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Article

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**The relationship between income
concentration and demand structure. The
case of automobile demand in Spain**

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Abstract

Economic analysts usually look at the supply side, the evolution and distribution of GDP among sectors. However, the demand structure offers a lot of interesting information on the characteristics of an economy. The present paper analyses the relationship of growing income inequality and crisis effects on the demand structure of the Spanish automobile sector. By contrasting data on income distribution and wage structure with shifts in the car demand among different vehicle segments, some long-term trends in automobile demand are identified which are accelerated by the impact of the deep economic downturn suffered by the Spanish economy. Thus, the long-term polarization trends towards low-cost products and used cars on the one hand and luxury cars on the other contrast with the failed political efforts to foster e-vehicles by public incentives. The analysis of the demand structure of the consumer and life-style determining automotive sector allows even further insights in general economic trends and developments.

Resumen

Los analistas económicos suelen prestar atención a la oferta, su evolución y a la distribución del PIB entre los sectores. Sin embargo, la estructura de la demanda ofrece mucha información de interés para caracterizar una economía. Este artículo analiza la relación entre la creciente desigualdad en los ingresos y los efectos de la crisis en la demanda estructural del sector del automóvil en España. Mediante el contraste de datos disponibles sobre la distribución del ingreso y la estructura salarial, con los cambios en la demanda de vehículos de los diferentes segmentos, se pueden identificar algunas tendencias a largo plazo que se han precipitado por el fuerte impacto de la crisis en la economía española. Así, la tendencia a la polarización entre vehículos de bajo coste o usados y el sector de automóviles de lujo, contrasta con los esfuerzos fallidos para fomentar los vehículos eléctricos, mediante incentivos y políticas públicas. El análisis de la estructura de la demanda y los estilos de vida de los consumidores determinan el sector del automóvil y permiten incluso establecer nuevas percepciones sobre el desarrollo y las tendencias de la economía general.

Keywords: Income inequality, demand structure, automotive industry, crisis effects

JEL classification: E21, H31, L62, R22

1. Introduction

“Cars are pervasive in modern economies, and are almost a defining gauge for how we view a country’s degree of economic development. Widespread car ownership has major implications for everyday life, countries’ economic and social fabric, and government policies” (Chamon et al., 2008, 2). 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 home-made real estate bubble and caused the deepest economic downturn in democratic Spain after fourteen years of growth. The credit driven consumption boom in the context of increasing income inequalities had created a long-standing car demand growth with a large spectrum of market segments. The economic crisis stopped this trend and altered the demand structure towards even greater polarisation between small and low-cost cars and luxury vehicles.

Studies on automobile demand have found two main determinants, income and policy. Income distribution shapes the patterns of vehicle demand, age and segmentation and also explains main differences between developed and developing countries (Yurko 2010; Chamon et al. 2008, Choo and Mokhtarian 2004). On the other hand, the automotive sector is highly intervened by sectoral and environmental policies which condition the household decisions in favour of certain vehicle types and replacement rhythms. Thus, many governments used the recent crisis for scrappage programs to foster the replacement of older by new, fuel-efficient cars combining macroeconomic demand stimulation with environmental objectives. The Spanish case is particularly interesting for testing general hypothesis on the relationship of motorization degree, income inequality and car demand segmentation. Additionally, the Spanish automobile market is traditionally conditioned by several deliberate demand policies which allow the analysis of policy impacts in the sector.

Our case study of the Spanish car demand pretends to test a general and three specific hypotheses. Generally we suppose a high elasticity of car demand with respect to variables such as economic development, income distribution and political regulation. Our first hypothesis establishes a relationship among economic up and downturns and the structure of car demand with high growth segments in boom periods (upper middle class vehicles, minivans), which suffer the demand shift towards small low-cost cars in recessions. Secondly we try to test the correlation between income inequality and the polarization of the car demand in luxury upper class vehicles, on the one hand, and small low-cost and second hand cars on the other hand. Finally we want to analyse the impact of sectoral, mobility and environmental policies on the structure of automotive demand.

The present paper is organized as follows. We start with a general overview of the main characteristics and recent trends of the automotive supply and demand in Spain. Section 3 outlines the automotive policies which always had significant impacts on the development of the sector and currently attempt to promote e-mobility. The following main part gives a detailed look at the automobile demand structure and its relation to income and wealth distribution using data from the automobile associations and national surveys on wage structure and income distribution. We conclude with some reflections on the structural changes and future prospects of car markets and household consumption patterns in Spain.

