 per household on average in the bottom 95% (Lawrence et al., 2008).

This phenomenon has not immediately affected households' consumption for two reasons. First, households have swapped income increase with debt increase to maintain their standard of living and acquire their homes. This was made possible by the strong support of the State and the adoption of various laws by Congress. The standardisation of mortgages and the introduction of mortgage-backed securities took

shape in the 1960s. Later, a decisive step was taken with the Tax Reform Act of 1986, which phased out the deductibility of most non-mortgage interest for instance interest on consumer loans. "This led to a shift of consumer debt towards mortgages and home equity lines" (Stango, 1999). Homeownership became the foundation of a stable middle class, and house mortgages became the cornerstone of household debt.[2] As a consequence, household debt as a percentage of disposal income, which was stable at around 60% since 1965, started to grow rapidly to almost 100% in 2000 at the end of the new economy bubble growth (see Figure 1.3).

The bursting of the dot.com bubble in 2000–2001 had the well-known effect of shifting the focus of speculation from shares to housing. There was a new wave of finance investment (was investment) in housing construction and home mortgages, and house prices soared. Despite the success of the "jobless recovery" (2001–2007), indebtedness skyrocketed to more than 120% in 2007.

As a consequence, with the exception of recession periods, consumption has constantly increased at a higher pace than compensation. Increasing debts filled the gap to the point that the US at the time could be said to have had "a debt-driven growth regime". Three special features of financial innovation in a context of low-interest rates and rising

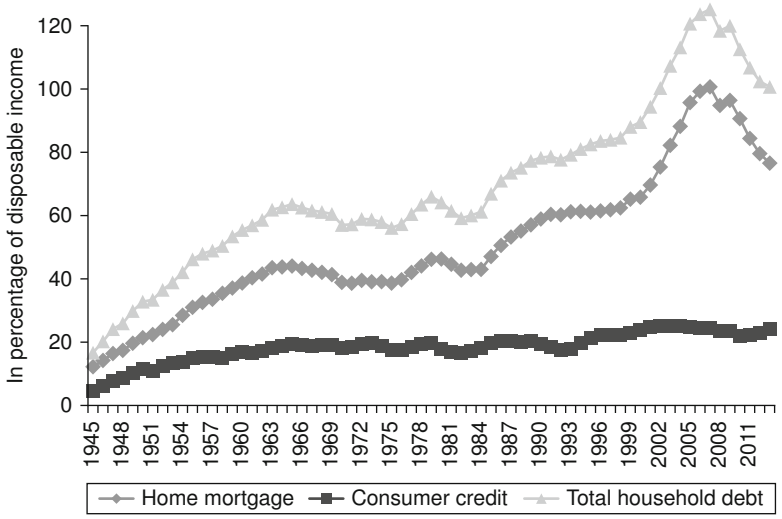

Figure 1.3 US households' debt as share of disposable income (1945–2013)
Source: Author's calculations with data from US Flow of Funds Accounts (Fed) and NIPA (BEA).

house prices explain why debt not only financed ordinary consumption but also created a consumption boom. In sum, these innovations contribute to explaining why, during the feeble recovery preceding the Great Recession, vehicles sales boomed, averaging 17.2 million units above the 16-million landmark achieved in the 1980s and 1990s.

First, the upward trend in housing prices generated a house wealth effect much more significant than the stock market wealth effect.[3] An enormous wave of refinancing existing mortgages, during 2000–2006, allowed homeowners to extract some of the built-up equity in their homes. Part was used to pay down more expensive non-tax deductible consumer debt or to make purchases that would otherwise have been financed by more expensive and less tax-favoured credit. In this sense, the refinancing phenomenon was a supportive factor for growth, as long as homeowners were able to make their monthly payments. Daniel Cooper (2010, p. 1) shows that "during the height of the house-priced boom (the years 2003–2005), a one-dollar increase in equity extraction led to 14 cents higher household expenditures". Overall, the increase was broadly concentrated in transportation-related expenses, food, schooling, and non-major home upkeep.

There is a positive and strong relationship between equity extraction and automobile costs, which include down payments for loans and leases. Equity extraction and health care costs had a smaller positive effect, which is consistent with the idea that households used equity extraction to help fund big-ticket expenditures. The problem with this financial extraction is that when house prices began to decline in 2006, it contributed to higher defaults. According to Mian and Sufi (2009), it accounted for 34% of new defaults from 2006 to 2008. In another paper, these authors show that the rise of households' debt-to-income ratio, and the growing dependence on credit card borrowing during the years before the recession, explain a large portion of the crisis and its effect on durable consumption. In particular, they show that "counties that experienced the largest increase in their debt-to-income ratio from 2002 to 2006, saw a severe contraction in auto sales very early in the downturn and a higher increase in unemployment" (2010, p. 95). By contrast, in low-leveraged counties, auto sales were up in the first quarter of 2008 and dropped only in the third quarter of 2008 when the crisis affected the whole country.

Second, financial innovations combined with the house price boom allowed households to take more debt secured on the value of their house. A secure loan is a loan for which the lender receives collateral in return. Mortgages and car loans are among the most common secured

loans. In these cases, collateral is provided to the lending institution in the form of a lien on the title to the property until the loan is paid off in full. If the borrower defaults on the loan, the lender retains the right to repossess the property (Ruben, 2009). Low-interest rates, appreciation in housing values, and the deductibility of interest payments on mortgage debt have induced households to borrow against the equity in their home. This process depended crucially on the assumption that continuous rising house values would outpace the increase in home-secured debt.

Third, financial innovations also developed the so-called subprime market and adjustable rate mortgage (ARM) given to low-income consumers not traditionally served by the mortgage market. Subprime loans have interest rates that are higher than standard prime mortgages as a direct result of the greater risk associated with holding the debt. ARM offered lenders the opportunity to put off big payments until later, seducing borrowers with lower initial payments and low initial interest rates. Due to relaxed underwriting criteria, subprime loans and ARM were sold to consumers who were unlikely to be able to repay the loan, should interest rates rise. Borrowing became much easier, thanks to the conventional belief that the growing value of the house would provide adequate collateral.

This belief was brutally refuted in 2007 when house prices began to drop. A growing number of households were caught in a debt trap. Homeowners' financial obligations soared from 13.8% in 1980 to 17.7% in 2007. Households' financial delinquency[4] on single-family residential mortgages, which was on average 2% during the 1990s, skyrocketed to 11.3% in the first quarter of 2010. Financial delinquency on credit cards topped at 6.5% in 2009 and student loan delinquency also rose. Personal bankruptcy filings as a share of households multiplied by 4.5 between 1980 and 2005 when it reached a record level before a new law made it harder and more expensive to petition for bankruptcy.

The effect of the crisis on the automobile market was dramatic. Auto delinquency loans increased to a high level and stayed high long after the official end of the recession (Figure 1.4). Only in the fourth quarter of 2014 did the 60-day delinquency rate return to the 2006 level, while the 30-day delinquency rate was still above that level. These percentages may look small, but the dollar amount is quite important. In the first quarter of 2010, automotive loans that were 30- or 60-days delinquent amounted to nearly $20 billion. It dropped to $16 billion in Q1 2011, signalling an improvement as households tried to pay their debts.

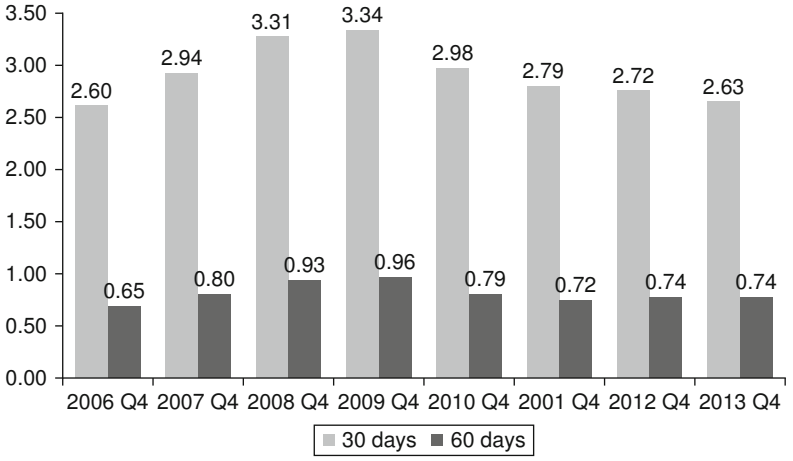

Figure 1.4 Delinquency rates on auto loans (2006 Q4–2013 Q4)
Source: Computed by the author with data from Experian.

What we call the "debt-driven growth regime" was not sustainable. The decline in house prices triggered the so-called subprime crisis which ended with the Great Recession. American households entered a painful phase of deleveraging. By 2013, most financial distress indicators had declined and returned to levels close to or below pre-recession levels, except those related to residential mortgages.

The automobile market has also recovered. In 2013, sales of new cars and light trucks reached 15.5 million units, up from 10.4 million in 2009 at the height of the Great Recession (see Figure 1.1).[5] The V-shaped recovery has sparked a wave of optimism in the automobile industry and confidence in the possibility of, in the coming years, reaching the previous sales record of almost 18 million units in 2000. Does it mean that the crisis is over and that the automobile demand is now set on a solid basis?

3 The US automobile market has recovered, thanks to exceptional cyclical factors

The optimism is based on several favourable factors that have helped the auto market bounce from the trough: job creation, the end of households' deleveraging process, aging of vehicles and pent-up demand, the quantitative monetary easing and its positive impact on automobile financing.

Employment is the major factor that determines the dynamism of the automobile market. In the first quarter of 2014, private employment with 116 million jobs for the first time exceeded the level it had in 2007 before the recession (115.7 million). Total non-farm employment, including public administration, followed the same pattern. More individuals were earning income and were able to obtain a loan to buy a car. At the same time, having a car is usually necessary to get a job.

Households were able to finance their car purchase in sharp contrast to the credit crunch they experienced in 2008–2009. Households cleaned their balance sheets and were now finding banks and financing companies willing to lend. Their debt now represents 104% of their disposable income, down from 125% at the end of 2007. This is the result of 6 years of deleveraging, which started in 2008, when households gave absolute priority to debt reduction and curbed their consumption. They borrowed less and paid down their existing liabilities with charge-offs, which also contributed to the decrease of aggregate balance.

Mortgage, credit card and auto debts went through this deleveraging process with the exception of student loans. Students had no choice but to carry on with their loans to finish their studies. Student loans are now in crisis because new graduates have difficulty finding work. This weighs negatively on their capacity to consume, and in particular, to buy cars. But for the majority of households, the deleveraging ended recently in the third quarter of 2013 with across the board growth in indebtedness.[6] This means that households are taking new loans to finance increasing expenditures. This is particularly the case of auto loans, which have started to expand since the last quarter of 2011, while other forms of debt were still decreasing.[7] Since the free fall of the fourth quarter of 2008 (–26.8%), motor vehicles and parts outlays, although highly unstable, have outperformed by far personal consumption expenditure during most of the recovery period. Consumption expenditures followed GDP growth with no sign of acceleration, and this shows how fragile the recovery is. What explains this outperformance of automobile expenditures?

If we set aside the pick-up in the supply of auto loans, enabled by the rehabilitation of banks and finance companies that will be analysed later on, two short-term factors explain the recovery of automobile demand: the aging of average households' vehicles and the release of pent-up demand. These two factors are intertwined. In 1995, the average car age was 8.4 years. It then rose steadily up to 10.4 years in 2007, just before the recession. In 2011, after the recession, it reached a historic peak of 11.1 years.[8] The share of vehicles by age shows that newer

vehicles – less than 5 years old – dropped from 24% in 2002 down to 15% in 2012, while the share of vehicles 11–20 years old grew from 34.4% to 42.4% over the same timeframe (Pfirrmann-Powell, 2014). The continuous aging of light vehicles means that owners held on to their vehicles longer during the last recessions but did not reverse the pattern during recovery episodes. This is because these recoveries did not last long enough, and income did not increase enough for households to absorb the financial loss of recessions and then purchase new vehicles in greater enough numbers to lower the median age. This phenomenon was especially strong with the Great Recession, and a high pent-up demand accumulated, which is now underlying the V-shaped recovery of the automobile market. Customers have delayed their new car purchases for lack of financial means. In 2009 and 2010, many consumers and businesses scrapped cars without replacing all of them, despite the car allowance rebate system.[9] These customers have shifted their demand to used vehicles, pushing their prices up to historical levels.[10] As a consequence, new vehicles are relatively cheap compared to recent used vehicles, and low-interest rates make them even more attractive. The convergence of all these factors explain why the release of pent-up demand is occurring now and has fuelled new vehicle sales since 2012 and probably will for some years to come because older vehicles are just starting to being scrapped. But this positive factor cannot last forever.

The monetary policy known as "quantitative easing" has also played a strong role in the recovery of the automobile market. This unprecedented policy of money creation by the Fed has pushed the interest rate to an all-time low of almost 0% in real terms. This policy has saved banks from bankruptcy and flushed them with an all-time high amount of money that they try to lend at a profit in a context of low financial returns. Because vehicle purchase outperformed other consumer goods, banks and finance companies started to lend more to car buyers at the start of 2012. Competition between banks, credit unions, captive auto finance companies, finance companies and auto retailers pushed real interest rates below 2% for a 48-month loan down from 8% on average in the 1980s (see Figure 1.5), and extended loan maturity to over 60 months, up from 35 months in 1971. This expanded the auto market to financially constrained households willing to purchase a new or used vehicle, because the combination of low-interest rates and long-term loans kept the average monthly payment stable.[11]

Banks were initially very conservative in their lending policies and focused on customers with the best credit scores. But they have gradually relaxed their standards from 2010 to now. For instance, the share of

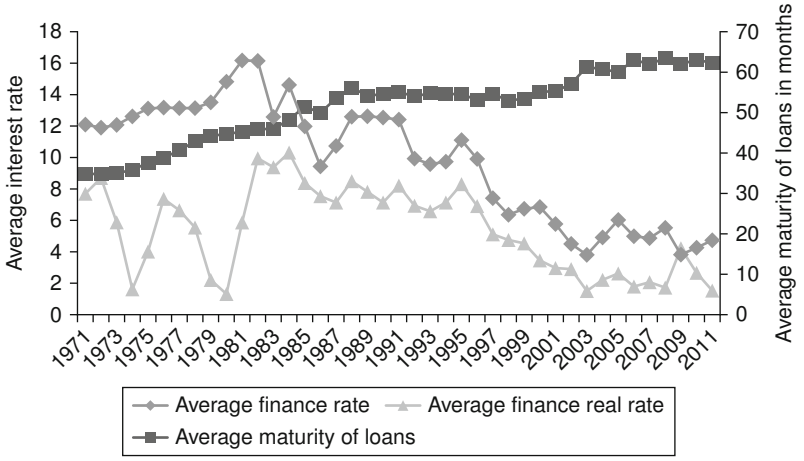

Figure 1.5 New car purchase financing terms of auto finance companies (1971–2011)

Source: Author's computation with FED G,19 data and CPI-URS inflation rate.

consumers with Equifax credit scores above 720[12] peaked at over 52.4% in the fourth quarter of 2009 in the turmoil of the recession and is down to about 45% since the fourth quarter of 2012. On the opposite end of the spectrum, consumers with poor credit scores increased their share to 23% in the second quarter of 2013, up from 9.3% in the fourth quarter of 2009. This is still well below the 25–30% shares registered before the Great Recession (Haughwout et al., 2013).

These favourable evolutions cannot improve continuously. One cannot expect an endless extension of loan terms or another reduction of real interest rates to nearly 0% with stable monthly payments. As we will see below, there is a limit to what finance can do, and in particular the growing risk inherent to market extension to less affluent customers. But on top of that, these favourable conditions are very sensible to the monetary policy. Once the Fed stops the quantitative easing policy, as it has already announced, interest rates will increase, and car financing will tighten.

4 Conditions of long-term growth are still not there

To summarise, the cyclical factors analysed above – job creation, deleveraging, pent-up demand, and quantitative monetary easing – will fuel automobile demand for the near future but cannot sustain a new growth cycle on the long-term. The decisive factor will be job creation and

income. In this regard, perspectives are bleak. Although employment has returned to its pre-recession level, job creations have not been strong enough to offset job losses accumulated during the Great Recession, and full employment is still very far off. To create enough jobs, the economy should grow for a sustained period at a pace above its long-term trend so that the gap between aggregate demand and the productive potential can be filled (Josh, 2014). Due to joblessness, growth has been sluggish so far because household demand, with the exception of automobile, has remained subdued. Officially, the unemployment rate has fallen to 6.3% in April 2014, below the level of November 2008 when Barack Obama was first elected president but still above the rate of 4.3% before the crisis in 2007. Worse, this improvement in unemployment hides the fact that the participation rate – the share of the adult population deemed available for work – is falling. To be classified as unemployed, adults must identify themselves as actively seeking work. Due to the scarcity of jobs during the Great Recession, many adults have abandoned active searches, but would return to active work if job opportunities were numerous. The number of these "missing workers" increased to an all-time high of 6.2 million (Shierholz, 2014). "If those missing workers were in the labour force looking for work, the unemployment rate would be 9.9 percent instead of 6.3 percent" (Shierholz, *op. cit.*). This put employers in a favourable situation to keep wages low. Wages have seen no growth since December 2009 and are stagnant at around 2% in nominal terms and around 1% in real terms. This explains the weakness of demand and why the recovery is much slower than previous ones.

As we have seen in Figure 1.2, the gap between real compensation and labour productivity is still very large because real compensation gains were close to zero over the period 2008–2013. The labour income share continued to decline and inequalities to grow. Thanks to the profound deleverage that occurred between 2008 and 2013, it seems that everything is in place for the same story to happen again but not in the same favourable circumstances as in the 1990s. Households are taking on new debt but in a context where after 5 years of falling, the real median income in 2012 of US $51,000 has returned to its 1995 level (see Figure 1.6). The bleak labour market does not signal a fast improvement. Overindebtedness will come sooner than in the previous growth cycle because in 2012, total consumer debt still amounted to 102% of households' disposable income. This is much better than the 125% of 2007 on the eve of the recession, but is still a high starting point for a new cycle of indebtedness. In regard to income inequality, it is as high as ever, with a Gini coefficient of 0.477 in 2012, up from 0.397 in 1975, which places the United States on the higher end of inequality among

Figure 1.6 Real household mean and median income in the United States (1975–2012)

Source: US Census Bureau, historical income tables.

rich countries (see Figure 1.6). The lesson is clear: when the positive effect of the short-term factors analysed above wanes, households' debt will take over and will fuel the growth of the automobile market for some more years. And when the wedge between stagnant real income and growing debt becomes too wide, a new recession will occur. In the meantime, the demand for automobiles will have to cope with some structural problems.

5 Structural problems still hamper automobile demand

Historically, the rapid fall of car price has been critical for the transformation of the automobile into a mass market. "Fordism" has been the technological, organisational and institutional breakthrough at the micro- and macro- levels that enabled the transformation of cars from a luxury to a mass product (Boyer and Freyssenet, 2002). One century after the invention of "Fordism", one may wonder if new cars are still affordable to the majority of consumers. In constant dollars, the price of a new car was US $25,233 in 2011, which places it between car prices in 1915 and 1916 (see Figure 1.7). Of course, the car of the 21st century offers much more value for the money than it did a century ago. Still the

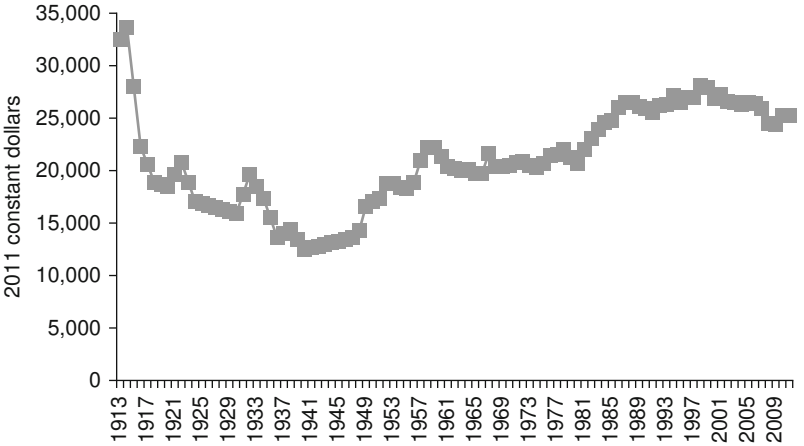

Figure 1.7 The new car, still a mass consumption good? (1913–2011)

Source: US Department of Energy, Transportation Energy Data Book: Edition 32–2013, table 10.10.

matter of new car affordability remains. The analysis of the purchase of new vehicles by income quintiles shows that all households except the highest quintile had started to reduce their spending on new vehicles in 2003, 4 years before the Great Recession, because their income had not fully recovered from the previous recession. The highest quintile was the only one to increase its annual spending in 2005 and 2006 to around US $4,800 before it plummeted after the Great Recession to US $2,800 in 2010 (see Figure 1.8). The highest quintile is also the only one for which spending on new vehicles is always superior to used vehicles. On average, over the period 1984–2012, the 20% richest Americans spent 1.7 times more on new vehicles than on used vehicles. At the other extreme, the poorest 20% Americans spent 1.6 times more on used vehicles than on new vehicles over the same period. The intermediary quintiles, which include the middle class, spent more money on new vehicles than the lowest quintile. Still, they spend more money on used vehicles than on new vehicles.

Another effect growing inequalities has on consumption is the bias it has introduced in favour of ever-bigger goods. This phenomenon has been detected in housing (Dwyer, 2009) and automobiles (Knittel, 2009; Bhat et al., 2009; Choo and Moktharian, 2004). This can be seen in the size of the vehicles purchased (see Figure 1.9), and in particular with the progression of big pick-up trucks and SUVs. Small vehicles were the

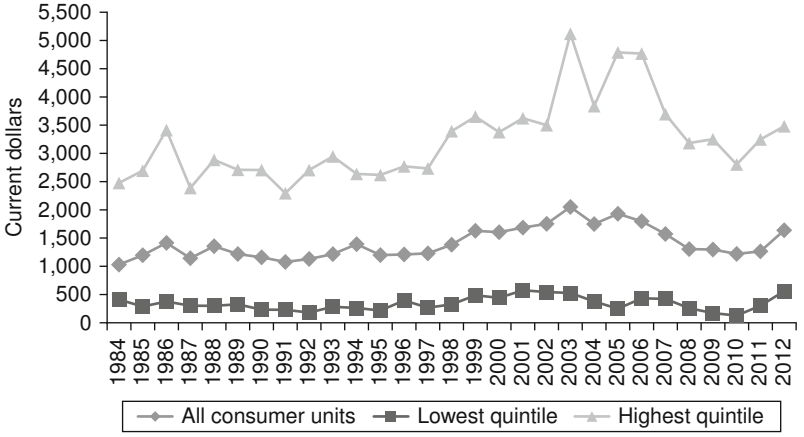

Figure 1.8 Purchase of new cars and trucks of lowest and highest quintiles (1984–2012)

Source: Bureau of Labor Statistics, Consumer Expenditures Survey.

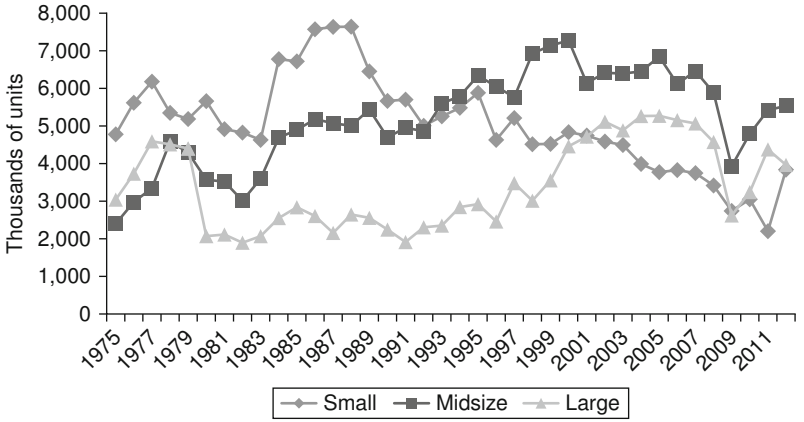

Figure 1.9 Breakdown of new light vehicles unit sales by size in the United States (1975–2012)

Source: Author's calculations with data from Transportation Energy Data Book, Department of Engergy (2013), tables 4.10 and 4.11.

major segment of the new vehicle market in the 1970s and 1980s. Then, in the 1990s, the midsize segment became the top one. This marks the progress of the middle class during the long period of growth at the time of the "new economy". During the "jobless" recovery of the

years 2001–2007, the housing bubble – powered by subprime mortgage loans – was compounded by an automobile bubble – created by new auto sales financed by subprime auto loans. At that time, the sales of large vehicles, with an average of 5.068 million units,[13] exceeded those of small vehicles (4.167 million units), which were the primary choice of low-wage earners who were the most affected by the sluggish recovery. Obviously, something was wrong, because rich people are much less numerous than low-wage earners, and a mass market can be sustainable only if established on a much sounder base. During 2009, the worst year of the Great Recession, almost as many large vehicles were sold as small ones: 2.6 versus 2.7 million. This reflects the influence of the top richest quintile of households, who have a strong preference for these large vehicles. These rich Americans were less affected by the financial crisis. In fact, their incomes recovered rapidly and even grew after 2009. They maintained their purchase of large, luxury vehicles, a phenomenon that was also observed with other luxury goods.

Because large vehicles are expensive, a minority of affluent customers buy them new, and a majority buy them used. The used vehicle market is by far the biggest. On average, over the period 1990–2013, it sold 2.7 more units than the new vehicle market.[14] During the period of crisis, more customers bought used vehicles to save money, and the ratio exceeded three used for one new. In other terms, the new vehicle segment represented on average 27% of the total used and new sales of around 55 million units in the period 1990–2013. For wholesalers and retailers, the used market is much more profitable than the new market. Firstly, in a period of crisis, the strong demand for recent used models makes their prices soar. Secondly, owners hold onto them longer, which increases repair and maintenance costs.

The automobile market, including both new and used light vehicles, reached an all-time record in 2006 with a total value of US $786 billion, and then declined during the Great Recession to US $575 billion in 2009.[15] When the market is fully recovered, one wonders whether there is still potential for future growth. Two issues raise questions about the market potential: the shift in consumer demand in favour of services and away from traditional consumer goods like the automobile, and the evolution of demographics.

Over the period 1929–1940, services accounted for 45% of households' expenditures.[16] During the postwar "Fordist" growth, their share increased a little, up to 47.5%. But over the last period (1980–2012), services jumped to 62.5% of households' expenditures (see Figure 1.10). Much of this progress was at the expense of non-durable goods whose share over the period 1980–2012 amounted on average to 24.8%, down

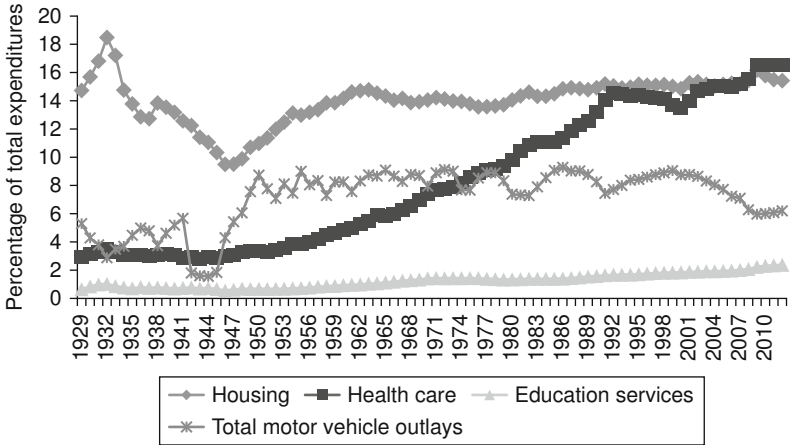

Figure 1.10 Share of selected expenditures of US households in total expenditures (1929–2012)

Source: Author's calculations with data from NIIPA, Personal Consumption Expenditures, table 2.4.5, Bureau of Economic Analysis.

from 45% before Second World War. The share of durable goods, among them automobiles, registered only a small decline: 12.7% in the years 1980–2012, down from 14.6% in the years 1949–1979. But a closer look at some big-ticket items shows that the decline in automobile spending is more pronounced than one might expect. The share of total vehicle outlays peaked in 1999, towards the end of the longest growth cycle of the postwar era (1991–2000) but then declined steadily, long before the Great Recession. Vehicle outlays were down to 6% in 2007, where they still were in 2012. Housing has traditionally been the biggest expenditure and after the Second World War, spending on homes increased gradually from 14% of total households' expenditures to 16% in 2009. But what is impressive is the sharp growth in healthcare spending, which became the biggest item of expenditure with more than 16%. It reflects the fact that the US healthcare system is one of the most expensive and inefficient among rich countries, and it now limits the spending that households could dedicate to other items, such as automobiles. To a lesser extent, spending on education services has also increased regularly and now accounts for over 2% of households' expenditures, two times the level of the 1960s. Higher education expenses are mainly responsible for this increase. Communication services, and among them mobile phone and Internet access, also account for about 2% of households'

expenses. Although they seem small, these expenses also compete with the consumption of durable goods.

A detailed breakdown of automobile spending reveals other interesting facts (see Figure 1.11). While the share of total automobile expenses motor vehicle outlays has remained stable until 2001, the share of new motor vehicles outlays has declined steadily, from an average of 4.3% in the period 1949–1979 to 3.1% in the most recent period (1980–2012). Conversely, there is a significant increase in motor vehicle services (maintenance and repair and other services) from 1% in the 1930s to almost 3% in the middle of the 1990s, to now 2%. To a certain extent, this evolution is linked to the increasing complexity and technological content of vehicle, and the high profit margin of parts and repair and maintenance services, which make the bulk of the profit of sales services.[17] Net used vehicle purchases also almost doubled their share from 0.8% in the period 1949–1979 to 1.6% in the middle of the 1990s, when the majority of households bought a second – usually used – vehicle. Finally, insurance costs add another 0.6% to households' spending. This item has been stable since the Second World War but is three times higher than in the 1930s.

To summarise, expenditures on new vehicles are on a historical declining trend due to higher spending on other items linked to car

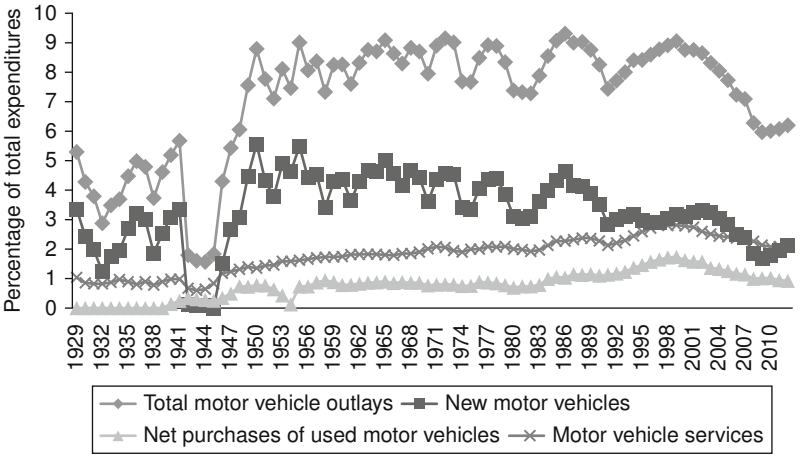

Figure 1.11 Share of motor vehicles outlays in total personal consumption (1929–2012)

Source: Author's calculations with data from NIPA, Personal Consumption Expenditures, table 2.4.5, Bureau of Economic Analysis.

ownership but also because of the higher price of critical spending like housing, health, education and communication. The share of new vehicle in total households' expenditures fell to a historical low level – under 2% – during the Great Recession, comparable only to such spending in the Great Depression of the 1930s. It will probably return to 3% in the near future, but it is doubtful that it will recover its historically high average of 4.3%, registered during the golden age of postwar growth.

Demography is another reason to believe that the US automobile market has entered a period of slow growth due to a relative saturation of the market. The percentage of households with no vehicle has dropped to 9.3% in 2011, down from 21.5% in 1960.[18] It is probable that this percentage will not fall much further because this share of the population includes people who are too poor to buy a vehicle, or too old, or who simply do not like automobiles and have other means of transport when they live in big cities.[19]

A third reason is that households' vehicle ownership has already increased dramatically. In 1960, 78.4% of households owned one vehicle. In 1990, that number had declined to 45% because most American women now work. But in 2011, the figure was almost the same: 43.4%. Ownership of a third vehicle has also increased but at a declining pace because of financial constraint. In 1960, 97% of households had fewer than 3 vehicles. By 1990, there were 82.6%. By 2011, the number was 80.9%, a small improvement of 1.7% in 11 years. Since 1958, there have been more vehicles in operation than there are employed civilians, which means that a second car is needed because both parents are working. But even more surprising is the fact that since 1986, there is more than one vehicle per licensed driver (see Figure 1.12). A significant number of drivers own more than one car – either new or used. This might be sustainable in a thriving economy but this is not precisely the case since the Great Recession. A final concern for the future expansion of the automobile market is the fact that the percentage of licensed drivers in the total population is reaching a point of stagnation at 68% (see Figure 1.12). All these elements show that there may still be some room to manoeuvre an extension of the automobile market, but they are getting scarce and are insufficient in the long-term.

6 Financing vehicle sales with subprime loans

Without a huge finance industry, there would not be a mass market for automobiles. Before the Great Recession, about three quarters of

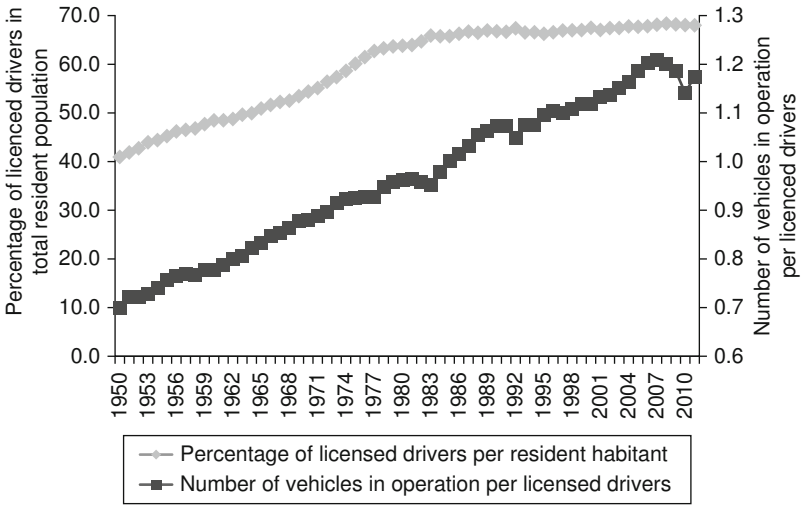

Figure 1.12 Towards a saturation of the automobile market? (1950–2011)

Source: US Department of Energy, Transportation Energy Data Book – Edition 32–2013, table 8.1.

new vehicles sales and half of used cars were financed either by loans or leases.[20] Car buyers' dependence on the auto finance industry has increased to 84% for new and 54% used vehicles after the recession because they are less wealthy. The auto finance industry churns out huge amounts of money. In the fourth quarter of 2008, when the total debt balance for the whole United States registered an all-time record of $13 trillion, automobile debt amounted to $800 billion: that is, 6.2% of the total debt, almost the same as credit cards (6.8%) and more than student loans (5%).[21] This is because car buying is the second largest expense of households after the purchase of a home. The auto finance industry is particular in the sense that automakers usually own a financial subsidiary, called "captive auto finance companies". This is not the case for other producers of consumer goods, but for automakers, it is crucial to be able to finance sales to "push" cars, whatever the circumstances. Captive auto finance companies hold 30% of the total auto finance market on average during the period 2007–2013 in competition with banks (34%), credit unions (22%) and finance companies (14%) (Experian). They assess customers, using credit scores, the best-known being FICO scores, but many companies have their own proprietary risk evaluation system. The process is the same as buying a home. Car buyers are divided in risk

categories according to their income, job, household characteristics, and past financial record (being late on debt payment, or worse, bankruptcy). Experian, for instance, ranks customers from top to bottom into super-prime, prime, non-prime, subprime and deep subprime risks. The riskier the customer is, the tighter the conditions of the loan: higher interest rate, higher monthly payment, smaller amount financed. Auto finance agents have different strategies: usually banks, credit unions and captive companies compete for the best customers while auto finance companies focus on non-prime, subprime and deep subprime customers because these companies accept more risk to make more profit. But all of them have a diversified portfolio whose exact composition varies according to their strategy. Before the Great Recession, the bad risks (below prime) market share amounted to around 38%[22] (see Figure 1.13), which means that 38% of vehicle customers were already in a difficult situation when buying a car. With the recession, this share grew to 43.4% in 2008. The share of deep subprime borrowers recorded an all-time high of around 18% of the market in the second quarter of 2009. Lenders tightened their lending criteria to filter below prime borrowers out of the market. With numerous charge-offs of delinquent loans, the auto finance market improved its risk profile. Since 2011, the share of below prime loans amounts to 35%, which is low by historical standards, while

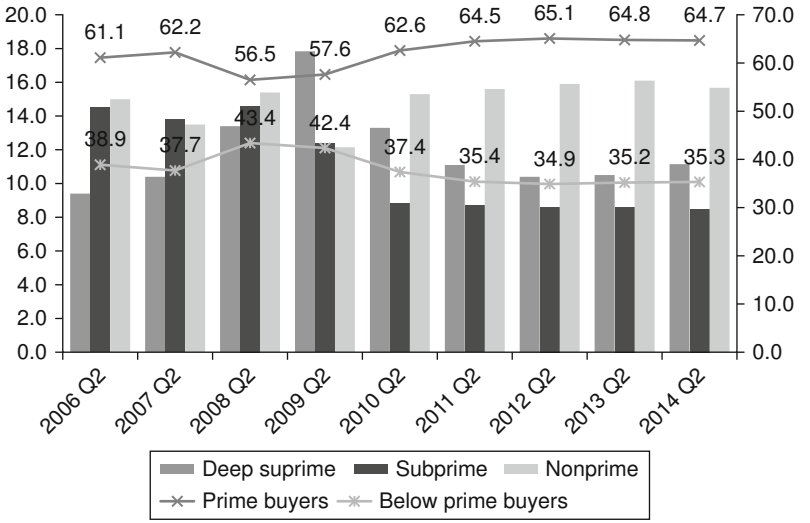

Figure 1.13 Distribution of all open automotive loans by risk tier (new & used vehicles) (2006–2014)

prime loans form the bulk of the market with the remaining 65%. While this situation may seem healthy from a risk assessment point of view, it is bad news for carmakers and lenders because it means fewer buyers. This is why, once the economy started to improve and households had cleaned their balance sheets, lenders rushed to make new auto loans, even to subprime and deep subprime borrowers. The reason is found in the state of financial markets. Because of the quantitative monetary easing, profits are very low, and many finance companies are willing to take risks to boost them. Many invested in the auto finance market, and especially the auto asset-backed security market. This market, which is very important for loans to below prime customers, had almost closed during the Great Recession and reopened in 2011. Like the subprime home market before the recession, auto lenders sell part of their auto loans on secondary markets, called asset-backed security markets, once loans have been transformed into securities. With this process, auto lenders get rid of the risk attached to below prime borrowers, as this risk is bought by investors willing to take it to make a profit. This system worked well before the Great Recession until it provoked the famous "subprime crisis". Of course, the situation is now different because households have deleveraged a lot, and lenders have plenty of money to lend. But the same cause will lead to the same consequences, especially because the recovery is not backed by a buoyant labour market, and household income is still low. One can assess the return of trouble with Figure 1.14, which focuses on the relation between auto loan delinquency and new auto loans. Three different phases can be distinguished. Between the years 2000 and 2005, which were marked by the dot.com bubble burst and the recession that followed, new auto loans and auto loan delinquency went up and down together, which is a normal pattern. When the volume of loans increases, it incorporates more borrowers with lower credit scores, such as subprime borrowers and vice versa. Over the period 2005–2012, one observes an opposite relationship between new auto loans and delinquency. Delinquency soared, while auto loan origination plummeted, the apex being reached during the worst of the recession in 2009. This reflects the working of the crisis. Many vehicle owners could not pay back their auto loans, and auto lenders restricted their loans to prime and super-prime customers. When the economy started to recover in 2010, the relationship was still opposite but reflected the best situation possible for auto lenders: they could take out new loans again while auto loans delinquency fell. The third period started in 2013 and resumed the normal pattern. The extension of the auto loan market to poorer and riskier customers, those who

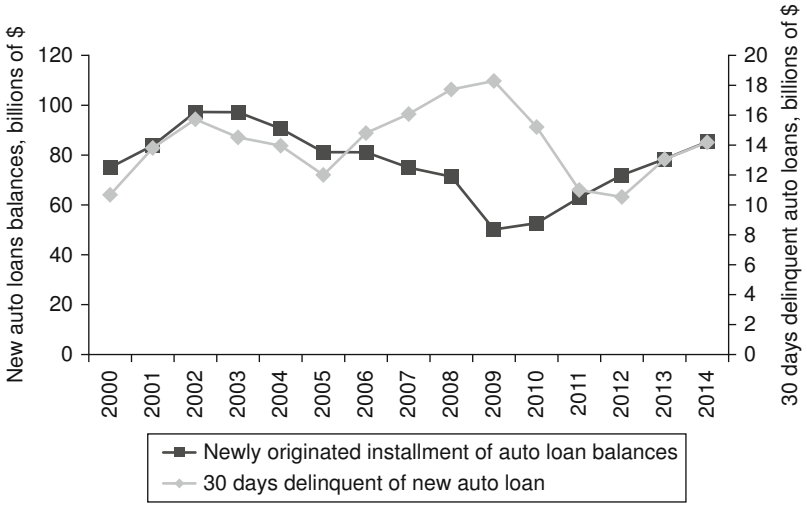

Figure 1.14 Delinquency and new auto loan origination (2000–2014), Q1
Source: Computed by the author with Fed of New York data, HHDC Report.

are deemed deep subprime and subprime borrowers, induced an increase in auto loan delinquency. In fact, in 2013 and 2014, one could observe a rush of equity funds in search of the big speculative gains that subprime and deep subprime customers provide because they pay a high interest rate. Finance companies held 15% of auto open loans in the second quarter of 2014, but 34% of 30-days delinquent loans (up from 22.6% in the second quarter of 2009) and 45% of 60 days delinquent auto loans (up from 28%). This concentration of risks is creating concern among the monetary and financial authorities.

This recent trend in automobile finance illustrates the contradiction automakers and auto lenders face: in the long run, they cannot lend to an ever-growing number of car buyers to increase car sales without taking more risks.

7 Conclusion

This chapter examined the relationship between the US growth regime and the automobile market, the impact of the Great Recession, and the factors that explain the recovery of the US automobile market. We have underlined the fact that cyclical and one-time positive factors are behind

the strong recovery. These factors cannot last, and the rebound of the US automobile market is not solidly grounded on long-term positive fundamentals. Actually, the deep causes of the Great Recession, which are the gap between labour productivity and real income and very high inequality, have not been addressed. As a consequence, households are going into debt again. If nothing changes on the demand side because income distribution remains basically the same, or even worsens after the Great Recession, one hope could come from the supply side, with a breakthrough in alternative fuelled vehicles. In the past, technical progress has sometimes brought radical cost-cutting of products, creating a mass market or revamping an existing mass market. In the automobile industry nowadays, expectations are high for hybrid and electric-powered vehicles. In past decades, various US administrations have repeatedly called for a reduction in the country's dependence on foreign oil. One of the bailout stipulations of GM and Chrysler in 2009 was that companies had to develop plans to produce energy-efficient vehicles. In May 2010, the Obama administration finalised new fuel economy standards for the first time in two decades to improve fuel economy to 34.5 miles per gallon for model year 2016 vehicles. In August 2012, it promulgated new standards for 2017 and 2025 model cars. Combined with the wide array of federal incentives for the development of alternative fuel-efficient vehicles (Cunningham et al., 2012), which includes tax deductions and credits for customers and incentives for manufacturers to produce alternative fuel vehicles, one could expect that the Great Recession would lead to the significant development of "green" cars.

The results are mixed. In 2012, electric vehicles accounted for roughly 0.3% of cars sold, and hybrid or plug-in hybrids accounted for 3% (EIA, 2012). Although sales are increasing, it is not an immediate success, especially for pure electric vehicles. The main reason is the high cost. One study found that at 2010 purchase and operating costs, a plug-in hybrid vehicle is $5,377 more expensive than a conventional car, and a battery electric vehicle is $4,819 more expensive (Lee and Lovelette, 2011). The gasoline cost savings of an electric car over its lifetimes does not offset its higher purchase price. This may change in 10–20 years if the cost of batteries decline sharply. But for the moment, it means that alternative fuel vehicles are not the solution for financially constrained households.

Notes

1. According to the National Bureau of Economic Research (NBER), the US economy was in recession from March 2001 to November 2001. The precise

dating has been much debated because there were no two consecutive negative quarters and growth remained weak until the first quarter of 2003. The end of the dotcom burst can be dated to June 2003, when the NASDAQ index started a new upward trend. Bivens and Irons (2008, p. 2) qualify the growth cycle 2001–2007 as "feeble" because "it was a full 40% slower than the post-World War II average (2.7% versus 4.8% in previous expansions)".

2. The homeownership rate, which stayed flat around 64% during the 1970s and 1980s, increased steadily in the 1990s and hit a peak in 2004 at 69%, plateauing at that level until the Great Recession. In 2013, it was down to 65%, a level first reached in 1978. *Source*: US Census.
3. Greenspan and Kennedy (2007) show that during the housing boom market of 2001–2005, an average of just under $700 billion of equity was extracted each year by home equity loans, cash-out refinance, and second mortgages. Case, Quigley and Shiller (2013) argue that over the same period, the housing wealth effect pushed up households' spending by 4.3%, a much stronger effect than the financial wealth effect.
4. Delinquent loans, mortgages, and leases are those that are past due 30 days or more and still accruing interest as well as those in nonaccrual status. They are measured as a percentage of the end-of-period. *Source*: Fed.
5. According to the NBER, the Great Recession officially began in December 2007 and ended in June 2009.
6. Except for home equity lines of credit (HELOC), which are loans where the collateral is the borrower's house.
7. Again, with the exception of student loans.
8. For light trucks, the average age is slightly below: 8.3 years in 1995, 9 years in 2007 and 10.4 years in 2011. *Source*: Polk, reproduced by US Department of Energy, table 01.25, Transportation Energy data book, various editions.
9. This system, known as the "Cash for Clunkers" program, started in July 2009 and ended in August 2009. According to the US Department of Transport, it resulted in 690,114 transactions.
10. The Manheim used car index (January 1995 = 100) registered an all-time high of 124.9 in 2011 and is still at 121.4 on average in 2013.
11. For instance, the index of the average amount financed for the purchase of a new vehicle increased 11% between the third quarter of 2008 and the third quarter of 2013, while the monthly payment increased by 2% only. *Source*: Author's calculations based on Experian data.
12. The Equifax credit score, like the FICO score, is a general purpose score that proprietary models use to predict credit risk. The Equifax credit score uses numerical range of 280 to 850, where higher scores indicate lower credit risk. The FICO score also uses a numerical range of 300 to 850, where higher scores also indicate lower credit risk. The New York Fed's Consumer Credit Panel is based on a nationally representative sample drawn from anonymised Equity credit data.
13. Author's calculation with data from Transportation Energy data book 2013, Department of Energy, tables 4.10 and 4.11. We have added all categories of vehicles: cars, vans, non-truck SUVs, pick-up trucks, and truck-SUVs by size: small, midsize, and large.
14. *Source*: Authors' calculation with data from National Transportation Statistics, Bureau of Transportation Statistics, table 1.17, updated 2013.