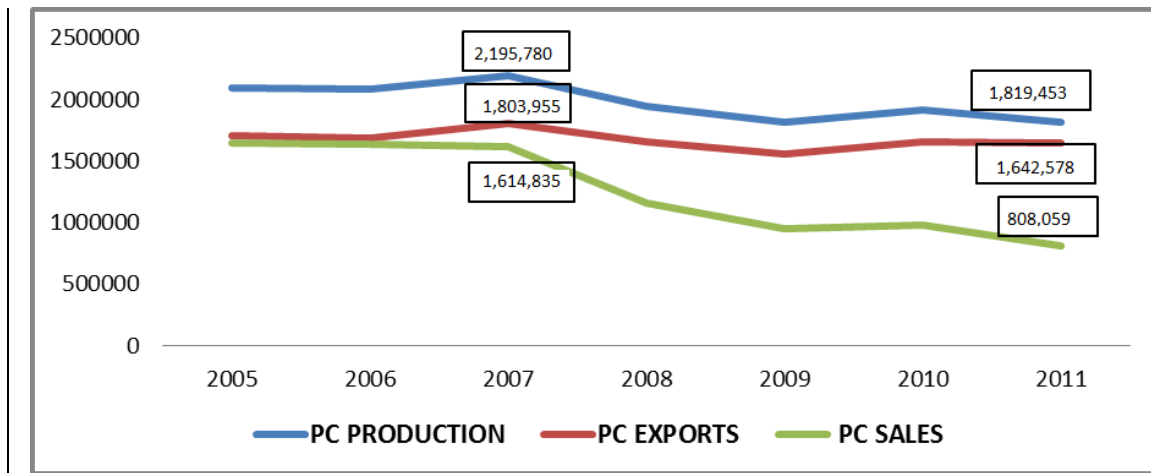
2. Spain's automotive sector

End of dictatorship, 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 its wealthier neighbours to the north. They were privileged destinies 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 of the growing market and sector. In many terms, the situation of Spain in the 1980s is comparable to the new EU members today. The EU enlargement converted Spain from low wage into average wage country with considerable impacts 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 disinvestments of foreign multinationals. This trend meets 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, giving incentives for the acquisition of new vehicles. Since the beginning of the 21st century, however, production figures are declining although sales kept on rising until the crisis. The assemblers are downsizing whereas many suppliers are relocating their production. Trade unions and governments are worried about this trend in one of the most strategic economical sectors. The Spanish automotive industry represents 6.2% of GDP and 18.3% of total exports, 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

(ANFAC 2011). 58,195 employees worked in the 18 OEM factories at the end of 2011, (about 18,000 less than in 2000) and some 165,000 in the supplier firms (about 80,000 less than in 2004), contributing with 8.7% (direct and indirect jobs) to total employment. 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. Spain is the second vehicle producer in Europe (after Germany) manufacturing 16% of European cars and 29% of European commercial vehicles, and eighth in the world.

Figure 1: Passenger car production, exports and sales



Source: National Statistics Institute (INE), Spanish Association of Car and Truck Manufacturers (ANFAC)

Table 1: Automotive OEMs in Spain

	2007	2008	2009	2010	2011
Companies	11	11	10	10	9
Factories	18	18	18	18	17
Productivity (Thousand € per worker)	753	602	566	597	622
Direct employment	68,667	63,724	60,937	58,043	58,195

Source: ANFAC

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* o *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. Around 86% of the Spanish supplier firms are small with less than 50 employees and in danger to fall victim of the current global restructuring of the sector.

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/Gual 2005; see also Turrión 2005 and 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. The international financial crisis coincided in Spain with the boost of the real estate bubble and thus provoked a deep and long recession.

Table 2: The impact of the crisis on registrations and production in Spain.

Registrations	Jan-Dec 2011	Jan-Dec 2010	%Ch 11/10	%Ch 11/07
New Car Registrations	808059	982015	-21,53	-99,84
New LCV Registrations	104228	115945	-11,24	-163,94
New Truck Registrations	16302	13061	19,88	-116,29
New Bus Registrations	2823	2558	9,39	-45,31
Production	Jan-Dec 2011	Jan-Dec 2010	%Ch 11/10	%Ch 11/07
New Car Production	1819453	1913514	-5,17	-20,68
New LCV Production	470029	437242	6,98	-3,52
New Truck Production	53532	36891	31,09	-73,34
New Bus Production	381	254	33,33	-305,77

Source: ANFAC

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; (5) internationalisation of markets.

Nearly 80,000 jobs were lost in the course of the crisis (2008 - 2010) mainly in the parts and component sector (ACEA 2011). The demand for industrial vehicles was particularly affected by the situation of the small-medium-sized companies which had problems to obtain credits, by the weak situation of the construction sector and the downturn of industrial activity.

Thus, the present crisis is only accelerating a longer trend suffered by the Spanish component industry. Up to 2003 the sub-sector 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 suffers relocation and increased competition, resulting in a declining trend for the whole sector. Only a few Spanish component manufacturers were able to respond with a proper internationalisation and upgrading strategy converting 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 started already in 2003, the manufacturing plants show good performance and competitiveness and their foreign parent companies continue to invest considerable amounts in their constant modernisation and upgrading, although closing some smaller factories like *Nissan-Madrid* or *Mercedes-Barcelona* and concentrating production. The profile of the Spanish car producers, specialised in low range and fuel efficient models with development potential for alternative fuel and hybrid drives, makes them more compatible with the 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 first benefiting from foreign demand recovery and the latter suffering chronically weak domestic demand.

3. Spain's automotive policies

Spain has a long tradition to foster automotive demand by incentives to buy new cars. Governments legitimated this public support with traffic security and ecological arguments claiming the need to renew the car park by more safety and fuel efficient cars. In November

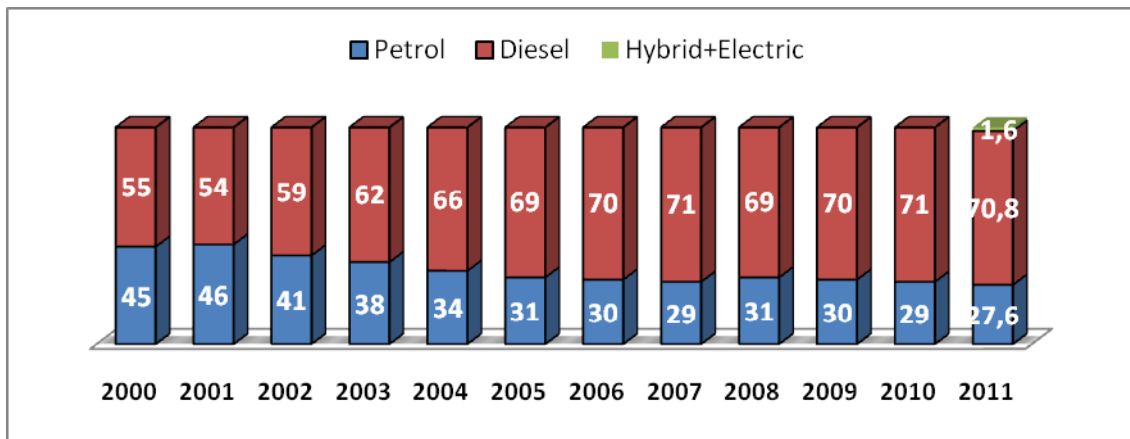
2008, the Spanish Government approved a stimulus package called the *Vehículo Innovador-Vehículo Eficiente* “VIVE” (Innovative Vehicle-Efficient Vehicle) which covered financial costs up to €1.2 million (of total amount financed). The results were not as expected and the system was changed in 2009 and another program to boost the auto sector (*Plan 2000E*) was implemented. In November 2012 a new initiative was carried out by the government with the *Programa de Incentivos para el Vehículo Eficiente* “PIVE” (Incentive Program for Efficient Vehicle). The scrapping incentives implemented by the Government, Regional Governments and manufacturers strongly pushed the private market of cars, with estimated 100,000 additional registrations per year until June 2010.