15. These figures include sales and leases. *Source*: Authors' calculation with data from National Transportation Statistics, Bureau of Transportation Statistics, table 1.17, updated 2013.
16. All the data presented in this part come from the national accounts published by the Bureau of Economic Analysis, and in particular table 2.4.5, which presents personal consumption expenditures.
17. For instance, in 2012, the net profit as percent of services and part sales amounted to 5.97%, while total dealership net profit as percent of total sales was 2.2%. *Source*: NADA Data Report 2013.
18. This data and the following in this part come from various tables of Transportation Energy Data Book, 2013, Department of Energy.
19. The 2009 National Household Travel Survey (NHTS) states that "almost thirty percent of the households in areas with a population density greater than 10,000 persons per square mile did not own a vehicle in 2009, a proportion that has remained steady since 1995" (NHTS, 2011, p. 36).
20. *Source*: The State of Automotive Finance Market, various editions, Experian.
21. The vast majority are house mortgages, with 73% of total households' debt at the time. *Source*: Fed of New York, HHD C Report, various issues.
22. Below prime is the sum of deep subprime, subprime and non-prime risks. The following development rests on Experian data unless specified.

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2

A Model to Follow? The Impact of Neoliberal Policies on the British Automobile Market and Industry

Tommaso Pardi

1 Introduction

From a comparative perspective, the United Kingdom has become a very unusual automobile country. On the one hand, its domestic market for new cars was second in Europe only to Germany and Italy before the 2008–2009 crisis, and in 2011, it was still the third largest European market behind Germany and France. Yet, despite the fact that the UK was historically home to a very significant automobile industry, this is a market that is now completely controlled by foreign importers, whose sales during the 2000s have accounted on average for more than 80% of the total (88.7% in 2011).

On the other hand, since the acquisition of the Rover Group by the German carmaker BMW in 1994, the UK no longer has any domestic players in the production of cars. Since the 2000s, the main actors have been Japanese, with the "transplants" of Nissan, Toyota and Honda concentrating on average over 50% of the total production (52.5% in 2011). Also, the British automobile industry has not only passed under the complete control of foreign multinationals, but has also become one of the most export-oriented in Europe, with over 84% of the production exported in 2011.

As a result of these two dynamics, what we observe in the UK, in particular during the crisis, is an almost complete disconnection between domestic automobile market and production. If such a configuration is quite common in developing countries used by foreign multinationals as low-cost basis for export towards high-wage countries, such as Mexico, Poland, Czech Republic or even, to a certain degree, Spain,

it is by all means unique amongst the old automobile nations in the TRIAD.

Its origins can be traced back to the neoliberal supply-side and market-oriented policies deployed by the British governments since Margaret Thatcher. These have been marked by the progressively abandoning domestic carmakers to their fate in the 1980s, the seeking of Foreign Direct Investments through the transformation of the UK into a low-cost, flexible, high value-added production base in the 1980s and 1990s, and the deregulation of the market for the sale and after-sale of new cars (Coffey & Thornley, 2009).

The record of these policies before and during the crisis is controversial. If the production of cars in Britain has increased regularly through the 1980s and 1990s, thanks in particular to the growing production of the Japanese transplants, it has never recovered its pre-oil shock level of 1973. Furthermore, it has suffered a steady fall during the 2000s and plummeted in 2009 to its lowest level since 1984 (1 million cars – 50% of the domestic sales). Yet, it spectacularly rebounded from 2010 onward, to the point of almost recovering its pre-crisis level in 2012 (see

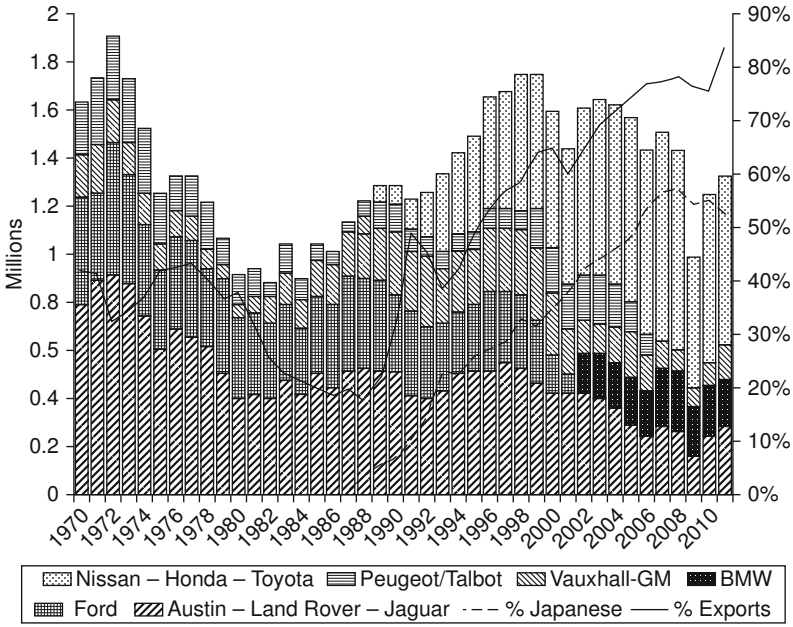

Figure 2.1 UK car production by group and brands (1970–2011)
Source: SMMT.

Figure 2.1), as a result outperforming most of the other European automobile industries (in particular the French and Italian).

Sales of new cars had already recovered their pre-oil shock level by the late 1980s, peaking at 2.3 million in 1989 before the 1991–1992 crisis made them drop to 1.6 million. It has then taken more than 10 years to surpass this level with a second peak in 2003 at 2.6 million. But from 2003 onward, the volume of sales of new cars has stagnated or fallen, dropping during the crisis below the 2 million bar, and in 2012, still hanging 15% below the 2007 level and 21% below the 2003 peak.

Yet, despite these mixed evidences, the dominant discourse favourable to neoliberal polices and reforms has systematically portrayed the impact of such policies in positive terms. Little attention has been paid to the evolution of the demand and to the inherent complete disconnection between market and production. Not surprisingly, the 2010–2012 export-led rebound of the British automobile industry has been hailed in Brussels as clear evidence that the problems of the European automobile industry were not demand-related but supply-related – namely, overcapacity and lack of competitiveness due to high labour cost and insufficient flexibility (Hosuk, 2012; European Commission, 2012a). Such a view is not only defended by the employers' organisations, which see through the crisis an opportunity to close old factories, reduce labour costs and relocate production to countries where costs are low with national and/or European financial support, but also by other stakeholders of the industry. This is notably exemplified by the EU report "Cars 21" that sets the European agenda for all the main stakeholders of the automobile industry, including unions and regional governments. The report problematises the crisis and the future of the sector mostly in terms of supply, with a double focus on environmental innovation (green cars) and industrial restructuring. If the report mentions the market, it is only to advocate further deregulation to foster competitiveness (EC, 2012, p. 14). Implicitly, such a literature clearly makes the UK – its export-oriented industry and its open and deregulated market – an example to follow.

In this chapter, we would like to develop a different view, one that focuses on demand and income distribution and analyses in detail all the implications of the British disconnection between market and production beyond the recent and contingent rebound of production. From this perspective, we will argue that the British configuration appears to be rather part of the problem (not the solution) in dealing with the ongoing crisis of the European automobile industry because it promotes what we will define as a double anti-Fordist dynamic (in the

production – through the reduction of labour costs and employment – and in the market – through the exclusion of the low- and middle-classes from access to new cars) that is fundamentally detrimental not only to automobile production but also to greener automobility.

The chapter is organised in four parts. First, we will review the process of disconnection between production and market, and assess its implications for the evolution of the industry and its stakeholders. Second, we will shift our attention to the implications for the demand for new cars of such a disconnection, and more generally, of the neoliberal policies that have sustained it. Third, we will focus more particularly on the behaviour of the market during the crisis, and its short-term and possibly long-term implications, both for demand and production. Fourth, we will conclude by discussing the ambition of the British government to make of the UK a favourable environment to produce and consume green cars and green technologies as a way to revamp domestic production and, possibly, reconnect production and demand through FDI.

2 Automobile production and market in the UK: progressive disconnection and Balkanisation

At the beginning of the 1970s, before the 1973 entry of the UK in the European Economic Community, British automobile production reached its highest level to date (see Figure 2.1) with 1.9 million of cars produced in 1972. Production at the time systematically exceeded domestic sales (see Figure 2.3) and around 40% was exported. The national champion British Leyland Motor Corporation (BLMC, later Austin Rover) accumulated almost 60% of the production; the rest was shared between the historical subsidiaries of the American multinationals: Ford, General Motors (Vauxhall) and, to a smaller degree, Chrysler (Talbot). These four carmakers also controlled the national market, cumulating slightly less than 80% of the sales, while imports were well below 20%.

But from 1973 onward, under the double impact of the first oil shock and of the entry of the UK into the EEC, imports started to increase rapidly: they surpassed the 50% threshold in 1979 and stabilised at around 55% during the 1980s. In the meantime, production was reduced by half and plummeted to its lowest level to date in 1982 (0.9 million) after the second oil shock.

As a result of this dramatic decline, BLMC was nationalised in 1975, and Talbot (Chrysler) was rescued by the Labour government and sold to Peugeot in 1978. Ford and Vauxhall took advantage of the difficulties of BLMC to increase their market share. But rather than producing

locally, they started importing the extra volume from their German subsidiaries. From 1979 onward, these "tied imports" represented over 30% of the total imports (37% in 1983). They were the result of two dynamics: the appreciation of the pound due to the anti-inflationist policy pursued by the Thatcher government since 1979, which made exports from Germany more profitable (see Figure 2.3), and the will of both multinationals (Ford in particular) to reduce their dependency on Britain because of its militant unions and troubled industrial relations (Tolliday, 2003; Foreman-Peck et al., 1995; Whisler, 1999).

The collapse of the national champion, and the impact of the tied imports marked a first divorce between the evolution of production and sales between 1977 and 1984 (see Figure 2.2). This was reinforced by the attitude of the Thatcher government, which had abandoned the previous Labour strategy of supporting ailing national champions in manufacturing. Rather than helping BLMC to recover its previous market share as a volume carmaker, it broke down the group and sold it by pieces: the Jaguar cars division to Ford in 1984, the truck and van division to DAF in 1987, and what remained – the Austin and Morris divisions and the Land and Range Rover products – to British Aerospace

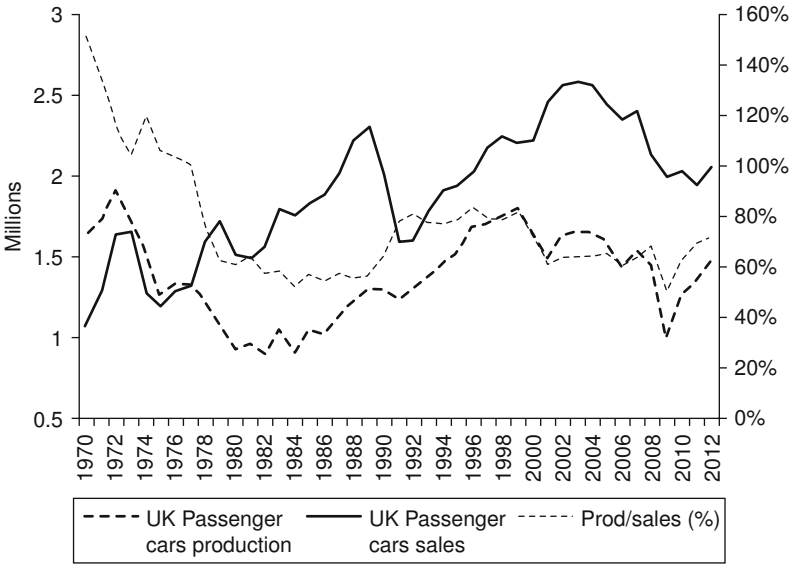

Figure 2.2 Cars production and sales in the UK (1970–2012)
Source: SMMT.

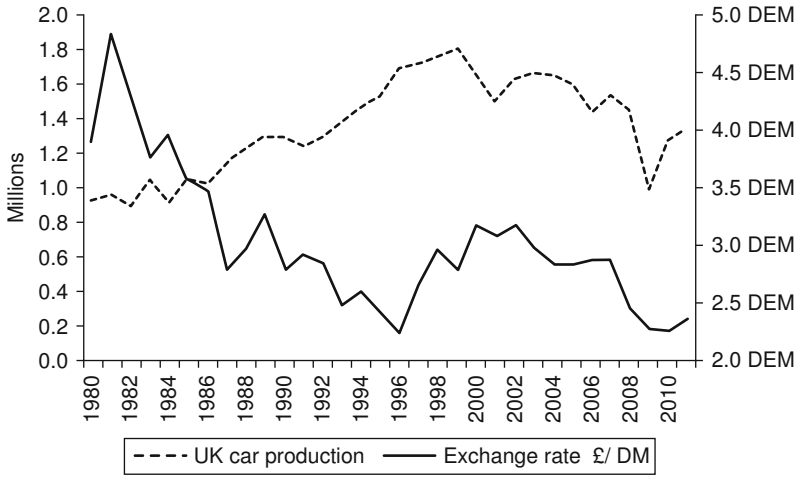

Figure 2.3 UK car production and the evolution of the £/DM exchange rate (1980–2011)

Sources: SMMT and Bank of England.

in 1988, which then resold it to BMW in 1994. In the process, almost all parts kept losing market share.

At the end of the 1980s, British production was slowly recovering, but it was still down to 55% of the domestic sales (against 77% 10 years earlier). Since only 20% of the production was exported, while 56% of the domestic market was supplied by imports, the deficit of trade for new cars was up to a record high of 9 billion dollars (see Figure 2.4).

In order to compensate for this loss of production volume and disastrous balance of trade, the government strategy was to attract FDI by turning Britain into a low-cost production base. Dismantling national champions was somehow part of the strategy, since most of them were union strongholds (Wilks, 1988). Curtailing union action through the law, deregulating the labour market, and providing financial and fiscal incentives to investors were the other levers. The Japanese carmakers that were looking for a point of entry into the EEC took this opportunity and created three production subsidiaries in the UK: Nissan Sunderland in 1984 and Toyota Burnaston and Honda Swindon in 1988.

By the beginning of the 1990s, the UK had turned into one of the cheapest places in Europe to produce cars. After the coordinated offensive against labour, and with the pound at 2.5 DM following the 1992 "Black Wednesday" devaluation (see Figure 2.3), total labour costs per hour in

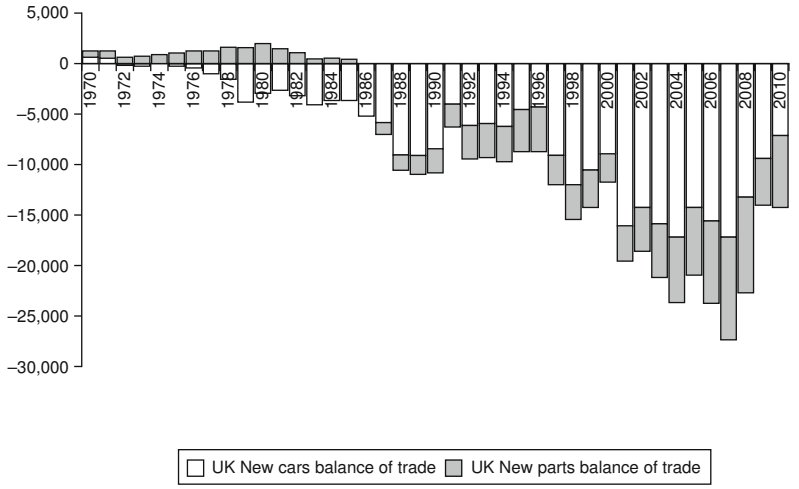

Figure 2.4 UK balance of trade for new cars and car parts (1970–2010)
Source: CHELEM.

the British automobile industry fell below those of Spain.[1] According to an internal audit of Ford UK, hourly labour cost in 1997 was $54 in the German factory of Cologne, $28 in the Spanish factory of Valencia, and $27 in the British factory of Dagenham (Tolliday, 2003, p. 104). Also taking into account the conversion of the British unions to the partnership approach, which provided employers with some of the most flexible working time agreements in Europe (Taylor & Ramsay, 1998), it is not surprising that production of cars started to increase, surpassing the 1.5 million threshold in 1995, and reaching a peak of 1.8 million cars in 1999.

Yet, even during this positive phase, the boasted "lean revolution" of the British automobile industry did not take place. The Japanese carmakers failed to take market share in the UK and in Europe. Hampered by insufficient volumes and/or by structural lack of flexibility (Pardi, 2007), the cumulated losses since the start of production of the three transplants in the UK amounted to £640 million by the end of the decade. As for the cumulated European losses of Toyota, Nissan and Honda in the 1990s, they surpassed the €3 billion.[2]

Their inability, in particular to take British market share (see Figure 2.6), meant that the British market was increasingly served by imports (from 56% in 1990 to 72% in 2000). This also meant that British automobile

production was increasingly dependent on exports (from 31% in 1990 to 65% in 2000), and therefore increasingly vulnerable to currency fluctuations. And, indeed, the appreciation of the pound from 1997 onward against the main European currencies (see Figure 2.3), and in particular after the introduction of the Euro in 1999, proved to be enough to unleash a drastic reduction in production and a wave of factory closures and redundancies.

The "Euro" crisis marked a second divorce between production and sales, pushing even further the disconnection between the two: production lost 306,639 vehicles between 1999 and 2001 (–17%), while sales grew by 261.154 vehicles (+12%). The crisis also sealed the fate of three historical British factories: Austin-Rover Longbridge, which was sold in 2000 by BMW for a symbolic £10 to a British consortium, only to delay its closure until 2005; and Ford Dagenham and Vauxhall Luton, which were both closed down in 2002.

When production started to grow again in 2003, following the depreciation of the pound, the share of the Japanese transplants increased to 44% and kept rising in the following years, reaching 57% in 2008. Inevitably, the share of exports also increased: from 69% in 2003 to 84% in 2011. The rise of exports was also due to the fact that what remained of British automobile production under foreign property were the export-oriented specialist divisions – Jaguar, Land Rover and Mini – that in 2011 represented 36% of the total production.

The fragility of such a configuration was exposed again by the impact of the financial crisis. In 2009, the fall in production (–31%) was the worst ever in a single year in the postwar history of the British automobile industry. This was due to the combination of two factors: On the one hand, demand dropped in the main export markets, and in particular in Europe, and in the US that represented, respectively, 58% (EU, p. 27) and 13.2% of exports in 2008 (CHELEM). On the other hand, the UK was the cheapest and easiest place in Europe to reduce production for multinational carmakers: the three Japanese plants, for example, which in 2008 employed 12,647 employees, all have drastically reduced their employment in 2009 and 2010. The UK manufacturing branch of Honda stopped production between February and May 2009: 1300 employees were voluntarily made redundant, with others accepting a 3% reduction in pay; Nissan made 1200 employees redundant in 2009; Toyota shifted to a four-and-a-half day working week, with a 10% pay cut for all employees starting from March 2009 and lasting until April 2010: 400 employees have quit the company in the meantime, and a further 750 were made redundant during 2010. To keep down redundancies, workers at Vauxhall (GM) agreed to a

new two-year pay freeze as part of a Europe-wide restructuring programme, following earlier concessions. And similar concessions, coming on top of the loss of agency workers and voluntary severance programmes, as well as shorter hours and less pay, were everywhere evident.

The rebound of production in 2010 and 2011 can be partly attributed to this restructuration process, which has further reduced production costs in the UK in a context of heightened intersite competition for production and investments in Europe. Yet, without the massive devaluation of the pound, which is down in 2010 and 2011 to its lowest rate ever against the Euro (see Figure 2.3), such an advantage would be much less significant. On the other hand, British factories have also profited from growing exports towards Asian markets, and in particular to China: from 8% and 2.7%, respectively, of the total exports in 2008 to 17.9% and 9.2% in 2010 (CHELEM). But one cannot help to emphasise the fragility of such a configuration. It is in fact highly probable that the exchange rate will soon rebound, because in the context of a very negative trade balance, a low pound means high inflation through more expensive imports (the consumer price index has risen to 5.5% in 2011, from 2.3% in 2007). The same is true for the exports to China that will be eventually replaced by local production.

All in all, as we can see from Figure 2.4 and Table 2.1, the record of the British automobile industry both in terms of balance of trade and employment during the 2000s has been quite poor. The automobile trade deficit reached a record high of £27.4 billion in 2007, and if it was reduced in 2009 and 2010, it is only because the domestic market for new cars was still depressed. Furthermore, the development of Japanese production has led to increased imports of parts and components from Europe and to the parallel weakening of the British component makers, once the spine of the industry. Employment and revenues of British component makers have decreased between 2000 and 2011 respectively by 53.5% (against a drop of 38.5% for carmakers) and 7.7% (against an increase of 19% for carmakers). This evolution clearly points to the hollowing out of the component industries through the imports of parts from either higher volume or lower wage cost component makers in Europe and the transformation of Britain into a low-cost assembly country.

If we focus now on the market, the main consequence of this progressive disconnection between production and domestic sales has been a process of Balkanisation of sales to the point that today it is almost impossible to identify a clear market leader in the UK.

As we stressed above, at the beginning of the 1970s the market leader (BLMC) controlled 38% of the market and the first three carmakers by

Table 2.1 Turnover, gross value added, employment and employment cost of British-based carmakers and component makers (1998–2011)

	Year	Number of enterprises	Total turnover £ million	Approximate gross value added at basic prices £ million	Total employment – average during the year Thousand	Total employment costs £ million
Manufacture of motor vehicles	1998	594	28,607	5438	123	3553
	2003	654	29,828	4092	91	3000
	2008	750	36,520	6392	77	3124
	2009	711	28,378	3398		2926
	2010	648	35022	6462		2923
	2011	659	41,451	6982	64	3047
Manufacture of parts and accessories	1998	1392	9107	3368	103	2175
	2003	1470	10,433	3039	95	2334
	2008	1672	10,855	2828	76	2021
	2009	1428	7493	1837		1524
	2010	1356	8789	2680		1505
	2011	1276	10,353	3057	47	1475

Source: Family Spending, ONS.

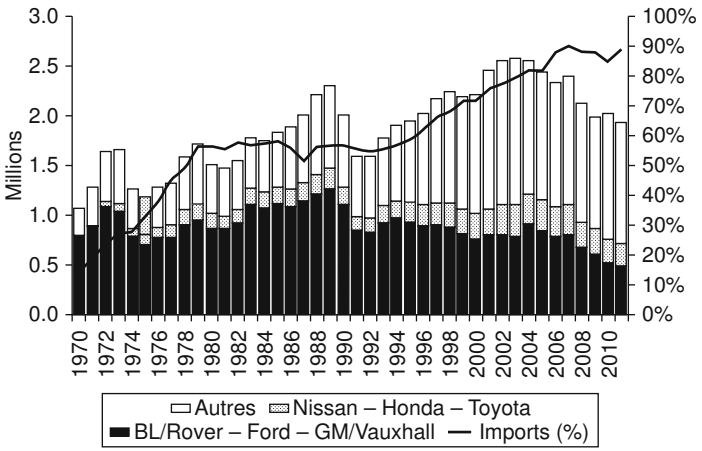

Figure 2.5 UK sales of new cars by groups (1970–2011)

Source: SMMT.

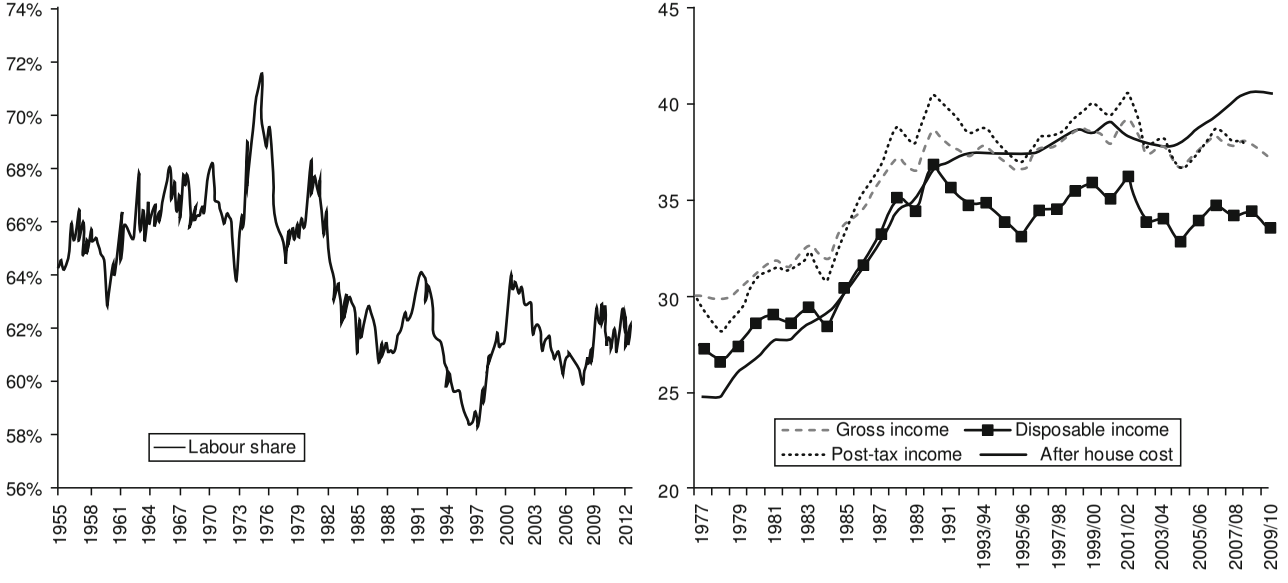

Figure 2.6 UK labour share (1955–2012) and Gini coefficient (1977–2010)

The labour share is based on whole-economy compensation of employees divided by nominal gross value added at factor cost (quarter data). The Institute for Fiscal Studies calculates GINI after-house cost by net incomes.

Source: ONS and Institute for Fiscal Studies.

sales (BLMC, Ford and Vauxhall) 75%. After the first "divorce" between production and sales in the late 1970s and early 1980s, Ford became the market leader (30.7% in 1980 and 25.3% in 1990) and the Big Three (Ford, Rover and Vauxhall) saw their market share drop to 57.7% in 1980 and to 55.4% in 1990. After the second "divorce" during the 1990s and 2000s, Ford leadership further shrank (16.8% in 2000) and was replaced by the Volkswagen group (VAG) as market leader in 2010 (17.2%). By this time, Rover was gone, and the first three carmakers by sales were two importers (VAG and Ford) and a very weakened domestic producer (Vauxhall): their sales were well below the 50% bar (43.1%). As regards the three Japanese carmakers – Nissan, Toyota and Honda – that were expected to replace the traditional market leaders on the domestic market, their cumulated market share in 2011 was 11.4% – only 1.5% more than in 1980 (9.9%).

To summarise, once domestic market leaders lose market power in a competitive and open market, as the UK became throughout this period, what emerges is a fragmented market that nobody can control and exploit as a domestic basis. That is why, in the end, even if the UK still has a large market for new cars, it does not have much else to offer but low production costs in order to keep or obtain production.

3 Incomes distribution, inequalities and market structure

The major impact of neoliberal policies on income distribution since the 1980s has been a reduction of the labour income share of national income and a sharp growth in income inequality.

The structural change from the postwar Keynesian configuration took place during the Thatcher and Tories years: the labour share dropped from 67.1% in 1980 to 58.4% in 1996 (annual data) and the GINI coefficient for post-tax incomes increased from 26.8 in 1980 to 38 in 1996. Elected to government in 1997, New Labour has substantially reproduced the same neoliberal policies without increasing or reducing labour share and inequalities: at the time the Tories returned to power in 2010, the labour share was 61.9%, and the GINI coefficient for post-tax incomes was 37.1% and 40.5% for net incomes after-house costs (see Figure 2.7).

Deregulation of the labour and product markets, the parallel diffusion of part-time, precarious and atypical jobs, and the implementation of fiscal policies favourable to corporate interests and high revenues were the main drivers of this radical transformation of the UK during the Thatcher and Blair years (Coffey and Thornley, 2009).

The analysis of the evolution of the distribution of household incomes by deciles of population shows a clear polarisation towards the richest (Table 2.2). The top decile is the one that has benefited the most from the neoliberal reforms: its share of total disposable incomes has grown from 21.3% in 1980 to 27% in 2010 (+27%). At the other extreme, the lowest deciles taken together (1st, 2nd and 3rd) have seen their share stagnate, while the "middle classes"(deciles 4th, 5th and 6th) are those who have suffered the most, their share having dropped by, respectively, 16%, 20% and 13%.

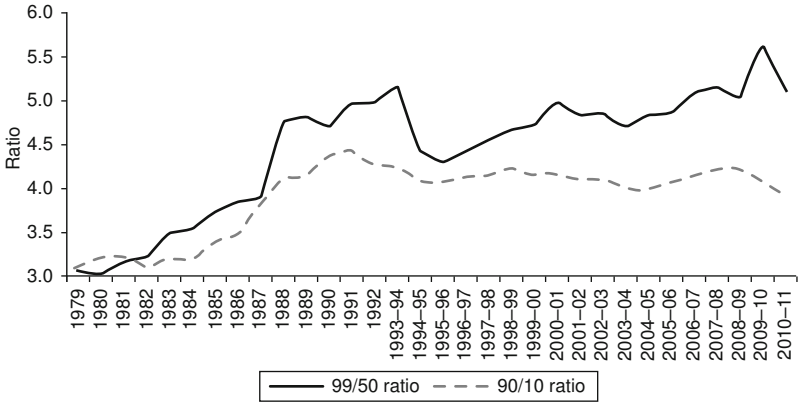

Figure 2.7 99/50 and 90/10 households' incomes ratios (1979–2011)
Source: Institute for Fiscal Studies (IFS Commentary C124).

Table 2.2 Evolution of the distribution of disposable incomes by decile rate (1980–2010)

	Bottom	2nd	3rd	4th	5th	6th	7th	8th	9th	Top
1980	3.1%	4.0%	5.6%	7.4%	9.0%	10.2%	11.5%	13.3%	14.6%	21.3%
1985	3.7%	4.4%	4.9%	6.7%	8.2%	9.9%	11.1%	13.0%	15.3%	22.9%
1990	2.6%	3.4%	4.2%	6.1%	7.9%	9.4%	11.3%	13.2%	15.7%	26.2%
1995	3.0%	4.2%	5.0%	6.2%	7.9%	9.5%	10.9%	12.9%	15.8%	24.6%
2000	2.6%	3.9%	5.1%	6.2%	7.6%	9.1%	10.8%	12.8%	15.4%	26.5%
2005	2.7%	4.3%	5.2%	6.3%	7.4%	8.9%	10.8%	12.8%	15.6%	25.9%
2010	2.8%	4.4%	5.4%	6.2%	7.2%	8.9%	10.6%	12.3%	15.2%	27.0%
1980–2010 growth rate	–9.7%	10.0%	–3.6%	–16.2%	–20.0%	–12.7%	–7.8%	–7.5%	4.1%	26.8%

Source: ONS.

The evolution of the 90/10 and 99/50 ratios since 1979 confirms the polarisation and shows that the ratio between the richest centile (99) and the median income (50) has grown much faster than the ratio between the richest decile (90) and the lowest one (10) (see Figure 2.7).

Due to this process of polarisation, a growing proportion of the population has fallen below the "relative poverty line".[3] The fraction of individuals with less than 60% of the median income has almost doubled under the Tories' office and was slightly reduced under the Labour office. But the fraction of individuals with less than 40% of the median income has almost constantly risen throughout the period, and was 9.9% – four times higher – in 2010 than in 1979 (2.5%) (See Figure 2.8).

The decline of the labour share, the rise of strong inequalities and the increased number of individuals below the relative poverty line have, of course, progressively transformed the structure of the market for cars.

3.1 The market for new cars: the rise of corporate fleets and the exclusion of low- and middle-income households

A first major change that occured from the 1980s onward concerns the composition of the sales of new cars. As we can see from Figure 2.9, fleet and business sales have progressively supplanted private sales as the main market for new cars (from 20.2% of the total market in 1980 to 44.2% in 1990, to 55.3% in 2000 and to 57.6% in 2011). Since company cars are the privilege of employees with high revenues – typically in the fourth and top quintiles – the fast-growing proportion of fleet sales has

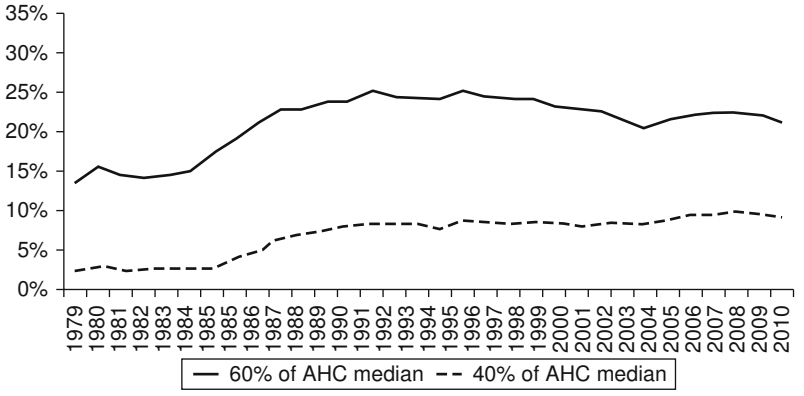

Figure 2.8 Fractions of individuals whose after-housing costs incomes are at 60% and 40% of the after-housing costs median incomes

Source: Institute for Fiscal Studies (IFS Commentary C124).

implied an increasingly inegalitarian access to new cars and reinforced the increasingly inegalitarian distribution of incomes (Froud et al., 2002). As a result, private sales of new cars to households have substantially stagnated since the early 1990s, and even before the crisis, they were well below their 1980 level (see Figure 2.9).

A second important change concerns which households can still afford to buy new cars and for which reasons. As we can see from Figure 2.10, the rate of households with no car or van has constantly decreased since the early 1970s from over 45% and stabilised at 25% in the late 2000s. But the rate of households owning one car and van has remained fundamentally stable since the early 1970s, while the proportion of households owning two, three or more cars has constantly risen. Now, according to the data collected from the Family Spending survey (2000–2001), the access to a second, third or more cars has been mainly the privilege, like for the company car, of the top three deciles by revenues, which also concentrated 62.5% of the total annual spending on new cars, against 4.9% for the bottom three deciles and 32.7% for the four middle ones. In other terms, new cars have been mainly sold during the last 20 years

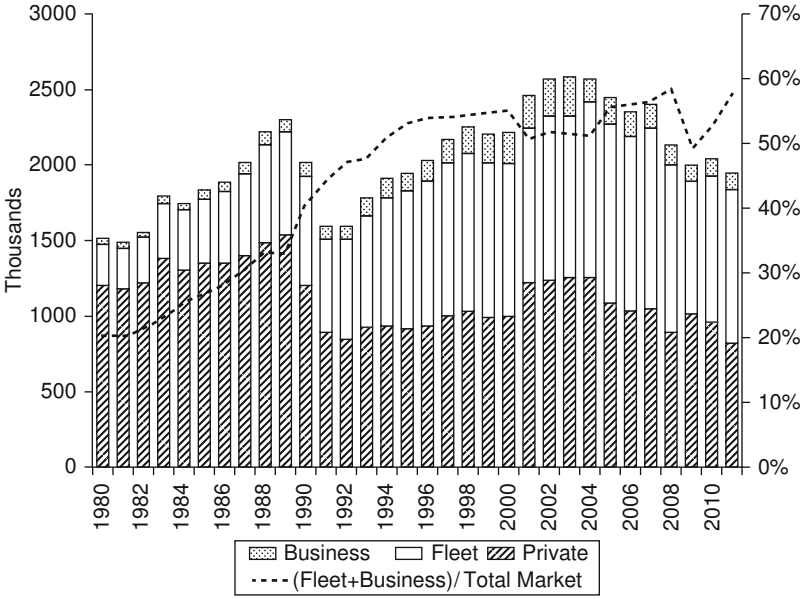

Figure 2.9 Cars sales by type (1980–2011)

Source: SMMT.

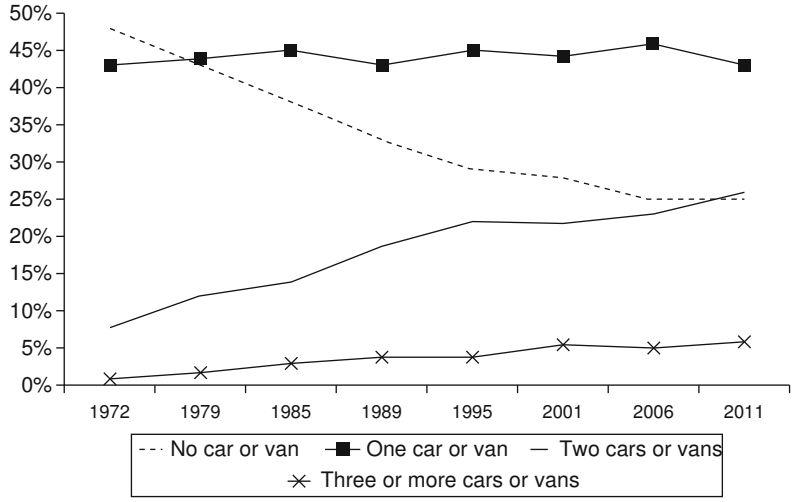

Figure 2.10 Households' access to car or van (1972–2011)
Source: ONS.

to the same households that already had access to a company car for the head of the family, as their second and third car. As a result of this trend, low- and middle-income households have been de facto excluded from the access to new cars (see Figure 2.11).

This process of exclusion also worked to a certain degree as a self-fulfilling prophecy. At the beginning of this period, carmakers started to consider that to keep selling cars in a competitive renewal market, they had to focus their offer on the segments of population that were more likely to renew their car or to acquire a second and a third car. Because they had to seduce consumers who already had a car, and often a quite new one, carmakers began to increase exponentially the variety and the rate of renewal of their offering. But since it was impossible to increase synchronically and diachronically the variety of the product range at constant prices, the average price of new cars tended to increase during this period, reversing the postwar trend that had made cars more affordable (Jullien & Pardi, 2011). Such an evolution, of course, made new cars less and less accessible to lower and middle classes that have shifted logically to secondhand cars.

3.2 The market for secondhand cars: choice, constraint and the burden of usage costs

Not surprisingly, since the late 1980s, the UK has developed the biggest European market for secondhand cars, with a ratio to new cars sales that

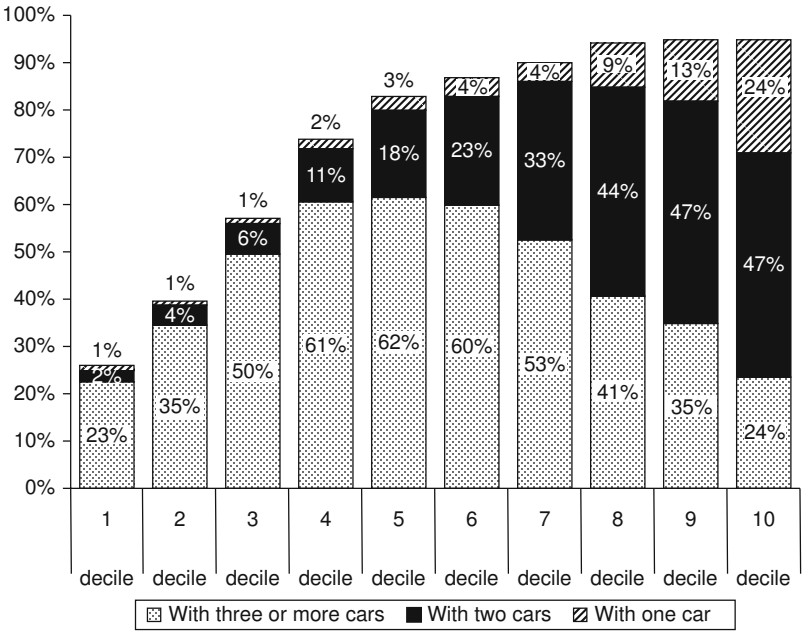

Figure 2.11 Access to one, two, three or more cars by households' deciles based on gross incomes (2001)

Source: ONS.

Table 2.3 UK licenced cars, used cars sales and new cars sales (1990–2011)

	Cars licensed	Used cars sales	%	New cars sales	%	UC/NC	Average age
1990	19,742	5694	28.8%	2009	10.2%	2.8	
1995	21,394	7842	36.7%	1945	9.1%	4.0	6.8
2000	24,406	6802	27.9%	2216	9.1%	3.1	6.9
2005	27,520	7259	26.4%	2440	8.9%	3.0	6.6
2006	27,609	7433	26.9%	2345	8.5%	3.2	6.7
2007	28,000	7059	25.2%	2404	8.6%	2.9	6.8
2008	28,161	6651	23.6%	2132	7.6%	3.1	6.9
2009	28,246	6301	22.3%	1995	7.1%	3.2	7.1
2010	28,421	6657	23.4%	2031	7.1%	3.3	7.3
2011	28,467	6690	23.5%	1941	6.8%	3.4	7.5

Source: ONS.

was on average higher than 3 and amongst the highest in Europe (it was 3.4 in 2011 – see Figure 2.14).[4]

This huge market for secondhand cars has fundamentally developed into two distinct markets (see Figure 2.12). The first is controlled by the dealers' network and concentrates around 53–56% of the volume and 74–77% of the value of the market.[5] These cars are sold on average at half the price of the new cars sold by the same dealers and are mainly cars less than 5 years old (60.1%). The second market is made up of private transactions and concentrates around 36–41% of the volume and 18–21% of the value of the market. These cars are sold on average at 17% of the price of a new car and at one-third of the price of a second-hand car sold by a dealer. They are mainly cars more than 9 years old (63.8% of the total).[6]

Broadly speaking, the first market belongs broadly to the same social world of those who can afford a new car, but for whom a used car is an alternative, in particular in hard times. The second market, by contrast, belongs to the world of those excluded from new cars by constraint (and

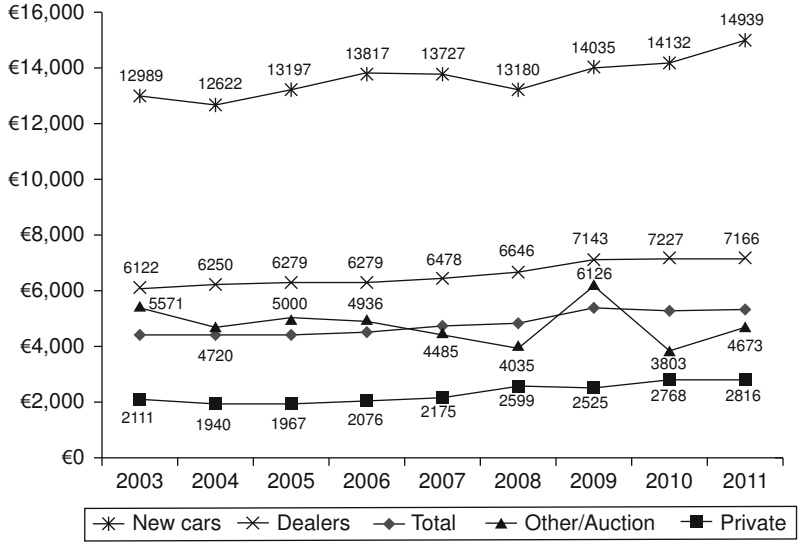

Figure 2.12 Average transaction price of secondhand cars by type of sale, and of new cars sold by dealers (2003–2011)

Source: Used Car Market Reports (BCA); http://www.buckingham.ac.uk/research/cam/publications.

not by choice): these people drive cars older than 9 years (43% of the total licenced cars in 2011 and 64% of the secondhand cars sales sold privately)[7] that cost on average less than £1,000.

Access to a secondhand car though, in particular when it is an old one that requires regular repairs and has high fuel consumption, is not necessarily a "good deal" for low-revenue households. Indeed, if households can trade-off between new and used cars, or between a recent and an old used car, they cannot avoid the higher usage costs (in particular petrol consumption and repairs) associated to used cars especially old ones. Furthermore, as we can see from the Table 2.4, usage costs have grown much faster than purchase costs and gross incomes. This has not only been due to rising oil costs, but also to the growing inability of carmakers of making money on the sale of new cars to wealthy households, shifting, as a result, the burden of their profitability on the sale of spares to the poorer ones (Jullien, 2002).

As expected, usage costs are proportionally much higher and more difficult to deal with for low-income households than for high-income households (Froud et al., 2005). For instance, according to the family spending survey of 2000–2001, usage costs represented 80% of total motoring costs and 27.6% of the gross incomes of households owning a car in the poorest quintile, against, respectively, 55.1% and 5.3% in the richest.[8] The households in the poorest quintile would notably spend

Table 2.4 Average British household motoring expenses (1988–2011)

	Income (gross)	Spent on motoring	Cars, vans, motorcycles purchase	Repairs, servicing, spares and accessories,	Fuel and oil	Vehicle insurance and taxation	Other
1988	£14252	£1320	£569	£167	£344	£203	£37
	100	100	100	100	100	100	100
1992	£18,493	£1863	£830	£224	£271	£271	£68
	130	141	146	134	79	133	186
1995–1996	£20,364	£1931	£725	£240	£558	£313	£89
	143	146	128	144	162	154	243
2001–2002	£28,891	£2475	£1347	£366	£770	£353	£94
	203	187	237	219	224	174	257
2006–2007	£34,661	£2693	£1190	£420	£955	£396	£127
	243	204	209	252	277	195	348
2010–2011	£37741	£2901	£997	£480	£1299	£490	£125
	265	220	175	287	377	241	342

Source: "Family Spending", ONS.

more annually on spares, accessories, repairs and servicing per car owned than those of the richest quintile (£480 against £366).

Clearly, households' motoring expenses have not only been affected by the growing unequal distribution of revenues but have also been drivers of inequality, insofar as the exclusion from new car ownership has forced a growing proportion of the British population to deal with growing usage costs.

3.3 The role of credit: consumption without purchasing power

The 1980s, 1990s and 2000s have not only witnessed growing inequalities but also a booming provision of consumer credit. Credit has not only partially offset the difficulties lower- and middle-income households have accessing expensive durable goods such as new cars, but also, its exponential development has more fundamentally nourished the mirage of economic growth without distribution of purchasing power.

If just 42% of households were using some form of consumer credit in 1979, by 1989, this figure had grown to 60%, and at the beginning of 1999, it stood at 63% (Whyley et al., 2000, p. 11). At the beginning of the 2000s, the amount of outstanding unsecured consumer credit in the UK economy had increased 11 times since 1979 to reach £122 billion, equivalent to £3,425 for every adult. Before the crisis, in 2007, it was at £222 billion, equivalent to £4,678 for every adult.[9] Consumer credit has not only concerned lower-income households: the increase in debt-income ratios of British households during the second half of the 1990s appears to be larger among the youngest and the lowest-income households (Cox et al., 2002). According to the NMG consulting survey (Bank of England) of British households, by the end of the 2000s, the poorest quartile (with gross annual income up to £17,500) held 27% of the total unsecure debt. The amount of this debt and its annual cost represented respectively 41% and 12.7% of their income (against 21% and 10.4% for the second quartile).

The importance of consumer credit for the purchase of new and secondhand cars is confirmed by the Family Spending Survey: before the crisis, in 2007, around 71% of the purchase of new cars, and 48% of secondhand cars, were financed through some form of loan. When new car sales had peaked 4 years earlier at some 2.6 million registrations, many analysts considered this figure unsustainable, due to the strong marketing incentives and low-rate finance offered at the time by the carmakers (Cooke, 2011, p. 61).

Yet, if the British households during this period have become some of the most in debt households in Europe and in the world (IMF, 2011,

pp. 4–5), this has been due mainly to the growth of secured credit on dwellings, in particular since the late 1990s. Whereas unsecured personal debt has grown from £130 billion in December 2000 to a peak of £225 billion in December 2008, secured personal debt has grown during the same period from £520 billion to over £1200 billion. This represented around 55% of the UK's GDP in 2000 and almost 90% in 2008. As a result, the ratio of households' financial liabilities to disposable incomes has risen by 53% during this period, to reach, in 2009, an average of 166% (*source*: ONS).

The fast expansion of secured credit has been directly linked to the increase in house prices. Between 1998 and 2007, real UK house prices rose on average 9.4% per year, which is roughly the same rate of increase of secured debt held by households (IMF 2011). What happened is that in a rising market, banks were willing to lend at high earning multiples and loan-to-value ratios, and consumers anticipated capital gains from house purchases. This interlinked dynamic led to the formation of the house price bubble (European Commission, 2012b).

Until the crisis, this very high and growing level of debt did not hamper the capacity of households to consume: quite the contrary, as long as the house prices kept rising, middle-income households with secured debt saw the value of their assets increasing faster than the cost of their debt, and they were therefore willing to reduce their saving ratio or to take on more debt in order to keep consuming.

When the bubble burst in 2008, the savings ratio of households fell to a record low of –0.2%, from around 6% in 2000 and 9% in 1997 (*source*: ONS). After the burst, an important correction occurred: house prices fell by slightly more than 10% in 2008 and 2009, the ratio of household loans to disposable income decreased from over 160% to 140% by year-end 2011, and the saving ratio increased to 8% by year-end 2011. As a result, due to the sharp reduction in both earnings and net wealth, households have drastically reduced their consumption, and the economic recession set in.

4 The impact of the crisis on the automobile market and the public policy's responses

The recession that began in 2008 is the longest and the worst that the UK has known in the postwar era.[10] The comparison with the 1979 and 1990 recessions in Figure 2.13 illustrates the magnitude of the crisis and its lasting impact on net national income and net real household actual income per head.

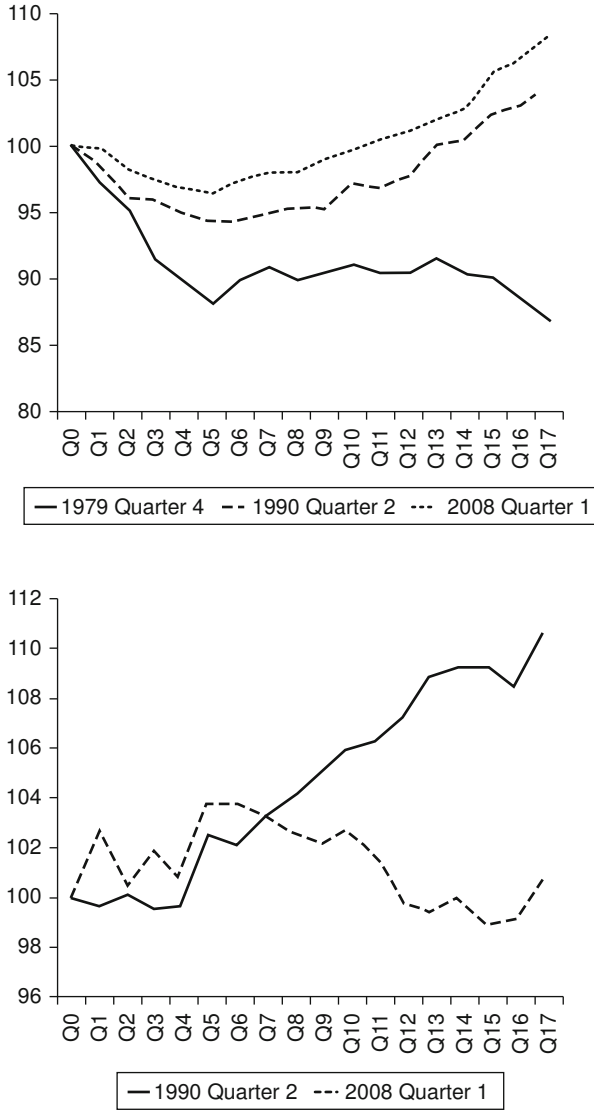

Figure 2.13 Net national income per head during three recessions (top) and net real household actual income during two recessions (bottom)

Source: *Measuring National Well-being, The Economy*, ONS (2012), http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/the-economy/art-economic-well-being.html.

Confronted with rising unemployment (from 5.7% in 2007 to 8.1% in 2011), declining earnings, revenues and assets (see above), and growing inflation (from 2.3% in 2007 to 5.5% in 2011), the capacity of households to consume has been substantially eroded (see Figure 2.14).

As a percentage of total household expenditure, motoring expenditures have remained substantially stable, fluctuating between 13.6% in 2007, 13.3% in 2009 and 14.1% in 2011. Yet, when analysed in detail (see Table 2.5), the evolution of motoring expenditure during the crisis reveals substantial changes. On the one hand, the expenditure due to the operation of personal transport kept increasing between 2007 and 2011 (+26.4%), driven in particular by rising petrol costs (+36%). On the other hand, the purchase of vehicles, in particular new (–29.8%) but also used (–10.1%), has significantly dropped (–16.2%) during the same period. If in 2007, 8% of the households in the sample of the family spending survey could afford a new car, this ratio was reduced to 5.8% in 2009 and 5.2% in 2011, and the same was true for the purchase of secondhand cars (from 22.2% in 2007, to 18.5% in 2009 and 17.6% in 2011).

In terms of distribution of motoring expenditures, the crisis neither increased nor decreased the unequal access to new cars. The richest

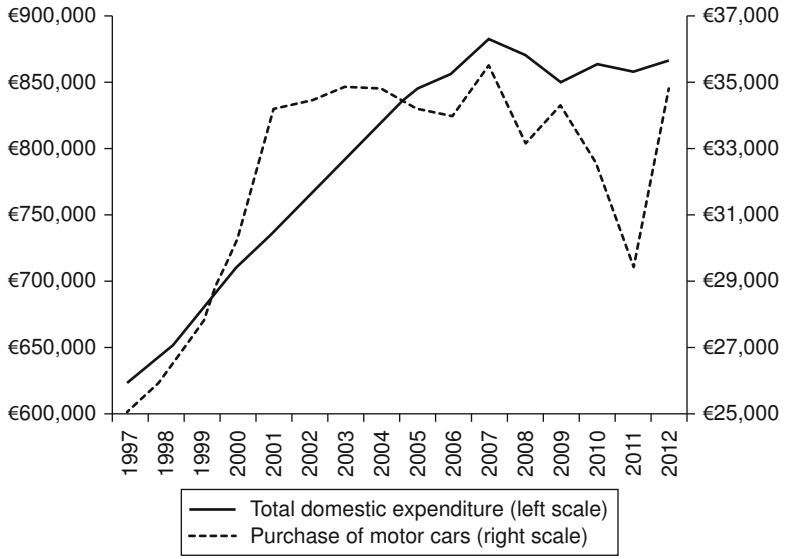

Figure 2.14 UK total domestic expenditure and total purchase of motorcars (1977–2011)

Note: In million pounds.

Source: ONS (Social Trends).

Table 2.5 Detailed average households' motoring expenditure in 2007, 2009 and 2011

	Average yearly expenditure of all households (£)				Percentage of households that spend in each category			
	2007	2009	2011	% (2007–2011)	2007	2009	2011	% (2007–2011)
Transport	3218	3047	3428	6.5%				
Motoring	2693	2546	2896	7.5%				
Purchase of vehicles	**1190**	**1017**	**997**	**–16.2%**	**29.8%**	**24.0%**	**23.1%**	**–22.4%**
Purchase of new cars and vans	**407**	**339**	**287**	**–29.5%**	**8.0%**	**5.8%**	**5.2%**	**–35.7%**
Outright purchases	230	183	162	–29.6%	2.5%	1.9%	1.7%	–30.8%
Loan/hire/purchase of new car/van	177	157	125	–29.3%	5.7%	3.9%	3.6%	–36.7%
Purchase of secondhand cars or vans	**749**	**647**	**673**	**–10.1%**	**22.2%**	**18.5%**	**17.6%**	**–20.7%**
Outright purchases	463	417	438	–5.3%	13.0%	10.6%	10.3%	–20.6%
Loan/hire/purchase of secondhand car/van	286	230	235	–17.9%	10.3%	8.9%	8.4%	–18.5%
Operation of personal transport	**1503**	**1529**	**1899**	**26.4%**	**86.6%**	**73.6%**	**79.7%**	**–7.9%**
Spares and accessories	100	104	110	9.3%	9.6%	8.1%	8.4%	–12.5%
Petrol, diesel and other motor oils	955	1002	1299	36.0%	76.3%	65.4%	70.9%	–7.0%
Repairs and servicing	320	308	370	15.6%	36.7%	30.5%	33.1%	–9.9%
Other motoring costs	**127**	**115**	**125**	**–1.7%**	**45.7%**	**36.7%**	**39.8%**	**–7.4%**

Source: Family Spending, ONS.

Table 2.6 Distribution of new car spending between gross income deciles (2007–2011)

	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	Company registered*
Percentage of new car spending						
2007	3.4%	9.9%	15.6%	20.5%	50.6%	57%
2008	2.4%	9.3%	18.5%	23.5%	46.3%	58%
2009	3.8%	10.6%	17.3%	25.3%	42.9%	49%
2010	3.5%	8.0%	17.3%	25.7%	45.6%	53%
2011	1.5%	9.8%	15.6%	29.8%	43.3%	59%
Percentage of used car spending						
2007	4.4%	9.8%	16.9%	28.8%	40.2%	
2008	4.7%	7.8%	17.0%	24.6%	45.9%	
2009	3.9%	12.0%	15.7%	27.0%	41.4%	
2010	3.6%	11.2%	14.7%	27.8%	42.8%	
2011	4.1%	11.5%	13.5%	26.2%	44.7%	

Note: * Percentage on volume.
Source: Family Spending, ONS.

quintiles already equipped with new or recent cars have delayed their purchase or shifted to newer secondhand cars, and amongst the poorest quintiles, very few (less than 2% of the households in quintile 1 and 2) have taken advantage of the scrappage scheme in 2009 and 2010 to trade in their old cars for a new one (see Table 2.6).

This increasing inability of households to consume, in general, and to purchase new cars, in particular (see Figure 2.14 above), significantly affected the automobile market of course. The sales of new cars have fallen almost 20% below their 2007 level in 2009 and have remained flat through 2010 and 2011.

The business market, which concerns fleets of less than 20 cars, has been the most affected: since 2009, it has stagnated around 40% below its 2007 level (see Table 2.7). The fleet market has fallen 26.1% below its 2007 level in 2009, and recovered only slightly in 2010 and 2011. The private market has fallen by 14.7% in 2008, then recovered in 2009 and 2010, boosted by the scrappage scheme introduced by the government, but has fallen again in 2011 to 21.3% below its 2007 level, and 34.5% below its last peak level in 2004. With 823,094 new cars sold to households, in 2011, the private market was at its lowest level since the late 1960s, and 32% below its 1980 level.

Table 2.7 Evolution of UK fleet, business, private and total car sales (volume) since 2007 (2007–2011)

	2007	2008	2009	2010	2011
Total	100	88.7	83.0	84.5	80.8
Fleet	100	92.9	73.9	81.5	85.3
Business	100	79.3	60.2	61.0	60.6
Private	100	85.3	97.0	91.6	78.7

Source: SMMT.

4.1 The scrappage scheme: a temporary success, but a poor solution

Besides the short-term 2008–2009 cut in the general rate of value-added tax (VAT) (from 17.5% to 15%), the April 2009–March 2010 scrappage scheme has been the main sector-specific measure taken by the government to sustain automobile demand and production in the UK. The scheme entailed a £2000 discount to car buyers who simultaneously scrapped a car more than 10 years old and owned for more than 12 months, jointly financed by the government and by cooperating carmakers. Initially expected to fund the replacement of 300,000 vehicles, it supported a somewhat larger figure – 285,000 vehicles in 2009 and 107,000 in 2010 (393,000 in total, equivalent to 20% of the total market, and 39% of the private market).

Despite its success in preventing the collapse of the sales of new cars in 2009 and 2010, the scheme has been criticised from different angles. First, it has been denounced for having almost entirely profited importers, which is not surprising at all, since almost all of the British sales of new cars were already imported before the crisis. Korean carmaker Hyundai-Kia benefited the most from the scheme, cumulating 20.3% of the subsidised sales and almost doubling its market share as a result (from 3.6% in 2008 to 6.6% in 2010). This means that around £400 million of public money has been used to subsidise imports, and notably imports from outside Europe, with no British content whatsoever.

Second, it has been argued that the scheme would make new cars cheaper at the expense of making old cars dearer – because of the number taken off the market – and that would favour, as a result, those who were better off (Hanlon, 2012). Evidence suggests that this might have been the case. As we can see from the Figure 2.12 above, the transaction prices of secondhand cars have increased much faster from 2009 onward than in the previous period (in 201,0 the average transaction

price of a secondhand car was 9.3% higher than in 2008), whereas the cars sold were in fact on average older in 2010 than in 2008.[11] However, the average transaction price of new cars also increased faster than in previous years (+7.2% between 2008 and 2010), probably because carmakers took advantage of the scheme to raise the prices, but also because the depreciation of the pound made imports dearer. At any rate, the average prices of both new and secondhand cars increased substantially under the scheme, paradoxically making it harder in the midterm for the low and middle classes to purchase cars.

Third, while the government claimed that the scheme had a beneficial impact on the environment, because the emissions for new cars bought under the scheme were lower by around 27% on average than those for scrapped cars, critics have contested this view. It has been argued that the production of new cars and the scrapping of old also produces CO_2 emissions (Coffey & Thornley, 2013), that car owners are inclined to drive new cars more frequently than old, that the scrappage scheme did not target environmentally unsound cars but was non-discriminatory, and that many still-serviceable cars were prematurely disposed of (Crossley et al., 2010).

Finally, the scheme has been criticised for what is probably its most problematic side in the current configuration: its short-term stopgap dimension. Scrappage schemes in fact do not increase the total number of sales in a longer period: their objective is to bring forward sales that would occur later to offset the immediate impact of the economic slump. However, if the economy does not recover, the sales brought forward will be missed later, while in the meantime, the crisis further erodes the purchase power of households. This argument was made most notably by the Institute of Fiscal Studies (IFS), a leading independent body, which has attacked the scheme as constituting a weak and ineffective form of fiscal stimulus, too specifically targeted at one industry (Crossley et al., 2010). The 2011 drop in the sales of new cars (–4.5%) seems to confirm this view.

5 Towards a green market and a green industry?

In 2009, in the midst of the crisis, the labour government created the Office for Low-Emission Vehicles (OLEV) – a cross-departmental unit composed of staffing and funding from the Departments for Transport, Business Innovation and Skills, and Energy and Climate Change.[12] One year later, the newly elected conservative government has committed £400 million through the OLEV, to be spent in the following 5 years to

support ultra-low emission vehicles (ULEVs). The most important measures concern the subvention up to £5000 of the purchase of an electric vehicles (EV) or a plug-in hybrid-electric-vehicles (PHEV), which is available since January 2011; the subvention up to £8000 of the purchase of EV and PHEV commercial vehicles of 3.5t or less, which is available since February 2012; a £30 million scheme to install recharging points; and around £80 million to support low carbon vehicle research, development and demonstration projects.

While the amount committed by the British government may seem substantial, it is dwarfed in comparison with similar plans in Europe. If we take for instance the *plan national pour le développement des véhicules électriques et hybrides rechargeables* launched in 2009 in France, whose market for new cars is around the same size of the British one, the amount committed by the French government is more than four times bigger – €1.9 billion (Hildermeier & Villareal, 2012).

This difference can be explained by the fact that France still has domestically owned car manufacturers, and one in particular, Renault, has been the first car manufacturer worldwide to launch a full range of electric vehicles. Therefore, by generously supporting the purchase of EV and PHEV vehicles and the installation of recharging points, the French government was explicitly supporting its "national champion" and its domestic motor industry, which still controls more than 55% of the national market.

However, though smaller in size, the objectives of the OLEV are similar to those pursued by the French plan. For instance, according to the Automotive Council UK, also created in 2009 to support the industry through the crisis and to attract further investments from abroad, "OLEV was established specifically to position the UK as a world leader in the development, demonstration, manufacture and use of ultra-low carbon automotive technology".[13] The government ambition was clearly to combine ecological targets with industrial development as a way to revamp a sector that was in 2009 down to its lowest production level in decades.

While it is too early to evaluate the results of these policies whose final horizon is set to 2050, it is still possible to review their ambitions in the light of analysis of British automobile production and the market developed earlier in this chapter, and in particular by taking into account their mutual disconnection and the growing unequal access to new and newer cars highlighted in the previous sections.

5.1 Can green cars reconnect market with production?

One could argue that the promotion of EV and PHEV by the government could help reconnect the UK market and production. Nissan, Britain's main car producer, started to produce its EV model, Leaf, in

its Sunderland plant in 2013. Toyota has produced a hybrid version of the Auris in the Burnaston plant since 2010, and is expected to produce a plug-in version of the same model in a near future. The EV Vauxhall Ampera could also be produced in Britain, while Mini (BMW) and Jaguar (TATA) have developed EV prototypes, but have not announced yet if and when their production will start.

However, this prospect appears highly improbable for at least two reasons. First, despite the availability of the grants, the sales of EV and PHEV models have remained so far very low, and even according to the most optimistic expectations, this should still be the case for many years to come. For instance, between January 2011 and March 2013, only 3633 claims were made through the OLEV plug-in car grant scheme, which amounted annually to 0.1% of the market for new cars during this period.

Second, if a mass market for EV and PHEV cars takes off one day in Britain, there is no particular reason why models manufactured in Britain would increase their market share faster than models that are imported. EV and PHEV cars have already started to be produced in France, Germany, Italy, and Spain, as well as in Central and Eastern European countries, and, as is already the case for thermic cars, carmakers with British factories will not have any specific advantage in selling this new generation of cars.

Another possibility is that the UK will succeed in attracting new FDI directed at developing and manufacturing EV and PHEV cars by creating a domestic environment particular favourable to their design, production and sale. Yet, as we have stressed above, the record of such a policy for the production of thermic cars has been rather poor in the last 30 years or so, and there is no reason why this should not be even more the case in the years to come. On the one hand, it is very difficult to see why traditional European carmakers would locate their production or design of EV and PHEV cars outside their own domestic basis, unless engineering and production costs were significantly lower – and this is not the case of the UK in comparison with Central and Eastern European (CEE) countries. On the other hand, if Japanese carmakers did not have too much choice in the 1980s – the UK being the only major European car country in the EEC ready to welcome them – Korean and Chinese carmakers have the choice today in the EU, and clearly prefer to locate their production and R&D investments in low-cost CEE countries.

5.2 Can green cars reverse the inegalitarian access to motoring?

As we have seen, during the 1990s and 2000s, new cars have become luxury goods that only a small and shrinking part of the population in the UK could afford. One could wonder, therefore, if the "green

revolution" can reverse this trend. Or to frame the same issue differently, one could argue that for a "green revolution" to take place, as the government wishes, such a trend should be reversed.

The main argument in favour of a rapid diffusion of EVs and PHEVs is that they are, at least on paper, much cheaper to use, and we have seen to what extent the growing costs of operating a car (and in particular an old, secondhand car) have become a major financial burden for low- and middle-revenue households. Not only do these cars consume little or no fuel, but EVs, in particular, due to the absence of both the combustion engine and the mechanic complexity inherent to its functioning, also require much less repair and parts' replacement during their life cycle.

Yet, the problem is that EVs and PHEVs are very expensive to buy. The objective of the £5000 and £8000 OLEV grants is not to make them affordable, but to lower their price to the same level of similar thermic vehicles, which means that only the rich will be able to afford this kind of car. Indeed, EVs and PHEVs so far have been conceived to sell to fortunate customers, and for this reason, they incorporate the same standards in terms of speed, comfort and technology that have made thermic cars more and more expensive to buy during the last 30 years. Furthermore, as the recent success of very expensive, "gas guzzler" cars such as SUVs demonstrates, these customers are the least concerned by usage costs, and therefore, are the least motivated to shift towards EVs and PHEVs. That is why, to persuade them to make this shift, EVs and PHEVs have to be as big, as heavy, as fast and as expensive as those cars – which of course makes EVs and PHEVs not only expensive to buy, but also more expensive and less practical to use by secondhand consumers than if they were lighter, smaller, slower and, ultimately, greener.

This schizophrenic trend is clearly visible in Table 2.8: while the average new car sold in the UK has seen its consumption and its CO2 emissions reduced by 21.9% and 21.3% between 2001 and 2011, respectively, its mass, weight, power and speed have all increased during this period as has, of course, its price, which has grown on average by 4.6% per year in current prices and by 2.4% in real prices.

If this trend continues, and nothing suggests otherwise, the chances of EVs and EPHEs to spread beyond very marginal market shares will be slim, and their chances to grow on the secondhand market are even slimmer. In other terms, if OLEV and the government do not explicitly include a substantial reduction of prices of new green cars amongst their main objectives, their ambition to revamp and transform British automobile production and consumption through

Table 2.8 Main features of the average car sold in the UK market (2001–2011)

	2001	2007	2008	2009	2010	2011	2001–2011 (%)
Sales (thousand)	2458	2404	2131	1989	2025	1937	–21.2
Average price (£)	14,313	17,260	17,470	17,939	19,378	20,952	46.4
CPI yearly increase		2.3%	3.6%	2.1%	3.3%	4.5%	24.2
Top speed (km/h)	182	191	191	188	188	190	4.4
Engine power (kw)	78	91	90	88	90	93	19.2
Engine size (cm)	1701	1778	1745	1683	1694	1698	–0.2
Mass in running order (kg)	1251	1395	1383	1364	1393	1406	12.4
Gross weight (kg)	1681	1855	1854	1821	1851	1867	11.1
Length (mm)	4170	4267	4251	4217	4238	4268	2.4
Width (mm)	1704	1761	1760	1759	1765	1773	4.0
Height (mm)	1466	1508	1508	1511	1519	1519	3.6
Wheelbase (mm)	2560	2609	2607	2591	2601	2611	2.0
Fuel consumption (l/100km)	7.3	6.6	6.4	6.1	5.9	5.7	–21.9
CO_2 (g/km)	178	164	158	151	146	140	–21.3%

Source: Mock (2012).

green cars is condemned to fail. Conversely, if this dominant configuration prevails, the hope that green cars can reverse or reduce the trend in the UK towards a growing unequal access to cars has no justification.

6 Conclusion

In this chapter, we have investigated the impact of the ongoing financial and economic crisis on the production and consumption of cars in the UK from an historical perspective. We have developed our analysis from two angles that correspond to distinctive features of the British configuration. First, we have reviewed the implications of the progressive disconnection between the production and consumption of cars in the UK, as it has emerged from the late 1970s and up to the 2009 crisis. Second, we have assessed the impact that the declining labour income share and increasing income inequality has had on automobile markets for new and secondhand cars before and during the crisis. Since the origin of these dynamics can be clearly traced back to the neoliberal policies introduced by Margaret Thatcher from 1979 onward and

reproduced by the succeeding Conservative and Labour governments that followed, the chapter has also considered to what extent the results of these policies in terms of automobile production and consumption in the UK can be hailed, as has often been the case, and in particular during the ongoing crisis, as a model for other automobile countries to follow.

The chapter shows that, from both the angles we have retained for our analysis, this should not be the case. First, while it is apparent that the disconnection between market and production has been the result of policies aiming at restructuring the British automobile industry through FDI and the import of manufacturing methods, it is also apparent that the results of these policies have been quite disappointing. Production certainly recovered through the 1990s, thanks to the Japanese transplants, but it never managed to attain its pre-1970s crisis level and has declined markedly through the 2000s. The same can be said of employment, the decline of which has been much more important due the increase in externalisation of production inside, but also outside, the UK.

Even before the financial crisis, British automobile production had become completely dependent on exports and on investment decisions taken elsewhere by foreign multinationals. As a result, to keep its automobile production, the UK has to rely on the reduction of production costs through low wages and precarious employment, on the preservation of a relatively low pound, and on the availability of state aids and favourable fiscal measures. From this perspective, the rebound of production in 2010 and 2011 – after the dramatic fall of 2009 – is fundamentally linked to exceptional circumstances: an exceptionally low pound and an exceptional surge of exports to China. These circumstances cannot last, because the low pound is fuelling inflation and trade deficits through more expensive imports, and because China has already become the main worldwide producer of cars and is systematically substituting imports with local production forcing international carmakers through different trade measures to invest and produce in China.

Second, the diminishing labour share of national income and the interconnected growing inequality in the distribution of income have progressively reduced the access to new cars of households but the richest ones. This process of exclusion of low- and middle-income households from new car ownership has been made worse by the rapid increase of growing usage costs. Paradoxically, the increase in usage costs is due, at least in part, to carmakers' difficulty making profits by selling products whose variety and renewal rate have been exponentially increased to seduce the shrinking number of fortunate corporate and private buyers. For all these reasons, the access of low- and middle-income households to

cars, both new and used, has become increasingly dependent on credit. The booming provision of consumer credit in the 1990s and 2000s has created the illusion of growth without distribution of purchasing power, but the burst of the property bubble in 2008 has highlighted the fundamental unsustainability of such a growth model.

Finally, and for the very same reasons, the project promoted by the British government since 2009 of revamping the production and the consumption of cars by making of the UK "a world leader" in green cars and green technologies, appears from the start highly improbable. On the one hand, the disconnection between market and production implies that the relatively modest efforts made by the OLEV to promote the purchase of green cars will only very marginally profit British-made products and will not constitute an incentive to localise or develop this type of production in the UK. On the other hand, the fact that the green cars have been developed so far according to the standards of the existing thermic cars, which means that they are as big, as heavy, as fast but also as expensive (indeed more expensive) than the existing cars, implies that their diffusion will be also marginal at best in the UK, due to the ever-growing, highly inegalitarian access to new cars. Furthermore, those who can afford new cars, because of their high incomes are also those who are the least interested in the reduction of usage costs that EVs in particular could deliver to low- and middle-class households if these cars were, of course, cheaper.

According to our analysis, therefore, the British neoliberal model is ill suited to sustain the development of automobile production and consumption. Not only does it make production dependent on low wages and low costs, breaking the Fordist link between mass production and mass markets that has been historically at the roots of the development of the automobile industry, but it also promotes a growing unequal distribution of revenues and incomes that reduces the access to new cars, turning the automobile market into a shrinking luxury market, highly dependent on credit. The result in the case of the UK has been a struggling foreign-owned and declining industry, and the exclusion of a growing majority of the population from the comfort and the security of new cars, and in particular of more fuel-efficient and less polluting cars.

Notes

1. US Bureau of Labor Statistics: ftp://ftp.bls.gov/pub/special.requests/Foreign-Labor/ind3710.txt.

2. *Sources*: Transplants and national and European distributors annual accounts (Pardi, 2011)
3. We refer here to the ONS and EU definition of relative poverty as the proportion of individuals with household incomes less than 60% of the contemporary median.
4. By comparison, it was in 2011 of 2.2 in Germany, 2.4 in France, 1.6 in Italy and 2 in Spain.
5. We rely here on the data provided by "The used car market report" of the Centre for Automotive Management of the University of Buckingham for the years 2003–2011 (www.buckingham.ac.uk/cam).
6. A smaller part of the market is traded through auctions and concerns on average around 5–8% of the volume and 4–9% of the value.
7. *Source*: Vehicle License Statistics, ONS.
8. We rely here on the data provided in Froud et al. (2005).
9. *Source*: http://www.creditaction.org.uk/helpful-resources/debt-statistics.html.
10. We should refer, to be precise, to a "double dip", or even possibly to a "triple dip" recession, because the British economy has briefly came out of the recession (two consecutive quarters of negative GDP growth) between the third quarter of 2009 and the third quarter of 2011, and again since the third quarter of 2012.
11. 36% of the secondhand cars sold in 2010 had more than 9 years and only 11% had less than 2 years, while 2 years earlier, these figures were respectively 33% and 15% used Car Market Reports [BCA], 2012.
12. See: http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtran/239/239we08.htm.
13. *Source*: http://www.automotivecouncil.co.uk/low-carbon-technology/grants-and-incentives/.

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3

Excess Capacity Viewed as Excess Quality – The Case of French Car Manufacturing

Bernard Jullien

1 Introduction

Since 2008, the European car crisis has been presented as a consequence of significant manufacturing overcapacity. This overcapacity was linked, on the one hand, to the arrival of new entrants who built factories to produce automobiles close to their new markets and, on the other, to the stagnation and decline of saturated and hyper-competitive European markets. Certain automobile manufacturers have sought to adapt by reducing manufacturing capacity in high-wage countries while maintaining or developing their output in Central and European countries that pay lower salaries. The automobile output of new member states has been growing significantly over the past 15 years (Jullien & Pardi, 2013), and capacity has been added more recently in Turkey, Morocco and Serbia. France and Italy have been particularly impacted by this move to lower cost countries (Jullien & Lung, 2011). France, for example, still manufactured 2.88 million vehicles in 2000, but only 1.46 in 2013 (CCFA, 2014).

Given the long-term consequences of putting different geographic zones in competition with each other, it is important to evaluate the underlying hypothesis that European markets are "saturated". To do so, however, one cannot solely rely on data from the years following the financial crisis in 2008. These numbers are particularly distorted, and in 2010, for example, demand for automobiles in Europe had fallen to its level 25 years earlier, in 1995. This should therefore not be considered the "normal" level of demand to be used to conclude that there is structural overcapacity in the sector that requires plant closures at a level similar to those experienced in the United States.

It is also important that the concept of "demand" be broadened to consider the economic contexts of the economic agents who buy cars – in particular households – and the product policies that manufacturers devise to adapt to these contexts (Boyer, Freyssenet, 2000). The French case again illustrates this point, as demand remained relatively constant until 2012–2013 with light-vehicle registrations relatively stable between 2.5 and 2.7 million throughout the 1990s. An initial impression would be to view this as a stagnating market that is going through a product renewal phase and that should be managed accordingly, with its predictability offsetting the mediocre outlook for growth. As such, the French market would appear typical of the situation throughout Europe, justifying the argument that structural adjustments are needed.

A more in-depth analysis of market structures and their dynamics, however, shows that this apparent stability is misleading. In reality, significant changes have made the French market quite challenging for its main operators and, in particular, for French carmakers. A detailed examination of key structural changes reveals that the market's consistency in terms of sales volumes has been accompanied by several new problems, in particular profitability. This has become a major issue for French carmakers, whose domestic base is being increasingly weakened (Jullien & Pardi, 2015). It can, therefore, be argued that the adaptation strategies adopted by carmakers are as much a cause of the problem of overcapacity as the structural stagnation of car markets.

The best way of explaining this is by analysing a series of factors that have diminished people's "willingness to pay" for new vehicles. For reasons that are both exogenous and endogenous, the market targeted by carmakers has become increasingly narrow, making it harder to sell new vehicles in France. Exogenous factors include changes in people's income and how much they spend on products other than the automobile. Endogenous factors include the reactions of industrialists who have adapted to the situation by behaving less cooperatively. Each player thus tries to gain market share by concentrating its efforts on whichever demand segment seems the most solvent. Underpinned by European policies (Jullien et al., 2014), this dynamic has caused new vehicle prices to rise somewhat, creating a new problem of demand. One name for this might be "excess quality", with competitive pressures creating a situation where products on offer are increasingly diverse, better-equipped and renewed more rapidly but subsequently find fewer customers willing to pay for all of this. The crux of the French automobile crisis could thus be considered to be a consequence of this general

phenomenon of "excess quality" that has emerged over the past 20 years in this particular value chain.

The apparent stability in automobile demand may have been, in reality, hiding a "value" crisis, and this may be a major part of the explanation for the "crisis" besetting the French automotive industry since the mid-2000s. The manner in which French carmakers have chosen to adapt to the new competitive landscape has spurred them to develop strategies that in turn lead to an altered industrial landscape that is unfavourable to French manufacturing sites. Such strategies pitch the interests of carmakers against those of other stakeholders, such as consumers, employees and subcontractors. These conflicts have underlined the present crisis and have prevented any sustainable political compromises from being reached in the French automotive sector.

To show how this dynamic took shape over the past decade and why it happened, part 1 of this chapter characterises the changes in automobile demand with a view towards highlighting some of the major structural changes belied by its apparent stability. Part 2 identifies the main external determinants of these changes: changes in income distribution and spending on substitute products and services. Part 3 identifies the internal determinants of structural changes that are linked to competitive dynamics that generate higher prices and excess quality. The chapter concludes that the crisis experience in the French automobile industry was, in fact, a crisis of value, where the falling profitability of French carmakers caused them to adapt their strategies in a way that led to a clear divergence of interests between France and its carmakers. The dynamics that led to the crisis have become so ingrained that they have prevented acceptable compromises from being reached.

2 Automobile demand: apparent stability, despite major structural changes

Since the early 1990s, the number of passengers cars sold in France has been relatively stable at around the 2.2 million mark. In terms of household spending on new car purchases, the figures have also been stable (€24.7 billion in 1990, vs. €23.5 billion in 2000 and €26.6 billion in 2010). It is tempting to conclude from this that in a market that can reasonably be said to be in its product renewal phase, demand has stabilised, signalling to carmakers that the market may no longer be growing but should nevertheless offer them a relatively stable volume of business. There are a number of reasons, however, not to accept this conclusion.

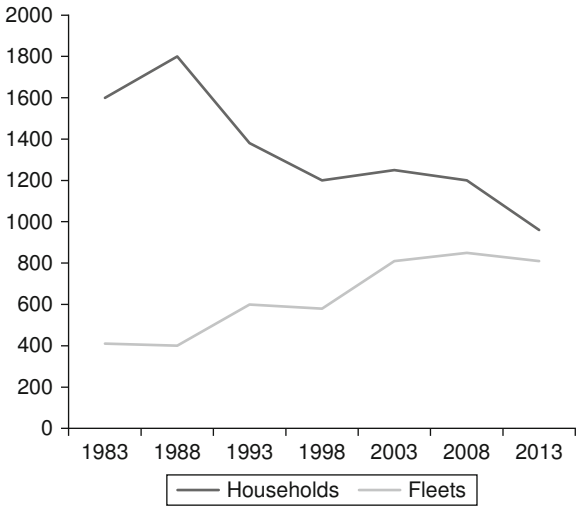

Figure 3.1 Household and fleet sales
Source: Computed by author using CCFA data.

The first lies in the relative stability of household spending on new vehicles over this period in which the same volume was not being purchased, but unit sales to households were falling at the same time as the prices of vehicles were increasing. Passenger car registrations remained stable nonetheless, but this was because customers other than households compensated for the volume that the latter no longer purchased. In the early 1990s, households bought around 1.7 million passenger cars (i.e., circa 80% of all vehicle registrations) while, in the early 2010s, they only accounted for 1.2 million units (55%).

Sales to "companies" or other "fleets" represent a relatively heterogeneous business segment, comprised of company car sales, long-term and short-term rentals, and vehicles that carmakers or their networks were unable to sell directly. As Table 3.2 shows, company cars generally account for 15–20% of registrations, rental sales for 7–10%, and indirect sales for 10–15%. Sales to households represented 55–60% of all sales, apart from years when scrapping bonuses were offered, as happened in 2009 and 2010, when sales exceeded 1.2 million units.

This demand structure raises certain important questions about the nature of the product policies of carmakers. Combined registrations of sales to professionals and short-term car rentals often amount to a

Table 3.1 Light-vehicle registrations by sales channel

	2006			2009			2012		
	Cars	**Share**	**Change**	**Cars**	**Share**	**Change**	**Cars**	**Share**	**Change**
Households	1162327	58.1%	–4.8%	1530377	67.5%	24.8%	1039429	55.9%	–19.5%
Companies and administrations	222863	11.1%	5,5%	236773	10.4%	–5.2%	230718	12.4%	–5.7%
Long term rental companies	124035	6.2%	–4.0%	102227	4.5%	3.6%	136880	7.4%	–9.4%
Short-term rental companies	200056	10.0%	–3.6%	160321	7.1%	–27.8%	183287	9.9%	–7.1%
Dealers	250070	12.5%	1.8%	211580	9.3%	–2.8%	227579	12.2%	–5.3%
Carmakers	41212	2.1%	–13.3%	27393	1.2%	–22.2%	42724	2.3%	2.8%
Total	2000562		–3.0%	2268671		10.7%	1860617		–14.1%

Source: Author's calculations, AAA data, Autoactu.com.

Table 3.2 Passenger vehicles sold to households vs. "companies and administrations" and "long-term rental companies" for 6 brands and 4 segments (2012)

			Households		**Cies, administrations, long-term renting**	
	Brands	**Models**	**No. of cars**	**%**	**No. of cars**	**%**
B Segment	Renault	Clio	60556	55%	28242	26%
	Dacia	Sandero	23450	86%	506	2%
	Citroën	C3	35434	57%	15143	24%
	Citroën	DS3	15237	61%	2651	11%
	Peugeot	207	28573	65%	6697	15%
	Peugeot	208	31142	47%	14497	22%
	VW	Polo	34389	78%	2160	5%
	Audi	A1	9769	69%	1917	13%
	Mini	Mini Hatch	5898	69%	1171	14%
	Mini	Mini Country	5295	63%	2014	24%
C Segment	Renault	Mégane	22673	37%	19809	32%
	Renault	Scenic	24919	44%	17753	31%
	Dacia	Duster	27792	82%	1123	3%
	Citroën	C4	18402	46%	12363	31%
	Citroën	C4 Picasso	16809	49%	9606	28%
	Citroën	DS4	7458	53%	2211	16%
	Peugeot	308	19844	43%	12340	27%
	Peugeot	3008	23267	53%	11972	27%
	Peugeot	5008	9523	43%	6447	29%
	VW	Golf	18887	51%	8529	23%
	VW	Touran	8034	51%	4995	32%
	VW	Tiguan	14720	65%	4150	18%
	Audi	A3	5192	51%	3081	30%
	Audi	Series 1	5854	47%	3732	30%
	Audi	X1	4261	61%	1516	22%

continued

Tabel 3.2 continued

			Households		Cies, administrations, long-term renting	
	Brands	**Models**	**No. of cars**	**%**	**No. of cars**	**%**
D Segment	Renault	Laguna	6505	44%	3875	26%
	Citroën	**C5**	**5229**	**32%**	**6571**	**40%**
	Citroën	DS5	3657	33%	3453	32%
	Peugeot	**508**	**7671**	**30%**	**11467**	**44%**
	VW	**Passat**	**2116**	**19%**	**6833**	**62%**
	Audi	**A4**	**3048**	**31%**	**4889**	**49%**
	Audi	Q3	5419	71%	1747	23%
	BMW	Series 3	4215	36%	3675	31%
	BMW	X3	3388	53%	2193	34%
D Segment	Audi	A5	3114	48%	2438	38%
	Audi	Q5	2634	52%	1715	34%
	Audi	**A6**	**1378**	**27%**	**2682**	**53%**
	Audi	**Q7**	**296**	**31%**	**412**	**43%**
	BMW	**Series 5**	**1615**	**29%**	**1999**	**36%**
	BMW	**X5**	**493**	**30%**	**616**	**37%**
	BMW	**X6**	**509**	**28%**	**678**	**38%**

Source: AAA files, processed using Autoactu.com.

quarter of all new vehicle registration. These sales did not involve a direct purchase by the end user, but these units had to be "sold off" as if they were new cars, and/or offered to households as used vehicles. Clearly, this had a negative effect on profitability for both carmakers and their distribution networks.

Sales to companies and public administrations and sales to long-term car rental companies involved passenger vehicles mainly used by households for professional or private purposes, but for which they were not obliged to pay directly. They represented 15–20% of all registrations, but this number could vary from one model to the next, with the percentage tending to rise as unit values rose (Table 3.3). The significant growth of this segment since the late 1980s in France is a result of more solvent households transferring the relevant charges to their employers. The fall in direct demand for automobiles did not mean that people were no longer interested in this product, but rather that the demand was being mediated by employers directly and/or by the operators (long-term car rental companies) to whom fleet management needs were being outsourced. Demand was being professionalised, and as a result, the vehicles' residual value after 36 or 48 months became an important factor to consider. As a result, German carmakers were favoured, as their vehicles maintained their value over this period, and French cars were at a disadvantage.

This development is particularly relevant to two other major structural changes affecting demand for new vehicles in France: the move down-market and the relative fall in French carmakers' market share.

For 20 years, the French market was characterised by the increasing domination of segment A and B vehicles and the decreasing importance of segments D, E and F. These categories accounted for nearly one-third of the French market in 1991 but only 18% by 2011. Given the growing importance of category C and D vehicle purchases by companies, public administrations and long-term rental companies, this means that households were far and away the main purchasers of category A and B vehicles. In particular for the D and E segment, Table 3.2 indicates that most models are sold to companies and long-term rental companies. On the other hand, when prices are much lower – as is the case for Renault's Dacia, the firm's entry-level brand – sales to households represent more than 80%.

During the years when the scrappage bonus reinvigorated household demand, the overrepresentation of segments A and B rose (Figure 3.2). A good example was in 2009, when individuals accounted for two-thirds of all sales, and these two categories amounted to 57% of all registrations. The opposite tendency can be witnessed in 2012, which saw particularly weak household demand.

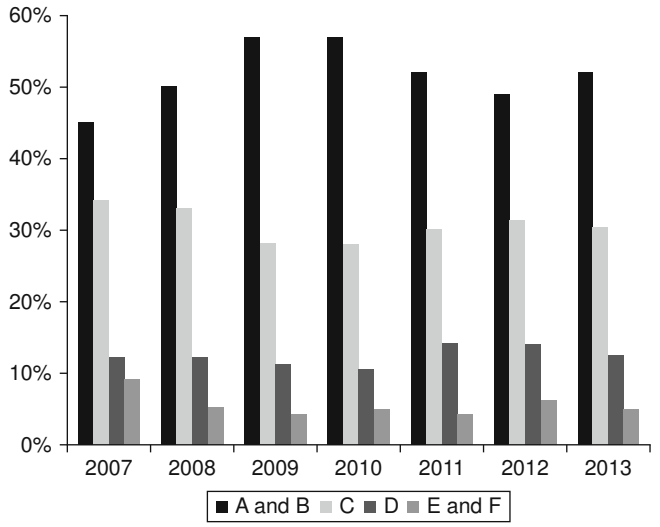

Figure 3.2 Market share by product range (2007–2013)
Source: CCFA (2014).

For French carmakers, these changes were accompanied by a relative decline in their share of the domestic passenger vehicle market, falling from 72% in 1981 to 60% in 1991, where it stayed throughout the 1990s before dropping again after 2000 to hit 56% in 2011, even when Dacia sales are included.

3 External factors: changes in income and competition with non-automobile expenditure

Structural changes might explain the increasing difficulty that carmakers, particularly French ones, faced when appealing to households in a highly competitive market. In large part, this explains problems that all carmakers had in developing product policies adapted to household income structures. Boyer and Freyssenet (2000) have stressed the need to adapt in their historical analysis of carmakers' trajectories, which highlights the existence of a plurality of productive models. The ability of carmakers to devise sustainable strategies is one pillar of this analysis, which focuses on the suitability of product practices in relation to certain macroeconomic "growth regime" characteristics. Income distribution is one of these characteristics.

3.1 Changes in income

The sustainability of strategies is also linked to the ability of households to free up the purchasing power needed to acquire new vehicles. The key here is market size, or the volumes likely to be sold. This in turn leads to questions about household income distribution – hence, inequality and the underlying dynamics. In terms of the automotive markets, what counts is the structure of demand, hence carmakers' need to be more or less present or active in different segments.

The French experience of the past two decades shows how important it is to examine the "suitability" of carmakers' product policies. As the data on past decades have shown, there have been some major changes in the market. Given the decline in the market share of French carmakers, it is important to examine the product policies that they used to adapt to these changes.

To broach this question, however, three elements of the connection between income distribution and automotive markets for the past two decades need to be taken into consideration. Firstly, households only account for 55% of the demand for automobiles. Secondly, most households satisfy their needs through used vehicle markets. Finally, although income levels are important, other charges faced by households, in

particular pre-engaged expenditures, meant that spending on automobiles suffered.

As a result, despite the fact that household driving rates and the "need for automobiles" have increased in French society, the demand for new vehicles has tended to fall as a percentage of total household spending. In economic terms, households perceived automobiles as "inferior goods", with spending rising more slowly than household income and/or overall spending.

The persistence of this phenomenon over the past 20 years is striking. It explains the falling share of household spending on new vehicle purchases (Figure 3.3) – a trend that does not directly reflect changes in national income or its distribution.

Since 1982, the stagnation of wages in France has had a very negative effect on households' ability to benefit from GDP growth. As a consequence, household consumption of automobiles has fallen since 1990. In contrast, the period 1985–1990 was one in which household arbitrage favoured cars (Figure 3.3).

The ongoing reduction in equality that was evident in France since the 1970s came to a halt from the 1990s. For the next 20 years, the evolution of the relative income of the top and bottom deciles has been one of growing inequality (Figure 3.5), and this growing inequality has created problems for French carmakers because of

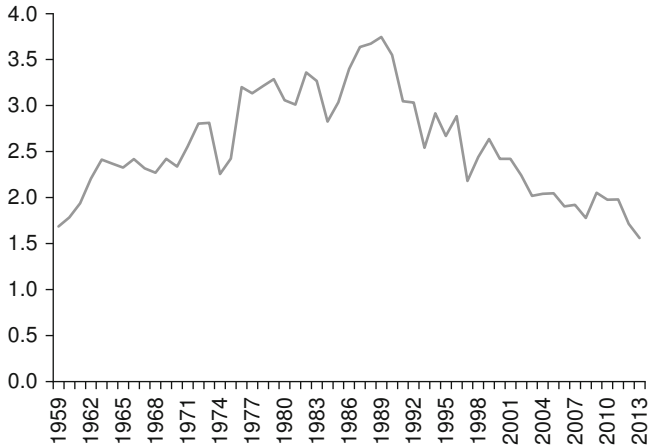

Figure 3.3 New car purchases as a share of total household spending
Source: Author's calculations, INSEE data.

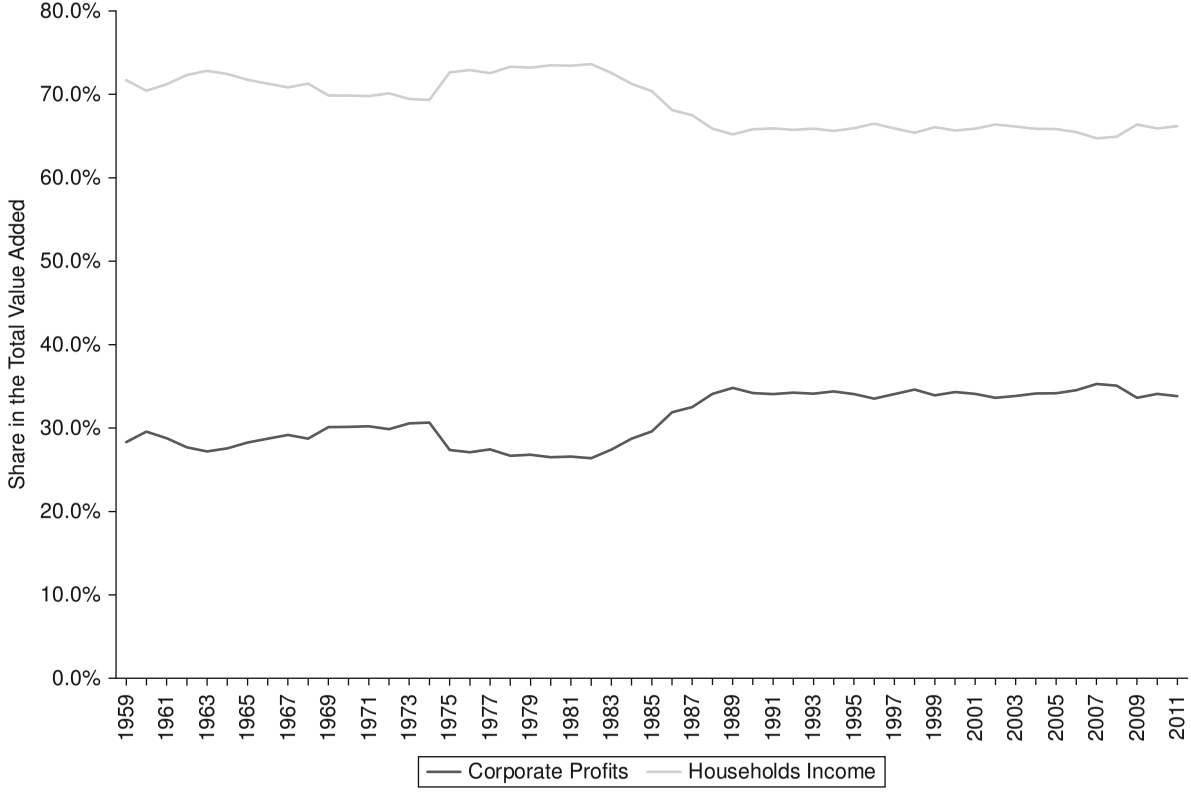

Figure 3.4 Household income/corporate profits as a share of total value added

Source: Author's calculations, INSEE data.