Besides the scrappage programs, other measures are dedicated to firms who avoid layoffs by collective agreements and invest in upgrading their factories and in the development of environmental friendly vehicles. An additional part is spent on improving rail, road and sea transport logistics for the sector. All this initiatives received the public support of all employers’ and trade associations including the trade unions.

Table 3: Characteristics of the scrappage programs *Plan Vive II* and *Plan 2000E*.

	VIVE (2008-2009)	2000E (2009-2010)	PIVE (2012-2013)
Financial support	Financing interest (max 2,5%)	2000€	2000€
VAT percentage in period	16%	18%	21%
Paying agencies	State (100%)	State and Automous Communities (500€/each) and Manufacturers (1000€)	State (1000€) and Manufacturer (1000€)
Budget	1200 million € (financed)	100 million €	75 million €
Vehicle maximum prize	30.000€ (VAT included)	30.000€ (VAT included)	25.000€ (VAT not included)
Vehicle requirements	No	Up to 120 CO ₂ gr/km	Type A or B (IDAE)

Source: Ministry of Industry, Tourism and Trade.

Figure 2: New vehicle registrations by type of fuel

Source: ANFAC

The incentives for low-emission vehicles since 2008 show clear effects. In the reform year, the average emission per car was 150 g CO₂, 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 CO₂ leaving the average tax per car in 730 €.

The big manufacturers have learnt for a long time to benefit from public subsidies and negotiate every new model and investments with the national and regional governments. The threat to assign these to alternative plants outside Spain and 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. Since 2008 the taxation of motor vehicles and the scrappage incentives are related to CO₂ emissions and the demand for vehicles with lower emissions and lower taxation (less than 120 g/km CO₂) has increased even during the current crisis with overall downturns. The percentage of vehicles with low emission rose from 19.5% in 2008 to 32.6% in 2010. Additionally, the elimination from Corporate Income Tax of investments in research, development and innovation is planned and programs to foster alternative fuels are carried out. The “*Plan Movele*”, scheduled until 2014, aims at introducing electric vehicles in the main cities like Madrid, Barcelona and Seville and install 546 public recharge stations. The electric vehicle purchase is subsidised up to € 15,000 depending of the vehicle price including all sorts of vehicles from motor cycles to trucks and buses.

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, internationalization of business, competition and efficient public administration. Parliament approved the LES on 15 February 2011, and the law entered into force 6 March 2011. There are three main areas to the LES, including efforts to: (i) improve the economic environment; (ii) promote competitiveness; and (iii) 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 also be given to sectors linked to renewable energies and climate change. For instance, the new law provides for an 8 per cent tax credit (increased from 4 per cent) for investments in tangible assets to protect the environment, e.g. 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 per cent to 12 per cent to foster innovative activities.

The automotive industry is one of the main target groups of the Law. On the other hand, the expiring of the Plan 2000E together with the VAT tax increase in July 2010 had an immediate effect on the fall of car sales. An additional negative effect on vehicle demand is the reluctance of the banks to give credits to private consumers and small companies.

While the general incentive programs for the sector are falling victim of the austerity policy cuts, the Spanish government has launched a €590 million programme to promote and sell up to 70,000 electric vehicles in 2011-2012, mainly to public and corporate fleets. The scheme comprises 15 measures in four 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 which include electric vehicles as their objective (€140 million).
- Support for communication technology between electric grid and vehicles (€35 million).
- Priority given to R&D & Innovation for electric vehicles. (€173 million).

Infrastructure and demand management:

- Coordinating measures that foster the introduction of electric vehicles via consensual agreement among electricity companies (€2 million)
- Super-off-peak rates (night-time hours)
- Free installation of meters with time discrimination for users of electric cars
- Establish charge point managers.

Transversal measures:

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

The '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 the consumer restraint towards the new technology. In 2011 only 484 e-cars were sold.