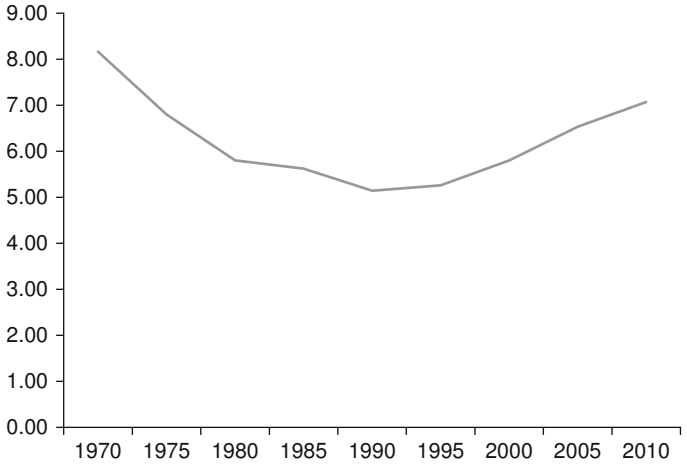

Figure 3.5 Inequality indicator D9/D1 (1970–2010)
Sources: Hourriez, Roux (2001) and INSEE (2011).

its impact on the dynamism of demand for new vehicles by French households.

3.2 Competition with non-automobile expenditure

However, other variables must be mobilised to understand these highly unfavourable changes in household automobile demand, particularly when looking at competing spending items found in households' general and specific automotive budgets.

In addition, during this period households were increasingly transferring spending to other items, such as telecommunications, eating out and plane tickets (Figure 3.6).

The sums involved were not significant, inasmuch as the five items studied here amounted to somewhere from €10 to 40 billion, corresponding to 1 to 4 points in terms of budgetary coefficients (Figure 3.7).

The choices made by French households among different consumption items was particularly unfavourable to automobiles due to slow income growth and a sharply rising share of "pre-engaged" expenditures in total spending, largely as a result of skyrocketing property prices (Table 3.3).

INSEE defines "pre-engaged expenditures" as the "total consumption of households realised within the framework of a contract that is difficult to renegotiate in the short-term". More precisely, this can be measured as:

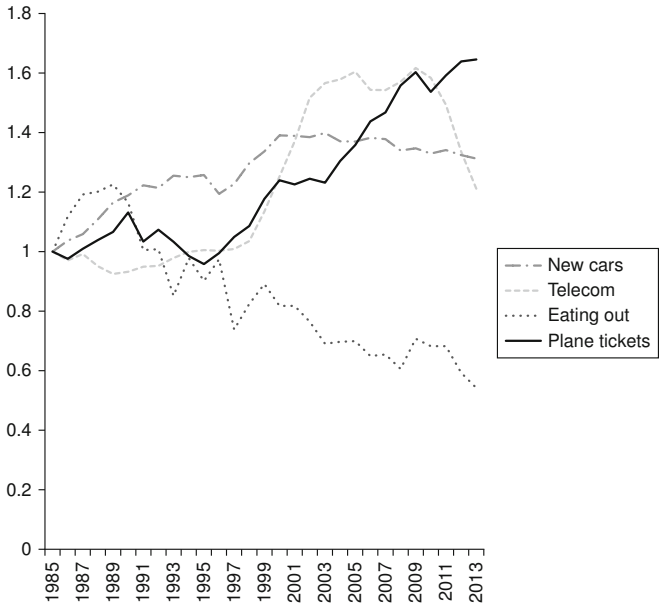

Figure 3.6 Relationship between the growth in four spending categories and the growth in overall household spending between 1985 and 2013

Source: INSEE, National Accounts.

Figure 3.7 Changes in French household spending (1985–2013)

Source: INSEE, National Accounts.

Table 3.3 Disposable income and pre-engaged expenditure

	1981	1986	1991	1996	2001	2006	2011
				Amount in Euros			
Gross disposable household income	18091	25518	31942	34847	39384	44605	48430
Pre-engaged expenditures per household	4064	6568	8421	9408	10486	12271	13249
Including housing	2895	4440	5750	6900	7798	9590	10364
Arbitrable household income	14027	18951	23521	25440	28899	32334	35181
				Avg. annual growth over previous five years			
Gross disposable household income		7.12%	4.59%	1.76%	2.48%	2.52%	1.66%
Pre-engaged expenditures per household		10.08%	5.10%	2.24%	2.19%	3.19%	1.54%
Inclusding housing		8.93%	5.30%	3.71%	2.48%	4.22%	1.56%
Arbitrable household income		6.20%	4.42%	1.58%	2.58%	2.27%	1.70%
				Index 1981 = base 100			
Gross disposable household income	100	141	177	193	218	247	268
Pre-engaged expenditures per household	100	162	207	232	258	302	326
Including housing	101	155	201	241	272	335	362
Arbitrable household income	100	135	168	181	206	231	251
				% disposable income			
Share of pre-engaged expenditures	22.5%	25.7%	26.4%	27.0%	26.6%	27.5%	27.4%
Share of housing	16.0%	17.4%	18.0%	19.8%	19.8%	21.5%	21.4%

Source: INSEE, author's calculation.

- Housing-related expenditures (including, in national accounts, imputed rents) plus others relating to water, gas, electricity and other fuels used for accommodation purposes
- Telecommunications services
- Catering expenses
- Television services (royalties, pay channel subscriptions)
- Insurance (except life insurance)
- Financial services (including, in national accounts, indirectly measured financial intermediation services)

According to France's "Observatoire de l'Automobile", the average new car purchaser in France was 51.5, above the European average age of 49.5. Households under the age of 30 were thus increasingly excluded from the new car market because of the housing costs they had to cover (Table 3.4).

In parallel, households' "need for automobiles" rose largely as a consequence of where they chose to live. Increasing property prices forced people to live at a greater distance from their place of work. There is evidence of this phenomenon in the ongoing rise in numbers of households and in how far people would drive (Table 3.7). Despite more need for automobiles, spending on automobiles fell as a proportion of total spending, going from 12.2% in 1983 to 10.2% in 2013. Examining the components of this spending behaviour, it is clear that the explanation for this decline is what happened with actual vehicle purchases (4.2%

Table 3.4 Age of new and used car buyers in France and EU

	France	**EU**
Average age of car buyers	51.5	49.5
Less than 30 years old		
Share of cars bought as new ones	20%	37%
Share of cars bought as used cars	80%	63%
More than 50 years old		
Share of cars bought as new ones	42%	55%
Share of cars bought as used cars	58%	45%
Average prices of cars bought as new and used ones (in Euros)		
For less than 30 years old	8,931	13,651
For more than 50 years old	10,399	14,030

Source: Observatoire CETELEM de l'Automobile (2011) – Survey on behalf of TNS Sofres (4,800 Europeans interviewed in July 2010).

and 2.6% of spending in 1983 and 2013 respectively) and not other items (Tables 3.5 and 3.6).

These changes clearly demonstrate an arbitrage within driving expenditures. Households seeking to remain mobile or pursuing multi-motorisation were forced to reduce new vehicle purchases. Spending on fuel, spare parts and maintenance can be considered pre-committed expenditures that are indispensable to mobility. The acquisition of a car, on the other hand, and in particular the acquisition of a new car, can almost always be deferred or achieved through the secondary market.

National accounting statistics regarding spending on used vehicles only describe part of this phenomenon. The progression curve observed over the period 1996–2006 offers a clearer picture, which can also be confirmed through other indicators, particularly household fleet characteristics (Table 3.7). It is clear that fleets became much older, were renewed less frequently and were driven further. This highlights how carmakers and their networks were finding it increasingly hard to capture the economic value associated with households' mobility needs. Households were trying to reduce the burden of their driving expenses without giving up on owning or using automobiles. To achieve this, they benefited from the increasing reliability of vehicles and drove an aging stock of vehicles comprised of small cars. These cars were also driven less and less every year, mainly because each household owned more of these vehicles than ever before.

The notion of an average household's spending covers a relatively wide range of behaviours, as can be seen from people's "willingness to pay". The Households Budget Surveys (HBS) carried out every 5 years by

Table 3.5 Transport spending as share of total household expenditures

	1983	**1988**	**1993**	**1998**	**2003**	**2008**	**2013**
Vehicle purchases	4.2	4.6	3.6	3.6	3.4	3.1	2.6
Maintenance, repairs, parts	2.1	2.3	2.3	2.4	2.4	2.5	2.2
Fuel	3.8	3.1	2.9	2.8	2.7	2.9	2.7
Insurance, tolls, parking	0.7	0.7	0.7	0.8	0.8	0.9	1.0
Public transport	1.4	1.3	1.3	1.4	1.4	1.6	1.7
Total transport	**12.2**	**12.0**	**10.8**	**11.0**	**10.7**	**10.9**	**10.2**

Source: INSEE, National Accounts.

Table 3.6 Changes in French households' driving expenditures

	1983	1988	1993	1998	2003	2008	2013
				Amounts (million Euros)			
New cars	14793	23345	20300	22611	22976	24744	23379
Used cars	3208	4173	6226	7469	11377	12495	11752
Maintenance, repairs, parts	9492	14153	17472	20910	26033	32881	31784
Fuel	17062	19513	22952	26303	30423	40511	40778
Insurance, tolls, parking	3035	4492	5775	7550	9297	12340	15033
Driving expenditures	47590	65686	72726	84844	100106	122971	122725
Public transport	9080	12148	15319	19018	23999	32446	36189
Total transport	56670	77834	88044	103862	124105	155417	158914
Household expenses	358621	507386	622644	716172	868521	1066598	1126403
				Progression (base 100 in 1983)			
New cars	100	158	137	153	155	167	158
Used cars	100	130	194	233	355	389	366
Maintenance, repairs, parts	100	149	184	220	274	346	335
Fuel	100	114	135	154	178	237	239
Insurance, tolls, parking	100	148	190	249	306	407	495
Driving Expenditures	100	138	153	178	210	258	258
Public Transport	100	134	169	209	264	357	399
Household Expenses	100	141	174	200	242	297	314

Source: INSEE, National Accounts.

Table 3.7 Vehicles in use (owned, leased or loaned) by households

	Units	1985	1990	1995	2000	2005	2010
TOTAL	Millions	**19.8**	**23.0**	**25.1**	**27.4**	**31.0**	**33.6**
Average ownership period			**3.7**	**4.1**	**4.4**	**4.7**	**5.0**
Average Age	Years	**6.0**	**5.8**	**6.6**	**7.3**	**7.7**	**8.0**
Average kilometers on odometer	Km	**65300**	**69500**	**84080**	**93140**	**99460**	**103470**
Kilometers (annual average)	Km		13041		13560	12530	11755
Total traffic for passenger cars	Billions of vehicle-kms		300		372	388	395
Breakdown by vehicle range							
Low range	%	37.6	39.4	43.4	45.1	44.5	46.8
Low-mid	%	20.1	20.8	24.3	27.3	32.2	30.9
High-mid	%	24.1	26.0	22.2	19.9	16.2	11.5
Premium range	%	9.8	8.7	7.0	7.0	5.7	5.0
Others	%	8.5	5.1	3.2	0.8	1.4	5.7
Percentage of vehicles purchased new	**%**	**50.9**	**50.4**	**45.2**	**43.9**	**40.1**	**41.1**
Breakdown by type of fuel used							
Gazole	%	7.7	17.4	30.9	38.1	48.9	59.6

Source: CCFA (2014, pp. 42 and 45).

France's INSEE statistics unit shows the purchasing behaviour of households per quintile (Table 3.8). For the top and bottom quintiles, automobile purchases peaked in 1989. For the intermediary quintiles, the maximum was reached in 1995 or 2001. All categories experienced a very fast fall in consumption between 2001 and 2006 when the recession caused households to accelerate the change in behaviour that had started to develop since the early 1990s. Falling automobile purchases can be explained in different ways from one quintile to the next.

- For quintile 1, the drop in new car purchases involved people giving up on automobiles altogether.
- For quintiles 2 and 3, the households increasingly purchased used cars.
- In Q4, there was a tendency for people simply to keep their cars longer.

Table 3.8 Household purchases of new and used cars – findings from 6 HBSs

	Q1	Q2	Q3	Q4	Q5	Total	Q5/Q1
Number of new vehicle purchases, in 000s							
1979	97	181	249	384	489	1400	5.0
1985	138	148	234	352	558	1430	4.0
1989	138	168	271	356	733	1666	5.3
1995	115	198	306	431	581	1631	5.1
2001	77	307	261	430	548	1623	7.1
2006	58	143	223	281	480	1185	8.3
Number of used vehicle purchases, in 000s							
1979	243	339	427	453	372	1834	1.5
1985	473	489	548	598	542	2650	1.1
1989	419	477	627	630	641	2794	1.5
1995	519	651	624	599	545	2938	1.1
2001	443	594	648	767	501	2953	1.1
2006	408	712	822	717	510	3169	1.3
Average unit value of new vehicle purchases, in current Euros							
1979	4338	4351	4573	4327	4838	4553	1.1
1985	8705	8535	9325	8852	9854	9272	1.1
1989	12197	11102	11487	1119	13065	12138	1.1
1995	11114	11858	11789	13764	14427	13212	1.3
2001	10651	8935	14035	15136	14653	13409	1.4
2006	14800	16878	16326	18056	19860	18161	1.3
Average unit value of used vehicle purchases, in current Euros							
1979	1202	1403	1609	1724	2107	1646	1.8
1985	2714	2993	3018	3585	4171	3323	1.5
1989	3533	3732	4071	5253	6784	4821	1.9
1995	3203	4588	5277	6384	8820	5733	2.8
2001	3507	4692	6024	7483	9094	6278	2.6
2006	4194	6617	7135	8834	11787	7772	2.8

Source: HBSs, INSEE.

- Finally, Q5 saw charges transferred to third parties. Since the late 1990s, company cars have become an increasingly widespread tool that companies use to remunerate employees.

As a result, out of all the new vehicles that households acquired, Q1 was significantly overrepresented in 1985 and underrepresented in 2001 and 2006. The overrepresentation of Q5 peaked in 1989 and fell in the 1990s before becoming significant after 2006.

Compared to new cars, old car purchases were more evenly spread across the different quintiles, primarily as a result of the growing heterogeneity of used cars that households were buying. In 1985, average unit

values for used cars acquired by Q1 amounted to 82% of the value of all used cars that French households bought on average. In 2006, this was down to 54%. At the same time, in 1985, Q1 household income was 51.3% of the average for all households, versus 41.6% in 2006. For Q5 households, used car purchases had a value in 1985 that was 1.25 times above average, versus 1.52 in 2006. At the same time, 1985 Q5 household income was 1.75 above average, versus 1.9 times higher in in 2006.

The range of used cars available offered something to all households, despite their income constraints and competing spending items. The price range of new cars is much narrower and, over time, it became harder for less affluent or younger households to access this market.

The household budget survey also broke down automobile spending by income levels and by category of expenditure: acquisition of new and used car, fuel and after-sales services, insurance, tolls and parking. Total automotive spending in 2006 can be compared by category and for the two extreme quintiles, Q1 and Q5 (Figure 3.8).

The figure reveals two automobile consumption systems in France.

1. The first system was structured far away from the carmakers, their networks and marketing teams. It was mainly comprised of used vehicles and dominated by spending on usage items. The most important of these is fuel, followed by after-sales services, insurance, tolls and parking. Fuel spending accounted for up to 15–20% of total household spending in this first quintile (Table 3.9), often involving multi-vehicle households that would purchase relatively old used cars and make them last. Given the vehicles' older technology, they would often deteriorate, meaning that they consumed more fuel, and there was a greater chance of mechanical failure. The system mainly applied to poorer or younger households and single-parent families. It also applied to a greater extent in rural and semi-rural communities, as urban dweller have less need for automobiles, given the greater availability and accessibility of other methods of transportation
2. The second system was structured around carmakers and their product offers. The dominant factor here was spending for acquisition. Although used cars were increasingly important, the cars in questions were relatively recent vehicles that people were fairly happy to purchase and keep maintained using carmakers' networks. Given the relative youth of these vehicles, and the fact that they

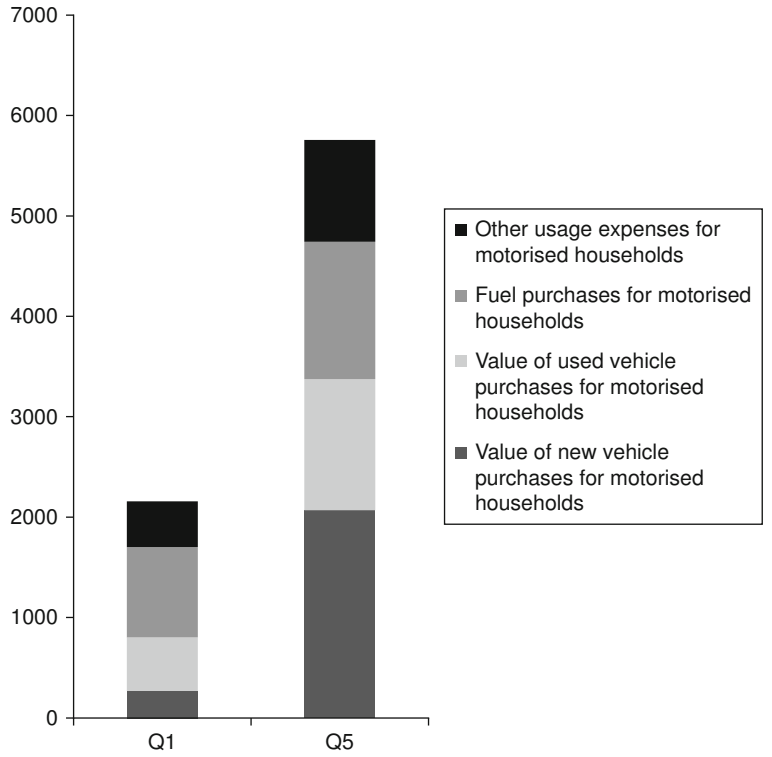

Figure 3.8 Amounts (in current Euros) and composition of annual automotive spending of least and most affluent households in 2006

Source: HBSs, INSEE.

often came with guarantees, they generated some maintenance costs but required few repairs. Household fleets were being renewed even more quickly, for two main reasons:

- The households in question would resell their car as the probability arose that they would suffer a breakdown or other problems.
- They "managed" their vehicles' residual value by getting the best trade in price whenever they bought a new or used car.

Expressed more dynamically, the aforementioned observations indicate that the first system prospered, whereas the second declined in relative terms.

Table 3.9 Changes in French household automotive spending

	Quintile 1			Quintile 5			Total/Average			Q5/Q1		
	1995	2001	2006	1995	2001	2006	1995	2001	2006	1995	2001	2006
Number of households (thousands)	4631	4904	4980	4631	4904	4980	23155	24520	24900	1.0	1.0	1.0
Household income (Euros)	11702	11687	12638	46921	52936	57750	25394	27534	30393	4.0	4.5	4.6
Number of new vehicles purchases	115	77	58	545	548	480	1631	1623	1186	4.7	7.1	8.3
Share of total volume	7.1%	4.7%	4.9%	33.4%	33.8%	40.5%	100.0%	100.0%	100.0%	4.7	7.1	8.3
Average unit value, new cars	11160	10651	14800	14427	14653	19860	13212	13409	18160	1.3	1.4	1.3
Value of purchases, millions Euros	1283	820	858	7863	8030	9533	21549	21763	21538	6.1	9.8	11.1
Share of total value	6.0%	3.8%	4.0%	36.5%	36.9%	44.3%	100.0%	100.0%	100.0%	6.1	9.8	11.1
Number of used vehicles purchases	519	443	408	547	501	510	2938	2953	3168	1.1	1.1	1.3
Share of total volume	17.7%	15.0%	12.9%	18.6%	17.0%	16.1%	100.0%	100.0%	100.0%	1.1	1.1	1.3
Average unit value, used cars	3200	3507	4194	8820	9094	11787	5733	6278	7791	2.8	2.6	2.8
Value of purchases, millions Euros	1661	1554	1711	4825	4556	6011	16844	18539	24682	2.9	2.9	3.5
Share of total value	9.9%	8.4%	6.9%	28.6%	24.6%	24.4%	100.0%	100.0%	100.0%	2.9	2.9	3.5
Total number of purchases	634	520	466	1092	1049	990	4569	4576	4354	1.7	2.0	2.1
Purchases per household	0.14	0.11	0.09	0.24	0.21	0.20	0.20	0.19	0.17	1.7	2.0	2.1
Motorisation rate	66.0%	59.9%	64.2%	89.0%	91.5%	92.5%	80.0%	80.7%	82.3%	1.3	1.5	1.4
Number of households motorised	3056	2937	3197	4122	4487	4607	18524	19788	20493	1.3	1.5	1.4
Value of new vehicle purchase for motorised household	420	279	268	1908	1790	2069	1163	1100	1051	4.5	6.4	7.7
Value of used vehicle purchase for motorised households	543	529	535	1171	1015	1305	909	937	1204	2.2	1.9	2.4
Total value of vehicle purchase for motorised households	963	808	804	3078	2805	3374	2073	2037	2255	3.2	3.5	4.2
Fuel purchase for motorised households	991	983	900	1249	1454	1369	1110	1280	1199	1.3	1.5	1.5
Other usage for motorised households	556	494	453	778	983	1014	640	726	745	1.4	2.0	2.2
Driving expenses as share of motorised households' income	21.5%	19.6%	17.1%	10.9%	9.9%	10.0%	15.1%	14.7%	13.8%	0.5	0.5	0.6

Source: HBSs, INSEE.

- Households from quintile 1 experienced an increasing disconnect between new and used car sales.
- Above all, it is worth noticing the "forced" system associated with quintile 1, one focused on used vehicle purchases and dominated by usage expenditures. This largely explains that the used car market expanded significantly since 1995.

The explanation for the spread of this first system lie in changes in purchasing power, in "forced spending" and problems faced in getting the new car offer to adjust to these various factors. More specifically, the sharp decline in household spending during the 2000s seems to have been related to a significant rise in vehicles' transaction values. This is witnessed by the fact that by 2006, a household spent on average 6.4 months of income to buy new cars, versus 5.4 months in 2001. For Q1 households, this went from 11 to 14 months over the same period of time. For Q2 households, it went from 6 to 10 months. Questions must be raised here about the suitability of carmakers' product policies.

4 Internal factors: price rises, competitive dynamic and excess quality

To understand these product policy problems, it is worth looking at changes in the average unit values of new passenger vehicles sold in France, compared with changes in average wages (see Figure 3.9 for recent years).

In a longer-term perspective, it appears that, in the early 1980s, eight months of wages were needed on average to purchase a new vehicle, versus ten months in the early 2000s (i.e., there was a relatively significant decline in French households' ability to purchase new vehicles).[1]

Changes in catalogue prices were therefore one manifestation of carmakers' inability to adjust their product offer to the series of constraints that people were facing in the market. Indeed, carmakers responded to these changes by accelerating sophisticated innovations to give people a sense that their products were becoming obsolescent, while also increasing their own company's market share. This led to a situation where customers appeared to be increasingly demanding because there were fewer of them, and each was receiving more attention. What can be deduced from is that there was a need to develop increasingly extensive product ranges targeting this population, and for these ranges to be renewed more frequently with innovation and

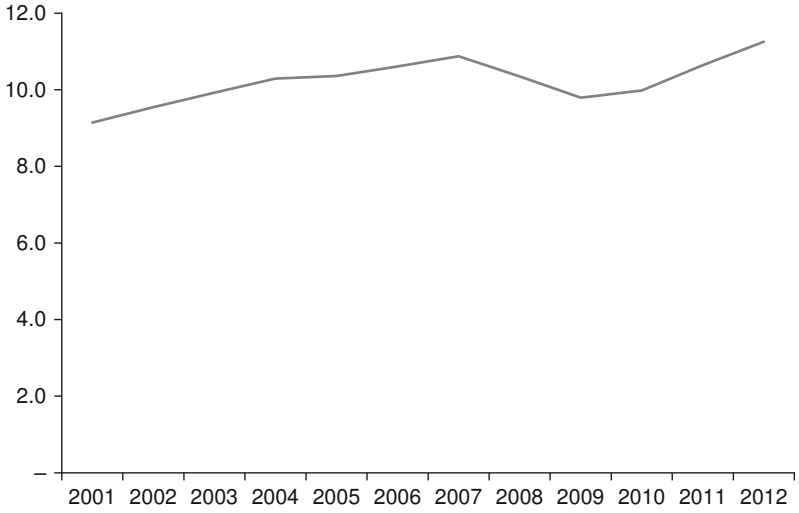

Figure 3.9 Average unit value, in months of average wage
Source: ICCT and INSEE, author's calculation.

sophistication, adding in turn new reasons for people to desire each generation of new vehicles.

4.1 Competition and excess quality

Since the willingness to pay for the growing technological or functional sophistication was continually decreasing, objective improvements in the features on offer did not imply an extra willingness to pay, other than by consumers from the most affluent households. This meant that the few consumers who were susceptible to the new narrative became a Holy Grail, with the quest assuming the form of a proliferation of product launches attempting (usually in vain) to attract the remaining customers' attention. These launches were like SOS signals sent out by an industry that was losing its way. Having noticed that consumers were allocating an ever-smaller percentage of their budgets to automotive purchases, manufacturers tried to take what they could from those who were still likely to be interested in their goods.

The exhaustion of the commercial paradigm seems therefore to have resulted from a form of market saturation that tended to view the automobile as a normal (and even inferior) good. Manufacturers responded collectively to this saturation effect by competing more fiercely. This

amplified the phenomenon, however, instead of making it more manageable.

One effective way of describing the competitive dynamic, when envisioned thusly, is the construct of "excess quality",[2] linked to the relatively widespread view that customers have become increasingly demanding. If excess quality means offering potential customers new or improved product characteristics (Lancaster, 1975) – features that are likely to gain a modicum of support but for which people are willing to pay little if anything – this would mean that improvements in product quality require efforts, hence costs that are increasingly difficult to offset via price hikes and/or extra volumes. It would also imply that because of competition, vehicles become increasingly varied and are renewed more often, making it harder to make a profit from them. In this case, lowering total costs becomes what games theorists call a dominant strategy: that is, it is the best one even if (as shown by the famous "prisoner's dilemma") everyone loses if everyone behaves in this way. In the automotive business, no one appears capable of escaping the need to diversify their product ranges and renew them more often. Towards this end, each participant knocks on to the value chain any and all of the costs and risks generated thusly. Nobody is able to differentiate his or her product offer significantly and/or sustainably. Everyone must manage a number of bad surprises and very few good ones. Nobody dares to take the risk of undermining this dynamic, but everybody hopes to become the best at carrying it out by becoming leaner and more flexible, and by purchasing, delocalising and consolidating better.

Once people start upping their bids for technologies and services, the only way forward becomes products that are more expensive and substantial, yet whose retail prices can only go up by a minimum amount. There is a very strong premium on premium goods, given the decreasing differential in volumes between different brands, and between top-, mid- and bottom-of-the-range models. Similarly, the willingness to pay associated with each of these categories continues to vary. From the second half of the 1990s through the mid-2000s, almost all manufacturers worldwide displayed a desire to maintain and/or develop a presence at the top of the range: Lexus, Infiniti or Genesis for Toyota, Nissan or Hyundai; Ford's acquisition of Jaguar, Land Rover, Volvo or Aston Martin (grouped together with Lincoln and Mercury in the Premier Automotive Group between 1999 and 2008); GM's acquisition of Saab; VW's development of Audi or acquisition of Bentley, Lamborghini and Bugatti, not to mention its close relations with Porsche (or the launch of the Phaeton, its electric car); Fiat's

efforts to relaunch the Lancia as a premium brand; Renault's attempt to reconquer the market for vehicles priced at more than €27,000 (specified in the 2006 Ghosn plan); or PSA's launch of the C6 and its building of a "top-of-the-range vehicle" competitiveness centre in Rennes, followed by the extension of its DS range. Everyone was singing from the same sheet, talking about the need to have a premium product. A few groups did this and were portrayed as big winners. Most did poorly.

Above and beyond the manufacturers, motorists were offered vehicles by a system that was only interested in a small proportion of the population and would let the others express themselves on the largely self-organised used car market. This was where renewal needs became the adjustment variable in most households' automotive budgets. For a growing percentage of households, the automotive consumption system (being able to drive) was managed as a costly social obligation (Froud et al., 2000), with people trying to reduce the cost by only paying what was unavoidable (to wit, utilisation costs, starting with fuel) and focusing only then on discretionary variables such as vehicle purchases.

In short, where it might be possible to imagine that – given more or less satisfactory ownership levels – the supply of automobiles would henceforth be geared towards enabling households to spend proportionately less in this area while gaining something in quality terms, what happened instead was a curious phenomenon in which automotive budgetary coefficients tended to stay the same, even as most households' cars got older, shifting their spending from acquisition to utilisation costs. Vehicles improved because the "social" benefit derived from this behaviour diffused much more slowly and much less widely than would have been the case had the offer of new vehicles been more in sync with what most households could and wanted to spend in this area.

Attempts to reduce emissions or improve road safety were tantamount, from this perspective, to measures requiring households to own vehicles satisfying both points of view. As noted in many arguments about carbon taxes or low-emission zones, such measures are deemed problematic today. This is because they mainly hit the more fragile populations, or the owners of the oldest vehicles, whose lifespans are often extended – making it harder for them to satisfy increasingly rigorous carbon or particulate emission standards. In turn, this stigmatises the poor's automotive behaviour.

4.2 The "premiumisation" viewed as a "one best way"

This competitive interaction occurred in a context characterised in many developed countries by growing disparities in income and assets.

The situation was de facto beneficial to specialist manufacturers but also to the Volkswagen Group who (together with Audi) disputed the specialists' domination in premium segments and benefited like they did from the specificities of the German market. In countries where mortgage lending was common practice, the property bubble that occurred over this period of time amplified this auspicious context. Once people's ability to borrow no longer reflected their disposable income but the increasing value of households' property assets, demand rose for automobiles, especially for premium vehicles due to an optimism sustained by bankers. The idea here was that households (even ones that did not earn much at work) could become rich by purchasing houses and reselling them to buy new ones. Spanish dealers selling German brands asserted that many households had, during this crazy era, added their Audi Q7s or BMW X5s to the sums they borrowed to acquire property assets, certain that these could not help but gain in value over the years to come.

German manufacturers benefited from this external context, in much the same way as Japanese manufacturers working in the United States during the 1980s took advantage of the second oil crisis. Both benefited in a way that their competitors could not, due to people's disbelief, based on recent history, that the products in question might become less marginal in commercial terms. Without their having to do much, the Germans' market share and profits grew very quickly in Europe. Daimler and BMW, for instance, each added 3 to 6 points in EU market share between 1990 and 2005. Since the American market experienced (for similar reasons) an analogous evolution by helping the same German manufacturers (plus more recent premium brands like the Toyota Lexus or the Nissan Infiniti) – and because the "nouveaux riches" in China and Russia very much wanted the same products – the trend was interpreted as being structural in nature. Financial analysts, who mainly focused on corporate profits, rapidly equated a company's presence in the top of the range with the be-all and end-all of the industry. Managers working for leading manufacturers were happy to adhere to a vision whose new priorities bolstered the love many already felt for automobiles.

Hence the advent within the automotive industry over the past 20 years or so of what modern economic sociologists call a new "conception of control" (in Fligstein's sense of the term).[3] The conception dominating the automobile (above all in Europe) views the top of the range as the factor that predetermines and initiates the characteristics that all product ranges will adopt within a few years: hence, the need to be present in this segment – the willingness to spend money

on (expensive) automobiles puts companies in direct contact with lead users by endowing their vehicles with new systems or traits that often diffuse later to all vehicles.

In the end, the whole of the industry began to focus on this one outcome:

- For generalists, profits on expensive cars would help to subsidise lower margins on smaller vehicles and, potentially, market share.
- Reputations earned on "premium" vehicles affected the rest of the range and enabled, everything else remaining equal, higher prices than the competition could practice in mass segments.
- Suppliers were well remunerated for working with these manufacturers, benefiting temporarily from innovations they were asked to make or that they initiated.
- Customers hoped that premium vehicles' resale value would deteriorate more slowly. Reasoning in "total cost of ownership" terms,[4] they viewed ostensibly irrational choices as quite rational.

This logic was rooted in a trickle-down automotive economy whose basic argument was that "doing more means doing less". The marketing version of this view saw innovative commodities as being irremediably expensive at first, hence reserved for consumers with the most purchasing power, the "safest taste" or the greatest aptitude for prescribing (i.e., lead users). It is only then that the demand for an innovation generalises, motivating investment and learning, benefiting from economies of scale and becoming accessible to the greatest number. The economic version of the trickle-down approach refers to the necessity, within a market economy, of allowing wealthy people to become even wealthier so the economy can prosper as a whole. Supply-side economists view this as defending entrepreneurial capitalism from egalitarian demands for an income redistribution that runs the risk of depriving corporate creators of necessary incentives. From the demand side, this is the idea that an economy also needs to discover the latent needs of its more affluent members, as well as ways of satisfying them profitably, so they can be subsequently disseminated to the masses.[5]

Here we are giving the trickle-down economics construct a specific industrial and automotive interpretation[6] inspired from Lipietz's *La Société en Sablier*, which defends the idea that the 1990s were characterised by amplified business cycles explained by the replacement of blimp-like Fordian income distribution systems with more hourglass-shaped forms. The result was a rise in the number of households receiving both less

and more than twice the median income. This comes with the idea that in this situation, and given the "ideological circumstances" leading to it, the new consensus was that the only sure way of driving business was to get the wealthiest to consume more by making them even wealthier or by attracting, for instance via tax measures, these sated consumers' attention to whatever else that they might spend their money on.

For a long time, the trickle-down model did not seem compatible with mass industry and Fordism. Experimenting with many innovations or new technologies at the top of the range went together with the idea that the real test lay in the transition to mass products. For many activities, the trajectory towards what Lipietz (1998) called an "hourglass society" invalidated this diffusion and development model. Where the synchronic or diachronic distances between the rich and poor are relatively small, trickle-down can be a socially feasible compromise. This is because the middle (and even poorer) classes join a society's enrichment model, meaning that they have a justifiable hope of being able to rise up the ranks within a reasonable period of time. This results in large "Chandlerian" companies managing portfolios of brands that each feature their own product ranges, so that the same organisation can see the coexistence of "premium" brands staging and initiating innovations alongside mass brands organising the diffusion thereof. Here, trickle-down becomes a rule that – via different logics of interfirm competition and by managing brand portfolios and products from different brands – does a relatively good job of organising work. This was how things worked during the golden age of General Motors, with its "Sloanian" model: GM's signature brand at the time was its basic brand, Chevrolet. For the Ford Motor Company, it was Ford.

On the other hand, when income distribution becomes more "competitive" in nature (Boyer, Freyssenet, 2000) and leads to the development of a form of dualisation – because income from work is being distributed more unequally, and income from assets gains importance – the distance between the rich and poor increases synchronically, with the poor losing hope that they can access the wealth model. Here, trickle-down does not work very well, increasing the probability of dualised supply and demand for the same goods.

In the automotive business, it is possible to see the embodiment of this dynamic in the specific competitive system mentioned above. Unlike other sectors, the automotive industry can only address part of the population participating in the market for new cars. This was always the case, due to the existence of an alternative – used cars, allowing households to continue driving despite new cars' excessive prices. This has created a

situation where the attributes of this general dynamic tend to produce specific repercussions, namely the absence of a dualised product offer. Many automakers found themselves restricted to increasingly narrow areas of commercial opportunity, limiting the space where they might diffuse their innovations to solvent customers. In the end, this meant that profits were sought from the outset at the top of the range, instead of during mass innovations' diffusion phases (Jullien & Pardi, 2011).

The justification was the industry consensus that having a presence in such segments was the only thing making it possible to develop the image and pay the technological entry ticket needed to attract customers who – even for smaller and cheaper vehicles – would quickly express their desire for limited numbers of vehicles with similar characteristics. Convinced that this was the only way to go, the specialists built smaller cars. The big generalists, on the other hand, wanted their own brands and premium models because they wanted the trickle-down effect to play out.

The VW Group and its remarkable success with Audi embodied this strategy, which seemed to renew the traditional Sloanian strategy and adapt it to today's non-Fordian context. By disputing BMW and Mercedes's monopoly at the very top of the range and benefiting from the associated profits and image, the group ensured that Audi trickled down to VW and VW-Audi to Skoda. VW became the dominant group in Europe and beyond, enjoying (and nourishing) a conception of industry control that suited it to such an extent that challengers were economically and technologically forced to defend themselves. This domination can be partially explained by the group's special access to a German market that offered, along relatively Fordian lines, strong foundations and a solid company governance compromise that it could use to build success. The three European generalists (Fiat, PSA and Renault) who lacked these advantages seemed forced to fight for scraps from VW's table. Specialist companies like BMW and Daimler shared a very large premium market with VW and defended it together with the made in Germany meta-brand, in much the same way as French luxury producers defend their national brand. Fiat, Renault and PSA could do little to avoid progressively being cast out from the upper, upper midrange (D) and increasingly lower midrange (C) segments.

Based on European sales of the main models produced by the five French and German carmakers over 2004–2009, we have devised a commercial domination indicator by comparing sales volume in Europe for the six German brands[7] with the three French brands[8] for all models sold in Europe in the same segments. Where the indicator exceeds one,

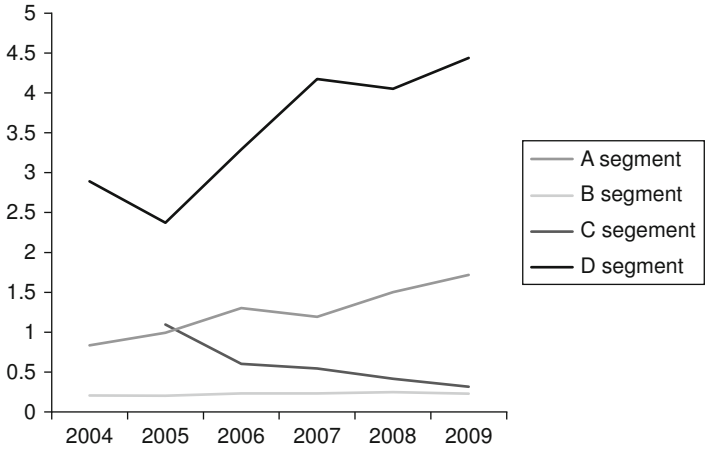

Figure 3.10 Shifting ratio of European sales by German brands/French brands
Source: Argus (French bluebook), author's calculations.

Germany dominated the statement, and vice versa. Thus, on the lower midrange segment, for instance, PSA and Renault were approximately selling as many vehicles in Europe in 2004 as VW, Audi, BMW and Daimler combined. By 2009, however, the Germans were selling twice as many units as the French.

Fiat was the first to experiment in a trajectory that, for a while at least, the two French groups thought they could escape. Today, they are increasingly restricted to the A and B segments and find it harder to defend the C segment, where they still have advantages that they try to maintain via compact minivans and the different ranges they could develop along these lines. It remains that these relatively clear-cut indicators attest to French carmakers' eviction from different product ranges by their German counterparts. Trying to imitate VW and the German industry in its own backyard – and by so doing, defending a conception of industry control that suits the Germans more than anyone else – has not necessarily been the best way to go for the French groups or for the automotive industry as a whole.

5 Conclusion

While it may appear on the surface that the demand for automobiles in France has not changed much over the past 20 years, this analysis

indicates that it has, in fact, become increasingly difficult to sell new cars to French households.

This difficulty is partly a consequence of the macroeconomic trends face by carmakers. On the one hand, French growth has slowed, and what little growth there is has favoured profitability rather than salaries. In addition this has further reduced the purchasing power of households with lower salaries. On the other hand, French households are choosing to spend more of their available income on other goods and services, such as telecommunications.

However, the difficulty of selling new cars in France, as in the rest of Europe, is also partly endogenous and linked to the strategic choices of carmakers and the new competitive dynamics that have emerged as a result. Rather than maintaining volume by adapting their product policies to the constraints on poorer households, in particular the smaller amount of money they wished to allocate to car purchases, European carmakers chose to move up-market and to target wealthier households. A new "conception of control" thus emerged in the sector. Despite the fact that it was, in reality, adding to the difficulties of carmakers, this common approach generated a consensus that markets were saturated and that the industry was suffering from structural overcapacity. This was already the dominant perception before the crisis hit in 2008.

The domestic base of French carmakers is centred on small to medium-sized vehicles targeted at the middle and lower classes, and this made them more vulnerable to the new competitive dynamics than German carmakers. They thus lost a significant volume of sales in the small car market and did not replace them with sales of higher-priced models. To adapt, they delocalised their manufacturing. Considering that the overcapacity was French-based, they halved French output in 10 years (Jullien, 2010). In so doing, they transformed a trade surplus in the automobile sector into a trade deficit, reduced employment in the sector very significantly, and dragged their OEMs into a state of permanent restructuring.

The new "conception of control" that came to dominate the European automobile sector thus proved particularly damaging for the French car industry. The rules of the game that emerged were not as disruptive for the German car industry, and it was able to grow and generate enough profitability in Europe to finance its international expansion. French carmakers, on the contrary, were more suited to the Fordian conception of the car sector, and they were subsequently weakened (Jullien & Pardi, 2015). PSA unsuccessfully tried to imitate the strategy of VW but ended up having to restructure in dramatic fashion, with the French state and

the Chinese carmaker becoming shareholders. Renault benefited both from its alliance with Nissan and the liberty it gained from the success of its "low-cost" segment, which allowed it to extract itself from this "conception of control" (Jullien, Lung & Midler, 2012). While Renault's success with Dacia did not restore the group's commitment to manufacturing in France, it did highlight how the product policies adopted by French carmakers in general were not what was called for in the environment that has been described.

Notes

1. This contradicts the measures that are normally used to assess new car price changes. Such indexes tend to include quality and promotion effects. As indicated in an INSEE study covering the period 2000–2007, this means that carmakers' catalogue price rises over the period in question should be halved. Titularly, they rose by 15%, but in reality, this was only 7%, since the price shifts mainly reflected the higher quality of the vehicles in question (Juillard, 2007) Yet once lesser quality vehicles are subtracted from the question, the actual catalogue prices are better at measuring households' ability to buy new vehicles. In the end, INSEE came to the conclusion that the relative price of new cars was rising more slowly than inflation was falling, with the opposite holding true for catalogue prices – those at which cars were actually being offered to households.
2. John Wormald inspired the reference to excess quality in the automotive business; he interpreted this, however, in somewhat different terms (see Maxton, G. and Wormald, J. 2004).
3. "Conception of control" is the term that Neil Fligstein used to analyse the industry and define rules structuring its productive sphere, viewed here in much the same way as Bourdieu saw social fields in general, meaning a kind of domination where the parties being dominated accept (often enthusiastically) a logic serving the dominant parties' interests.
4. TCO: total costs of ownership (notably including utilisation costs, new car retail prices and resale values).
5. In recent years, the press has often characterised "Obamanomics" as an attempt to create "trickle-up economics", in contrast to the trickle-down economics that have dominated since the times of Reagan.
6. As indicated in the introduction to this third section, the connotation is broader than the one customarily used to define trickle-down economics, focused solely on lowering taxes and social charges on society's wealthiest.
7. Audi, BMW, Mercedes, Mini, Smart and VW.
8. Citroen, Peugeot and Renault (excluding Dacia).

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4

Income Polarisation, Rising Mobility Costs and Green Transport: Contradictory Developments in Germany's Automotive Market

Antje Blöcker and Julia Hildermeier

1 Introduction

In the last 10 years, the gap between the rich and the poor in Germany has widened. Incomes polarise to the margins, and the middle-income group gets smaller. Increasing income inequality has important influence on the population's real and perceived quality of life and participation in society at large. Since 2001, at the mid-term of each electoral period, the German government issues a report on the living conditions of the poor and rich. The forth and most recent report, issued in January 2013, confirmed existing trends: a wider distribution of incomes among the rich and the poor; increasing low-income jobs, as more than 4 million people earn less than 7 Euro pre-tax an hour; a higher risk of poverty in general. Poor people thus tend to remain in the weakest income group (Bundesregierung, 2013). This alarming finding has been a highly political issue, as the government tried to conceal its significance in an earlier version of the report, published in 2012 (Sueddeutsche Zeitung, 28 November 2012).

It is a fact that the income share of GDP has been decreasing continuously in recent years. The incomes of the population's richest decile increased substantially, while those of the poorest decile lowered gradually. Wage earners face living expenses that are expanding faster than

real wages. Social inequality has been a central catalyst of the 2008–2009 crisis, which rapidly extended to the real economy and hit especially the automotive industry.

In this chapter, we put the growing inequality in Germany into perspective with the recent developments in its automotive market and industry. Based on statistical data, we ask if and how growing income polarisation will have negative effects on the German automotive markets in the medium term. Rising living expenses are mostly due to energy and transport costs, which have increased above the average in the last 5 years. Both cost factors are directly linked to the automotive industry.

Some contradictory findings emerge: Germany's car industry surmounted the 2008–2009 crisis like no other. Jobs were protected through working time accounts and short-time work, and scrapping schemes stabilised the domestic market (Blöcker & Jürgens 2009). In 2010–2012, the sector returned to pre-crisis rapid economic growth. Global players accumulate profits (Volkswagen, Audi, Porsche, Daimler and BMW) as never before. German premium carmakers especially registered extremely high returns on sales. Only the German subsidiaries of US groups Ford and GM (Opel) did not follow.

In order to explain this development by sectoral and market characteristics, we first need to take into account that locally produced cars are being exported to Europe and in ever-larger numbers to emerging BRIC markets, which considerably improves the country's positive trade balance. The car industry has been guaranteeing the success of Germany's export-based economy for years.

But German cars are also sold in the domestic market, where especially premium carmakers have benefited so far from the relatively high level of economic prosperity. Could rising inequalities now jeopardise the premium model?

After the Second World War, the Federal German Republic's car industry mirrored the Fordist middle classes' mass production and consumption of compact cars, a pattern shaping the strategies of volume producers such as VW, Opel and Ford, until the 1980s, while premium producers Audi, BMW, Daimler and Porsche served higher-income groups. As home-based players, they shaped an industrial model based on relatively well-paid skilled workers and a growing number of technicians and engineers.

Despite the general trend towards neoliberalism in German society Germany's economic development still considerably depends on the dynamics of its core industrial sectors, including mechanical and

electrical engineering, the chemical industry, and the automotive industry, including its suppliers along the vertical and horizontal value chains. In contrast to the deindustrialisation observed in the UK, France, Sweden and Spain, the German economy has come to depend more, not less, on industrial performance.

Facing increasing individualisation and globalisation, on the one hand, and rising oil prices and the CO_2 debate on the other hand, German OEMs have reacted to Fordist challenges since the 1990s by differentiating their product range to small and cheap cars as well as large, expensive cars. The question is whether product market differentiation was a reaction to – or the driving force of – income polarisation. Did OEMs and suppliers react to rising energy and mobility costs by producing affordable emission-reducing cars? Or have green cars become a new privilege of the rich? The 2008–2009 crisis accelerated the trend towards "product greening". First of all, politicians focus on the electric car and related mobility innovations. Does this imply a radical change in the German car industry's dominant production model? Will electric cars and "green mobility" be affordable for everyone?

In our contribution to this volume, we first illustrate how Germany's income situation has developed, especially how mobility costs have transformed in comparison to general living costs over time (Chapter 2). The third chapter concentrates on the German automotive market, asking for a correlation between market changes and income inequality. In Chapter 4, we look at the most important challenges on the supply side, focusing on greening strategies, electric mobility and public support schemes. We conclude with the current contradictions among increasing income gaps, carmakers' greening strategies and rising mobility costs on the German automotive market.