“One conclusion could be that people tend to be more concerned about status value and less about environmental performance than people would like to admit to themselves. This would fit well into the often-heard claim made by policy-makers and car-producers that ‘consumers are just not interested in environmentally-friendly cars’.” (Dijk and Nijhuis, 2011)

4. Spain's automotive demand

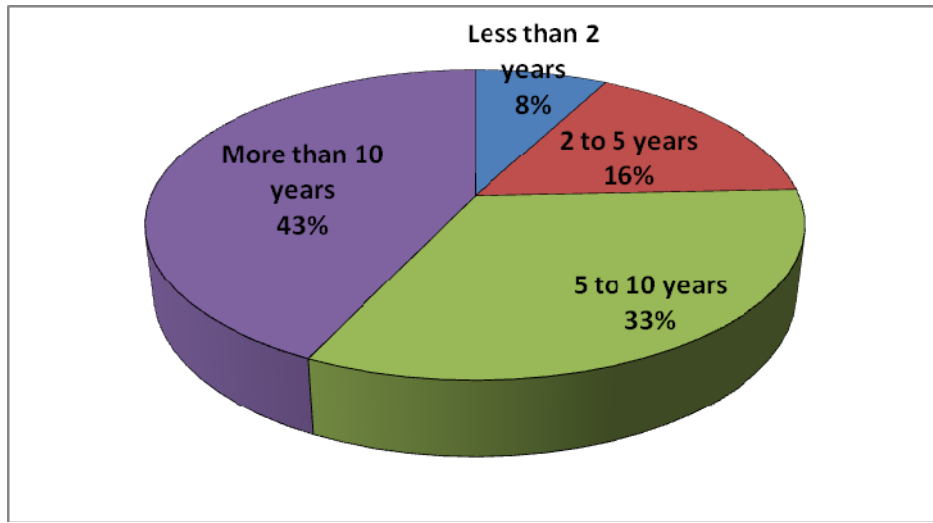
Expenditures on motor vehicles comprise the largest part of consumer expenditures on durable goods (Yurko 2010). “Car ownership increases with income. All else equal, one would expect higher inequality to increase the growth in ownership rates at low levels of income, because higher inequality increases the number of households with sufficiently high income to buy a car. However, at a more advanced stage of development, higher inequality will have the opposite effect, by creating a larger mass of poor households that cannot afford a car despite a relatively high average income in the country” (Chamon et al., 2008, 11). Since the late industrialization started in the early 1960s until the current crisis Spain experienced a long-standing growth in vehicle demand. Motorisation was in fact a main pillar of economic development during the second half of 20th century. The rate of cars per habitants doubled in the period from 1985 to 2007 converting Spain into a highly motorized society. The economic downturn since 2008 inverted this trend and had an immediate impact on the car-demand structure.

Table 4: Vehicles in use

	Passenger cars	Light & heavy trucks	Bus & Coaches	Truck tractors	Total	Growth
2004	19,541,918	4,418,039	56,957	185,379	24,202,293	4.7
2005	20,250,377	4,655,413	58,248	194,206	25,158,244	6.8
2006	21,052,559	4,910,257	60,385	204,094	26,227,295	4.4
2007	21,760,174	5,140,586	61,039	212,697	27,174,496	3.7
2008	22,145,364	5,192,219	62,196	213,366	27,613,145	1.6
2009	21,983,485	5,136,214	62,663	206,730	27,389,092	-2.2
2010	22,147,455	5,103,980	62,445	199,486	27,513,366	0.5