2 Income, consumption and mobility costs in Germany

Since buying and using a car, as well as public transport, have become more expensive, German households are forced to spend a larger part of their income for mobility. More and more people cannot afford the rising costs of spatial mobility and consequently have fewer chances to integrate into society.

In the long run, since the 1970s, the level of labour income share of gross national income has declined: in the 1970s, the growth of labour income visibly exceeded GDP. The main increase can be observed between 1970 and 1975, followed by stagnation until 1980. The highest gap between the

rate of growth of the labour income share and the GDP. A significant turn of this distribution occurs after 1983 when profit income increased.[1]

About 120 years ago, the trend towards income polarisation, as it was known in the United States and UK, reached Germany. Until the end of the 1990s this polarisation was moderate and relative to income groups, whereas the additional absolute polarisation has visibly increased since the 2000s. In the 2000s, labour income share drops sharply by 8% until 2007. The annual data in Figure 4.1 shows that this trend continues, only interrupted by the German reunification, and has doubled its impact since 2004: at that time, productivity growth almost exclusively benefits profit incomes. No other country has seen such a rapidly growing income gap between productivity gains and real wage growth. The deep recession of 2008–2009 triggered only a short-term increase of the labour income share, which dropped again in 2010 (Figure 4.2).

Decreasing real wages by 4.5% in Germany from 2000–2010 is responsible for this polarisation trend. Germany was at the peak of wage restraints among all industrialised countries, ranking even before Japan (–1.8%) over the same period (www.ilo.world wage report 2012–2013). This reduced labour income share because the larger distribution margin by 0.73%, as compared to the increase of real wages + 0.13% p.a., was not exhausted.

Not only did functional labour income shares diminish from 72.1% in 2000 to 66.5%, but also inequality increased considerably. Gross wages per employee in real terms were rising only very slowly; gross salaries per employee were at 25,305 Euro in 1991, going up to 27,198 Euro in 1996, but then dropping again in 1997 and 1998 to 26,941 Euros. Between 2000 and 2002, gross salaries were again augmented

Figure 4.1 Increasing profit share of GDP (1970–2012) in the 2000s
Source: AMECO data, national accounts Germany (update 14.03.2013).

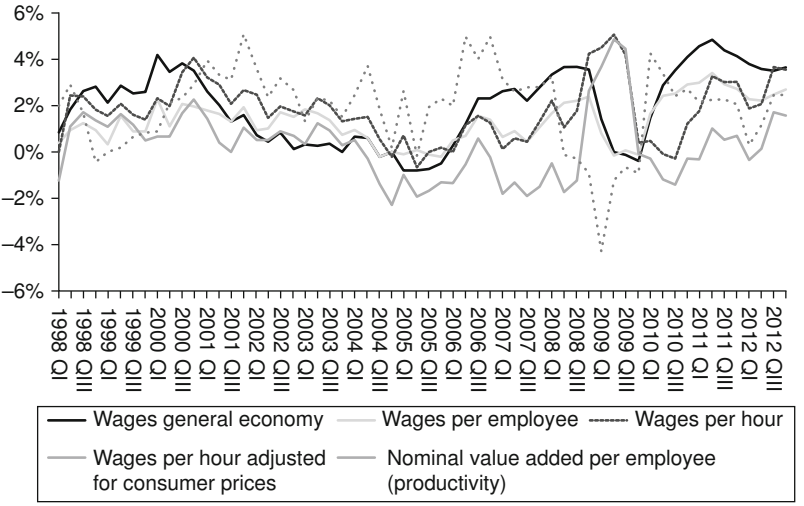

Figure 4.2 Growth of wages (nominal and real) and productivity in Germany
Source: Statitisches Bundesamt auf Basis AMECO national accounts (update 14.03.2013).

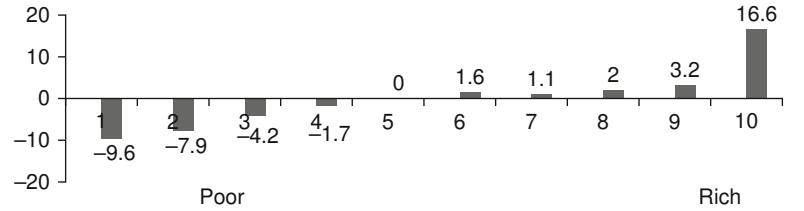

Figure 4.3 Development of disposable incomes (1999–2009) per income decile
Source: Sachverständigenrat (2011), p. 340 and WSI Verteilungsbericht (2012).

to 27,425 Euro. Since then, they have declined to their current level, 26,821 Euro. Income differences are increasing. The poorest 30% had to face a decline of –4.2% between 1999 and 2009, as shown in Figure 4.3.

German socioeconomic panel data (DIW/WZB 2011) shows that not only are there more poor and rich people in absolute numbers, but also that poorer households are becoming poorer. In contrast, the richest

10% in 2010 were 10 times higher than the gross wage of the poorest 10%, while in 2000 it was only 7 times higher (WSI, 2012).

This trend makes middle-income groups that normally guarantee for social stability feel more insecure. Between 2000 and 2010 especially the four lowest deciles became poorer (Figure 4.5).

The unequal distribution of income depends on the structural change of labour. Income poverty has resulted from high unemployment numbers in Germany since 1990. From 1991 until 2006, the number of unemployed doubled from 2.159 to 4.245 million. It sank as a result of labour market reforms (so-called Hartz laws) to 3.128 million in 2008. During the crisis, unemployment increased only moderately to up to 3.228 million, which was acknowledged globally as the "German job

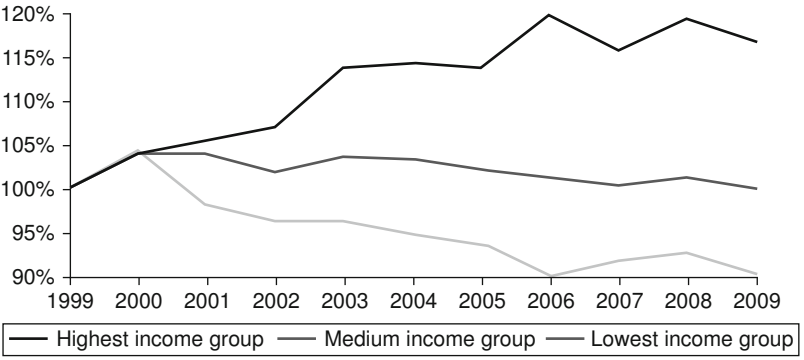

Figure 4.4 Growing income gap between the poor and the rich

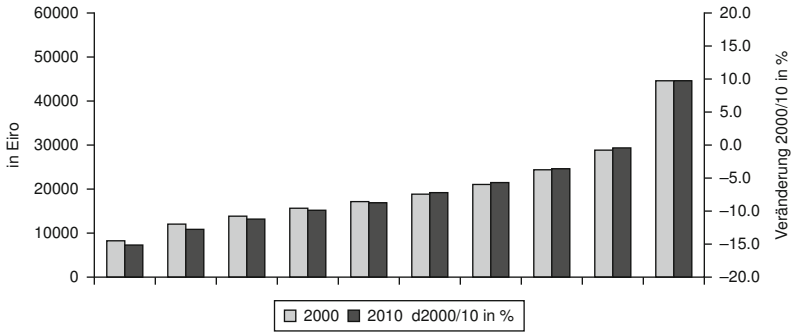

Figure 4.5 Change in incomes (2000–2010)

Source: Bundesregierung (2012) and Armuts- und Reichstumsbericht (2012). Berlin.

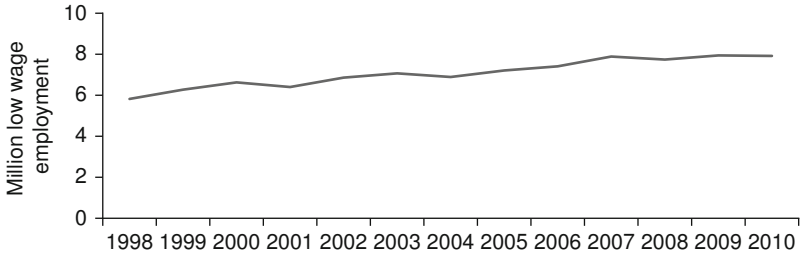

Figure 4.6 Rise of low-wage employment (1998–2011)
Source: WSI Verteilungsreport (2012) (low wages: less than two-thirds of average hourly wages).

miracle". Only by mid-2011 had absolute unemployment numbers dropped substantially: by the end of 2011, "only" 2,501 million (5.9%) Germans were jobless, which is the lowest level since 1992 (Ameco data & Agentur für Arbeit, 2011).

Behind the "German job miracle", however, we see increasing poverty among wage earners in an increasingly precarious labour market. Part-time, temporary and minor employment seem to constitute Germany's path towards the service economy. Nearly 8 million people have low-wage jobs, a growth rate from 17.7% to 23.1% of all employees in Germany.

Although these wages are misleadingly termed "entry wages" to professions, the chances to obtain a better-paid job have worsened. There is less overall income mobility.

Not only earners of low incomes have witnessed cuts in real wages, but also employees in middle- and high-income groups, such as skilled metal workers in the car industry. The cost of successful exports, in fact, is wage restraints. Germany's foreign trade plus is paid for by other national economies. As a consequence, many employees cannot live on their wages. This especially concerns jobs newly created during the boom after the 2008–2009 crisis. In 2010, the number of temporary workers in firms increased, especially in the car industry. While on the one hand poverty is increasing, private property is expanding, based on rather tolerant tax laws on incomes, property and profits. The government justified these measures with the need to protect national industrial sites and to attract job-creating investments. However, these measures did not stimulate any long-term effects. Short-term effects on automotive markets and industry were high exports and high premium sales due to increasing income polarisation.

Does this polarisation translate into lower participation in mobility or changing ownership patterns of new and used cars? Even if the savings rate in Germany is much higher than in other industrialised countries (e.g., the United States), and rose after the crisis in 2008, households mainly invest their disposable income in private consumption (91.3% of disposable income). Over time, consumer spending has varied: While households spent less for food and clothes, heating, electric lighting, transport and other services have increased remarkably (see Table 4.1).

The consumer price index of 1995, 2000 and 2005 shows that living expenses considerably increased, out of which mobility costs (vehicle price index) have grown disproportionately. From 2009 to 2010, the consumer price index has risen from 107.0 to 108.2, and from 108.2 in 2010 to 110.3 in 2005, and mobility prices increased from 107.6 to 111.6 due to rising fuel prices (115.8) and insurance costs (118.6). For the years 1993, 1998, 2007, 2009 and 2011, our data details mobility costs and spending (see Table 4.2): While expenditures for buying a car keep fluctuating, cost shares for fuels have doubled since 1993. This trend seems to continue in 2013, as fuel prices and vehicle insurance increased between 2007 and 2011, as the index shows above.

To the question of which income groups spend below the average for mobility, income polarisation again is the key explaining factor: The

Table 4.1 Breakdown of consumer spending by main categories, in percentage of total consumer spending

Year	Consumer spending per habitant EUR	Food, beverages tobacco	Clothes shoe-ware	Housing, water, electricity	Equip-ment	Transport	Leisure culture	Tourism holiday	Other*
1970	3218	24.5	9.7	17.6	9.4	12.5	9.5	4.9	12.0
1980	7343	20.5	9.1	20.1	9.2	13.3	9.1	4.7	14.0
1991	11034	17.7	7.9	19.2	8.3	16.7	9.5	5.7	15.0
2000	14540	15.1	6.0	22.9	7.9	16.4	10.0	5.7	16.0
2005	15849	14.5	5.1	24.1	6.6	17.1	9.3	5.4	17.9
2007	16493	14.3	5.2	24.0	6.5	16.8	9.4	5.7	18.2
2008	16922	14.6	5.1	24.7	6.3	16.6	9.3	5.8	17.7
2009	16996	14.4	5.0	24.7	6.2	17.0	9.2	5.8	17.8
2010	17530	14.2	5.1	24.6	6.2	16.2	9.2	5.8	18.9
2011	18191	14.1	4.8	24.4	6.2	16.6	8.9	5.9	19.1
2012	18975	14.8	4.8	24.4	6.2	16.7	8.9	6.0	17.9

Note: * Health, education, insurances and financial services.

Source: Statistisches Bundesamt (2012, pp. 8–10).

Table 4.2 Mobility cost split (spending per household and year)

Year	1993 EUR %	1998 EUR %	2007 EUR %	2009 EUR %	2011 EUR %
Private consumption transport costs	1747	2061	2770	2889	3019
Car purchase	35.9	42.4	36.9	40.6	35.5
Motor bikes, bikes	2.6	2.9	2.3	2.1	2.2
Equipment, spare parts	2.3	4.3	4.4	4.1	4.2
Fuels, lubricants	15.9	23.0	25.1	21.8	25.5
Service, maintenance	8.6	11.5	11.6	11.5	11.6
Garages, pitch rental	5.9	1.7			
Other services	4.7	3.5	3.7	3.8	3.8
Passenger transport services	6.0	10.4	17.5	17.2	18.3

Source: Statistisches Bundesamt (2012, p. 25).

lowest income groups spend less than average on transport, while the two highest income groups spend more. The poorest income groups' mobility spending is especially very restricted since 2003, as is their access to an ever-more mobile society.

The fact that the same group, consisting mostly of young people, does not spend any income on new or used cars suggests a strong link between car ownership and higher incomes. Expenditures for mobility and cars by income groups (DIW/WZB, 2011) show that Germans start to spend money on cars when they earn at least 1300 Euros; lower-income groups cannot afford car ownership. The income threshold for car ownership increased slightly to 1500 Euros with the financial crisis in 2008. Above that threshold, patterns of expenditure for cars have remained stable over the last two decades: the higher the income, the more people buy cars. In 2008, 20.2% in the income group earning up to 2000 Euros a month bought cars, as did 33% of those in the highest income group, which earned between 5000 and 18000 Euros a month.

3 Structural change in the German automotive market

Comprising over 42 million passenger cars, the German car market is the biggest in Europe. Since 1990, the stock of passenger cars has been growing continuously. Nevertheless, new car registrations have declined since 2006 because of cars' longer operating life and increasingly saturated markets, but also because of the substantial price increase for fuel

Table 4.3 Car stock, new and used car registrations in Germany

Year	Car stock (million units)	New car registrations (million units)	Share of new cars on registrations (%)	Average price new cars EUR	Used cars changing owner	Average price used cars EUR
1991	36.772	4159	33	15290	7961	7260
1992	37.947	3930	40	16410	7507	7620
1993	38.892	3194	42	16360	7644	7260
1994	39.765	3209	43	17690	7586	7465
1995	40.404	3314	44	17845	7484	7670
1996	40.988	3496	44	18865	7583	7670
1997	41.372	3528	43	18765	7382	7925
1998	41.674	3736	40	19225	7449	8130
1999	42.324	3802	36	19120	7696	8385
2000	42.840	3378	35	20045	7400	7975
2001	43.772	3342	33	21165	7212	8310
2002	44.383	3253	32	21930	6831	7910
2003	44.645	3237	34	22360	6711	8220
2004	45.023	3267	34	24090	6610	7900
2005	45.376	3342	37	23880	6655	8330
2006	46.090	3468	35	24480	6733	8310
2007	46.570	3148	38	25970	6262	8400
2008	41.184	3090	38	25990	6112	8690
2009	41.738	3807	40	22520	6013	8590
2010	42.301	2916	38	26030	6432	8790

Source: VDA (2011) and DAT-Report (2011, p. 59).

and new cars in the last 10 years. Does the automotive market reflect the polarisation described in the previous chapter?

As in previous years, in 2010, 30% of domestically produced cars are sold in Germany. For German carmakers VW Group, BMW, Daimler, Ford Deutschland and Opel Deutschland, the domestic market still is the largest single market worldwide. However, with the progress of tis French, Italian, Japanese and later South Korean competitors, German brands' share of the domestic market declined gradually: From 95% in 1950 to 71% in 2000 and then 65.5% in 2010. In 2010, 2,916,260 new cars were registered: that is, 23.4% less than in 2009, the year of the scrapping scheme (when 3,807,175 vehicles were registered). The timeline in Table 4.8 indicates the general decline in registrations of new cars (exceptions are the years of economic prosperity – 2005 and 2006 – and 2009, with its strong external market incentives). In general, the market has levelled off at about 3 million vehicles.

Table 4.4 Share of car segments of the German car market (1990–2010)

Segment	1990	1995	2000	2005	2006	2007	2008	2009	2010
Mini cars	20.8	22.6	6.8	4.0	4.4	5.0	6.0	9.7	5.7
Small cars			16.6	16.7	17.6	18.8	18.0	24.2	20.1
Compact cars	33.4	32.6	29.1	26.9	24.9	26.2	26.8	28.5	27.5
Large family cars (midsize)	29.7	25.7	21.8	17.0	16.6	16.5	17.3	12.5	19.4
Executive cars (full-size)	10.3	8.9	8.9	6.4	5.8	5.8	4.8	3.3	5.7
Luxury cars	1.8	1.5	1.3	1.1	1.2	0.9	0.9	0.6	5.7
SUVs (Sport utility vehicles)	–	2.0	2.9	5.8	6.5	7.3	7.7	6.4	4.5
Sports cars	2.5	3.3	3.4	4.4	4.2	1.9	1.7	1.0	1.2
Vans	–	1.7	6.8	12.8	13.6	12.4	11.3	9.0	8.5
Others	1.5	1.7	2.5	5.0	5.2	5.0	5.5	4.8	8.2

Source: Kraftfahrbundesamt (1990–2010).

The economically equally important used car market offers a different picture. For the first time in many years, 2010 witnessed a 7% rise in ownership changes. After the boom period in 2009, which created benefits mostly for small car buyers, the used car is gaining market significance. In addition, consumer research expects new car purchases to further diminish because household incomes are less stable (DAT, 2011, p. 13). Used cars constitute a less risky purchase, they are cheaper, and rates of price increase are low, staying far beyond prices for new cars.

In comparison, new car prices were rising at the same pace as living expenses (as measured by the consumer price index) until about 1999. From 2000 onwards, and especially since 2004, new car prices grew much more rapidly. A reason could be an overly large sales share of vans, SUVs, and expensive, more comfortable cars. While consumers had to pay extra for luxury equipment until the 1990s, most car models and segments comprise these comfort add-ons since 2005.

In the early 1990s, compact cars had a market share of 33.4%, but in 2010 had only 27.5%. The lower-middle segment diminishes to the benefit of mini and small cars. Higher middle-class and executive cars perform slightly better. Until 2009, their market share declined considerably, but executive cars especially seem to have regained market share since 2010. As a consequence, we find income polarisation in the small and mini vehicles segment. However, this shift seems to be crisis-induced and thus temporary.

The "employment and stability pact for Germany", enacted by the government on 14 January 2009, included an "environmental bonus" for new cars and a scrapping scheme for used cars. The goal was to replace old cars with emission-efficient new cars, to strengthen demand, and thus to protect automotive jobs. At an overall volume of 5 billion Euro, buyers could ask for a 2500 Euro bonus beginning 27 January 2009. On 5 February, financial means were already depleted, and 1,932,929 new cars had been ordered at OEMs (BAFA 2010). There is no doubt that German car owners made exhaustive use of the scrapping programme. Due to its immediate success, many countries copied the idea.

Consumers mostly bought cars by VW (401,286) and Opel (160,371). Comparing newly acquired models with scrapped cars, we observe a shift in segments. Among old cars, 18% were compact cars, though among new cars, only 4% were. Inversely, the share of small cars increased from 32% to 36%, while mini cars increased from 9% to 15%. Buyers with lower and average incomes especially benefited from this temporary shift in consumption patterns towards smaller segments. The scrapping scheme protected around 200,000 jobs that otherwise would have been cut or reduced to temporary work, since the bonus scheme's best sellers are produced at domestic sites (e.g., VW Golf in Wolfsburg, Opel Corsa in Eisenach).

Despite being officially labelled as such, the bonus was not really linked to environmental criteria, as environmental groups criticised. Nevertheless, cars purchased through the programme on average have 20% less CO_2 emissions and consume 1.5 litres less fuel than the average scrapped car. Further, the programme reduced nitric oxides by 87% and fine particles by 99%. Adding this to labour market effects, the programme's overall social and ecological impact was positive.

Since the 2000s, there have been a number of other structural market changes (VDA, 2011; KBA, 2011a, 2011b): German cars are ageing, from an average of 6.3 years in 1992 to 8.3 years in 2010. 28% of the 42.3 million cars in Germany are 0–4 years old, 19.7% are 5–7, 17.1% are 8–10, and a considerable 35.2% are older than 11 years (KBA, as of May 2011). 90% of the car stock is held privately. However, this share has been declining in recent years: Forming a clear majority with over 60% before 2000, private car owners represent only 40.1% of owners in 2011. Among the large category of commercial buyers, vehicle dealers and services are dominant, with 22% of all newly registered cars each year. They are followed by commercial fleets in the manufacturing sector, with 11.8%, and 8.6% in public institutions. Car rental firms purchased 10% of all registered cars in 2011. This trend towards a growing share of institutional buyers, especially the rapid increase in company cars,

Table 4.5 Share of private and commercial passenger car buyers (%)

Year	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Private buyer	60.1	50.8	49.4	48.9	47.5	46.1	47.4	39.0	41.1	63.0	42.9	40.1
Commercial buyer	39.9	49.2	50.6	51.1	52.5	53.9	52.6	61.0	58.9	37.0	57.1	59.9

was only reversed by the scrapping bonus scheme in 2009, when private buyers again were at 63% (see Table 4.5).

The higher the vehicle segment, the larger the share of commercial and institutional car holders. In mini (49.4%) and small cars (46.2%), the commercial share is comprised mostly of rental cars. From compact class (54.7%) upwards, commercial shares are significant in middle class (73.2%) and upper-middle class cars (78.0%), and peaks in upper-class cars at 87.9%. In this segment (for example, the Audi A8) only 12.1% of buyers are private individuals. In all, the share of commercial holders has increased over time, representing a very important consumer basis in the premium segment (Diez, 2010). This becomes more evident when we look at who the institutional and commercial car owners are.

In 2011, they bought almost 60% of all new cars. Dividing institutional and commercial car buyers into car trade firms, car rental firms, manufacturing firms, and public and private services firms, one can observe that between 1999 and 2011, the buying share of the car trade firms decreased from 45% to 35%. The share of service cars of manufacturing firms has risen from 12% to 20%. It is evident that the car industry itself has become simultaneously the producer, and an important buyer, of new cars.

The German car market also reflects Germany's ageing society. Only 1.3% of new car buyers are younger than 20. In fact, we see that young people up to age 39 tend to purchase cars much less often. Throughout the country's total passenger car fleet, in January 2011, 28.8% of holders were above the age of 60. The average buying age for new cars has risen to 51 in 2010, and one-tenth of buyers (10.3% in 2010) is older than 70. According to statistical office calculations, people aged 60 and older will make up 30% of the country's population in 2020 (and 35% in 2030). In 2010, the "silver agers" customers are more numerous than the ones aged 30 to 39 years and almost as numerous as the ones aged 21 to 29 and 30 to 39 years combined.

Since 2000, more and more private car holders tend to buy used cars. Consumers' decision to buy used or new depends on their monthly household income. Younger and weaker income groups tend to buy fewer cars: from 17.0% in 1990 to 6.1% in 2010.

Table 4.6 Private car registration per age group

Age group in years	1990 (%)	2000 (%)	2010 (%)
Younger than 20	0.6	0.9	1.3
21–29	17.0	8.0	6.1
30–39	23.0	23.0	12.5
40–49	23.0	24.0	26.5
50–59	21.1	21.2	25.5
60–69	11.3	16.9	17.4
Older than 70	3.1	6.3	10.7

Source: VDA (2011).

Both new and used cars are massively financed through loans. In 2010, private holders bought 500,000 cars; commercial holders paid for 650,000 cars with bank loans. 44% of all new car registrations are leased or loan-financed, a share that has risen from 31% in 2000 and 38% in 2005. With a market share of 68%, OEM-owned banks offer credits. All OEMs have extended their leasing and loan business since 2000, building on discounts for new cars and offering low-interest rates. However, given the fact that across all income groups, buyers purchase cars most often with loans that have attractive interest rates, we observe little direct correlation with income polarisation.

By reacting to base rates via firm-owned banks, OEMs govern the automotive market. But do they also react to rising energy and fuel costs?

99% of the German passenger car fleet still operates with conventional powertrain technology, 73% of which are gasoline-based engines. In the long run, the diesel trend as a "European specificity" has been confirmed on the German market: The overall diesel-share of the total fleet is 26%, and has increased continuously in the last 20 years from 13% to over 40%. Only in the crisis year of 2008 did it drop to 30%.

In the background of the dominant conventional technologies, emission classes are a good "greening" indicator. In Germany's total car fleet, 6.3% of cars remain in the Euro 1 category, introduced in 1992. 23.2% are classified Euro-2 (dating from 1996), 18.5% as Euro 3 (by 2000), and the majority, 43%, which is equal to 18 million passenger cars, adopted Euro 4 emission standards by 2005. The most recent Euro categories, 5 and 6, cover only 6.1% of the fleet (VDA, 2011).

The car fleet's "greening" degree can be measured in CO_2 emissions (g CO_2/km). After the voluntary agreement and subsequent European regulation, emission goals were at 140 g CO_2/km by 2008–2009. At the time,

Table 4.7 Registered alternative drive cars

	2005	2006	2007	2008	2009	2010	2011
All car Registrat.	3,342,122	3,467,961	3,148,163	3,090,040	3,807,175	2,916,260	3,173,634
Liquid gas	1.380	4.220	5.419	14.175	11.083	8.154	4.873
Natural gas	8.053	11.555	11.208	11.896	10.062	4.982	6.283
Electric	47	19	8	36	162	541	2.154
Hybrid	3.589	5.278	7.591	6.464	8.374	10.661	12.622

Source: KBA (2012).

EU-directives foresaw a gradual fleet emission reduction by 65% by 2012, 75% in 2013, 80% in 2014 and the final objective of 130g/km for all newly registered cars per OEM in 2015. According to the European Commission, these objectives were achieved much beyond what was expected: the average emissions level of a new car sold in 2014 was 123.4 g CO_2/km, well below the 2015 target. Finally, until 2020, average new cars should not emit more than 95 g/km CO_2. In the German automotive market, we can observe a continuous emission reduction since 1998. Since 2006, emissions of gasoline cars range below that of diesel cars, because upper- and high-segment vehicles often run with diesel engines. In all, however, German car fleet emissions range at 151.5 g/km in 2010, due to the high premium share and heavy vehicles; thus, they are far from the originally intended objectives in the voluntary agreement. The gradual application of the emission limits, however, left carmakers more flexibility to comply.

Alternative drive technologies represent about 1% of all passenger cars. TThe number of liquid gas-fuel engines rose from zero to 14.000 between 2003 and 2008, but dropped to around 8.000 among annual registrations by 2010 and dropped again by 40% in 2011. Newly registered cars running with natural gas have a share of about 2,500 since 2002. Pure electric cars can be counted by models: In 2010, we see 150 smartForTwos, 57 Fiat 500s, 51 VW Golfs and Jettas, 34 Suzuki Splashes, and 32 Mercedes A-classes. All in all, the share of German models with alternative drive technologies is remarkably low.

It is even more remarkable to see equally few domestically produced hybrid cars that have increased from zero in 2003 to 10 661 vehicles in 2010. Among them, there wre 3,481 Toyota Prius, 1,880 Toyota Auris, 1,375 Honda CR-Z, 1,157 Toyota Lexus and 762 Honda insight. With a total of 8,655 units, Japanese models clearly dominate, not least because German OEMs considered hybrid technology as preferred by Toyota and Mitsubishi to be an impasse well into 2008.

4 Greening strategies in the German automotive industry

The German automotive industry is made up of 1,353 firms with 723,190 direct employees in 2010, and about 2.5 times more along the supply and production value chain (VDA, 2011). As has been the case in several automotive crises during the last decades, the sector again emerged as a winner from the most recent crisis in 2008–2009. Globally, every sixth car belongs to German group brands (VW: Audi, Skoda, Seat, Porsche, Bentley, Lamborghini; BMW and Mini; Daimler: MercedesBenz and Smart,[2] Opel Deutschland, Ford Deutschland). With 9 million passenger cars (21.2% of the total car fleet) the VW group dominates the German car fleet, followed by Opel with 12.4% and Mercedes with 9.3%. The three large groups – BMW, Mercedes and VW – have gained market share since 2000. This, however, is not due to their premium-based strategies but rather to their expansion into lower, small car segments, vans and SUVs. With regard to import brands, Renault/Dacia leads with 2.2 million vehicles (5.2%) but has faced losses of 5.7% (to 5.1%) since 2000. PSA, Fiat and Toyota also face declining market shares of below 3%. Only Hyundai could broaden its share from 0.8% to 2.7%.

German OEMs are crisis winners because they live by 70% of exports. The largest part of exported cars stay in the rather saturated Western European market. In Eastern Europe, the used car market dominates, mainly because wages have hardly increased since the crisis. Sales are increasingly jeopardised due to ongoing financial crises in Southern Europe. The European stagnation will increase competition between sites, through discounts and low financing rates. The spiral of concessions in which the car industry is trapped since the 1990s threatens to further deteriorate this situation.

In addition, the share of OEMs' foreign production since 2007 has risen continuously from 49% to 53.1% in 2010. All German OEMs invest massively in their production capacities in BRIC states (Brazil, Russia, India, China) as, for example, VW does with 13 sites and about 40,000 employees in China. The German premiums – BMW, Daimler, and, in future, Audi, invest in the United States. This development implies limits to expanding exports from Europe. Although so far, foreign production and exports created job effects in Germany, the relocation of components and parts production will shift parts of R&D into rapidly growing world regions. The positive effects on the firms' balance sheets cannot hide problematic consequences resulting from shrinking capacities in

domestic sites, which puts industrial employment into danger. Industrial employment is mostly created outside of Germany.

So far, German OEMs have managed to maintain their leadership in innovation and technology development due to faster trickle-down effects from premium to volume segments. How about fuel-efficient, more affordable vehicles?

The debate about alternative drive and transport concepts has had several ups and downs in its long history. Battery-driven cars, based on plumb nickel batteries, and more importantly, the hydrogen-driven fuel cell, were already supported by the public in the 1980s, and were tested in regional model projects. Alternative fuels such as biofuels, as well as natural gas engines, conquered market niches (despite the intensive debate on the newly introduced E10 gasoline in 2010 and 2011). Politicians and industrial actors neglected electric cars until the mid-1990s.

Clearly, decision makers in the car industry focused on efficient gasoline and diesel technologies to reduce emissions. All German OEMs introduced blue- or green-label technologies: VW Blue Motion (for the VW brand Skóda: GreenLine), BMW Efficient Dynamics, and Mercedes BlueEfficiency. These efficiency technologies also "trickled down" into all segments (except for some SUVs and sports cars by Mercedes and Porsche) in 2011 after having been introduced very selectively in previous years. Prices adjusted even more rapidly, so there are hardly any price differences between non-green or green-blue cars.

There is no price adjustment concerning electric cars. During the crisis year of 2009, political attention to electric mobility exploded, for several reasons. There were debates about limited oil and fossil energy resources, global warming and global expansion of transport in fast-growing markets such as India and China. At the same time, young peoples' interest in owning cars was diminishing. In addition, EU emission limits were severed to 95g per km by 2020. While the 2015 target (120g/km) can be reached through efficient combustion technology, the 2020 targets impose the electrification of current fleets. Thus, introducing electric cars provides a means to reduce overall fleet emissions, especially for premium carmakers.

In industrial policy terms, competition is an important driver: Japanese OEMs brought hybrid cars in series production to markets; the United States, China and especially France provided substantial public support for electric mobility and adequate infrastructure. Germany threatened to lose its leading position.

With the national development programme for electric mobility, implemented in November 2009, governments tried to keep up with track international competitors. In February 2010, an interministerial coordination office was created to support the policymaking process by the "national platform for electric mobility". The platform, consisting mainly of industrial representatives, presented a detailed first report in November 2010 and a second in summer 2011 (NPE, 2011), based on which the government programme on electric mobility was issued (Die Bundesregierung, 2011). The objective is to install Germany as the global lead market and lead provider of electric mobility.

More precisely, government and industry aim for one million registered hybrid and pure electric cars by 2020, and 6 million in 2030, a goal to be reached in three stages: The first phase, market preparation, is to take place until 2014, foresees 100,000 vehicles. However, without public subsidies, and direct monetary and non-monetary support, members of the platform expect only 25,000 e-cars to be on the market by that time.

The second market expansion period lasts until 2017 and should include 400,000 cars, giving way to a mass market with sustainable business models and one million e-cars. The programme includes an overall funding of 3,967 billion Euro for 5 pillars: batteries, 986 million; engine technologies, 982 million; light construction, 328 million; ICT and infrastructure, 753 million; recycling, 90 million. 828 million Euro was designated for vehicle integration and model testing projects. This direct funding adds to indirect support via tax deductions and advantages, loans at low-interest rates, parking privileges and direct support for institutional buyers (i.e., for executive cars). Without this massive public funding, there would be no means to close the current cost gap of 9,000 Euros between an electric and a conventional car, which would lead to only 450,000 registered cars on the market by 2020, far from the industrial policy objective (NPE, 2011).

The question of who would be responsible for building and financing public charging stations for about 35.5 million Euros remains open, as are security concerns. The NPE's experts consider that there will be only moderate demand for public recharge facilities since most users will load batteries at home or at work. Electric cars seem to be designed for customers equipped with garages and workplaces, which is not the case in low-income groups, so collective participation in electric mobility appears to be unrealistic. Prices reach far beyond the average cost of a new car (see above). The Opel Ampera, produced in the United States for the German market, is, at 42,300 Euro, far beyond an average household's budget. Those who have benefited so far are large utilities that

use electric cars as storage facilities, and customers who can afford a third, "green" car. German OEMs announced first electric series only for 2013–2014. Due to high costs, electric automobility will only be available for small higher-income groups. Vehicle fleets will be electrified only gradually.

The many parallel developments we can observe at present will remain in the coming years. This opens up opportunities for suppliers to develop new CO_2 neutral mobility solutions and to cooperate on know-how and qualification. Despite the industry's gradual shift to electric mobility, the current early stage of innovation will determine if German firms own or buy new technologies and components. Current developments at German sites suggest that firms will build their own development and production capacities in close cooperation with producers of batteries and electric engines. The plans to start production of new models like VW e-up or e-Golf has started in 2013 and 2014 but sales units are small to resource and material efficiency as well as to regenerative energy production.

Electric mobility goes beyond new product variants: it is a core part of the government's paradigmatic shift in energy policy towards new energy resources. Electric cars serve as mobile storage possibilities for regenerative energy in smart electrical grids. Electric mobility symbolises the integration of infrastructures of energy, information and transport grids, creating new synergies and systemic innovations towards a sustainable energy supply. A sustainable shift towards electric mobility necessitates not only that product changes, but also that current mobility systems transform.

Thus, only integrating the electric car in multimodal transport concepts will imply sustainable change. Facing this challenge, OEMs recycle solutions from the 1980s, especially "call a bus" and car-sharing systems. Taking into account a paradigm shift from "using to owning" cars, Mercedes has offered Smarts in a "Car2go" system since 2008, BMW (in collaboration with car rental company Sixt) offers "drive now". In 2011, VW invested in a rental car system and will offer its own car-sharing system, "Quicar".

Focusing on urban, densely populated regions, German OEMs are aiming to develop innovative and CO_2-free mobility concepts, to be exported along with their cars (VDA, 2011, p. 56). Mercedes is developing visions of mobility concepts in green, sustainable cities online, using a prosumer-oriented, open innovation approach. Beginning 15 December 2011, users can develop a "GreenSight City" (http://www.greensightcity.de/) in which they connect environment-sensitive mobility, regenerative energies and innovative technologies.

5 Conclusion

Inequality in Germany has increased for several reasons: Primary sources of income vary more greatly, while the share of profit incomes of real national income is rising. From 2005 onwards, neoliberal policy adds on to this trend so that inequality is less compensated for by public redistribution of wealth. The central cause of absolute decline of employees' incomes is that precarious and low-paying jobs expand rapidly. Poverty has become anchored in German society and has spread to the middle classes. In some densely populated areas, high rents and especially energy costs, put the living standard of average income earners, who are the majority of car owners and buyers, at risk.

Our question was how this inequality affects the German car market and how OEMs react to this. While prices for new cars increased moderately, fuel prices rose massively. OEMs reacted by investing highly in R&D for efficiency technology investments, targeting EU emission law. We further asked if the segment differentiation we observed was an effect or a driving force towards income polarisation. The answer here is less clear. Expansion to higher and lower segments is mostly rooted in OEMs' strategies, especially premium carmakers BMW, Audi and Daimler. Except for young people who cannot afford cars, middle-income groups buy VW Golf as a representative model of this segment. Inequality is much more visible in premium segments that are highly dependent on institutional buyers. The correlation between income inequality and greening remains open. All OEMs have invested in greening and light constructions. Premium cars remain innovation drivers, but greening innovations trickle down more quickly into lower segments. This may be seen as a reaction to high fuel prices and emission regulation. However, prices do not differ between non-green and green cars.

In all, the 2008 crisis does not seem to have affected the German automotive market structurally. The polarisation of incomes and product market and changes in mobility patterns have persisted in the last decade. The crisis did accelerate the debate on product greening; however, so far politics and carmakers have reacted late and in rather conservative terms to preserve the country's bread-winning export industry.

The reason why income polarisation does not have stronger echoes in the automotive market is that in all, German consumers stick to the individual passenger car. While modes of use are about to change, cars still are an emotionalised product. Since young people prefer rental to ownership, OEMs massively invest in rental schemes. Surveys show that urban youth refrain from owning and using a car in general (Bratzel,

2011). While more than half of young men between 18 and 29 owned a car in 2000, the number has declined to one-third today. More importantly, driving is becoming expensive for the young generation, who are often stuck in precarious jobs. As we showed above, buying and maintaining a car has become more expensive due to high fuel costs. As a consequence, it remains an open question as to who could participate in car-sharing if young people cannot even afford a car and a driving licence.

One solution could be an inverse development of real wages. Among other factors, it has been lower wages in the automotive industry that allowed the suppressing of domestic competitors. German economic policy needs to introduce minimum wages, abolish temporary work, lift pensions, stabilise social security on the level of former standards, and raise taxes on profit incomes and firms. In the beginning of 2013, wage agreements – not only in the car sector – are higher than during the last decade – a trend that has positive effects on domestic demand and would also benefit the European market. However, as has become clear from the debate on the government's fourth poverty report, official politics are far away from recognising increasing inequality as a central problem for society. It is possible that decision makers will become more sensitive to this issue in case of a new automotive crisis.

Our chapter has confirmed the link between participation in the automotive market and unequal income distribution in Germany, through precarious jobs in the car production facilities and at dealerships, and declining car ownership. It could further show that this trend goes beyond the individual passenger car and also concerns the growing offer of collective new transport and mobility services. Decreasing social mobility (entering higher social status groups has become more difficult) and unequal participation in new forms of spatial mobility become a general problem. Unequal access to mobility could open up a larger debate on social (in)justice in German society.

Notes

1. In all timelines, data from before 1991 only concerns Western Germany. A fully valid comparison is only possible after 1991.
2. The Maybach brand was closed in autumn 2011.

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5
The Automobile Demand in Spain

Holm-Detlev Köhler and José Pablo Calleja Jiménez

Spain is one of the most prominent victims of the global economic crisis following the subprime crash in 2007. The international financial crash coincided with the homemade real estate bubble, and after 14 years of growth, it caused the deepest economic downturn in democratic Spain. The present chapter starts with a general overview of the main characteristics and recent trends in Spain's automotive sector. The second section outlines the automotive policies which always had significant impacts on the development of the sector and currently attempt to promote e-mobility. The following part provides a detailed look at the automobile demand structure and its relation to income and wealth distribution. We conclude with some reflections on the structural changes and future prospects of car markets in Spain.

1 Spain's automotive sector

The end of dictatorship, the opening of the economy, and finally, the integration into the European Community generated the framework conditions for the rise of Spain (and Portugal) as important automotive economies. Currently, however, the Iberian countries have outgrown the low-wage model of development that enabled them to lure huge multinational investments and close the income gap with their wealthier neighbours to the north. They were privileged recipients of foreign direct investment in the 1970s and 1980s as low-cost countries entering the European community, and the automotive sector was one of the most prominent growth industries. Nearly all European and North American OEMs opened plants in Spain, and a considerable supplier industry emerged with foreign investments of multinationals and new Spanish firms taking the opportunity to earn in the growing market and sector.

In many ways, the situation of Spain in the 1980s is comparable to that of the new EU members today. The EU enlargement converted Spain from a low-wage into an average-wage country with considerable impact on the economy. The foreign investment flows in and towards Europe are redirected to the Central and Eastern European countries (CEECs) with Southern Europe losing its comparative advantages and suffering from the disinvestments of foreign multinationals. This trend meets up with a worldwide reorganisation of labour-intensive manufacturing industries towards fragmented production systems taking advantage of cost differentials.

After the investment boom of the 1970s and 1980s, the 1990s saw a consolidation of the sector in the context of a domestic market boom with growing sales and production numbers. The domestic market increase was partly pushed by specific sectoral policies, aimed at modernising the cars in use and giving incentives for the acquisition of new vehicles. Since the beginning of the 21st century, however, production figures have declining, although sales kept on rising until the crisis of 2008–2009 (see Figure 5.1). The assemblers have downsized, while many suppliers have relocated their production. Trade unions and governments are worried about this trend in one of the most strategic economic sectors. The Spanish automotive industry represents 6.7% of GDP and 11.2% of total exports in 2013, the second place in the ranking of export industries behind capital equipment goods. Nearly 90% of the Spanish car production is exported, mainly to Europe (74.7% of total

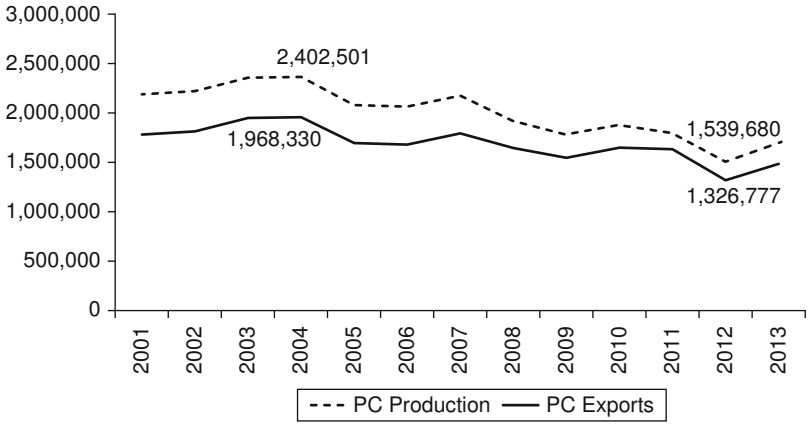

Figure 5.1 Passenger car production and exports

Source: Authors' calculations with data from ANFAC.

exports) while 56,699 employees worked in the 17 OEM factories at the end of 2013 (about 25,000 less than in 2000), and some 185,000 in the supplier firms (about 65,000 less than in 2005), contributing with 8.1% (direct and indirect jobs) to total employment according to ANFAC (2014). The automotive sector ranks second in Spanish industries behind food and beverage. The weight of the car sector in the Spanish economy shows a slight decline over the last decade, a trend which is considered to continue (see Table 5.1). Spain is the second vehicle producer in Europe (after Germany) manufacturing 16% of European cars and 29% of European commercial vehicles, and twelfth in the world.

Spain has plants dealing with all the stages of production but with a clear lack of R&D activities due to foreign ownership. The multinationals use to concentrate their R&D departments in their home countries or other global development platforms which gives Spain a subordinate position as dependent assembler and component supplier.

The Spanish supplier industry started its major development in the 1970s with the arrival of foreign assemblers' investments. It can be divided in three groups:

(1) Spanish global suppliers: There are about 10 Spanish suppliers, like Antolin, Gestamp, Ficosa and Mondragon Automotive, which developed towards globalised first-tier suppliers with presence in all main automobile markets.
(2) Subsidiaries of global suppliers: Many first-tier multinationals like Robert Bosch, Benteler, Valeo, Delphi, Visteon, VDO, etc., have production facilities in Spain.
(3) Local Spanish suppliers: Many local Spanish firms did not take part in the globalisation of the sector and remain as second- or third-tier suppliers in the local market. 86% of Spanish supplier firms are small, with less than 50 employees, and they are in danger of falling victim to the current global restructuring of the sector.

Table 5.1 Automotive OEMs in Spain

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Companies	11	11	11	11	10	10	9	9	9
Factories	18	18	18	18	18	18	17	17	17
Employment	72,331	70,601	69,929	67,264	65,814	63,695	58195	56,669	n.d.
Employment (Suppliers)	251,035	247,772	245,666	208,766	169,936	179,045	191,005	185,046	n.d.

Source: Authors' calculations with data from ANFAC.

Whereas the group one companies are growing in the new emerging markets without reducing their production in Spain so far, the group two and three are strongly affected by relocation operations. A study of relocation risks for industrial sectors in Spain reveals the automotive supplier industry as the sector of highest risk in front of electronic equipments and rubber and plastic materials (Torrens and Gual, 2005; see also Turrión, 2005; Rodríguez Rodríguez, 2005).[1] The plant closures and job cuts announced during the last years confirm the high relocation risk for automotive suppliers located in Spain, while the other industries with considerable plant closures are shoes and textiles, electronic components and alimentation. However, the textile relocations are more directed towards low-cost regions in North Africa and Asia which allows us to conclude that the automotive supplier sector is by far the most affected industrial sector in terms of relocation risks towards the new member states.

The economic crisis had a severe impact on the Spanish economy including the automotive sector, as shown in the Figure 5.2 and Table 5.2. The international financial crisis coincided in Spain with the boost of the real estate bubble and thus provoked a deep and long recession.

Nearly 90,000 jobs were lost during the 2008–2012 crisis, mainly in the parts and component sector (ANFAC, 2014). The demand for industrial vehicles was particularly affected by the situation of the small- to medium-sized companies which had problems obtaining credit, by the weak situation of the construction sector and the downturn of industrial activity.

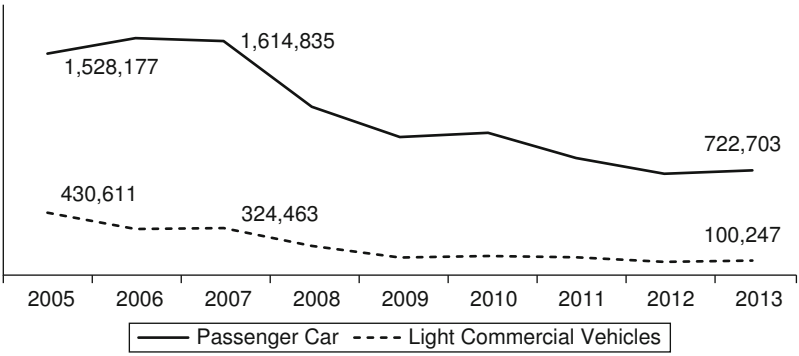

Figure 5.2 The impact of the crisis on registrations in Spain
Source: Author's calculations with data from OICA.

Table 5.2 The impact of the crisis on Spain's passenger car exports

Destination	2007	Share 2007	2011	Share 2011	% var.
GERMANY	197,854	11.0	262,361	16.0	32.6
BELGIUM-LUX.	76,044	4.2	56,314	3.4	–25.9
DENMARK	16,381	0.9	16,303	1.0	–0.5
FRANCE	463,836	25.7	524,752	31.9	13.1
GREECE	35,001	1.9	12,759	0.8	–63.5
IRELAND	16,693	0.9	6,337	0.4	–62.0
ITALY	233,283	12.9	151,923	9.2	–34.9
NETHERLANDS	56,898	3.2	61,331	3.7	7.8
PORTUGAL	42,294	2.3	26,515	1.6	–37.3
UNITED KINGDOM	312,184	17.3	183,237	11.2	–41.3
AUSTRIA	28,518	1.6	45,198	2.8	58.5
FINLAND	5,275	0.3	6,839	0.4	29.6
SWEDEN	8,583	0.5	11,960	0.7	39.3
TOTAL EU-15	**1,494,844**	**82.9**	**1,365,835**	**83.2**	**–8.6**
ICELAND	358	0.0	328	0.0	–8.4
NORWAY	4,829	0.3	4,892	0.3	1.3
SWITZERLAND	22,885	1.3	25,691	1.6	12.3
CZECH REP.	5,559	0.3	11,165	0.7	100.8
HUNGARY	32,351	1.8	17,359	1.1	–46.3
POLAND	19,196	1.1	17,405	1.1	–9.3
SLOVAKIA	3,363	0.2	5,927	0.4	76.2
SLOVENIA	5,306	0.3	5,835	0.4	10.0
ROMANIA	12,190	0.7	3,797	0.2	–68.9
TURKEY	48,397	2.7	68,917	4.2	42.4
OTHERS EUROPE	35,922	2.0	22,202	1.4	–38.2
TOTAL EUROPE	**1,685,200**	**93.4**	**1,548,753**	**94.3**	**–8.1**
JAPAN	2,359	0.1	2,683	0.2	13.7
USA	16,979	0.9	2,544	0.2	–85.0
MEXICO	17,761	1.0	18,763	1.1	5.6
AFRICA	21,409	1.2	30,112	1.8	40.7
AMERICA (EX. USA)	6,268	0.3	7,932	0.5	26.5
ASIA-OCEA (EX. JPN)	10,936	0.6	16,050	1.0	46.8
OTHERS	43,043	2.4	15,741	1.0	–63.4
TOTAL EXPORTS	**1,803,955**	**100.0**	**1,642,578**	**100.0**	**–8.9**

Source: Author's calculations with data from ANFAC.

Thus, the present crisis is only accelerating a longer trend suffered by the Spanish component industry. Up to 2003, the subsector grew due to the outsourcing and subcontracting strategies of the car manufacturers, who

reduced their value-added and workforces to the benefit of modular and system suppliers. The auto parts industry gained more importance in the vehicle production process, assuming more finished and pre-assembled systems and more complex functions like R&D or the coordination of supplier networks. Since the EU enlargement in 2004, however, Spain has suffered relocation and increased competition, resulting in a declining trend for the whole sector. Only a few Spanish component manufacturers like Antolin, Ficosa, Mondragón, Gestamp or ESSA, were able to respond with a proper internationalisation and upgrading strategy in order to convert themselves into successful global players.

In spite of the severe effects of the crisis, the overall picture of the Spanish automotive sector isn't that bad. Whereas the parts and component industry may continue its slimming down trend, which had already started in 2003, the assembly plants show good performance and competitiveness, and their foreign parent companies continue to invest considerable amounts in their constant modernisation, although they closed some smaller factories, like Nissan-Madrid or Mercedes-Barcelona, and concentrated production. The profile of the Spanish car producers, as specialists in low- range and fuel-efficient models with development potential for alternative fuel and hybrid drives, makes them more compatible with future market demands and requirements. During the crisis, the Spanish plants benefited immediately from the incentives and scrappage programs in other countries, particularly in Germany and France, increasing their exports.

Whereas the Spanish economy remains in a weak and vulnerable state, the automotive sector shows clear signs of recovery since 2010, and is the leading sector in export growth. So there is an increasing cleavage between Spanish car production and consumption, with the former benefiting from foreign demand recovery, and the latter suffering chronically weak domestic demand.

2 Spain's automotive policies

Spain has a long tradition of fostering automotive demand by offering incentives to buy new cars. Governments legitimated this public support with security and ecological arguments, claiming the need to renew the stock of vehicles with safer and more fuel-efficient cars. In November 2008, the Spanish Government approved a stimulus package called the *Plan Español para el Estímulo de la Economía y el Empleo* (Economic and Employment Stimulus Plan, or Plan E). Plan E was a comprehensive package comprising €53.4 billion aimed at supporting families and

companies and raising employment rates. The measures were aligned on two main axes: the fiscal stimulus effort and direct financial support. Finally, and after a month of government resistance against specific subsidies for the car companies (which, unlike in France and Germany, were largely foreign-owned), in February 2009, the government approved a € 4 billion package to boost the auto sector: "Plan 2000E". Besides the scrappage programme ("Plan Vive II"), the measures are dedicated to firms who avoid layoffs by collective agreements and invest in upgrading their factories and in the development of environmentally friendly vehicles. Additional funds are spent on improving rail, road and sea transport logistics for the sector. This programme received public support from all employers' and trade associations and from the trade unions.

The scrapping incentives implemented by the Government, regional governments and manufacturers strongly pushed the private market for cars, with an estimated 100,000 additional registrations per year. In the second half of 2010, suffered from the end of incentives and from the rise of the VAT by two points, from 16% to 18%; the market presented a decrease of more than 25%. On September 2012 VAT was increased again, up to 21%. Given the importance of the sector, the government introduced further measures to promote the purchase of new vehicles. The PIVE programs (6 editions to date) and PIMA Aire (4 editions) continue to pump public funds in the vehicle market. In 2012, ANFAC estimates that the PIVE program generated an additional demand for 25,000 new vehicles (ANFAC, 2013). Following the success of this program, it was implemented again in 2014 with increased funding and for an extended period. In both programs, the public aid for purchasing a new vehicle is subject to its energy rating. As an example, PIVE and PIVE 2 programs are explained in Table 5.3.

For some time now, the big manufacturers have benefitted from public subsidies and have negotiated every new model and investment with the national and regional governments. The threat to assign these new investments to alternative plants outside Spain, which would reduce employment, always motivates significant public support.

Just before the crisis, Spain started to develop a deliberate strategy to promote electric vehicles and e-mobility in a market dominated by diesel engines since the beginning of this century (see Figure 5.3). Since 2008, the taxation of motor vehicles and the scrappage incentives have been related to CO_2 emissions, and the demand for vehicles with lower emissions and lower taxation (less than 120 g/km CO_2) has increased, even during the current crisis, with overall downturns. The

Table 5.3 Characteristics of PIVE and PIVE2 programs

	PIVE	**PIVE 2**
Budget and period	75 million € 6 months (ended 31 March 2013)	150 million € 12 months (started 2 February 2013)
Amount	1,000€ conditioned to a discount of 1,000€ at the point of sale	1,000€ conditioned to a discount of 1,000€ at the point of sale 1,500 conditioned to a discount of 1,500€ at the point of sale (vehicles with more than 5 seats, for large families)
Type of vehicles	Passenger cars (A or B energy rating) E-vehicles, hybrid vehicles	Passenger cars (A or B energy rating) Passenger cars (large families only) with more than 5 seats (A, B or C energy rating) Passenger cars and commercials emitting less than 120 g CO2/km (A,B,C or D) E-vehicles, Hybrid vehicles
Replaced vehicles	Passenger cars (more than 12 years) and commercials (more than 10 years)	Passenger cars (more than 10 years) and commercials (more than 7 years)
Vehicle maximum value	25,000€ (exc. e-vehicles and hybrid vehicles)	25,000€ (exc. e-vehicles and hybrid vehicles) 30,000€ (vehicles with more than 5 seats, for large families)

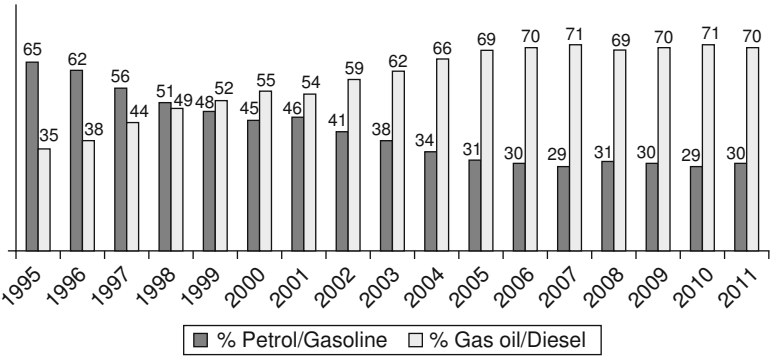

Figure 5.3 New vehicle registrations in Spain by type of fuel

Source: Elaborated by the authors with data from ANFAC.

percentage of low-emission vehicles rose from 19.5% in 2008 to 32.6% in 2010. Additionally, the elimination of the corporate income tax on investments in research, development and innovation is planned, and programs to foster alternative fuels are being carried out. Since 2008, the incentives for low-emission vehicles have shown clear effects. In the reform year, the average emission per car was 150 g CO_2, and the state collected 1,004 € per vehicle. Two years later, the car producers offered a wide range of low-emission models, and the average went down to 139 g CO_2, which made the average tax per car 730 €.

In November 2009, the Spanish Cabinet approved a draft bill for the Law on Sustainable Economy (LES) – the Government strategy to define the new growth model for the economy based on innovation, technology, internationalisation of business, competition and efficient public administration. Parliament approved the LES on 15 February 2011, and the law went into effect 6 March 2011.

There are three main areas to the LES, including efforts to improve the economic environment, promote competitiveness, and commit to environmental sustainability. A Sustainable Economy Fund was created to support a range of measures, from private sector investment to environmental improvements.

Particular initiatives include the following:

- *Streamlining incorporation*: Through the reforms, administrative procedures for incorporating limited companies were improved. For example, the waiting time for incorporation was established at five days where the share capital is between €3,100 and €30,000.
- *Green transition*: A series of incentives will be given to sectors linked to renewable energies and climate change. For instance, the new law provides for an 8% tax credit (increased from 4%) for investments in tangible assets to protect the environment, such as equipment to prevent air or noise pollution from industrial facilities, to prevent the pollution of surface, ground and sea water, or to reduce, recover or treat the investor's own industrial waste.
- *Promoting innovation and research and development*: Funding will be allocated to encourage the creation of technology-based firms and to foster the renewal of traditional sectors in an effort to improve their competitiveness. For instance, the rate of corporate tax reductions on investments in R&D will be increased from 8% to 12% to foster innovative activities.

The automotive industry is one of the main target groups of the law. On the other hand, the expiration of Plan 2000E, together with the VAT

increases in July 2010 and September 2012, had an immediate effect: a decline in car sales. More recently, banks' reluctance to give credits to private consumers and small companies has had an additional negative effect on vehicle demand. Furthermore, the continuous rise of the unemployment rate in Spain – up to 24.5 % in September 2014 (INE) – has had a significant impact on consumption capacity.

While the general incentive programs for the sector are falling victim to austerity policy cuts, the Spanish government has launched a €590 million programme to promote electric vehicles. The "Plan Movele", initiated in 2012 and still in place, aims to introduce electric vehicles in cities like Madrid, Barcelona and Seville, and to install 546 public recharge stations. Electric vehicle purchases were subsidised, depending on the vehicle price, and included all sorts of vehicles, from motorcycles to trucks and buses. For the first 2 years – 2011 and 2012 – the aim is to promote and sell up to 70,000 electric vehicles, mainly to public and corporate fleets. The scheme is comprised of 15 measures in 4 areas to boost demand, invest in research, and develop recharging infrastructure.

Encouraging demand:

- Subsidies for vehicle purchase (20%, up to a maximum of €6,000), with an estimated budget of €240 million
- Creation of a map indicating fleets eligible for replacement by electric vehicles
- Identification of advantages of using electric vehicles in urban areas: circulation in restricted areas, reserved public spaces for charging of vehicles, etc.
- Creation of a seal for cities that favour electrical mobility

Support for industrialisation and R&D:

- Priority given to businesses that include electric vehicles in their objectives (€140 million)
- Support for communication technology between the electric grid and vehicles (€35 million)
- Priority given to R&D and innovation for electric vehicles (€173 million)

Infrastructure and demand management:

- Coordination of measures that foster the introduction of electric vehicles via consensual agreement among electricity companies (€2 million)

- Super-off-peak rates (nighttime hours)
- Free installation of meters with time discrimination for users of electric cars
- Establishment of charge point managers

Transversal measures:

- Strategic marketing and institutional communication
- Identification of barriers arising from consumer habits and opinions on electric vehicles
- Approval and standardisation of vehicles and their components
- Implementation of the European directive on promotion of clean and efficient vehicles
- Specific academic and professional training

The intiative's action plan thus rewards drivers with up to €6,000 towards the purchase of a new electric car. The state hoped the initiative would translate into 20,000 sales in 2011 and 50,000 in 2012, mainly to public and corporate fleets. Since July 2011, a new energy tariff allows the cheap recharge of electric vehicles during the night hours. These figures, however, seem all too ambitious, given consumer restraint towards the new technology. Only 377 e-cars were sold in 2011, 484 in 2012, and 818 in 2013 (ANFAC, 2014). E-motorbike sales are somewhat better, with about 1,500 sold vehicles in 2012, but only 1,100 in 2013, according to Anesdor (2014).

Several factors may explain these disappointing results. First of all, the financial crisis led to fewer car sales, in particular of expensive models, which include the electric car. Second, the crisis lead to severe cuts in the budgets of companies, and particularly of public administrations, which should have been the main drivers in the introduction of these new vehicles and drive systems. Additionally, the subsidy program for e-vehicles stopped, and the value-added tax increased, which meant a further downturn in vehicle sales.

3 Spain's automotive demand

From the beginning of the late industrialisation in the early 1960s until the current financial crisis, Spain has experienced long-standing growth in vehicle demand. Motorisation was, in fact, a main pillar of economic development during the second half of the 20th century. The number of cars per habitants doubled in the period from 1985 to 2007 (see Figure 5.4). The car had become the main status symbol of the new mass

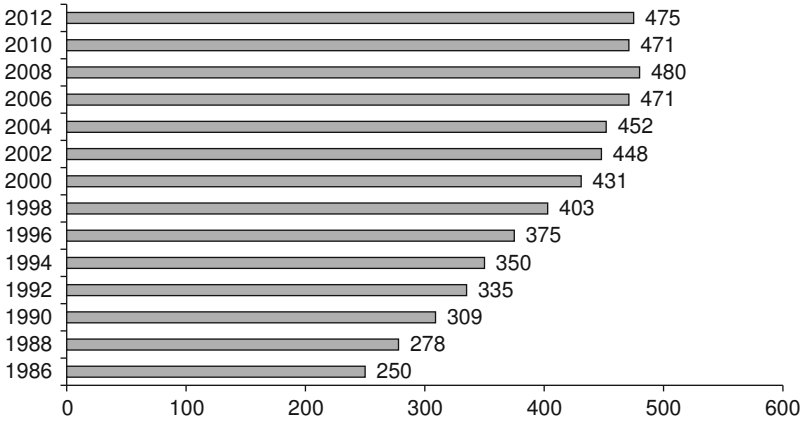

Figure 5.4 Passenger cars per 1,000 habitants

Source: Elaborated by the authors with data from ANFAC and DGT.

Table 5.4 Vehicles in use

	Passenger cars	Light & heavy trucks	Bus & coaches	Trucks tractors	Total	Growth (%)
2004	19,541,918	4,418,039	56,957	185,379	24,202,293	
2005	20,250,377	4,655,413	58,248	194,206	25,158,244	3.95
2006	21,052,559	4,910,257	60,385	204,094	26,227,295	4.25
2007	21,760,174	5,140,586	61,039	212,697	27,174,496	3.61
2008	22,145,364	5,192,219	62,196	213,366	27,613,145	1.61
2009	21,983,485	5,136,214	62,663	206,730	27,389,092	–0.81
2010	22,147,455	5,103,980	62,445	199,486	27,513,366	0.45
2011	22,277,244	5,060,791	62,358	195,960	28,055,470	1.97
2012	22,247,528	4,984,722	61,127	186,964	27,480,341	–2.05

Source: Authors' calculations with data from DGT (National Traffic Agency).

consumption society in Spain, and companies, banks and governments fostered the mass motorisation with credits and scrappage programs. The economic downturn that began in 2008 inverted this trend, and had an immediate impact on the car demand structure, as shown in Table 5.4 and Figure 5.5.

Following the crisis of the early 1990s, the Spanish economy embarked on a long period of strong and sustained economic and employment growth, with growth rates well above those of the European Union. Domestic demand was important to growth, with credit-financed

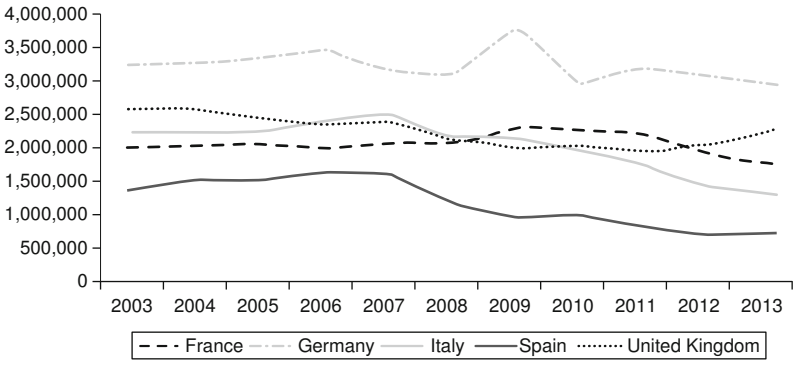

Figure 5.5 New passenger car registrations (2003–2013)
Source: Elaborated by the authors with data from ACEA.

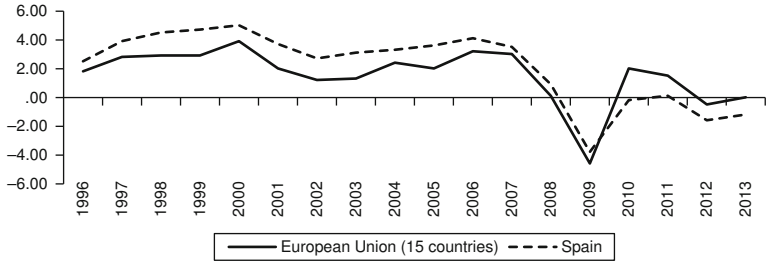

Figure 5.6 GDP growth rates differential Spain/EU-15 (1996–2013)
Source: Eurostat.

housing and durable products – cars included – as prominent elements. The crisis 2008 put a sudden end to this 14-year boom and left Spain in a severe recession (see Figure 5.6).

Construction (housing) and private consumption drove growth and led to dramatic increases in private household debt, particularly in mortgages. In fact, as a percentage of disposable income, household debt in Spain increased by 55 percentage points between 2000 and 2010 (see Figure 5.7). This is significantly higher than the change in household indebtedness in other major EU economies. As shown in Figure 5.8, the crisis had a strong impact on household income distribution, with a steep increase in the housing cost overburden rate (percentage of the population living in a household where the total housing cost represents more than 40% of the total disposable household income).

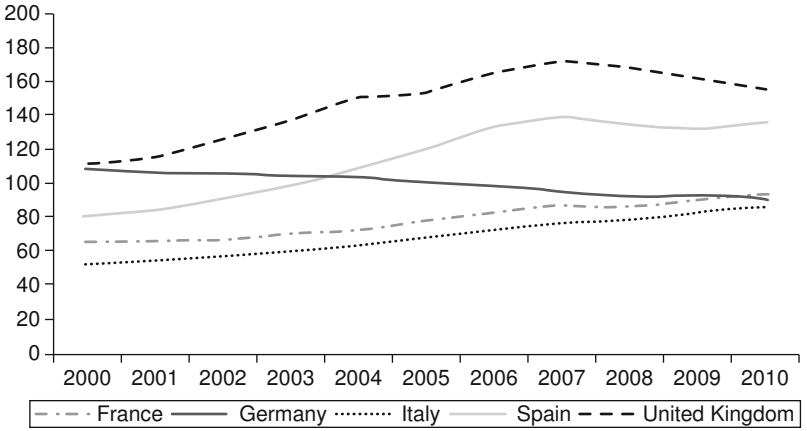

Figure 5.7 Real household debt as a percentage of disposable income (2000–2010)

Source: OECD.

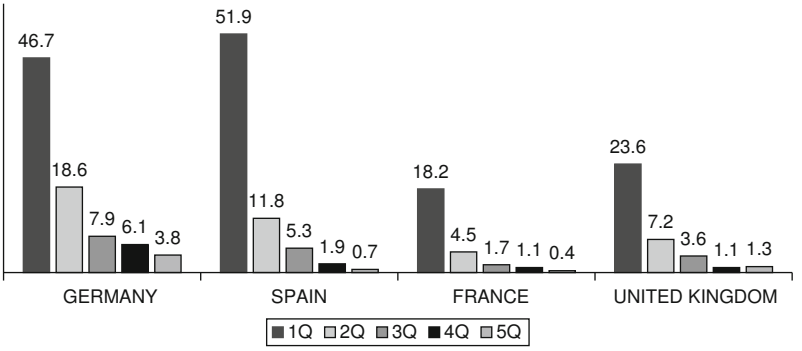

Figure 5.8 Housing cost overburden rate by income quintile (2012)

Source: Elaborated by the authors with data from Eurostat (EU-SILC).

The effect of the crisis on the Spanish economy was drastic, both in terms of the magnitude of the decline in GDP and, more significantly, in terms of the duration of the fall. The downturn was particularly steep in the labour market: Spain was one of the few countries in which the decline in employment outpaced the drop in GDP, with about 2.7 million jobs lost between 2008 and 2010 and an unemployment rate of 26.2% (1st quarter 2013, INE). The fall in domestic private demand

was somewhat compensated by public programs to stimulate investment and consumption in 2008 and 2009. However, the economic recession went on, and after 2 years of expansion policies and shrinking state revenues, the increased public debt forced a shift towards austerity. So, since 2010, the VAT increase, the wage cuts in the public sector, the ongoing credit restrictions, and the high unemployment rate keep strong pressure on domestic markets. The negative effects on the demand side are particularly severe in durables, as goods sensitive to income and credit restrictions. In this adverse context, all car industry associations and trade unions welcomed the renewed incentive programmes for vehicle purchases.

Income distribution patterns in Spain are quite close to the EU average, with the Gini coefficient[2] at 35 in 2012 (EU-27: 30.6), according to the Eurostat database. The income quintile share ratio (ratio of total income received by the 20% of the population with the highest income (top quintile) to that received by the 20% of the population with the lowest income) is also slightly above the European average. Spain, however, is the European country where income inequality has grown fastest during the recent crisis years (see Figure 5.9).

Income and wealth concentration in Spain has increased since the 1990s, although many people invested in private housing which led to dramatic increases of real estate prices. Income and financial wealth, however, are held disproportionately by the top percentile and benefited from the surge in stock prices (Alvaredo and Saez, 2009). The main component of income concentration in Spain is capital gains,

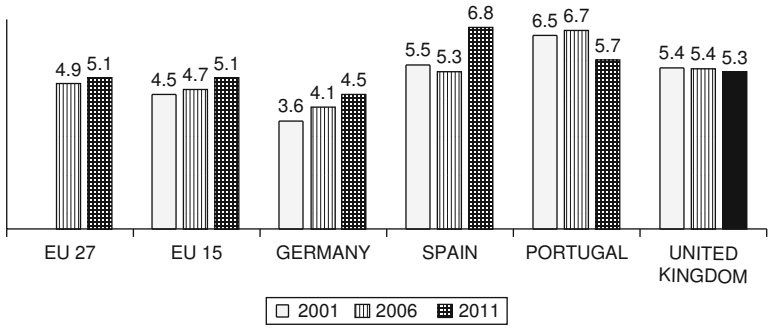

Figure 5.9 Income quintile share ratio in selected countries

Source: Authors' calculations with data from Eurostat.

whereas the main source of general wealth increase is real estate ownership.

As in other developed countries, salaries in Spain are losing share in national income. Wage differences are increasing, leading to huge income inequalities. During the boom, low-wage employment in service and construction experienced high-growth rates, employing many immigrant and female workers. On the other hand, management compensations grew much more than average salaries (i.e., see Table 5.5). The unequal wage development wasn't altered by the crisis; management pay continued to be above average, and low-wage occupations suffered stagnation. Whereas in 1995, a management reward was 142% of an average wage, in 2009 (according to the latest survey on wage structure in Spain), it has risen to 181%. The most common salary in Spain is about 15,500 €/year, which means few earn more than 1,000 € per month (14 pay periods/year) and implies serious difficulties for many trying to maintain a family, particularly in bigger cities. The legal minimum wage in Spain is 645.30 €/month (2013).

Concerning the car market, domestic demand in Spain has sharply fallen in the course of the crisis (more than 50% in 2007–2012; see Figures 5.10 and 5.11), although it shows some signs of recovery, with positive figures since 2013. However, high unemployment, continued credit restrictions, low consumer confidence and the expiration of the demand-side incentives still keep the markets down. The recovered exports only partly compensate the depressed domestic market.

The structure of automotive demand was also altered by the crisis, with a growing market share for used vehicles. Spain has a long tradition of buying new cars financed by credit and stimulated by public scrappage programs, whereas the market for used cars was very small. In 2007, however, for the first time, sales of used cars exceeded those of new cars, and in 2010, 1.7 used cars were sold per 1 new car, a figure that put Spain behind its European neighbours such as Germany (2.2), France (2.4) or the UK (3.3), according to BCA (2013). On the other hand, after the expiration of the Plan 2000E incentives in June 2010, new car sales dropped to their lowest level since the early 1990s, making a clear impact in the Spanish automobile pool, which is approaching an average age of 10 years, one of the highest in the EU. Besides the changes in household income and consumer preferences, dealer strategies and the growing Internet market contribute to this shift.

Following data from the Spanish household panel, the number of households purchasing a car has shrunk 24.4% from 2006 to 2009, but the ones buying a used car only fell 8% whereas the households buying

Table 5.5 Average real wage per occupation (2002–2009) in €/year

	2002	2004	2005	2006	2007	2008	2009	+ %
Companies or public administration management	54,649	55,707	59,800	60,342	61,661	60,453	63,150	13.46
Occupations associated with qualification of 2nd or 3rd university cycle and similar	33,422	28,444	31,633	31,899	34,093	35,505	36,962	9.58
Technical support professionals	26,173	24,865	25,920	25,423	26,332	27,592	28,400	7.84
Qualified workers in extractive, metallurgy and machine construction sectors	20,236	19,905	20,406	20,653	21,810	23,685	23,463	13.75
Unqualified services workers (excluding transportation)	9,740	11,632	12,188	11,435	11,981	13,573	13,838	29.61
Labourers in agricultural, fishing, construction, manufacturing and transportation industries	12,352	13,410	14,217	14,298	14,521	15,328	15,343	19.50

Source: Authors' calculations with data from National Statistics Institute (INE).

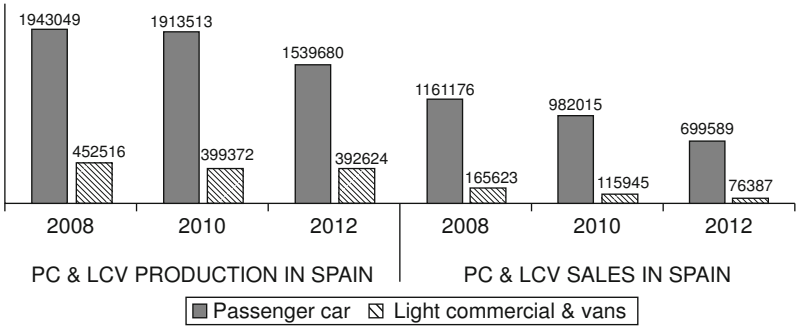

Figure 5.10 Production and sales of vehicles in Spain (2008–2012)
Source: Authors' calculations with data from OICA.

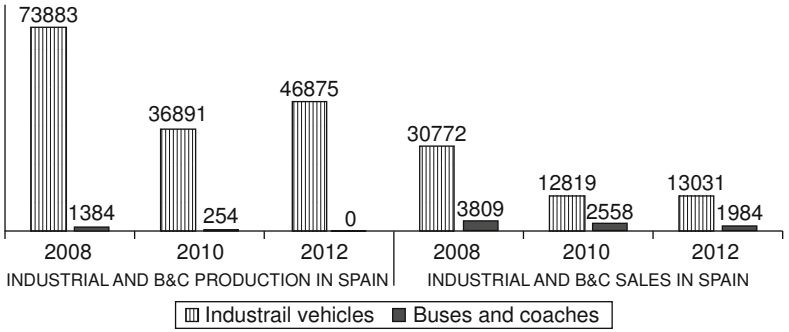

Figure 5.11 Production and sales of vehicles in Spain, II (2008–2012)
Source: Authors' calculations with data from OICA.

a new vehicle dropped 36% (BBVA, 2011). The average expenditure on car purchase dropped in the same period from €15,600 (2006) to €13,500 (2009), and the fall in total expenditure was pronounced, as can be seen in Figure 5.12. The crisis has accelerated a car consumer habit,which had already appeared during the last two decades as a result of growing income inequalities and changing life styles, and the expenditure shares on new cars have also dropped significantly since 2007 (see Figure 5.13).

The employment boom was based mainly on low-wage and low-quality jobs in construction and service industries and the ongoing concentration of the population in big cities with high costs of living. Whereas the older generation developed consumer habits such as mortgage financed

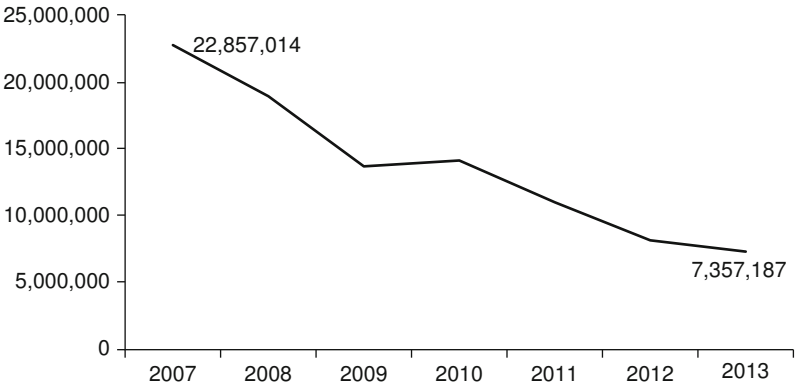

Figure 5.12 Vehicles total expenditure (2006–2011) (thousands €)
Source: Authors' calculation with data from INE.

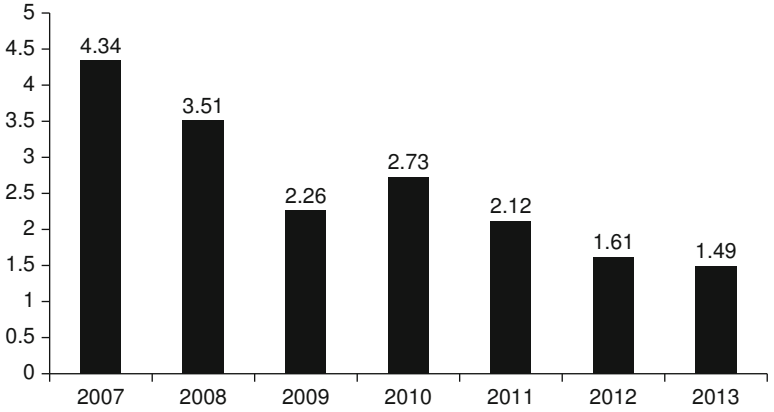

Figure 5.13 Expenditure shares on new cars (2007–2011) (% of total expenditures)
Source: Authors' calculation with data from INE (Household Budget Survey).

housing ownership and credit-financed purchase of durables, furniture and cars, a growing younger population is adapting its life style to limited income/high-cost conditions, living in rented flats and buying used or low-cost cars. Empirical studies show a negative correlation between housing ownership and purchasing used cars (BBVA, 2011). The grown immigrant population also contributes to a trend which might indicate a long-term change.

The crisis accelerated a longer trend in Spanish consumer habits known as low-cost consuming (see Table 5.6). Particularly young and often well-educated people with relatively low income – in Spain, they are called "mileuristas"[3] – develop specific consumer strategies: buying discounted no-brand or white label products, using the Internet for cheap shopping or free downloads, travelling with low-cost agencies, etc. Concerning car demand, this is reflected in more purchases of used cars, often via the Internet, and of cheap models such as Dacia Logan. The average age of the cars in use has also risen since 2007, and the average price of car transactions is falling. There is a particular increase in demand for cheap used cars below €3,000, a phenomenon which received the label "mileurista car".

In the following, we will have a closer look at the evolution of the demand for cars regarding the type of fuel used, the share of 4×4 models, average power, and motor volume. The demand structure in Spain follows similar pro-cyclical patterns as in other EU countries. During the economic growth period, people tended to buy bigger and more powerful cars, with a spectacular minivan and 4×4 (4-wheel drive)

Table 5.6 New car registrations by market segment

	2007		2009		2011	
	Units	**Share**	**Units**	**Share**	**Units**	**Share**
MINI	78,321	4.9	42,521	4.5	32,566	4.0
LOW	371,147	23.0	248,697	26.1	219,786	27.2
LOWER MEDIUM	469,401	29.1	303,248	31.8	230,312	28.5
UPPER MEDIUM	224,277	13.9	133,741	14.0	103,165	12.8
EXECUTIVE	37,528	2.3	13,431	1.4	13,889	1.7
SPORT	14,322	0.9	7,061	0.7	7,051	0.9
LUXURY	6,014	0.4	1,499	0.2	2,456	0.3
LOWER MPV	218,102	13.5	108,632	11.4	84,651	10.5
UPPER MPV	40,679	2.5	12,771	1.3	14,156	1.8
SMALL OFF-ROAD	51,224	3.2	19,021	2.0	30,659	3.8
MEDIUM OFF-ROAD	56,913	3.5	47,517	5.0	55,604	6.9
LARGE OFF-ROAD	16,686	1.0	4,823	0.5	4,602	0.6
LUXURY OFF-ROAD	30,221	1.9	9,812	1.0	9,153	1.1

Source: Authors' calculations with data from ANFAC.

boom in 2005–2007, which, until then, had had little presence on Spanish roads (i.e., see Figure 5.14). All major car companies followed a marketing strategy to promote these new fashionable vehicles and found an immediate response from Spanish customers in the context of the bubble boom. The crisis stopped and inverted this trend towards smaller, cheaper and less powerful cars, as shown in Figure 5.15.

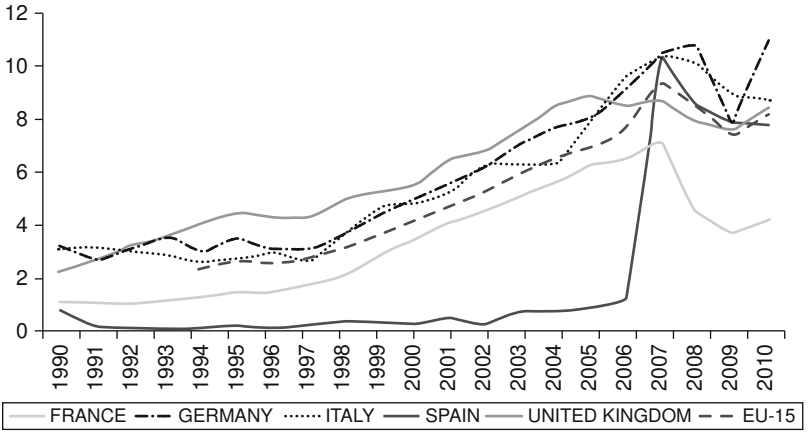

Figure 5.14 Share of 4 × 4 wheel drive models
Source: ACEA.

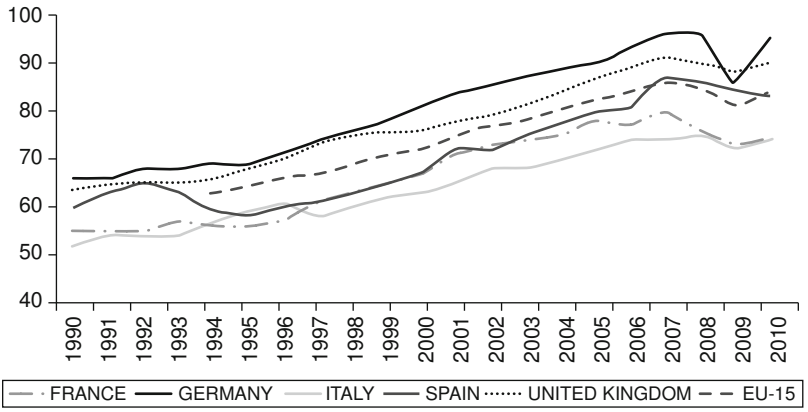

Figure 5.15 Average power (Kw)
Source: ACEA.

The automotive demand in Spain has experienced a fundamental shift since 2008. The impact of the crisis –high unemployment and uncertainty, ongoing credit restrictions, growing income inequality, and demand policies that favour low-emission vehicles – shifted the lion's share of the market towards small- and medium-sized segments and used cars. The policies promoting e-mobility show no significant effects so far.

4 Conclusion

The structure of the car demand in Spain has experienced fundamental changes, which result from a mixture of long-term trends and the impact of the economic crisis since 2008. The international financial crisis coincided in Spain with the burst of the homemade real estate bubble, which led to a severe and long-term recession that affected consumption and car markets. During the long expansive period since the early 1990s, the market for new cars grew constantly, with a steady trend to higher segments culminating in the minivan and 4x4 boom in the last years before the crash. The banks and savings banks fuelled the boom with easy credit, and the governments pushed the demand with incentives for the purchase of new housing and new cars.

The characteristics of the boom, however, based on low-quality employment and urbanisation, have already generated a new, low-cost consumer class among the young urban and immigrant populations. The impact of the crisis stopped the expansive credit- financed consumption boom and shifted consumer habits towards low-cost habits. Whereas the market for new cars has been shrinking since 2008, the low-cost car segment has gained market shares, and the used car market has exceeded that for new cars for the first time in recent history. The age of the Spanish car pool has increased, and economic forecasts don't offer any hope for short-term changes in these trends.

The public policies under the pressure of debt control and austerity abandoned the scrappage programs which had maintained the passenger car demand stable during the initial crisis years – the commercial vehicles suffered immediate downturns – and concentrated instead on subsidies and incentives for electric and hybrid vehicles. The ambitious goals of these e-mobility programs, however, were far from reality, and the private demand for electric vehicles is still non-existent. Despite the incentives for manufacturers and consumers, people are very reluctant to buy expensive vehicles in the context of uncertainty, economic

recession and underdeveloped infrastructure for the charging and maintenance of battery-dependent low-range cars. The replacement of internal combustion engines with electric driving systems is only a long-term alternative; it is not possible to implement by short-term policies in adverse economic contexts. The important position of the car industry for employment and exports, and the disappointing response to the e-vehicle programme, motivated the government to renew scrappage programmes and R&D subsidies for traditional fuel vehicles, although they were directed to fuel-efficient models and technologies.

Given the depth and long-term impact of the ongoing economic crisis in Spain, the analysed shifts in the vehicle demand structure may indicate some long-standing changes in consumer habits, lifestyles and car markets.

Notes

1. The study uses a synthetic indicator composed of five groups: (1) penetration of multinationals; (2) FDI dynamics in the new member states; (3) productive specialisation in Spain and the new member states; (4) efficiency; and (5) internationalisation of markets.
2. The Gini coefficient is defined as the relationship of cumulative shares of the population, arranged according to the level of equivalised disposable income (the total income of a household, after tax and other deductions, that is available for spending or saving), to the cumulative share of the equivalised total disposable income received by them.
3. The term refers to people earning about 1,000 €/month and living in big cities with high living costs.

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6

Japan's Automobile Market in Troubled Times

Holger Bungsche

1 Introduction

This chapter will investigate developments in the Japanese automobile market with regard to changing social and economic conditions over the last two or three decades. The research question is *whether*, and if yes, *how* the traditional national pattern of income distribution has changed, and how these changes influenced the market for automobiles. In particular, this chapter will examine what influence the financial crisis of 2008 had on Japan's automobile market. However, more than in any other market and industry, developments in the automobile sector are determined by legal regulations in reaction to new social, environmental or safety requirements, by technical innovations, and by changing individual and collective attitudes and value perceptions towards cars, mobility and the modern lifestyle. Often in times of economic changes or crises, these factors coincide and accelerate development trends in the industry and the market. This has happened in the past, and there are signs that the financial crisis of 2008 might have boosted development of ecological cars and sustainable mobility, especially in Japan.[1]

Looking first at the scope and scale of the Japanese automobile industry, we have to state that next to China and the United States, Japan still is the third largest car producing country, as well as the third largest single automobile market in the world. However, due to the shift of markets and production to neighbouring economically evolving countries, the importance of Japan – both as a production location and a market – is shrinking. Already, since 2007, overseas production of Japanese manufacturers exceeds domestic production. In 2012, only 38.6% of all vehicles produced by Japanese manufacturers were still manufactured, and only 20.8% were also sold in Japan.[2]

The Japanese car market has some special features. First, it is a mature market, mainly driven by replacement sales with ever-fewer first car buyers. Secondly, domestic brands account for more than 90% of sales. And thirdly, about one-third of all vehicles sold are mini cars with less than 660 cc cylinder capacity. This mini car segment, which is totally in the hands of domestic manufacturers, is also the only segment that is still growing after 1990, while the whole market has been more or less stagnating for more than two decades.

The main driving factors for this development have been, first, that with the beginning of the 1990s Japan's demographic structure began to change remarkably as the share of elderly people increased. Secondly, with the burst of the economic bubble in the early 1990s, Japan's economic and company systems underwent radical changes, which had considerable influence on people's incomes and on consumer behaviour. And finally, attitudes, especially of young people, towards cars have been changing.

In this chapter, I will argue that the abovementioned factors have determined the development of the Japanese car market over more than two decades, and they will continue to do so in the future. I will show that the financial crisis, which heavily affected Japan's merchandise economy, especially the export-oriented industries, had a strong, but only short-term, impact on the domestic automobile market. The crisis did not alter the long-term development course of the car market as it can be observed since the 1990s. It seems, however, as if the financial crisis has accelerated the shift towards ecologically friendly cars and sustainable mobility.

2 Social changes and macroeconomic developments

The development of consumer markets in Japan is increasingly influenced by the demographic change that set in around the mid-1980s and has been speeding up ever since. The rapid aging of Japan's population brings about profound changes in households' sizes, incomes and purchasing power. These changes are, of course, affecting all consumer markets, but the automobile market in particular. Also, in the long run, this demographic change will continue to be the single most important factor for the future development of the car market in Japan.

Projecting the demographic development until 2050, Figure 6.1 illustrates one trend, the quickly aging and declining Japanese population.[3]

The demographic development is especially affecting the automobile market negatively, since on the one hand, the group of first-time car

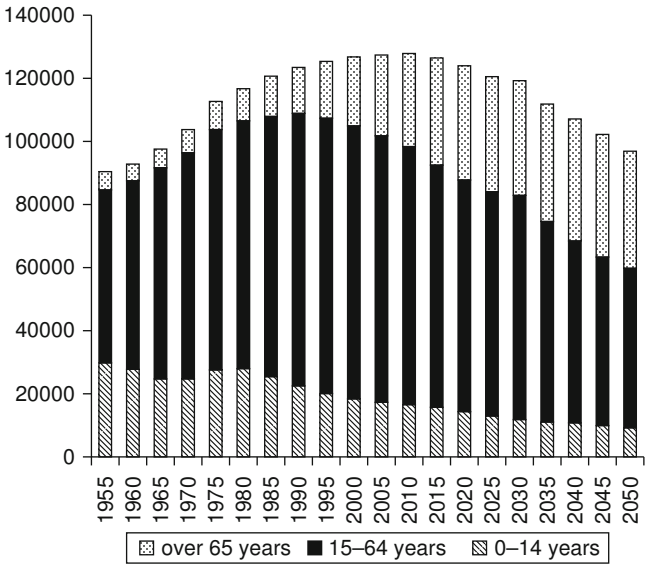

Figure 6.1 Japan's changing demography

Source: National Institute of Population and Social Security Research (Unit: 1,000 people).

buyers is continuously shrinking, while on the other hand, the number of elderly people, who are less frequently replacing their old cars, is constantly growing.

Next to the demographic change, macroeconomic developments in the early 1990s have to be addressed, which not only remarkably affected the development of the automobile market in recent years, but also led to a profound readjustment of Japan's social-economic model as a whole. Japan's rise to become a global economic power after the war was based on two factors: firstly, the strong influence of the state on industry development (developmental state) and, secondly, a company system that gave higher priority to reinvesting profits and making employees participate in the companies' success than to distributing profits to shareholders, who nonetheless received their fair share.[4]

In the 1980s, however, cheap money, initially intended to help export industries to invest in new, more effective production technologies in order to cope with the sharp appreciation of the Yen against the US dollar, was more often used for speculation in shares and real estate, which in the end led to an overheating of the markets and the whole economy. Finally, the bubble burst in the early 1990s, and with this,

Japan's economy entered a stage of stagnation, often called the "lost ten", or even the "lost twenty", years. Since the mid-1990s, economic growth has been almost entirely export- driven, consumption in the domestic market has stagnated or declined, there have been times of price deflation, and real incomes have dropped considerably due to lower bonuses paid to firm employees.

For whatever reason, however, the bubble economy was solely blamed on the traditional Japanese company system, which over more than 40 years guaranteed economic growth and social prosperity. In the aftermath of the burst of the economic bubble, most listed companies shifted at least partially from seniority to achievement-based payment schemes, especially with the support of the younger employees, who expected higher salaries. With the restructuring of the banking sector at the change of the millennium (big bang), which led to mega-fusions in this sector, the traditional ties between banks and companies also weakened, and considerable portions of shares in Japanese companies were taken over by foreign investment funds. Finally, deregulations of the labor market, especially with regard to agency workers, opened up the labor market for precarious forms of work.[5] Partially as a result of these reforms, the percentage of all non-regular forms of work increased from a little more than 10% in 1984 to more than 30% in 2009.[6]

As a result of all of this, the postwar pattern of income distribution, which traditionally favoured the labor side and also kept income inequalities relatively low, around 1995 began to shift away from the labor towards the capital side, and income inequalities grew. And, in fact, since the mid-1990s, real wages in Japan are decreasing. Some figures will illustrate this shift. For example, between 1955 and 1995, first-time wages for university graduates increased 15 times, while in the same time period, Japan's GDP increased only 10 times and prices only 6 times. After 1995, first-time salaries stayed more or less unchanged. According to OECD data, wages between 2000 and 2007 decreased 10% in small enterprises with fewer than 30 employees, and 5% in companies with more than 30 employees, despite the fact that labor productivity increased annually by 1.9% in the 1990s and by 2.3% between 2002 and 2005, and Japan's real GDP grew by 12% between 1995 and 2012.[7] Rather than decreasing monthly wages, however, employees' incomes are specifically declining because the profit-related bonus payments that are paid twice a year were cut drastically after 1995.[8] Further, with the introduction of achievement-based compensation, salary progression also flattened. While in 1985 the average salary of a 50- to 54-year-old

employee was 3.4 times higher than the salary of an employee in his early 20s, in 2005, it was only 2.7 times higher.[9]

The above changes are, of course, reflected in the development of average household incomes. While between 1981 and 1996 average yearly household income grew from 3.619.000 Yen to 6.180.000, from 1996 on, average income is continuously decreasing and reached a pre-bubble-era level of 5.179.000 Yen in 2008.[10] The reasons for the decreasing average household income, however, were not only economic but also social. The social reason is the steadily increasing number of economically underprivileged households, like single-person households, households of elderly people, and single-parent households.

Finally, the income-based Gini index for Japan gives evidence of the growing inequalities, which are mainly the result of the abovementioned increase in the number of poorer households. For more than 40 years, the income-based Gini index is continuously growing from 0.314 in 1972 to 0.402 in 2008.[11] However, it is important to stress that inequalities are growing, despite the fact that household incomes of all income groups have decreased since the mid-1990s.