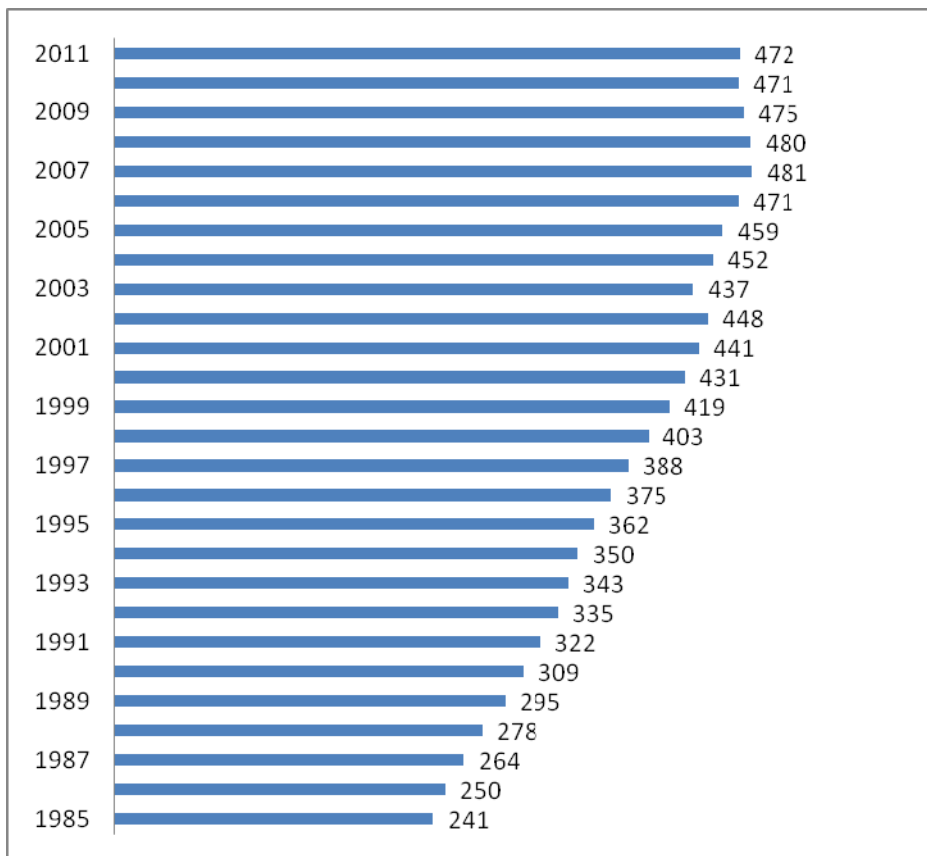
Source: ANFAC

Figure 3: Age of Spain's passenger car stock

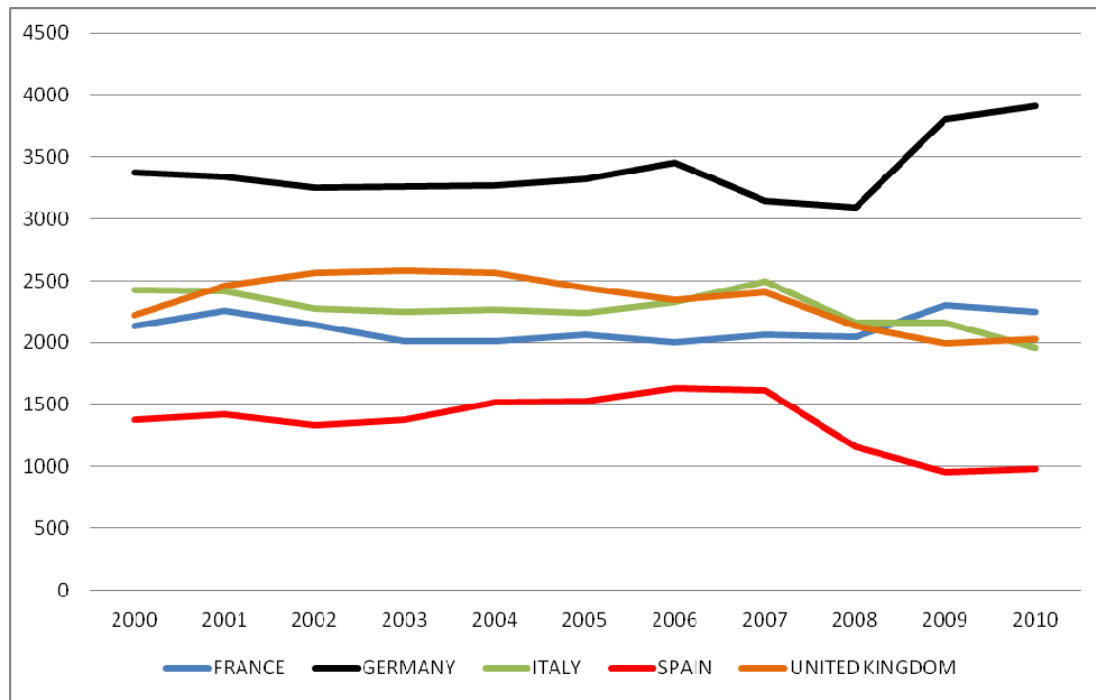


Source: DGT (Spanish Traffic Agency)

Figure 4: Passenger cars per 1,000 habitants

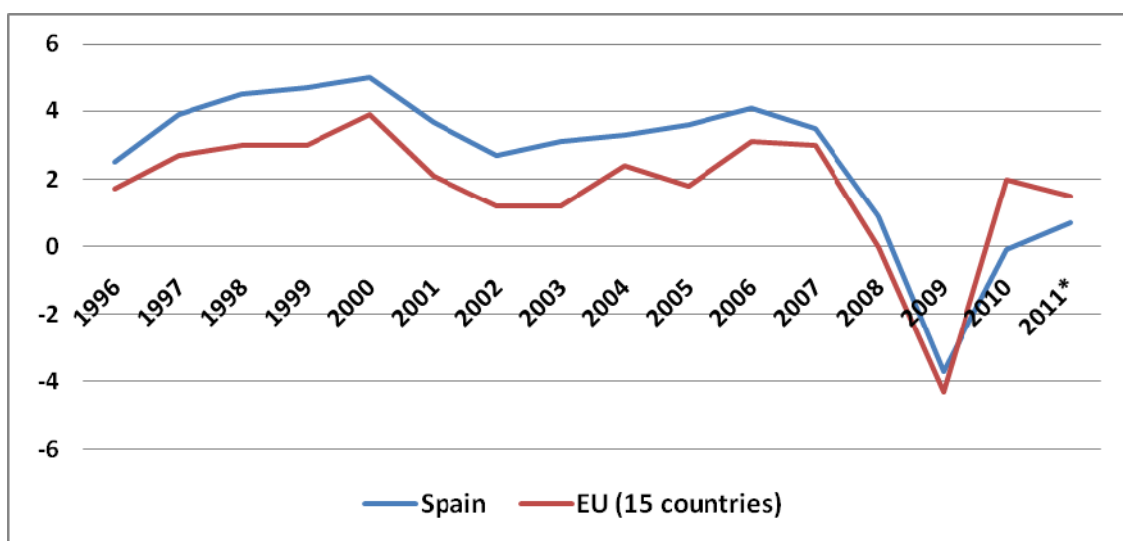


Source: ANFAC

Figure 5: New passenger car registrations (x1000).

Source: European Automobile Manufacturer's Association (ACEA)

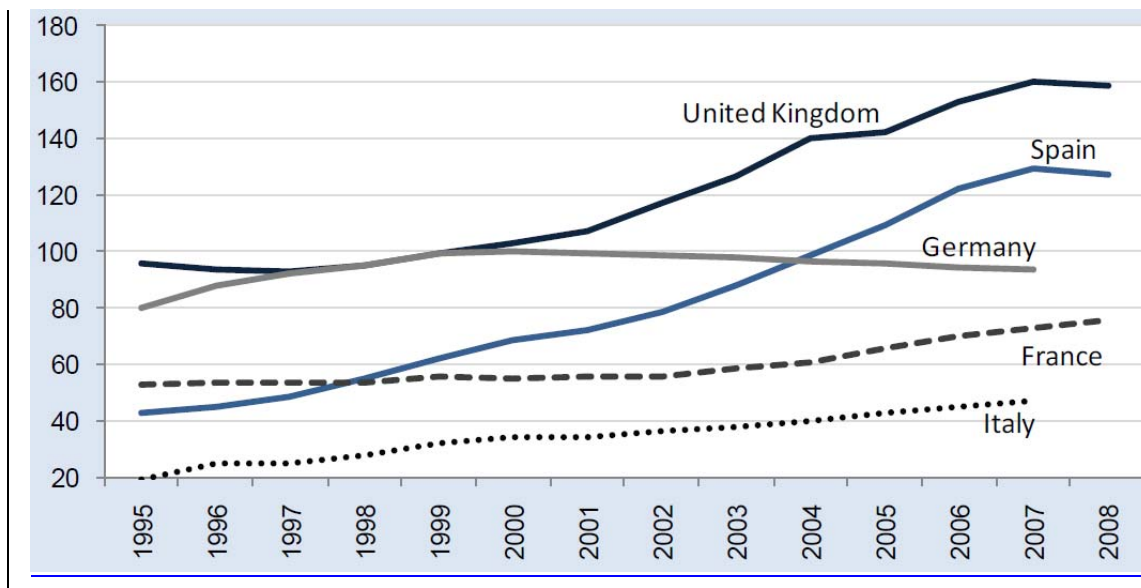
Following the crisis of the early 1990s, the Spanish economy embarked on a long period of strong and sustained economic and employment growth with growth rates well above the EU media. Domestic demand was an important growth factor with credit financed housing and durable products, cars included, as prominent elements. The crisis put a sudden end to this 14 year boom and left Spain in a severe recession.