3 The Japanese automobile market for new cars: development and specific peculiarities

Traditionally, small- and medium-sized cars dominate Japan's automobile market. There are three main reasons for the dominance of small cars. Firstly, traffic and, especially in dwelling areas, very narrow roads, are attributable to both historical urban development and public traffic infrastructure policies that have always favoured public transportation systems rather than individual motorisation.[12]

Secondly, Japan's mass motorisation historically began with the so-called People's Car Initiative launched by the Ministry for International Trade and Industry (MITI) in 1955. This initiative laid the foundation for the segment of mini or light cars (*kei-jidōsha*) that doesn't exist in any other developed car market.[13] Today, mini cars hold a share of more than 30% in sales of new passenger cars.[14]

Thirdly, until 1989, extremely high taxation was imposed on cars with more than 2 litres of engine capacity, resulting in only marginal sales numbers for standard cars until the 1990s.

With the amendments of the automobile tax regulations in 1989 on the one hand, and the introduction of new criteria for mini cars in 1989 and again in 1998 on the other, the Japanese automobile market, however, changed considerably. Regarding the amendment

of the tax regulation for ordinary cars, drastically lowered taxation rates, and narrowed the large gap in taxation of cars below and above 2000cc.[15] As a result, sales of standard cars increased from 276538 or 5.5% in 1989 to 897985 units or almost 20% in 1996. However, until 2002, registration of standard cars dropped again to about 15% (674094 cars).

We can observe a sharp increase of standard cars in 2003; however, this is just the result of a change of the statistical parameter, which was adjusted from chassis-based (engine capacity) to registration-based (engine capacity and body size) evaluation. One effect of the taxation amendment of 1989 specifically was that all Japanese car manufacturers extended the body size of numerous car models with less than 2000 cc engine capacity beyond the limits set for small cars, because since 1989, taxation is only calculated on cylinder capacity, not on body size, as before.

Statistically, the number of standard cars more than doubled from 674094 cars or 15% market share in 2002 to over 1.4 million cars or 31% market share in 2012 respectively. Based on cylinder capacity, however, the number of cars with more than 2-litre engines continuously decreased again after 2005, and reached 519817 cars or 12% in 2010, a level comparable to the year 2002, when just 15% of cars were equipped with an engine exceeding 2-litres capacity.[16]

Looking at the development of the Japanese car market since 1966, as displayed in Figure 6.2, we can distinguish four phases: (1) A first high-growth period that lasted from the early 1960s until 1973, when (2) the oil crises slowed down domestic demand for about 10 years, despite the fact that during the same time, the Japanese auto industry became the largest in the world. Then, (3) we observe a second high-growth period in the 1980s that again lasted for 10 years and reached its peak in 1990. After 1990, the last development phase so far (4) began, which is characterised by remarkable market shifts towards mini cars on the one hand, and cars with larger body sizes on the other, which are occurring in an overall sharply declining market.

Finally, regarding the market for imported cars, we observe a stagnation of car imports since the mid-1990s. On average, about 250,000 cars are imported per year, taking a share of about 5% in new car sales. Between 2007 and 2009, the import car market dropped by more than 30%, but recovered completely again in 2012.[18] Taking into consideration that imported foreign cars are, on average, considerably more expensive than domestic brands, the stagnating number of imports over

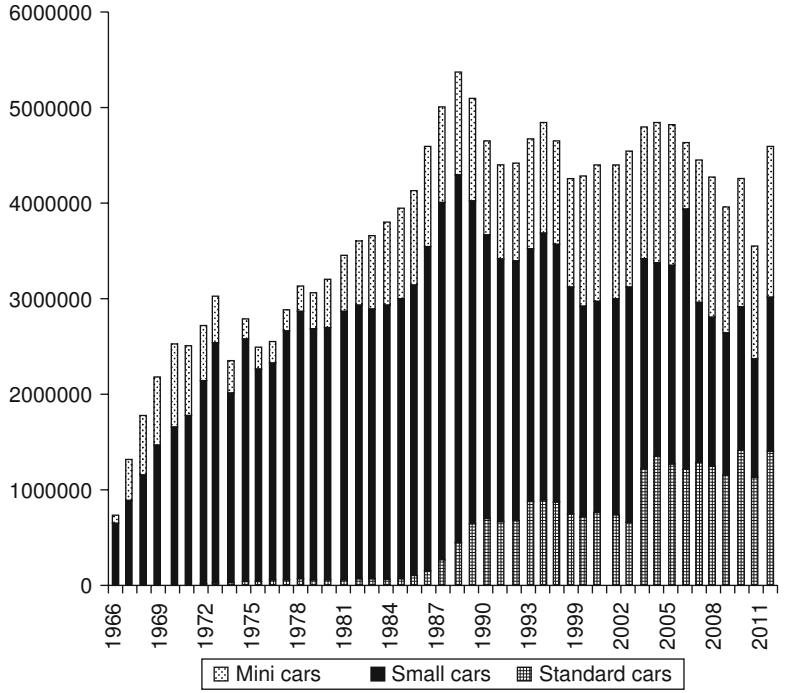

Figure 6.2 Sales of passenger cars between 1966 and 2012[17]
Source: JADA.

the last almost 2 decades doesn't support the assumption that growing income disparities lead to higher market segmentation. The same holds true for the group of recreational vehicles that became increasingly popular in the 1990s. In 1991, with sales of about 800,000, recreational vehicles accounted for roughly 20% of the small and standard car market.[19] Until 2002, sales grew continuously, but between 2003 and 2008, the segment declined again by almost half a million cars, which is especially attributable to shrinking sales of hatchback-type station wagons.

After 2008, the recreational vehicles market has developed very much like the overall Japanese car market. Also, the stagnating sales numbers of comparably expensive off-road and sport-utility vehicles (SUVs) don't support the assumption of an increase in market segmentation due to rising income disparities.

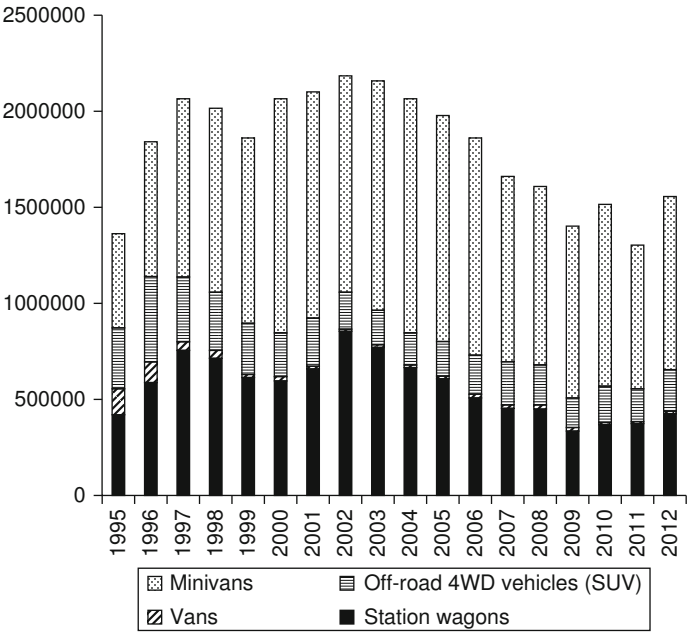

Figure 6.3 Sales of recreational vehicles after 1995
Source: Japan Automotive Yearbook, various years.

4 The Japanese used car market

With respect to the market for used cars in Japan, we first have to point out some fundamental differences compared to the market for new cars. First of all, the development of sales of used cars is much less volatile than sales in the new car market. Secondly, the used car market steadily grew since the 1970s until 2005. In 1992, for the first time the number of used cars sold in Japan exceeded sales of new cars. The gap between used and new cars sales continued to widen, especially in the mid-1990s, after the burst of the bubble economy, indicating that in economically uncertain times, many people postponed or abandoned purchasing a new car and bought a used one instead. However, the decline in new car sales after 1990 is also at least partially attributable to the fact that the average time a car is in use has increased from 8.29 years in 1985 to 12.43 years in 2011.[20]

From 2006 on – already well before the economic crisis – the used car market began to shrink and is performing very much like the new

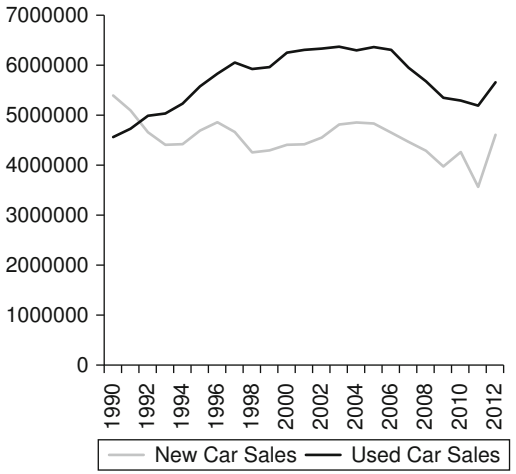

Figure 6.4 Development of the Japanese new car and used car market after 1990 (only Japanese brands)

Source: Japan Automotive Yearbook, various years.

car market. The decline after 2008, however, is only partially attributable to the economic crisis. More than the crisis, the eco-car tax exemption or deduction and the incentive scheme for purchasing new fuel-efficient cars, which were both introduced in April 2009, got the used car market into trouble. This was because, on the one hand, more people sold their cars to buy new ones, and, on the other hand, fewer people bought used cars because they wanted to take advantage of the incentive schemes and tax benefits. Both programmes led to higher than usual inventories for used car dealers, slower turnover, and lower-priced used cars.[21]

Looking at longer-term tendencies, we also observe a shift towards mini cars in the used car market, which began 10 years after this shift occurred in the new car market. And similarly to the market for new cars, in the used car market, the shift took place mainly at the expense of the small car segment, while the share of used standard cars remains quite stable, as Figure 6.5 illustrates.

In addition to used domestic brand cars, about half a million used imported cars are sold every year, taking roughly a 10% share of the used car market. This relatively high share might be attributable to the fact that foreign cars are often kept in better shape and driven longer than domestic cars.

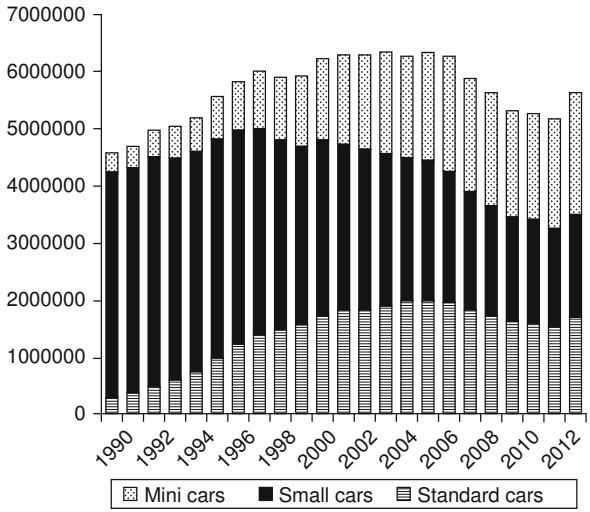

Figure 6.5 Development of the used car market for Japanese brands after 1990
Source: Japan Automotive Yearbook.

5 Car fleet and car density in Japan

The number of cars on Japanese roads is still increasing every year. In 1990, the number of registered passenger cars was 34.9 million. By 2000, the number increased to 52.4 million, and as of 31 March 2013, there are 59,421,009 cars registered in Japan. Of these, 17.2 million were standard cars, 22.8 million were small cars a,d 19.2 million were mini cars.[22]

Car density per household varies considerably from region to region. In general, car density per household is the highest in rural areas and lowest in urban, and especially metropolitan, areas. In March 2013, there were on average of 108 cars per 100 households registered. Car density is the lowest in Tokyo with only 48.1 cars per households registered, while it is highest in the prefecture of Fukui on the Japanese sea with 176.1 cars per households registered. The average number of passenger cars per household, however, has decreased for almost 10 years.

The decrease in cars is definitely attributable to the increase in single-person households or households of elderly people who don't possess cars. According to the data in the JAMA "Survey on Trends in the

Table 6.1 Development of number of passenger cars per 100 households

	1988	1998	2005	2007	2010	2012
Cars per 100 households	75.1	106	113.2	111.2	109.3	108

Source: JAMA (2013).

Table 6.2 Percentage of ownership of one or more cars per household

	1985	1989	1993	1997	2001	2005	2009	2011
Households with one car	61.2	66.0	72.0	76.9	79.0	78.8	75.8	77.5
Households with more than one car	16.8	19.8	30.5	35.6	39.6	41.8	36.1	41.8

Source: JAMA (2012, p. 1).

Automobile Market", the number of households possessing a single car is also decreasing, while households owning more than one car remain stable and, after a slump in 2009, are back to a pre-crisis level again.

6 Car prices, running costs, and car financing in Japan

Until the late 1950s, cars in Japan were absolutely luxury products. In 1953, the Hino Renault PA, which was in fact the Renault CV 4 produced under licence by Hino, cost 850,000 Yen, Toyota's Toyopet Super 928,000 Yen, and the Prince Sedan AISH 1,320,000 Yen.[23] So, for instance, a new employee, freshly graduated from university, would have had to spend 6 years' salary to buy a Hino car.[24] However, starting in the 1960s, cars became more and more affordable for ordinary people. The reason for that was that with the beginning of the high-growth era, real wages quickly increased, and at the same time, small, mass-produced cars were put on the market at more reasonable prices, which enabled normal households to purchase a car.[25] Table 6.3 shows the development of car prices since the 1950s for selected car models.

The introduction of affordable volume models in the mini and small car segment, such as the Mazda Carol or the Toyota Corolla, laid the basis for Japan's mass motorisation in the 1960s. Compared to these cars, middle- and upper-class models like the Nissan Skyline and the Toyota Crown, or specialty cars like the Nissan Fairlady Z, were more than twice

Table 6.3 Car prices of selected models and prices for 1 litre of gasoline

	Mazda Carol	Toyota Corolla	Nissan Skyline	Toyota Crown	Nissan Fairlady Z	Gasoline Regular
1952					835000	34
1962	395000	490000 (1966)	880000 (1964)	830000	850000	47 (1963)
1972	465000	813000	852000	2443000	1150000–1500000	66 (1973)
1982		1038000	2093000 (1986)	3642000	1690000–3510000	172
1992	668000 (N)		2415000 (N)	4481000–5267000 (N)	3480000–4880000	129
2002	698000–1015000	1223000–2148000	2500000–3660000	2950000–5650000	3000000–3600000	105
2012	899850–1220550	1356000–2440000	2898000–4410000	3450000–6200000	3643500–5092500	145

Source: Morinaga, Takurō (prices of Fairlady Z and gasoline prices), Japan Automobile Federation (2012 prices), Nihon jidōsha ākaivusu joyōsha (prices of Skyline, Crown and Corolla until 1982) and advertisements in national newspapers (indicated with a N).

as expensive. From the above table, we also see that between the late 1960s and early 1980s, car prices increased quite drastically. However, since the rise in real wages was considerably higher than the price increase of cars, cars became relatively cheaper. Car prices continued to increase until the late 1980s, but with the burst of the bubble economy, like almost all prices for consumer products, they have stagnated ever since. Based on the early 1960s prices, until 2012, the price of the Mazda Carol mini car increased 2.2 times, the Toyota Corolla 2.8 times, the Nissan Skyline 3.2 times, and the Toyota Crown, as well as the Nissan Fairlady, 4.2 times. In relation to the overall price increase during this period of time, the prices for upper-class models increased fairly in line with the overall price development, while prices for mini and small cars increased much less.

Looking at car prices today, we first realise that due to the huge variety of cars offered in Japan, prices for domestic brand cars span a spectrum from as low as 795,000 Yen (6115 Euros) for a Daihatsu *Mira e:s* mini car to 15,500,000 Yen (120,000 Euros) for a Toyota Lexus LS.[26]

Table 6.4 provides a detailed overview of current car prices in Japan, according to type of car, average of minimal and maximal prices, as well as average price for each specific car type.

Despite the huge spectrum of car prices, we should keep in mind that a third of all cars sold in Japan are mini cars, with an average price of

Table 6.4 Car prices in Japan for domestically produced cars according to car type (prices in Japanese Yen)[27]

	Min	Max	Average
Compact cars	1307873	1788892	1548383
Wagon & 2 box cars	2033268	2810663	2421965
Minivans	2149111	3115038	2632075
Sedans	3238735	4607729	3923232
Specialty cars	4928950	6168150	5548550
SUVs	2553339	3514336	3033838
Mini cars	1167455	1639117	1403286
Average of all car types	2482676	3377704	2930190

Source: JAF Kokusan & yunyūsha kōnyū gaido (2012).

about 12,500 Euros. And this mini car segment is still growing. Mini cars are attractive because they are cheap but also because they appeal to a wide range of the population including to those who can afford more expensive cars. According to the biannual JAMA survey, mini cars are gaining popularity across all income and age groups, in all rural, urban and metropolitan areas and amongst both sexes.[28]

6.1 Running costs and minimum required income to hold a car in Japan

Another factor that has to be addressed are the running costs of a car. Table 6.4 compares the running cost of a small car with a mini car, based on an assumed average usage pattern.

The above table indicates that monthly expenditures for running a car in Japan are at least 36805 Yen (283 Euros) per month.[29] Based on this calculation, assumptions can be made about how much minimum income is needed to buy and run a car in Japan. Since possessing a car is not absolutely necessary for living, minimum net income has at least to be enough to cover the expenses for a car on top of the minimum living costs. According to a study by the Ministry of Health, Labour and Welfare, absolute minimum living expenses and minimum living expenses for leading a decent life are as shown in Table 6.6.

According to the above data, it can be assumed that the minimum income necessary to buy and run a car has to be at least the amount of money necessary for leading a decent life, which is 211,000 Yen (1650 Euros) for a single-person household. This assumption is also supported by the fact that all banks in Japan require a minimum yearly income of at least 2 million Yen to take out a car loan.

Table 6.5 Running cost for a mini car and a compact car in comparison[30]

Car model and price cost	**Suzuki Alto 808500 Yen**	**Honda Fit (Jazz) 1230000 Yen**
Gasoline	72527	81481
Oil change	6000	7000
Automobile tax	7200	34500
Tonnage tax	3300	12300
Insurance (fully comprehensive insurance)	142500	187600
Technical inspection	13000	13000
Safety inspection	28000	46000
Highway tollage	43778	54531
Tire change	8666	10400
Parking	120000	120000
Sum	444971	566812

Source: Kuruma wo kaou! (http://kuru-ma.com/page317.html).

Table 6.6 Monthly minimum living expenses and living expenses necessary for leading a decent life[31]

	Absolute minimum living expenses	**Living expenses necessary for a decent life**
Single-person household	161000	211000
Couple household	202000	273000
Couple + 1 kid	222000	277000
Couple + 2 kids	266000	299000
Couple + 3 kids	265000	338000
Single-parent household, 1 kid	176000	244000

Source: MHLW (2011, p. 11).

6.2 Financing a car: cash, loan, and leasing

This leads to the question, how do Japanese people pay for their cars? Like in many Asian countries, the percentage of people paying with cash is relatively high. Unfortunately, there are no official statistics as to how many people who buy cars pay cash and how many take out cars loans. According to a 2006 study by the Norinchukin Bank Research Institute, approximately 60–73% of car buyers pay cash when purchasing a car. Based on the investigation of three national car dealer networks, the Norin Research Institute estimates that about 20% of customers buy cars by borrowing at least some of the money from the manufacturers'

financial institutions, while 5% take out loans at their local banks. According to the same study, especially customers of used cars (35%) and imported cars (40%) take out loans.[32]

Based on another study by the same institute in the same year, the average loan duration was 54 months for new car buyers and 34.5 months for buyers of used cars.[33] Calculated on a minimum yearly income of 2 million Yen or 166666 Yen per month, it would take 8.5 months of income to pay back the loan for a car worth 1.3 million Yen.[34]

Finally, car leasing is not very common amongst private households in Japan. In 2012, there were only 2.913 million registered leased cars on Japanese roads, which corresponds to 3.78% of the Japanese car fleet. More than half of these cars were, however, commercial vehicles. Among these nearly 3 million leased cars, only 111,655 were leased privately.[35]

6.3 Financial situation of private households and development of expenditures for automobiles

The above data indicate that most Japanese people pay for their cars with cash. This raises questions about the financial situation of Japanese households, savings and debts, and finally whether expenditures for buying and running a car have changed in recent years. First, we look at the overall situation of household liabilities.

As Figure 6.6 shows, the percentage of households holding liabilities for real estate didn't change much after 1999. However, the number of households holding liabilities not related to real estate shrank

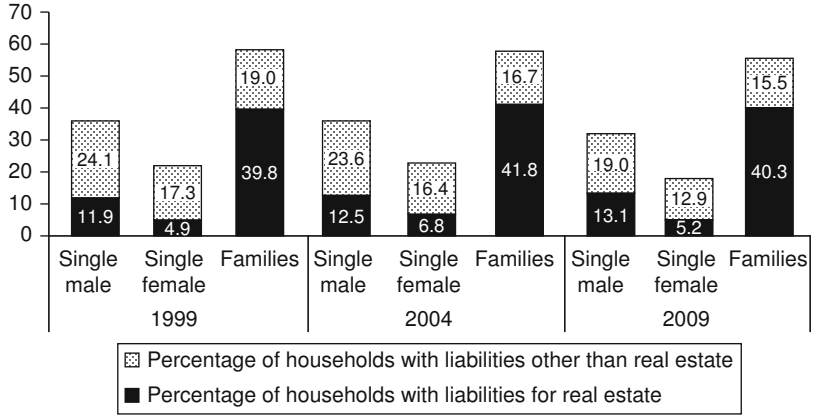

Figure 6.6 Development of household liabilities

Source: Statistics Bureau of Japan, National Survey of Family Income and Expenditure, various years.

considerably across all types of households. Thus, with the exception of single male households, the share real estate liabilities take in all household liabilities has increased.[36] On the other hand, all households' savings have also increased between 1999 and 2009, while average incomes have decreased. This simply means that less money has been spent for consumption.[37] This observation is also confirmed by the statistics on monthly household expenditures.

Looking at the data of average household spending, it becomes obvious that with decreasing yearly incomes, consumption decreased. However, consumption didn't decrease with respect to health, telecommunication and automobiles. To the contrary, expenditures grew by 19% for health, 20% for telecommunication, and 8% for private automobile mobility.

Table 6.7 Household expenditures per month

	1999	**2004**	**2009**
Income (yearly)	6494000	5887000	5532000
Consumption expenditures	294628	280440	263439
Food	69989	62657	60313
Housing	23432	22100	20994
Heating, water, electricity	1707.	16589	16340
Public transport	7323	7171	6147
Cars	18161	19725	19732
Of which car usage	12712	14447	13897
Telecommunication	9471	11406	11369
Education	11518	10980	10441
Health	9590	11274	11439
Recreation	30467	29771	29538

Source: Statistics Bureau of Japan, National Survey of Family Income and Expenditure.

Table 6.8 Household expenditures and car ownership by young people

	Age group up to 25 years			**Age group 25–29 years**			**Age group 20–34 years**		
Year	**1999**	**2004**	**2009**	**1999**	**2004**	**2009**	**1999**	**2004**	**2009**
Income (in 1,000 Yen)	2866	2792	2703	4264	4006	3809	5401	5010	4887
Car-related expenses	12093	11229	8653	19846	19751	18011	21208	24064	21292
Telecommunication	8937	9671	8670	10330	11589	10304	10111	12404	12927
Percentage of car ownership	52.7	45.1	56.0	72.7	70.7	57.7	84.1	81.2	77.9

Source: Statistics Bureau of Japan, National Survey of Family Income and Expenditure.

Now looking at younger age groups, we see that the age group of people up to 34 years old indeed turn their backs on cars. Over the last 10 years, in all age groups, expenditures for private automobile mobility has shrunk, and together with this, the percentage of households owning a car has considerably decreased.

All of these trends and developments outlined above, however, are not short-term; they are long-term, and are only marginally related – if at all – to the economic crisis of 2008.

6.4 Government initiatives and company strategies for gas-efficient and "green" cars

With regard to fostering energy-efficient and green cars, we have to distinguish programmes aiming at the spread of electro or alternative fuel vehicles, and efforts to increase car fuel efficiency in order to reduce CO2 emissions. First, efforts aiming at the spread of electro vehicles have had a long, but not very successful, history in Japan. No program from the mid-1970s until 2001 even came close to reaching its set targets.[38] And none of these programs had a real impact on company strategies.

This began to change, however, with the third program phase, which started in 2007 with the METI's "Next Generation Vehicles and Fuel Initiative", which set a target of ten million low-emission vehicles by 2010. In May 2009, the Ministry for Environment followed with a long-term program called "Strategy for the Spread of Next Generation Vehicles" aiming at 2 million EVs in 2020 and 8.8 million in 2050, which would be more than 10% of all cars in Japan. Finally, in April 2010, the METI introduced its latest program, "Next Generation Vehicle Strategy 2010", which aims at a share of 15–20% of electro and plug-in hybrid vehicles in new vehicle sales by 2020.

The efforts to reduce CO2 emissions started in 1999 with the implementation of fuel efficiency standards to be reached by passenger cars in 2010 and by diesel cars and trucks in 2005. These regulations were revised in 2007, and new, stricter standards were determined for gasoline passenger cars, to be achieved by 2015. In a third step, in 2012, higher standards were set again, which the manufacturers will have to meet by 2020. So far, each time the efficiency objectives were raised by about 20%.[39]

The decisive point, however, was that new automobile taxation regulations, which came into effect in April 2009, integrated the aims of both the programs for spreading next generation vehicle technologies and the regulations for reducing greenhouse-gas emissions, by giving

monetary incentives to buyers of cars with next generation engine technologies as well as cars with improved fuel efficiency based on conventional gasoline engine technology.[40]

Based on the new tax exemption and tax reduction regulations for ecological vehicles, cars with next generation engine technologies are exempted from the 5% purchase tax (3% for mini cars) and the tonnage tax, which depends on the weight of the car and is to be paid at each technical safety inspection: first after 3 years, then every second year. Measured on the 2010 efficiency standards, cars with an improved fuel efficiency of 25% are granted a tax reduction of 75% on the purchase and the tonnage tax, while cars with 15% to 20% improved efficiency are entitled to receive a 50% tax deduction. In addition, exhaust emissions have to be 75% lower than the limits set in the 2005 emission standards in order to receive the benefits.[41] In April 2012, new revised taxation regulations came into force that are based on the stricter 2015 efficiency standards and don't automatically exempt hybrid cars from the tonnage and purchase taxes. With the new regulations, the fuel efficiency of hybrid cars has to exceed the standards by 20% in order to receive the full tax exemption.[42]

With the introduction of the eco-car taxation regulations, the Japanese car market indeed changed considerably, as Figure 6.7 shows.

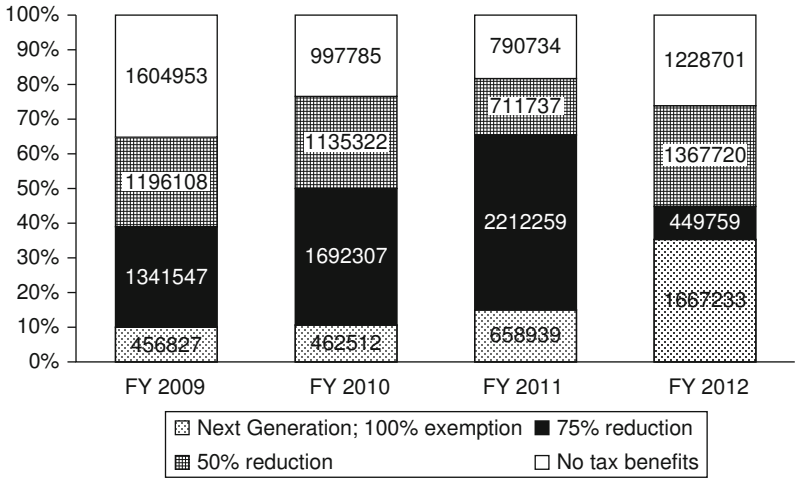

Figure 6.7 The Japanese car market after implementation of the eco-car tax regulations

Source: JAMA (figures indicate number of registered cars).

In FY 2009, more than 65% of all cars sold were entitled to receive tax benefits. Among these, almost 10% were next generation vehicles. In the following 2 years, the number of cars exceeding the fuel efficiency standards grew steadily and reached more than 80% in FY 2011. In FY 2012, with the revised regulations, the number of cars receiving 100% tax exemption grew remarkably, while on the other hand, the number of cars not qualifying for any tax reductions increased. From the above figures we can state that since 2009, fuel efficiency became one, if not the most, important criteria for Japanese car buyers.[43] This is also indicated by the improvement of the average fuel efficiency of all new cars, which increased from 12.6 kilometres per litre gasoline in 1997 to 19.9 kilometres per litre in 2011. Just between 2008 and 2011, fuel efficiency improved by 3 kilometres per litre, which is also attributable to the introduction of the tax exemption regulations and increased consumer consciousness.[44]

The new public policies for fostering eco-friendly cars, and especially the new tax regulations, have exerted considerable influence on company strategies. This especially applies to the development of hybrid vehicles, which take the lion share in the group of next generation vehicles. Since the introduction of the tax reforms and the incentive scheme, the best-selling model in Japan has been the Toyota Prius, the first hybrid car model, launched in 1997, with marginal sales of the first model generation. With the second model generation, launched in 2003, sales increased to 73113 units in 2008. With the tax reform, however, sales tripled in 2009 to 208076 cars and again increased in 2010 by more than 100000 units. Following the success of Toyota, all producers of small and standard cars successively developed and launched a number of ybrid cars as well.[45]

With regard to prices, the price for the Prius hasn't change remarkably since it was first launched in 1997. At around 2.2 million Yen, the car is positioned above Toyota's best-selling Corolla model, but well below the upper-middle class models like the Toyota Crown. Regarding the price difference of models that are available as hybrids and non-hybrids, the prices for the entry hybrid model are, almost regardless of the type of car, about 600,000 Yen (4615 Euros) higher than the cheapest gasoline engine version.[46] Based on a simple calculation, the higher price of the hybrid versions will be made up over 5–7 years by the tax and higher fuel efficiency savings.

As Table 6.9 shows, the impact the taxation reforms had, was in the first place on sales of hybrid cars.

Table 6.9 Trends in alternative-energy vehicles in use in Japan

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Electric vehicles	720	2696	3019	3111	2929	2573	2447	2600	3821	11105
Hybrid cars	74563	91219	132516	196770	256644	343626	429274	536473	983381	1418400
Natural gas cars	12012	16561	20638	24263	27605	31462	34203	37117	38861	40429
Diesel-LPG vehicles	14962	17954	19483	20670	21868	23007	22917	22608	21812	20764

Source: JAMA (2012), The Motor Industry of Japan, p. 25.

Looking at the spread of next generation vehicles other than hybrid cars, we see from the above table that for the first time, electric cars seem to have gained acceptance in Japan. This is due to two models offered since April 2010: the Nissan Leaf and the Mitsubishi i-MIEV. In fiscal year 2012, which ended in March 2013, 11,600 Leafs and 2856 i-MIEVs were sold. Both e-cars together, however, still held only a 0.32% share in all passenger cars sold in the same time period.[47]

The price of electric cars is still one obstacle that has to be overcome to attract more customers. At 3.8 million Yen (29230 Euros), Mitsubishi's i-MIEV G, with 16 kW/h batteries, is three times more expensive than the gasoline version of the same car. Even when deducting the subsidies granted for purchasing an electric car, the price is still more than twice as high. And even the cheaper i-MIEV M (2.6 million Yen), with less powerful batteries, is 300000 Yen (2300 Euros), more expensive than the best-equipped gasoline engine version of the same model, after deducting the subsidies.[48]

Like in all developed countries, however, the decisive point for the dispersion of electro-cars will be the provision of the necessary infrastructure. However, Japan might have the best chance of being the first country with a considerable number of alternative-energy vehicles or electro-cars on the road, because of (1) the relatively limited distance the average car is driven per day, (2) the already large number of mini cars in use, which could easily be replaced over time with mini-e-cars, (3) the population's high common environmental and ecological consciousness, and (4) last but not least, the presumably best-developed public traffic infrastructure in the world offers the chance to combine public transport and individual e-mobility. Maybe in this respect, 2008, the year of the economic crisis, will in retrospect b eperceived as the turning point on the way to sustainable individual mobility.

7 Conclusion

Since the mid-1990s, Japan's society, economy, company system and working environment have changed rapidly. These changes have, as we have seen, far-reaching implications on income distribution and, as a result, on consumer behaviour and markets. This especially applies to the automobile market, not just because cars are expensive consumer goods and markets therefore react very sensitively to economic changes, but because developments in the automobile market and car industry are, more than in any other market and industry, influenced by legal regulations adapting to new social or environmental requirements, new technical developments and innovations, and changing individual – as well as collective – attitudes and value concepts with respect to individual mobility.

When looking at Japan and asking what factors have influenced the development of the automobile market in recent years, we first have to mention the demographic change of the Japanese population. Second, there have been socioeconomic changes after the burst of the bubble economy in the mid-1990s that have profound influence on the purchasing behaviour of the Japanese people. Thirdly, we observe considerable changes in the attitudes, especially of the younger generations towards cars. And last but not least, there is the influence of public policies that with taxes, regulations for fuel efficiency, and so forth try to accelerate the process towards new technologies and sustainable mobility on the one hand, while on the other, aim to support the industry in order to help maintain employment levels, economic wealth and technological leadership.

As a result, we observe first a long-term trend towards smaller cars, especially mini cars, not only in the lower-income groups, but also within all income and age groups as well as all living environments: rural, urban and metropolitan. And finally, we observe a trend towards more fuel-efficient cars, as well as cars with new technologies, especially hybrid cars. Although this trend was considerably accelerated by public policies after 2008, in reaction to the world financial but it is also a trend continuing for a much longer time.

The subprime crisis did have some influence on the Japanese automobile market, as did the triple disaster of an earthquake, a tsunami and the accident at the Fukushima nuclear power plant in Northeast Japan in March 2011. However, the socioeconomic – and, first and foremost, the demographic – changes have been much more decisive over

the long run, and they will continue to determine the development of the Japanese car market in the foreseeable future.

Notes

1. In this respect, the economic and oil crises of the 1970s have to be mentioned; they significantly contributed to the accelerated development of cleaner and safer automobiles.
2. With 25.7 million automobiles (personal cars and commercial vehicles), of which 9.94 million were produced in Japan, Japanese manufacturers held a share of 31% in global car production (*Source*: JAMA and OICA).
3. There are two reasons for the demographic change. Firstly, since 1960, life expectancy in Japan increased by more than 15 years and is, with a combined life expectancy of men and women of 83 years, currently the highest in the world (OECD, 2011, pp. 24–25.). Secondly, as in other developed countries, especially in Europe, the birth rate in Japan has continuously declined, and since 2009, is lower than the death rate.
4. This company system is primarily based on four pillars: (1) lifetime employment; (2) seniority-based salarie; (3) company unions; and (4) access to capital through one main bank and cross-shareholding between companies and banks. By providing employment security, stable career development and progressively increasing incomes to the companies' core employees on the one hand, and by making the companies highly independent from financial, as well as outside labour, markets on the other, this system guaranteed that all people could profit from Japan's postwar economic miracle.
5. Dispatching of agency workers was allowed for the first time for a limited number of professions in 1986 (Worker Dispatching Act). In 1999, agency workers were allowed in principle to work in all professional fields except manufacturing. This restriction was finally removed in 2005. After the 1999 amendment, the number of agency workers jumped from less than 1 million to 4.5 million, or about 8% of the total workforce in 2008.
6. *Source*: Ministry of Health, Labour and Welfare.
7. Salary data taken from *Bukka no bunkashi jiten* and *Keidanren* (2012); price index taken from Bank of Japan; wage development and productivity data taken from OECD (2009), pp. 22 and 38.
8. In the pre-bubble economy, bonuses usually amounted to 5 or 6 months' salary., Since the mid-1990s, bonuses were cut to less than half of the former amount. The bonus payments are especially relevant with respect to the automobile market, since bonuses are, besides paying back real estate loans, generally used for purchasing cars.
9. *Source*: Cabinet Office, Government of Japan (2007), *Kokumin seikatsu hakusho*, p. 233.
10. *Source*: Ministry of Health, Labour and Welfare.
11. Ibid.
12. 84.7% of all roads in Japan's cities, towns and villages are just 3.8 meters wide on average (Zenkeijikyo, 2012, p. 1). Although road construction became a higher priority with an ever-growing number of cars in use, it never kept pace with the increasing fleet. Even today, Japan still has a relatively limited

network of expressways: just 7641 kilometres long (data for 2009), and Tokyo, the capital, still has no uninterrupted express ring road, unlike Seoul and Beijing.

13. With Japan's accession to GATT, the People's Car Initiative aimed at increasing the national car industry's competitiveness by concentrating the industry on about three companies. This plan was heavily criticised by all manufacturers, and finally failed, since instead of a reduction in car manufacturers, their numbers doubled, because Honda, Suzuki, Mazda (Tōyō Kōgyō), Daihatsu and Subaru, perceiving the plan as the last chance to enter the passenger car market, started to produce their people's cars.
14. In Japan there are three classifications of cars: standard, with a cylinder capacity of over 2 liters and a body size exceeding 4.70 meters in length, 2 meters in heights or 1.70 meters in width; small, with a cylinder capacity of more than 660 cc, but less than 2 liters, and a body size smaller than standard, but larger than mini cars; and mini, with a less than 660 cc engine displacement and a body size of up to 1.48 meters wide, 3.40 meters long and 2 meters high.
15. The taxation rate for cars with more than 2-litre engines was lowered from 81500 Yen per year to 45000 Yen, for cars with more than 3-litre engines from 88500 Yen to 58000 Yen, and for cars with engines exceeding 6 litres from 148000 Yen to 111000 Yen. With this, the gap between cars with more than 1500cc, but less than 2000cc and cars over 2000cc (up to 2500cc) was narrowed from its former tax rate of 41500 Yen to just 5500 Yen.
16. *Source*: JAMA, Motor Vehicle Statistics of Japan (2012), p. 12.
17. Passenger mini cars include bonnet mini vans.
18. European brands account for almost 95% of all car imports to Japan. With a share of 70% in all imports, German manufacturers hold a very strong position, especially the premium brand manufacturers – Audi, BMW and Mercedes-Benz – which alone take about 45% of the market.
19. The group of recreational vehicles comprises all cars but sedan, sports, mini and most compact cars, and therefore is very heterogeneous. Although, highly fuel-efficient cars like the Honda Fit hybrid (European name: "Jazz") or the Toyota hybrid Prius α also belong to the group of recreational vehicles, most of them are relatively expensive, larger cars with more powerful engines.
20. Japan Automotive Yearbook (2012–2013), p. 440.
21. It has to be mentioned that a considerable number of used cars is exported every year from Japan, mainly to Russia and other former Soviet Republics, Africa, Asia and to Arabian countries. According to the Japan Used Motor Vehicle Export Association, one million used vehicles were exported in 2012, including trucks and busses (See: JUMVEA).
22. *Source*: JAMA.
23. Car prices taken from Nihon jidōsha ākaivusu joyōsha (1947–1956).
24. At that time, sending a letter cost 8 Yen, 375 grams of herring cost 36 Yen, the same amount of salted salmon was 145 Yen, squid or seaweed were 19 Yen, 10 kg of rice cost 990 Yen, which was extremely expensive at that time, and the price of a haircut for men was 59 Yen (All prices: Morinaga Takurō).
25. In this respect, not just the People's Car Initiative, but also Prime Minister Ikeda's plan from 1960 for doubling peoples' income within 10 years have

to be mentioned, because both were decisive for an increasing number of people be able to buy cars in the 1960s.

26. The variety of car models offered by domestic manufacturers is supposedly the highest in Japan, because a large number of models are only offered there, and because of the mini car segment, which doesn't exist in other countries.
27. The price calculation is based on 181 car models of Japanese manufacturers listed in the JAF buyers' guidebook. Their classification into compact cars, wagons, minivans, etc., is adopted from the JAF guidebook. The prices are the minimum average price, the maximum average price, and the average of both prices for each class of cars.
28. *Source*: JAMA: Jōyōsha shijō dōkō chōsa (2011) nen, p. 11.
29. The above calculation is based on a high assumption of the distance travelled per year and distance travelled on toll roads. According to the JAMA market survey for 2011, the average distance travelled per month was 410 kilometers (JAMA, 2012, p. 25). Also the insurance fee is very high, since it is the maximum fee for fully comprehensive insurance without any deduction. On the other hand, there are no costs calculated for repairs and spare parts Therefore, the real cost of running a car might vary considerably from this example.
30. Calculation is based on 10,000 vehicle kilometres travelled per year, an oil change every 5000 km, real gasoline consumption as given in car test magazines, the national average gasoline price of 132 Yen (regular gasoline) and 143 Yen (high-octane) as of February 2011, and fully comprehensive car insurance without any allowances for age or years of accident-free driving. Technical inspection just covers basic charges without the cost of materials and parts replacement. Costs for a safety inspection are calculated on a yearly basis. Highway tollage for 2500 kilometres travelled on toll roads per year is included. Cost calculation for tire change relates to the standard tires of a Japanese manufacturer, changed every three years. Parking costs are based on an estimate of an average monthly rental fee for a parking space in urban dwelling areas.
31. Minimum living expenses are based on 15 monthly items like food, housing, electricity and water, which are calculated per month, and 11 items like clothing, electric appliances, furniture, etc., which are calculated per year.
32. Furue Shinya (2006 b), pp. 30–31.
33. Furue Shinya (2006 a), pp. 24–25. In 2008, Gulliver, a large used car distributer in Japan, conducted another internet-based survey of 1000 car customers, who have bought a new or a used car in the past 12 months; the results were very similar. According to Gulliver, 68.9% of customers paid for their cars in cash, 21.9% made a down payment and took out the rest as a loan, while only 9.2% of car buyers purchased their cars entirely with car loans. Out of these people, 77.8% made use of car loans offered by the respective car distributer, while 18.6% took out a loan at their bank, and the remaining 3.5% borrowed money from relatives. (Garibā Jidōsha Kenkyūsho [Gulliver International], Car Life Research, October 2008.)
34. The loan is calculated based on a duration of 54 months and an effective yearly interest rate of 3.9%. The loan over this period of time would add up to 1,418,230 Yen, and the monthly payment would be 26,000 Yen for 53 months with an initial down payment of 40,230 Yen.

35. Automotive Yearbook (2012–2013), p. 238. According to the Japan Automotive Leasing Association, the pressure on companies to cut costs was the main reason the number of car leases has increased since 1995 from a share of 6.5% of all new car sales to about 10% in 2005 and 13% in 2008 (Automotive Yearbook 2005, p. 210). In 2012, leased cars took only a share of 9.7% of all new cars.
36. In 1999, 87.5% of families' liabilities were related to real estate. This share increased to 92.5% in 2009, while real estate liabilities of single female households only increased by 0.5–75%, and the share of real estate liabilities of single male households decreased 5.1– 76.2%.
37. Although single female households hold roughly only one-third of the amount of liabilities compared to single males and only one-tenth compared to family households, which reflects their considerably lower household incomes, the average savings of single female households is almost as high as that of family households.
38. In a first phase, four programs were implemented between 1977 and 1991: three by the MITI and one by the Ministry for Environment. Two of these programs, in 1977 and 1991, aimed to spread 200,000 electric cars within 10 years. However, the real number achieved was between 800 and 2500. Also, a joint action plan of the METI, the Ministry for Environment and the Ministry of Land and Infrastructure to foster the development and spread of low emission vehicles in 2001 didn't lead to marketable products, which was the plan's aim in the second phase: to support alternative technologies. (For details, see *Jamagazine* 8/2011).
39. The efforts to drastically reduce CO2 emissions in the transport sector are an important part of Japan's 'Towards a Low Carbon Society' program, which was announced by the Ministry of Environment in 2007. The program aims to contribute to a 50% reduction in global CO2 emissions until 2050, which means that Japan would have to reduce its greenhouse emissions by around 80%.
40. In 2009, electric, hybrid, and plug-in hybrid, clean diesel, as well as natural gas cars, were classified as next generation vehicles.
41. Based on the same measurement standards, an eco-car purchase incentive scheme, which was intended to tackle the immediate effects of the financial crisis, retroactively took effect April 2009. Until September 2010, car buyers who traded in a more than 13-year-old car when buying a new car that met the efficiency standards, received a subsidy of 250,000 Yen (at that time, about 2300 Euros). Car buyers who didn't trade in an old car received 100,000 Yen on the condition that the car they bought exceeded the efficiency standards of their old car by at least 15%. Buyers of mini cars received half of the subsidy.
42. Since April 2011, the method of measuring fuel efficiency has changed. The new JC-08 modus is based on a much longer driving cycle and is much closer to real, everyday driving patterns than the old 10–15 modus was. Although the efficiency standards were adjusted to the new stricter measurement, the targets to be met in the future remain the same, which will exert even more pressure on manufacturers to further improve fuel efficiency.
43. For comparison, in 2008, before the implementation of the new tax regulations, only 2.6% of newly sold cars would have been classified "next

generation" vehicles, while 64.2% would not have been entitled to receive any tax benefits because they didn't meet the fuel efficiency standards.

44. JAMA, motor industry of Japan (2013), p. 24.
45. Because Mazda, amongst all Japanese car manufacturers, is the one most dependent on export markets, especially in Europe, it is so far concentrating on clean-diesel engine technology.
46. The difference between the ordinary Toyota Crown and the Crown Hybrid is 530,000 Yen, while the difference between a Corolla and a Corolla Hybrid is 563,750 Yen; also, the Crown is in its basic version almost triple the price of a Corolla.
47. In fiscal year 2012, 2,887,893 small and standard cars and 1571179 mini cars were sold
48. In case of the i-MIEV G, the subsidy is 850,000 Yen; for the M version, it is 620,000 Yen. Subsidies, however, may vary according to the local regulations of the prefecture or municipality.

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7

From Expansion to Mature: Turning Point of the Korean Automotive Market

Myeong-kee Chung

1 Introduction

There is no doubt that the automobile industry is going through a fundamental shift. The "Great Recession" triggered by the "subprime crisis" has affected worldwide automobile demand and prompted automobile manufacturers to form alliances and shift their focus and concentration to the emerging market, which has withstood the slump amid economic growth and government subsidies. In a context of weak global demand, major markets will see harsher price competition as key players take an aggressive stance for larger market shares. Hence, automakers will compete more fiercely than ever before for more sales and will have to fight on two major fronts: to gain a larger market share and to maintain profitability. As a result of recession, income disparity widens, as does the spending gap, triggering fears of social instability. This change in spending patterns show evidence of a "middle class squeeze", with reflects in a stagnation of mid-range cars and an increase of the top and low range cars demand. After an expansion phase, the Korean market growth has stagnated, as the national economy remained sluggish.

Overall, the global auto market will see weak demand in both developed and emerging markets amid escalating political and economic uncertainty. Specifically, Korea was one of the countries most severely hit by the shock of the global financial crisis in 2008. Global automotive markets have sharply declined from the fall of 2008 as a consequence of the financial crisis. Under these extremely severe conditions, automobile makers have run a race for survival in the global market. To respond to the crisis, automobile manufacturers must solve liquidity

problems urgently, while reducing production costs. It should also be noted that manufacturers have implemented creative marketing strategies to entice reluctant consumers, even though this has not prevented the catastrophic drop in sales.

In this context, this chapter will look at the current market situation and new trends within the Korean automobile industry and its future prospects. This chapter is organised as follows: Part one is an analysis of the Korean economy situation and its effect on the automobile market since global financial crisis in 2008. Part two focuses on new market trends after global financial crisis and describes the change in Korean consumer preferences in the period. The crisis led to a structural change in automobile consumption, which brought on downsizing.

2 Latent risk factors for the Korean economy and its effect on auto market

After years of strong economic growth driven by exports of high-end electronics and cars, the country is edging closer to the deflationary, low-growth trap that Japan has been mired in for decades. The financial crisis that began in the United States in the summer of 2007 has turned into the most far-reaching international financial and economic crisis since the Great Depression. Following the September 2008 bankruptcy filing by Lehman Brothers, the global financial market plunged into a panic. Not one country was immune to the negative effects arising from this global financial turmoil and the resulting contraction in demand. Korea was no exception.