Figure 6: GDP growth rates differential Spain/EU-15, 1996-2007

Source: Eurostat (*= forecast)

Construction (housing) and private consumption were the driving growth forces which 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 86 percentage points between 1995 and 2007. This is significantly higher than the change in household indebtedness in other major EU economies. The crisis strongly impacted on the household income distribution with a steep increase of the housing cost overburden rate (percentage of the population living in a household where the total housing cost represent more than 40% of the total disposable household income).

Figure 7: Real household debt as a percentage of disposable income, 1995–2008.

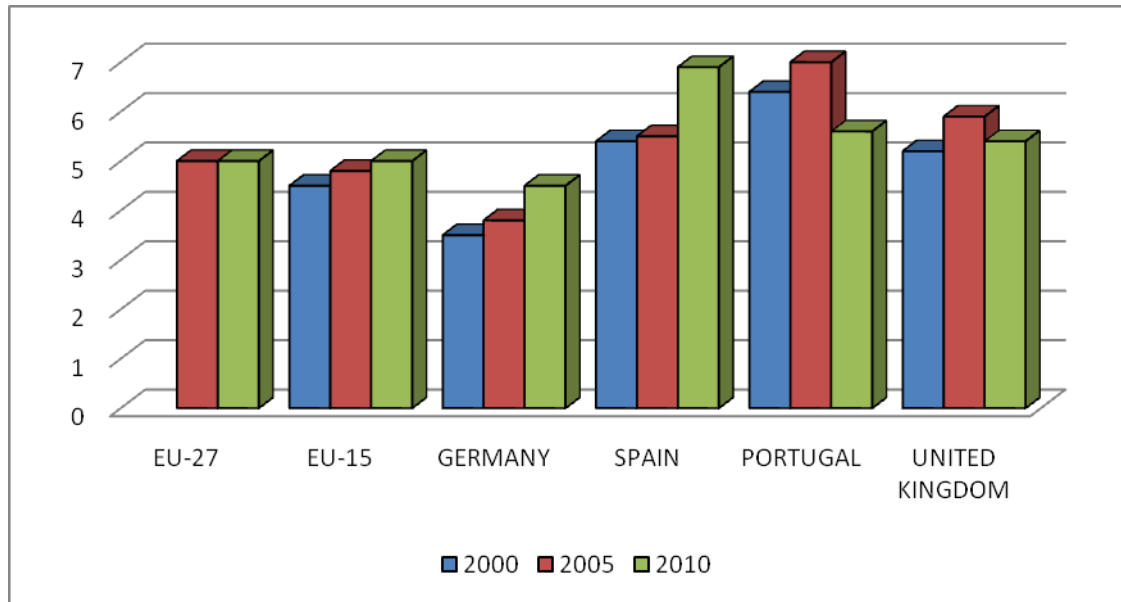


Source: International Labor Organization (ILO) 2011, 15

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 where Spain was one of the few countries in which the decline in employment outpaced the drop in GDP with about 4 million jobs lost between 2007 and 2012 and an unemployment rate of 25.02% (2012, 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 two years of expansion policies and shrinking state revenues the increased public debt forced a shift towards austerity. Since 2010, the expiring of the Plan 2000E, the VAT tax increase, the wage cuts in the public sector, the ongoing credit restrictions and the high unemployment rate keep a 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.

Income distribution patterns in Spain are quite close to the EU average with the Gini coefficient² at 33.9 in 2010 (EU-27: 30.5). 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 (lowest quintile) is also slightly above European average.