The Korean economy faces a multitude of external and internal challenges. Externally, inflows and outflows of foreign capital continue to provoke instability, with global growth forecast to be slow in the mid- to long-term. Six years after the outbreak of the global financial crisis, the root causes of the crisis are yet to be resolved. Despite the global slowdown caused by the US subprime mortgage crisis, the Korean economy maintained a reasonable pace of growth until 2010. Korea recovered faster and more vigorously from the 2008 global crisis than most OECD countries, and enjoys low unemployment and low government debt. The growth rate of the GDP has increased 6.5% in 2010, from 0.7% in 2009. Following this, the domestic economy began deteriorating due to decreasing exports caused by the global economic environment and a depressed domestic market. The GDP dropped in 2011 by 3.7% and by 2.2% in 2012. While the economic growth signalled a reverse after two consecutive years of growth, the growth rate of household expenditure is lower than that of the GDP (see Figure 7.1).

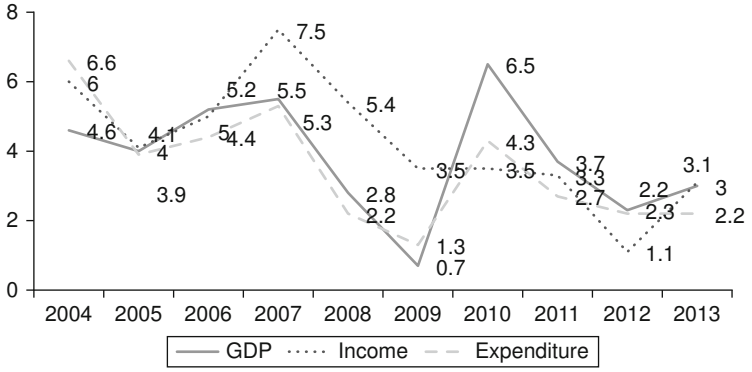

Figure 7.1 Growth rate of GDP, household income and expenditure

Source: Statistics Korea (http://kosis.kr/statisticsList/statisticsList_01List.jsp?vwcd=MT_ZTITLE&parentId=C#SubCont).

Domestic demand gradually slowed in 2011, mainly due to the Eurozone crisis and the resulting loss of purchasing power, but exports maintained a solid expansion rate. In fact, 2011 exports increased by 22% compared to the previous year. At the same time, the Korean economy remains heavily dependent on external demand, causing a disparity between exports and domestic economic activity.

This export-driven Korean economy is facing a challenge, despite Korea achieving substantial economic growth after global financial crisis. Since 2011, its economy has plunged into a severe recession. Corporate facilities investment has continuously declined, and there has been an increasing disparity between exports and domestic economic activity. As a result, private consumption declined by a substantial margin.

Growth slowed in late 2011, reflecting the deterioration in the world economy, but was recorded at 3.7% in 2012. While Korea is performing well, it needs to prepare for a number of challenges, including rapid population aging and weakening domestic demand due to high household debt. Stagnant service sector productivity and struggling small and medium-sized enterprises (SMEs) are also obstacles to sustaining Korea's economic growth. Reliance on exports appears to be losing its effectiveness, as their trickle-down effect on domestic demand and employment has weakened, prompting the Korean economy to upgrade its current export-driven growth model. Korea's economy has still stagnated with growth in the range of 2.3–3.0% since 2012 (see Figure 7.1). In addition, inequality in Korea has gradually increased due to globalisation, technical progress, aging and low public social spending. Moreover, Korea's

traditional growth model contributes to greater inequality by widening wage dispersion in favour of large companies, which account for around two-thirds of exports, and manufacturing. Korea's relative poverty rate is now the eighth highest in the OECD (OECD, 2014, p. 5).

With the renewed global crisis and slowing world trade, Korean exports and domestic demand fell in 2011. Korea has been slow to overcome the current soft patch, with growth picking up from 2.3% in 2012 to around 3% in 2013, close to the economy's potential rate. After 2 years of sluggish growth at an annual pace of around 2.5%, Korea rebounded during 2013, thanks in part to a pick-up in housing investment after seven straight years of decline and faster exports growth, which helped to sustain employment. Business and consumer confidence strengthened gradually, even though the exchange rate has appreciated sharply since mid-2013. A moderate rebound in world trade will help Korean exporters overcome the appreciation of the won, which has gained 38% relative to the Japanese yen since 2012. The won-yen exchange rates are important, as around two-thirds of Korean exports are thought to compete directly with Japanese products in world markets. Stronger exports are key to boosting business investment, which declined in 2013 (OECD, 2012, 2014).

The Korean economy, however, continues to face near- and medium-term risks. The Korean economy's challenges are rooted in changes that have occurred over the past 10 years. Although Korea achieved substantial economic growth during this period, it also became more dependent on external demand, causing a disparity between exports and domestic economic activity.

The Korean economy should upgrade its current export-driven growth model. The need for change has been rising continuously since the 1990s because domestic demand (which includes private consumption and facilities investment) has stagnated considerably. Moreover, the growing instability of Korea's export-driven growth model during the global financial crisis in 2008 has stoked interest in alternate means of ensuring stable growth. South Korea should no longer expect a "trickle-down" of benefits from conglomerates and the rich to small companies and low-income earners. The cyclical relationship of rising exports spurring domestic consumption and investment has eroded. Domestic demand, moreover, is itself sluggish. The former is caused by weak collaboration between the manufacturing and service industries and higher foreign direct investment.

Korea accordingly has to pursue a balance between exports and domestic demand. Based on its strength in exports and manufacturing,

it has to seriously address the causes of low domestic demand and harness the ripple effects of exports to restore a virtuous cycle, while simultaneously promoting the service sector. To this end, it should lower dependency on foreign investment in facilities and equipment, converge and combine the manufacturing and service industries, open and ease regulation of the service industry, and support development of services for the elderly in Korea's rapidly aging population.

Korea's ability to create jobs needs to be improved to ease the phenomenon of crowding in a few industries. Employment in industries with low productivity has increased while job growth in mainstay industries has been low. Disparity in productivity as well as profits and losses between large companies and SMEs has widened. Some industries persistently attract a disproportionate share of the workforce, while trade is driven by only a few product categories. Against this backdrop, diversification of Korean industry is imperative. Domestically, this will generate new needs. On the global field, it will mean simultaneous restructuring export items and markets, as well as efforts to extend correlation with other industries (KIM, 2012, p. 17).

On the domestic front, high household debt poses a risk to consumer spending in the medium term. Household debt as a share of disposable income stood at about 164% at the end of 2012 and was accompanied by a weak property market. The high level of debt has kept private consumption growth below GDP growth each year since 2006. As for the property market, Korea avoided a housing price bubble, leaving it, along with Japan, as the only OECD countries where real house prices in 2013 were below their 1995 and 2007 levels. With the removal of restrictive housing policies since 2008 and the launch of three housing packages in 2013, residential investment in 2013 rebounded, but was still 9% below its average over the past decade. Moreover, the erosion in real housing prices that began in 2012 is continuing (OECD, 2014).

Continued employment and wages gains, combined with some reversal in the rise in the household saving rate, are expected to boost private consumption, although it will continue to be restrained by high household debt. Domestic risks are largely on the upside, insofar as government initiatives to address household debt and the housing sector could boost growth more than expected. However, Korea is particularly sensitive to the fragile global economic situation and exchange rate shifts, as exports account for more than half of GDP. The impact of yen depreciation could be larger than expected if Japanese firms shift their emphasis

from boosting profit margins to regaining market share. While the direct impact from the tapering of US monetary policy on Korea is likely to be limited, the recent instability in a number of emerging economies poses another risk.

Obviously, the Korean economy faces external and domestic risks. On the external side, a materialisation of the risks in the Euro area could push the OECD area into a severe recession. Korea would be vulnerable to such a downturn. Moreover, slower-than-expected growth in China, Korea's major trading partner, and in other emerging economies, would have a negative impact on Korea's economy. Another important risk is raising oil prices, given that Korea is the world's fifth-largest oil importer.

Korean consumers, weighed down by household debt and a stagnant property market, are saving rather than spending. Companies are hoarding cash as they face uncertain demand at home and more competition from China. Korea's population is also aging faster than that of any other country in the OECD, with people 65 and older set to account for at least 14% of the population by 2017.

Hence, the Korean economy should upgrade its current export-driven growth model. The need for change has been continuously raised since the 1990s because domestic demand (which includes private consumption and facilities investment) has stagnated considerably. Moreover, the growing instability of Korea's export-driven growth model during the global financial crisis in 2008 has stoked interest in alternate means of ensuring stable growth. Moreover, as a result of the erosion of the cyclical relationship of rising exports spurring domestic consumption and investment, domestic demand has itself become slugghish.

Under this situation, the Korean automotive industry is predicted to have a hard time again after the global financial crisis in 2008. The lower local and global economic growth resulted in a negative impact on the automobile market. Next, the three main risk factors in the growth of Korea's automobile market in view of the demand side will be examined.

2.1 Aging to disturb consumption

The first concern is the impact of a sharp increase of the aging of the population on domestic car demand. Korea has one of Asia's fastest-growing aging societies. A country is considered an "aging society" when the number of people aged 65 or older reaches 7.0% of its total population. It becomes an "aged society" when the elderly population reaches

14% or more and a "super-aged society" when they account for 20%. Korea became an "aging society" in 2000. In 2018, Korea will become an "aged society" and a "super-aged" society by 2026. By 2050, Korea is expected to become one of the most aged nations in the world, with the elderly comprising 38% of the total population. The nation cannot avoid becoming an aged society. But Korea's problem is the speed with which it is approaching. It will take Korea 19 years to move from an "aging" to an "aged" society, much faster than that of other developed countries. Korea is becoming the most rapidly aging society in the world (Lowe-Lee, 2009).

Underlying this speedy transition are its dramatic decline in birth-rate and significant improvement in life expectancy. The rapid changes in demography will bring about new and different challenges on the economic, social, and political fronts. One of the challenges for an aging society is a declining total population. Furthermore, the nation will suffer from the shortage of economically active people (i.e., between 15 and 64). Moreover, the nation's economic growth potential will be threatened by the declining working-age population and the rising aged population. The rapid graying of the nation will have a significant impact on Korea's future socioeconomic environment. When a country has a high proportion of elderly, a low proportion of working-age people, and a declining total population, it is certain to experience rising fiscal burdens, capital shortages, and a lower growth potential. In 2010 in Korea, there were 5.9 working-age adults available to support each elder, down from 13.5 in 1970 (see Figure 7.2). The trend of the declining working-age population relative to the retired population will continue in the future (1.4 in 2050), making it difficult to sustain economic growth.

Since 2012, the baby boom generation born between 1955 and 1963 begins retirement and transfers to the elderly demographic. Graying means paying – more for pensions, more for health care, more for nursing homes and other social services for the elderly. This situation leads to a change in vehicle purchasing and replacing that in turn means a change in the domestic car market. As a major purchaser, this generational shift will reduce demand for newly released cars.

2.2 Household debt

The vexing debt problem has come back to haunt the Korean economy. Back in the late 1990s, the economy suffered from humongous corporate debts, but this time, mounting household debt has set alarm

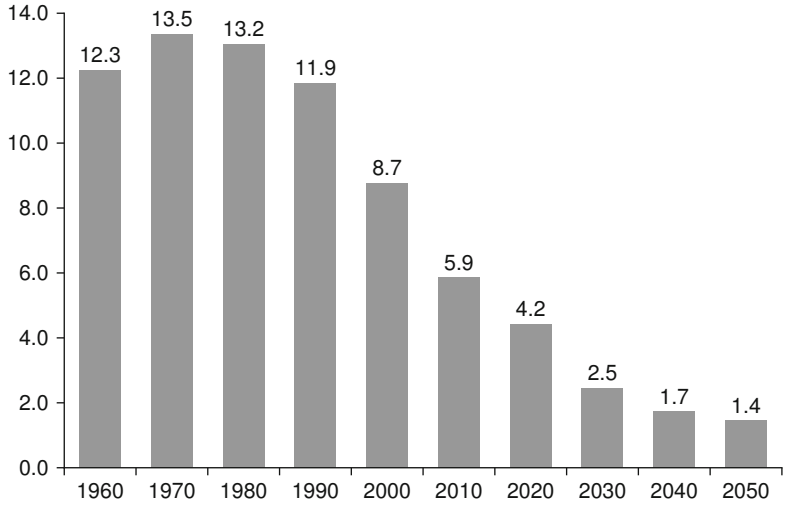

Figure 7.2 Aged support ratio

Source: Author's calculations with data from "World Population Prospect, the 2012 Revision", United Nations. The ratio divides the number of the population aged 20 to 64 to those aged 65 and over.

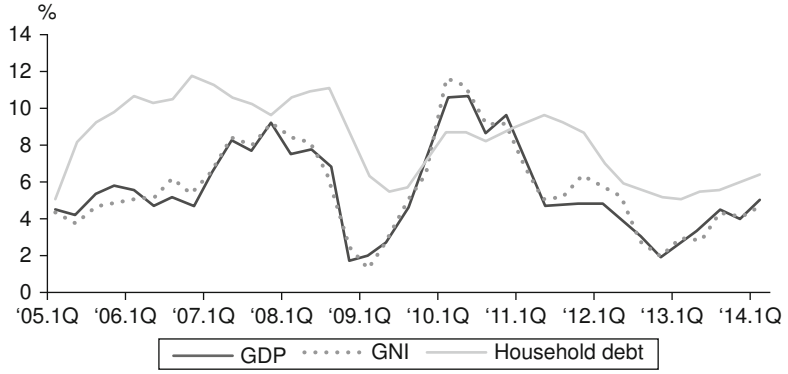

Figure 7.3 Growth rate of GDP, GNI and household debt

Source: KDB (2014, p. 28).

bells ringing. After the Asian financial crisis in 1997, banks turned to household loans, especially in the form of mortgages, as the government tightened rules on corporate lending, in the course of corporate restructuring to pull the country out of the crisis. Before the crisis,

Korean banks had depended heavily on interest income from corporate loans.

While household debts have gradually increased over the past decade, they no longer appear safe. The risk posed to the economy by household debt is climbing at a fast pace. Indeed, household debt has been increasing at an alarming rate. Korea's household debt was increasing by an annual average of 8.2% from 723 trillion won in December 2008 to 1,021 trillion won in December 2013. During the same period, monthly household income rose by 4.7% to 4.1 million won from 3.3 million won, while the United States and Japan saw a 0.7% and 1.1% drop respectively (*Korea Herald*, 1 September 2014). The main reason household debt has further expanded is because some banks have increased lending, which consists of fixed and variable interest rates, in order to comply with the government's policy of increasing fixed-interest loans. The continued rise in household debt may pose a threat to the economy since its growth rate has been faster than that of household income for the past few years. This growth rate was still way above the country's GDP growth and consumer inflation. As a result, the ratio of household debt to disposable income has increased to 160.7% in 2013, from 140.5% in 2006 (KDB, 2014, p. 32).

Current household debt growth has been driven by home mortgage loans from commercial banks and credit loans from non-bank institutions. In order to revive the economy, the government introduced tax incentives and low-interest rates for purchasing houses. Consequently, household debt owed to commercial banks has continued to grow in the form of home mortgage loans despite a continuing slump in the housing market. Amid the heightened economic uncertainty, non-bank lending to households has grown sharply, mostly in non-home mortgage-based products such as credit loans. Non-bank household lending grew by 23.2 trillion won and 22.4 trillion won in 2010 and 2011, almost on par with commercial banks. Among non-bank institutions' household loans, non-home mortgage-based loans, including credit loans, rose by 14.7 trillion won in 2010 and 12.4 trillion won in 2011, respectively, accounting for 63.4 and 55.5% of total household lending growth (Lee, 2012, p. 26).

Many worried about the possibility of household debt placing downward pressure on the country's economic recovery. The ratio of household debt to disposable income has also increased steadily, meaning deteriorating debt repayment capability. The government's push to encourage more debt to buy houses is risky in this aging society, where housing prices will eventually fall. When the housing bubble bursts,

Table 7.1 Monthly household income, expenditure, expenditure on car purchases and domestic car sales

	Income (won)	Expenditure (won)			Sales car (thousand)
		Total (A)	Expenditure on car (B)	B/A (%)	
2007	3,200,005	2,583,685	56,795	2.2	1,219
2008	3,390,738	2,718,046	54,833	2.0	1,154
2009	3,432,021	2,775,560	74,516	2.7	1,394
2010	3,631,713	2,960,892	66,357	2.2	1,465
2011	3,841,586	3,114,946	77,028	2.5	1,475
2012	4,076,876	3,216,884	76,005	2.4	1,411
2013	4,161,833	3,261,590	77,582	2.3	1,383

Source: Author calculations based on statistics of KAMA and Statistics Korea (http://kosis.kr/statisticsList/statisticsList_01List.jsp?vwcd=MT_ZTITLE&parentId=C#SubCont).

the insolvency of the mortgages will bring down the value of other assets. In particular, non-bank household loans have a higher share of non-home mortgage-based lending. If income conditions deteriorate in the future due to the economic slump and contraction in employment, there is high potential for spreading defaults on non-bank household lending, particularly among households with lower-income levels and credit ratings. This circumstance saps consumption of households, which could in turn decrease consumption of cars. While the expenditure on automobile purchases in the household budget grew steadily, the proportion of expenditures on cars has decreased continuously since 2011, when it dropped by 2.5% and 2.3% in 2013 (see Table 7.1).

2.3 Labor market and growing income inequality

Job issues are found in every segment of the population in Korea. The employment rate is low compared to that of advanced countries. In particular, employment and participation in economic activities is low among young adults (40.3%) and women (52.6%). Although the employment rate of the middle aged and the elderly is high (60.9%), decent jobs for them are in short supply. Moreover, the share of low-wage workers (25.9%) is the highest among OECD countries. The share of workers in the service industry is also higher than in the manufacturing industry, and the share of employment is high in low value-added industries among service jobs (Kim, 2012, pp. 20, 21). The worsening labor market has exacerbated the lackluster domestic demand.

The share of temporary workers in Korea (33.3%), who account for a majority of non-regular workers, was double the OECD average in

2013. Even though regular and non-regular workers have comparable skills, there is a large wage gap between them. The portion of high-wage workers who earn more than 150% of the median wage dropped 25.7% in 2012, from 29.7% in 2006, while low-wage workers who earned less than 150% of the median wage grew 14%, from 12% during the same period (Hyundai Research Institute, 2013: 3). Consequently, the labor market dualism has negative implications for household income inequality. By 2009, the ratio of the top to the bottom income quintile had risen to 5.7, the tenth highest in the OECD, while relative poverty was 15%. Rising inequality has squeezed the middle class from 75.4% in 1990 to 67.5% in 2010 (see Figure 7.4). This higher-income inequality contributes to a continued slump in domestic demand. As income disparity widens, so does the spending gap, triggering fears of social instability. Spending and income patterns both show evidence of squeezed purchasing of newly released cars.

In summary, slowing economic growth, mounting household debt, unstable employment and an anemic housing market are weighing down consumer sentiment and consumption in Korea. This is reflected in the change of consumer preference for purchasing cars and in industry business structure. We discuss these issues in the next section.

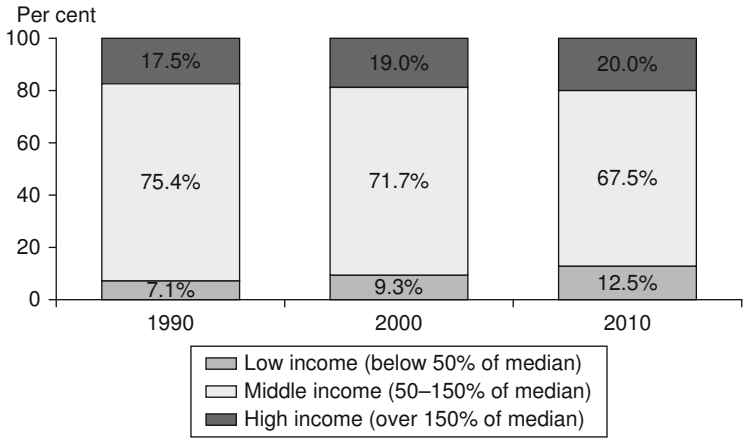

Figure 7.4 Growing income inequality has squeezed the middle class

Note: *The middle class is defined as those with an income between 50% and 150% of the national median.

Source: Korea Institute of Health and Social Affairs. Re-quoted OECD (2014, p. 22).

3 Changing features of the Korean automobile market during the recession

The economic recession in Korea caused by the worldwide financial crisis has continued to affect the Korean automobile industry and has reduced the consumption of automobiles in both domestic and overseas markets, so much so that even some leading automakers are faced with liquidity crises. The Korean automobile industry began to revive only slowly in May 2009, as the governmental policy of providing incentives for replacing old cars was finally implemented, and exports began to increase gradually in the latter half of 2009. From then until 2011, the domestic automobile market continued to recover, aided by the release of new models of popular cars and by government policies to support the market (see Figure 7.5). For instance, the government cut the individual consumption tax and implemented a policy of superannuated car replacement. But in 2012, this rescue policy shows signs of exhaustion.

In 2012, sales decreased by 4.3% from the previous year to 1.411 million units. In 2013, sales dropped by a further 2.0% to 1.383 million units (see Figure 7.5). This new downturn is the direct result of the new developments in the European financial crisis, which deepened in October 2011. The export slowdown breeds a climate of sluggish investment and a dramatic worsening of consumer sentiment.

As of the end of 2013, the number of cars registered in Korea was 19.40 million units, up 2.7% from the previous year and only slightly short of the 20 million mark. In that year, the number of new registered cars was 5.12 million, of which used cars accounted for 3.57 million

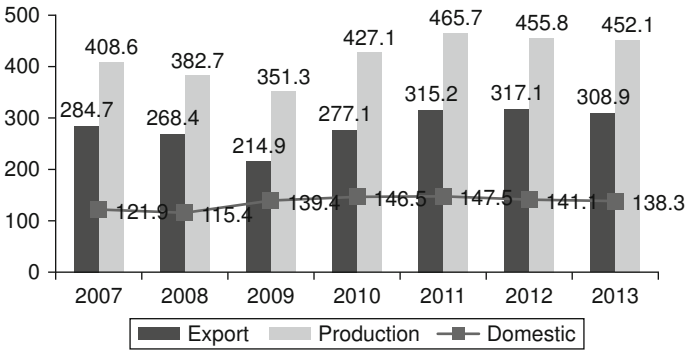

Figure 7.5 Production and sales of Korean automakers (unit: 10,000)
Source: KAMA, Domestic Auto Industry Trends, various issues.

units. By vehicle type, passenger cars accounted for 15.078 million units (77.7%), vans stood at 0.971 million units (5.0%), and trucks and specialist sector vehicles made up 3.352 million units (17.3%), indicating that the proportion of passenger cars is still growing, while that of vans is declining (Korea Automotive Research Institute, (KARI), 2014: 42). Car density per household is high. In 2013, there was, on average, 1 car registered per 2.3 persons. This means that every household has at least one passenger car (Kim, 2014: 26–27). From this point of view, the demand for passenger cars in Korea mostly depends on second household cars and replacement demands, respectively. However, these kinds of demands are limited, owing to the mid-term recession. Obviously, the Korean car market is entering a mature stage.

In summary, the Korean automobile market since the global financial crisis has been characterised by stagnant demand. In a situation of profound change in the economic environment marked by increasing uncertainly, the automobile market is experiencing some structural changes.

3.1 Change of consumption pattern

The first structural change deals with the consumption patterns. A dramatic increase occurred in the category of compact cars. During the financial crisis, the sale of compact cars in the domestic market recorded an astonishing 843% growth: from 32,617 units in 2008 to 307,730 units 2009. That year, compact cars were the biggest segment with 26.2%. Table 7.2 shows that the boom in compact cars is in part due to a shift in customer demand from medium to compact cars as a direct result of the crisis. In the following years, the share of compact cars declined – to 19.8% in 2013. One reason is because the sales of "city

Table 7.2 Domestic auto sales by segment (unit)

	2008	2009	2010	2011	2012	2013
City	134,303	135,753	160,579	184,899	202,844	182,021
Compact	32,617	307,730	287,768	260,232	240,971	225,514
Medium	429,669	284,285	335,100	270,162	259,545	214,728
Large	144,752	169,307	158,884	211,683	163,037	155,253
RV	217,513	277,668	275,433	284,308	309,494	359,511
Total	958,854	1,174,743	1,217,764	1,211,284	1,175,891	1,137,027

Note: (1) City: ~1.0L, Compact: 1.3L~1.5L< Medium: 1.5L~2.0L, Large: Over 2.0L. The threshold for compact cars was raised in 2009 from 1.5L to 1.6L.
(2) RVs include minivans and wagons.

Source: KAMA, Domestic Auto Industry Trends, various issues.

cars", which are smaller, have maintained their momentum. In 2012, the domestic market recorded city car sales of 203,000 units, up 9.7% from the previous year. Accordingly, the proportion of city cars in the total number of units sold in the domestic market continues to expand, from 11.6% in 2009 to 16.0% in 2013. At the other extreme, the sale of RVs increased from 217,000 in 2008 to 360,000 in 2013, as did their proportion: from 23.6% to 31.6% in the same period. This continuing positive sales record for city cars seems to be attributable to their low maintenance costs and the fact that they are preferred as a second car, an increasingly significant factor, as the number of families that have more than one car increases. In 2012, in particular, small cars with good fuel efficiency were very popular due to rising oil prices. The government's policy of subsidising city cars has also contributed to the expansion of demand. Additionally, the government provides a variety of benefits for city car owners, including discount on premiums, highway tolls and public parking fees, and extensions of tax benefits and fuel tax support for city cars, which all expired at the end of 2012. This policy successfully promoted this car segment (KARI, 2013, p. 10).

In 2013, the Korean automotive market saw a slowdown in demand from the previous year. The passenger car and RV markets in Korea recorded entirely different performance results. The sales of passenger cars were 778 thousand units in 2013, down 10.3% from the previous year, while those of RVs rose by 16.2% to 360,000 units. With a market share of 68.4% in 2013, passenger cars dropped below 70% for the first time in the past 7 years (see Table 7.2). The increase in RV sales resulted from the release of new fuel-efficient models. Customers consider fuel efficiency to be important due to continuing high oil prices, and the technical improvements of diesel engines altered customers' attitudes.

This is reflected in the ranking of new vehicle registrations by type of fuel. In 2013, gasoline-fuelled cars declined 9.3% from the previous year, while LPG and diesel cars increased 2.5% and 13.5%, respectively. The proportion of newly registered vehicles by fuel is as follows: diesel cars 43.5%, gasoline 42.5%, Liquefied Petroleum Gas (LPG) 11.4% and hybrid-electric-vehicles (HEV) 2.5%. In 2013, diesel cars surpassed gasoline cars in the number of newly registered vehicles due to the increase in sales of RVs for leisure and imported diesel passenger cars featuring a relatively low fuel cost and greater fuel economy. It is also due to the recovery of commercial vehicles sales which typically run on diesel (KARI, 2014, p. 44). In summary, Korean automakers quickly dealt with the change in environment by expanding compact vehicle production and fuel efficiency engine development. This means that Korean

automobile makers held fast to small- and medium-centred strategies. In particular, Kia was highlighted for its competitively priced cars, and GM Korea also benefitted from compact cars, such as the Morning and the Matiz, which have drawn attention from the market.

Regarding the financing of car purchases, more than one-third of consumers have obtained used car loans since 2010.

Obviously, the financing of car loans correlates closely to automobile purchases. Before the global financial crisis, approximately 52% to 62% of car buyers took out car loans. In 2009, this proportion dropped sharply owing to the global financial crisis, from 62.4% in 2008 to 28.6% in 2009. With the domestic demand slowdown, financing of car loans also began stagnating. As of 2013, this rate had still not recovered to the 2007 level (see Figure 7.6). The Korean commercial banks have started to reduce household lending under a policy of enhancing risk management against a possible growth in overdue loans. This is because the announcement in 2013 of the progressive end of the policy of quantitative easing by the FED and the spreading danger from the Eurozone debt crisis rattled Korean financial markets. A full-fledged suspension of household loans would lead to a strong decrease in car purchases.

3.2 The increased trade of used cars

Slowly increasing household income and increased economic uncertainty stimulate the purchasing of used cars. The used car market steadily grew

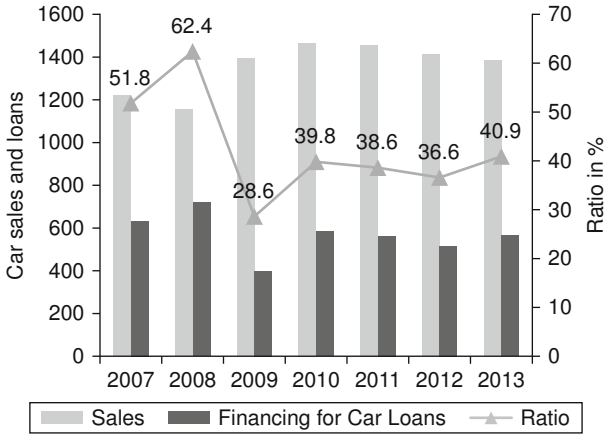

Figure 7.6 Number of sales and car loans

Source: Author's calculatation based on statistics of KAMA and the Credit Finance Association.

from 2009. Many people postponed or abandoned purchasing a new car and bought a used car instead. As of the end of 2012, the number of cars over 10 years old was 6.587 million units, up 0.34 million units from a year earlier, and the proportion of these cars among all cars registered increased to 34.0%. The proportion of vehicles less than 2 years old decreased to 15.8% (KARI, 2014, 43). This means that consumers prefer to retain their cars for longer periods, reflecting reduced disposable household income and expanding consumer debt.

The average used car trade grew 14.4% between 2009 and 2013, while transactions of new release registered vehicles increased just 1.4% during the same period. This shows that the used car market was on the upswing. Used car trades were below 2 million units per year before 2009. With the change in the composition of newly registered vehicles by classification, the share of used cars, which had accounted for 57.4% of total registered vehicle in 2009, increased 85.8% in 2013 (see Figure 7.7).

The recent strong demand for used cars can be attributed to the change of attitude of consumers towards them. As of the end of 2012, the number of cars over 10 years old was 6.587 million units, up 0.34 million units from a year earlier, and the proportion of these cars among all cars registered increased to 34.0%. The gap between sales of

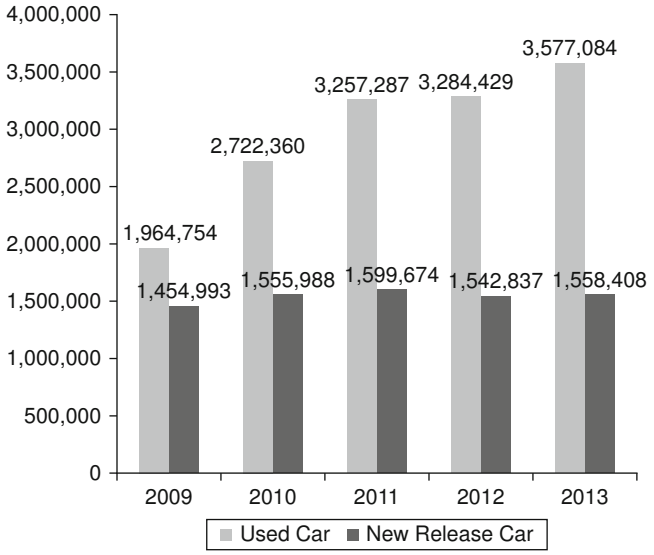

Figure 7.7 Vehicles registered by vehicle type

Source: The Hankyoreh (2014).

new and used cars continued to widen. The ratio of used cars over new cars increased from 1.35 in 2009 to 2.3 in 2013 (see Figure 7.7) as a result of a domestic population weighed down by household debt and a stagnant property market. Obviously, Korean consumers seem to prefer saving to spending, while the potential replacement demand is expected to rise steadily.

3.3 Increased market share of imported cars

The imported car segment continues to expand its market share. While sales by local makers stagnated, the proportion of imported cars in relation to total domestic auto sales rose from 6.0% in 2008 to 10.0% in 2012. In 2013, imported car sales increased 19.6% from a year earlier to 156,000 units and its share in the market to 12.1% (see Table 7.3).

One of the major drivers for such an increase in imported car sales is the deployment of many small displacement cars as regulations on automobile green house gas (GHG) emissions and fuel efficiencies took effect in 2012. One can see this from the fact that sales of imported cars with an engine displacement of less than 2.0 liters increased by as high as 45.8% from a year earlier. Sales of diesel cars, which feature high fuel efficiency and small GHG emissions, also increased dramatically to 66,671 units in 2012. Diesel cars, in fact, account for 50.9% of total imported car sales (KARI, 2014, p. 42).

The strong sales records of imported cars are due to the expansion of medium and small cars with engines smaller than 2,000 cc and the increase in young purchasers (20s–30s) attracted by improved price competitiveness. The proportion of imported cars with engines smaller than 2,000 cc sold in the Korean market relative to the total number of imported cars sold rose from 49.4% in 2012 to 53.5% in 2013 (KARI, 2014, pp. 33–34). This increase can be attributed to the increased maintenance costs resulting from higher oil prices and the influence of the

Table 7.3 Imported car sales (Unit sales: 10,000)

	2008	2009	2010	2011	2012	2013
Imported car	6.2	6.1	9.1	10.5	13.1	15.6
Share in the passenger car market	6.0	4.9	6.9	8.0	10.0	12.1

Source: Korea Automotive Importers and Distributors Association (KAIDA) and Korea Automotive Manufacturers Association (KAMA), Re-quoted KARI (2014, p. 33).

trend for smaller engines. With the growing interest in fuel-efficient cars, sales of diesel and hybrid models increased continuously. Whereas the prices of Korean cars continued to experience a broad rise due to the premiumisation of specifications and design, prices of imported cars are being cut due to the reduction in tariffs under several FTAs and the cash discounts offered. As a result of the expanded market share of imported vehicles, the Hyundai-Kia motor group posted a declining market share of below 80%.

Overall, there has been a regression in the performance of Hyundai-Kia since 2012, while the four other main Korean vehicle manufacturers progressed. In particular, the great advance made by SsangYong intensified the competition between the No. 4 and the No. 5 ranked manufacturers. In 2013, Hyundai posted domestic sales of 641,000 units, down 4.0% from the previous year, while its market share declined to 46.3%. Kia posted sales of 458,000 units, down 5.0% from a year earlier, as its market share fell to 33.1% in 2013. GM Korea posted sales of 151,000 units, up 3.7% from the previous year. The slight increase in its market share was due to strong sales of the SUV sector. Domestic sales of Renault Samsung remained stable at around 60,000 units. Domestic sales of SsangYong posted 64,000 units, up 34.1% from a year earlier, thanks to the strong sales results of the SUV. This company specialises in the production of SUVs and surpassed Renault Samsung to rank fourth in the Korean automotive industry (see Table 7.4).

Table 7.4 Domestic sales by local automaker (in 1,000 units, %)

Category		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Hyundai	Sales	581	625	571	703	660	684	668	641
	M/S	(49.8)	(51.2)	(49.4)	(50.4)	(45.0)	(46.4)	(47.3)	(46.3)
Kia	Sales	271	272	316	413	485	493	482	458
	M/S	(23.2)	(22.3)	(27.4)	(29.6)	(33.1)	(33.4)	(34.2)	(33.1)
GM Korea	Sales	128	131	117	115	126	141	146	151
	M/S	(11.0)	(10.7)	(10.1)	(8.2)	(8.6)	(9.5)	(10.3)	(10.9)
Renault	Sales	119	117	102	134	156	109	60	60
Samsung	M/S	(10.2	(9.6)	(8.8)	(9.6)	(10.6)	(7.4)	(4.2)	(4.3)
SsangYong	Sales	56	61	39	22	32	39	48	64
	M/S	(4.8)	(5.0)	(3.4)	(1.6)	(3.2)	(2.6)	(3.4)	(4.6)
Others	Sales	9	13	9	8	7	9	8	9
	M/S	(0.8)	(1.1)	(0.8)	(0.6)	(1.5)	(0.6)	(0.5)	(0.7)
Total Sales		1166	1221	1156	1394	1,465	1,475	1,411	1,385

Note: "Others" is the record of Daewoo Bus and Tata Daewoo.

Source: Monthly Automotive Updates by Korea Automobile Manufacturers Association (KAMA).

3.4 Diversification of the export market and extension of overseas production

Domestic sales stagnated after the world financial crisis, and overseas sales also fell, which aggravated the challenges facing the Korean automotive industry. To maintain export volumes, Korean automakers looked forward to diversify their export markets. Hence, Korea automakers strongly wished to penetrate emerging markets such as the Middle East and the Asia Pacific Region. Exports to the Middle East enjoyed a relative increase, thanks to the economic conditions of oil-producing countries, which were improved by the increasing oil price.

It is obvious that Korean automakers struggle to improve their current market position amid fierce competition. In this regard, they have expanded overseas production. In 2009, two Korean automakers, Hyundai and Kia increased their offshore production by 29.5% to 1,886,714 cars. The overseas production of Hyundai grew in 2009 by 33.7%, to a total of 1,493,075 cars, thanks to the increase in the production capacities of the Hyundai plants in China, India, and the Czech Republic. 48.2% of Hyundai's total production now comes from its plants operating outside Korea. Hyundai's Beijing plant, which produced 571,234 units in 2009, was the most remarkable of all, recording a growth rate of 90.2% from 2008, thanks to the Chinese government's efforts to increase domestic car sales, by lowering the taxes on newly purchased small cars, among other initiatives. The Chinese governmental policy, in turn, led to an explosive growth in the sales of compact cars. The Hyundai plant in India also produced 559,620 cars, marking a growth of 15.1% from the previous year. The growth was also caused by a reduction of the consumption tax by 4%. Production in the United States and Turkey were more severely affected by the worldwide recession. The Czech plant, which began its operation in 2009, produced 118,022 cars. The Kia plants in China increased their output by 75.5% in 2009, offsetting the setbacks suffered by the Slovakia plant as well as producing a total of 393,639 cars alone, marking a growth of 15.7% from the previous year. 25.7% of all Kia vehicles produced in 2009, in other words, came from the company's overseas plants (KARI, 2010, p. 21).

Hyundai-Kia's overseas production between 2010–2013 increased continuously. In 2011, Hyundai began the full-fledged operation of the St. Petersburg plant in Russia, with a capacity of 200,000 units per year. They also expanded with a third Chinese plant, having commenced production in late 2011. As a result, the company's production in China exceeded the 1,000,000 mark. Hyundai also started full operation of its

Table 7.5 Configuration of exports (%)

	2007	2008	2009	2010	2011	2012	2013
North America	29.3	28.6	28.3	24.4	24.5	28.5	30.9
EU	19.3	13.1	14.1	10.8	13.5	12.6	13.2
E. Europe	15.7	17.3	4.6	8.7	8.5	8.9	7.3
Africa	6.2	6.7	8.1	6.2	5.7	6.2	5.9
Asia	3.2	3.9	5.3	6.1	7.2	5.6	6.1
Middle East	11.3	15.6	19.5	21.2	19.9	19.4	19.2
Pacific	4.2	3.9	6.9	6.5	5.1	5.1	5.1
Latin America	10.8	10.8	13.2	16.1	15.7	13.7	12.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: KAMA, Domestic Auto Industry Trends, various issues.

plant in Brazil, recording production of 167,000 units. The total overseas production of Hyundai increased 15.1% in 2013 to 2,875,000 units. In 2013, Kia's overseas production increased 8.4% from the previous year to 1,233,000 units, solidifying the automaker's overseas production base. Powered by the increase in overseas production, the total production of Hyundai-Kia at home and abroad for 2013 posted 7.56 million units, and Hyundai-Kia's overseas production ratio grew 3.3% to 54.3%. Given the efforts to help better cope with the currency issues (to condone a strong Korean currency) caused by the accelerating descent of the yen, owing to "Abenomics", it is inevitable that overseas production will expand.

3.5 Introduction of eco-friendly vehicles

An inflection point is arising in the eco-friendly vehicle market, where the hybrid vehicle is becoming a mainstream product as a result of the global financial crisis. Currently, local automakers are beginning to spend more on eco-friendly cars. In July 2009, the Hyundai Motor Group released their first mass-production hybrid models Avante LPi and Forte, but sales for both have been disappointing. The Avante hybrid had sold only 8,458 vehicles, while the Kia Forte posted sales of just 2,225 units as of August 2010. Hyundai unveiled the Blue-on, Korea's first high-speed electric car in September 2010. Hyundai also launched the Sonata Hybrid, Korea's first production gasoline hybrid model, in May 2011. Korean automakers are hesitant to become entrenched in environmentally friendly vehicles, owing to disappointing sales, while Korean companies are becoming the new powerhouses in batteries for environmentally friendly vehicles. LG exclusively supplys batteries for

Chevrolet's Volt. Disappointing sales of eco-friendly vehicles are caused by the lack of a comprehensive market strategy and government subvention policy.

Undoubtedly, Korean eco-friendly vehicle technology is lagging behind that of their competitors. Compared to other developed markets like Japan, the United States and Europe, Korea lacks competence in environmentally friendly vehicle components including electric vehicle motors, common rail direct injection engines and battery chargers. The Korean government's plan to promote a green car industry is based on four intiatives: presenting a road map for the mass production of green cars; developing eight major green car components; planning green car supplies; and expanding the battery-charging infrastructure for motorists. Highly energy-efficient green cars include electric vehicles, hybrid cars and clean-diesel vehicles. According to this plan, 1.2 million green cars will be produced by 2015, of which 900,000 will be exported, with an aim of reaching a 21% share of the domestic vehicle market. Regarding production plans, the government aimed to start mass-producing plugged-in hybrid vehicles in 2012, fuel cell vehicles in 2015, and clean-diesel buses in 2015.

Hybrid cars were first introduced to the Korean market in 2009. In 2012, there are 75,000 units registered, accounting for 0.4% of the total in 2012. In 2013, 104,000 units were recorded, up 38.7% from the previous year. This accounted for 0.5% of total registered cars. The number of newly registered electric vehicles (EVs) was only 614 in 2013, while 517 were registered in 2012 (KARI, 2014, p. 45). The Korean automobile industry is betting that mid- to long-term growth will rely on a more eco-friendly lineup of vehicles, but there is still a long way to go.

4 Conclusion

Despite the ragged state of the auto industry worldwide, Hyundai and Kia are emerging from the global crisis as winners, on track to realise their goals of a share in the global and US markets. Their world market share continues to expand, from 6.4% in 2008 to 8.8% in 2012 (Financial Today, 2014). Thanks to their success during the recession, Hyundai and Kia have been driving a stand-alone strategy based on the opening of overseas automotive plants in emerging markets such as China, Russia, and Brazil. This expansion is overly optimistic, because the effect of the tax cut and state subvention is steadily disappearing, and the US Big 3 and Japanese competitors now appear much more stable and are trying to win back market share lost during the recession. It shows the

obstacles the nation's largest automakers will have to surmount for their survival. In their expansion of overseas capacities, however, they must be cautious. The low brand power has a lot to risk if a sales slump brings an overproduction crisis.

It is clear that the Korean automobile market has developed from expansion to maturity and/or stagnation, because the Korean economic environment is still gloomy, driven by the slowing pace of domestic economy growth and reduced unemployment. Also, the household debt has been increasing at an alarming rate. Regarding the fierce competition in the domestic market, the strong sales of imported cars can be attributed to aggressive business strategies, such as selling various mid-and small-sized models with reasonable prices that are new challenges for Korean carmakers. In this respect, cannibalisation between brother companies is expected to occur. Kia occupied a very similar position as its mother company Hyundai. They occupied almost the same market segment. They also have the advantage of using the same platform to be profitable and simply bring different brands and designs to the market.

During 2 years of financial crisis, the Korean automobile industry had to restructure. Downsizing of automobile consumption and the changing of consumer preferences characterise change in industrial structure. Korea's "Big 2", Hyundai and Kia, are equipped with a stand-alone strategy based on expansion in emerging markets and a low-road way into the production system. They also adapt speedy decision-making by way of the top down method and increased flexibility in production process in order to cut costs, where the price and quality is the source of competitiveness. At this time, the Big 2 have increased their market shares, both domestic and overseas. The past 5 years of environmental change after the crisis have offered both threats and opportunities to Korean automakers. A huge difference in performance has been drawn between OEMs that recognised such change, using it as a growth opportunity, and those that stand still in order to survive the problem. Hence, the configuration of the Korean automobile industry is polarised: Hyundai-Kia and small OEMs.

The most important issues facing the industry are the long-term consequences of the stagnated demand for vehicles in advanced countries and increased competition in emerging markets, where most of the important markets for Korean OEMs lie. The future survival of the Korean automobile industry will depend on the competitive strategies of the firms, which include their flexibility and agility. In light of this point, the Korean automobile industry is still expected to run a strong race into the future global market.

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Conclusion

Despite the differences between the various mature economies analysed in this volume, some common lessons can be drawn.

The Great Recession has not changed the paradigm of the automobile industry, but it did accelerate previous trends. Such is the case of the polarisation of the market, whereby high-income earners buy or use new, expensive, and often big and fast, vehicles, while low-income earners are either excluded from the automobile market or buy used cars, usually old and with a high usage cost, while the middle-income earners strive to maintain access to at least one new and affordable vehicle.

Carmakers are able to implement supply strategies that track the evolution of the distribution of income. Since at least three decades, they have developed a productive flexibility, which enables them to offer a large product mix with a lower cost, thanks to externalisation and offshoring. In a sense, carmakers are using the full potential of the globalisation of production chains to supply "a car for every wallet" in the pure tradition of Alfred Sloan. The possibility that the Great Recession would lead to a reorientation of product strategy in favour of more affordable, smaller and lower usage-cost vehicles has not materialised.

Rescue policies like scrappage programmes have cushioned the bulk of the recession and supported automobile demand in the short-term. But sometimes they have postponed the sales downturn, or worse, created a gap that precipitated a drop in the market once the programme ended. What's more, no country has engaged resolutely a policy of wage increase and inequality reduction through a redistribution of income as a way out the crisis. Quite the contrary, in many countries, real median income has, at best, stagnated but often decreased, and social security schemes have suffered a reduction in scope and benefits. In this context, one cannot expect a revitalisation of the automobile market that would

reverse the trends observed these last decades in mature countries: the slow but steady retraction of the new vehicle market on a declining share of the population and the overwhelming dominance of the used vehicle market, where the bulk of industry profit lies. In the absence of hope on the demand side, one may have expectation on the supply side.

In the medium-long term, radical innovations – with a dramatic cut in vehicle ownership costs and the supply of a new set of services – can be the best way to revive the automobile market. Many hopes have been placed in the advent of the electric vehicle. But the truth is that the great push for them has not yet occurred. There are least two reasons for the present failure. The first is that the majority of consumers are still not convinced that electric cars can perform as well as conventional cars in every aspect and for every usage. The second is that despite government subsidies, they are still too expensive. This book described at length how a majority of households are financially constrained and experience difficulties buying new cars. To become the solution to these difficulties, an electric car should be much less expensive to buy and to use. While the use cost is indeed lower than that of a conventional vehicle, the purchase price, even including subsidies, is, in the best case, as high as the price for a conventional vehicle, which is too expensive for the majority of potential buyers.

As long as electric and alternative fuel vehicles are not much cheaper, it is hard to imagine a breakthrough. One crucial element for this to happen would be the strong commitment of the State to support the electric vehicle, so that private companies are convinced that investing in infrastructure, in particular in the creation of electric spots, would be profitable. So far, progress has been too slow, and it does not provide a way out of the crisis when it is needed.

Prolonged periods of relatively low-priced oil, particularly in countries like the United States, where taxes are low, postpone the moment when alternative fuel vehicles will really become less expensive than traditional fuel. Worse, episodes of relatively cheap oil prices result in the resurrection of gas guzzlers, which carmakers are so eager to sell because they are very profitable. Only in the long run, when oil prices really start to grow, with fewer episodes of cheaper fuel, will customers shift massively to energy-efficient vehicles. What the Great Recession did not achieve – creating a momentum for a paradigm shift in the automobile industry – will finally be realised by the upcoming energy crisis. One may regret the waste of time.

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