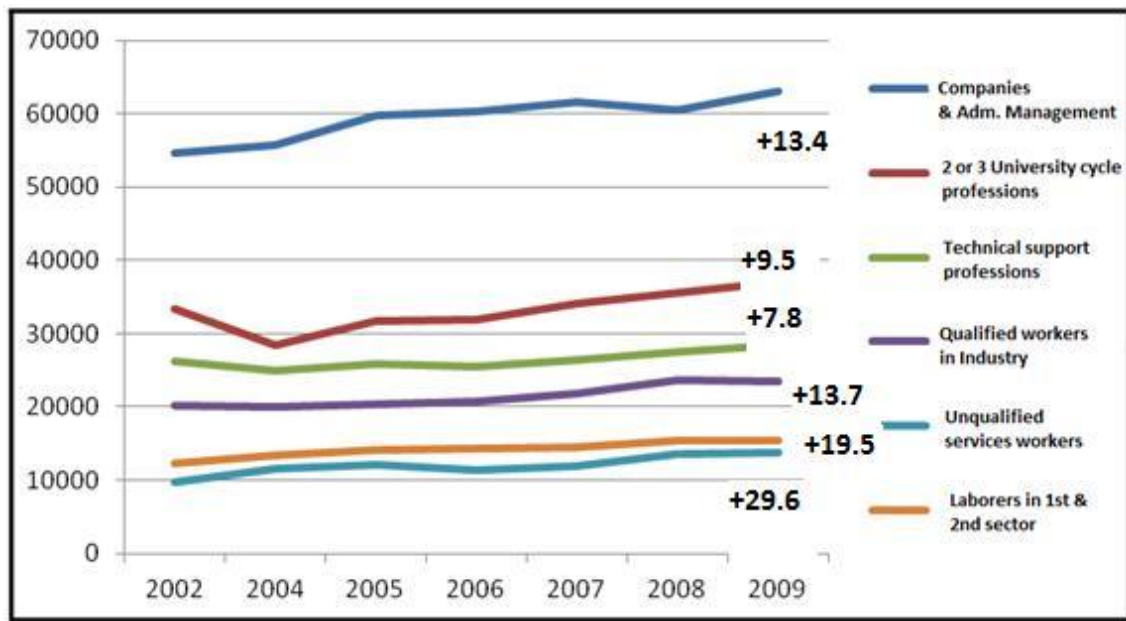
Figure 8: Income quintile share ratio in selected countries.



Source: Eurostat

Income and wealth concentration in Spain has increased since the 1990s although somewhat compensated by the real estate wealth concentration which declined during the housing boom with many people investing in private housing and 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/Saez 2009). The main component of income concentration in Spain is capital gains whereas the main source of general wealth increase is real estate ownership.

² The Gini coefficient is defined as the relationship of cumulative shares of the population arranged according to the level of equivalised disposable income, to the cumulative share of the equivalised total disposable income received by them.

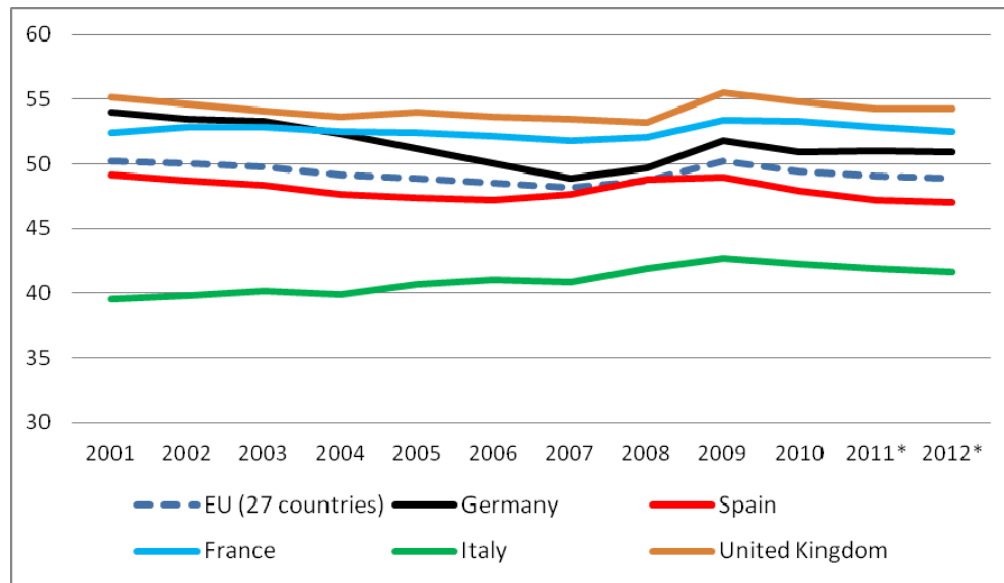
Figure 9: Evolution of average wages per occupation.

Source: Wage Structure Survey. National Statistics Institute (INE).

As in other developed countries salaries in Spain are losing share in national income (Ellis and Smith 2007). 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.

The unequal wage development wasn't altered by the crisis with management pays still growing above average and low-wage occupations suffering stagnation. Whereas in 1995 a management reward was 142% of average wage, in 2009 (latest survey on wage structure in Spain) it has rose to 181%. The most common salary in Spain is about 15,500 €/year which means few more than 1,000 € per month (14 pays/year) and implies serious difficulties to maintain a family particularly in bigger cities. The legal minimum wage in Spain is 634 €/month (2010).

Figure 10: Employee compensation share in GDP in selected countries.

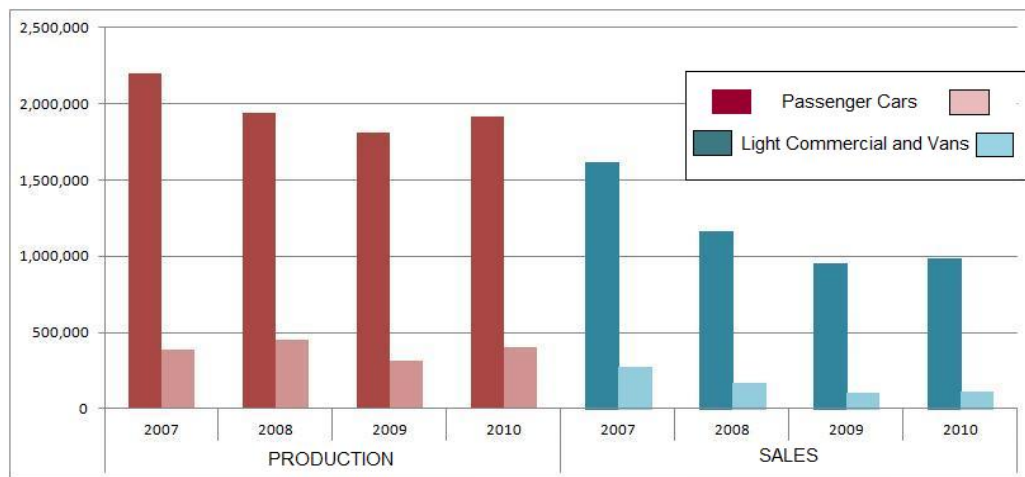


Source:

Eurostat (* forecasts for 2011 and 2012)

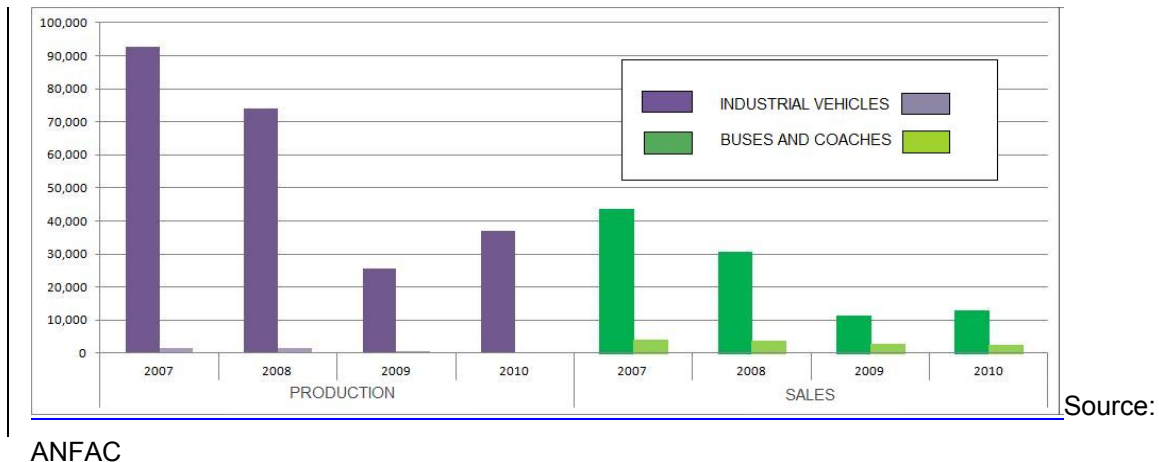
Concerning the car market, domestic demand in Spain has sharply fallen in the course of the crisis (about 40% in 2007-2010) and shows no clear trend of recovery. High unemployment, continued credit restrictions, low consumer confidence and the expiring of the demand-side incentives keep the markets down. The recovered exports only partly compensate the depressed domestic market.

Figure 11: Production and sales of vehicles in Spain, 2007 - 2010



Source:

ANFAC

Figure 12: Production and sales of vehicles in Spain, 2007 - 2010 (II)

A comparative analysis of the European automobile industry reveals the particular weakness of the Spanish market. This shows “to what extent certain economies benefited from easy credit and real estate bubbles, and of configuration where the volume of sales were linked to the evolution of revenues and have resisted much better to the crisis. Amongst the five great European automobile countries, Spain and the United Kingdom fall in the first category, France and Germany in the second, and Italy between the two. Two parameters are here decisive: on the one hand, the degree of regulation of the work market and the part of the revenues that is socialized; and, on the other hand, the relative degree of indebtedness of the households.

The first parameter is related to the strength or the weakness of the —automatic stabilisers— that economies were able to use during the crisis. The second is related to the magnitude of the financial bubble and to the consequences of its burst on the consumption of the households.

On these bases it is possible to explain the differences between the different economies and in particular why the Spanish and the British markets have suffered so much during the crisis: the first combines weak automatic stabilisers and a massive use of mortgage credit that have exposed the households to high levels of indebtedness on real properties that have lost a lot of their value; the second is mainly affected by the sole effects of the second parameter.” (Jullien, 2011, 19f)

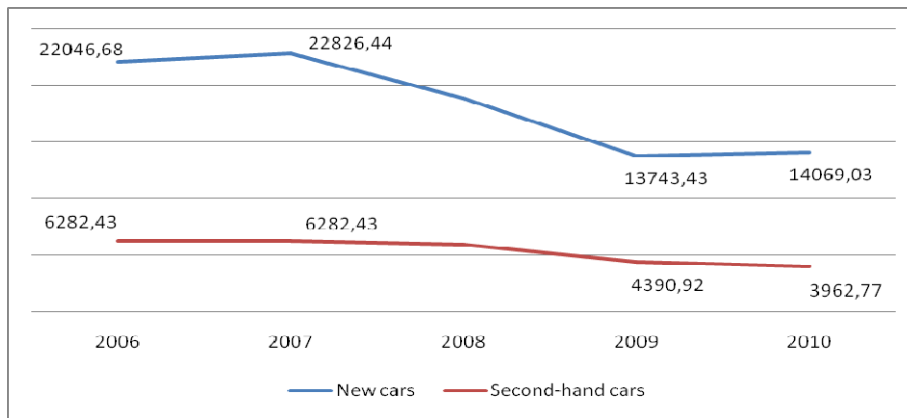
The structure of the automotive demand was also altered by the crisis with a growing market share for used vehicles. Spain has a long tradition of buying new cars financed by credit and stimulated by public scrappage programs whereas the market for used cars was very limited. In 2007, however, the sales of used cars exceeded for the first time that of new cars and in 2010 1.6 used cars were sold per 1 new car, a figure still behind the European

neighbours such as Germany (1.9), France (2.7) or UK (3.2). On the other hand, after the expiring of the “*Plan 2000E*” incentives in June 2010 new car sales dropped to the lowest level since the early 1990s, a trend making itself felt in the Spanish automobile pool, which is approaching an average age of 10 years, one of the oldest in the EU. Besides the changes in household income and consumer preferences, the dealer strategies and the growing Internet market contribute to this shift.

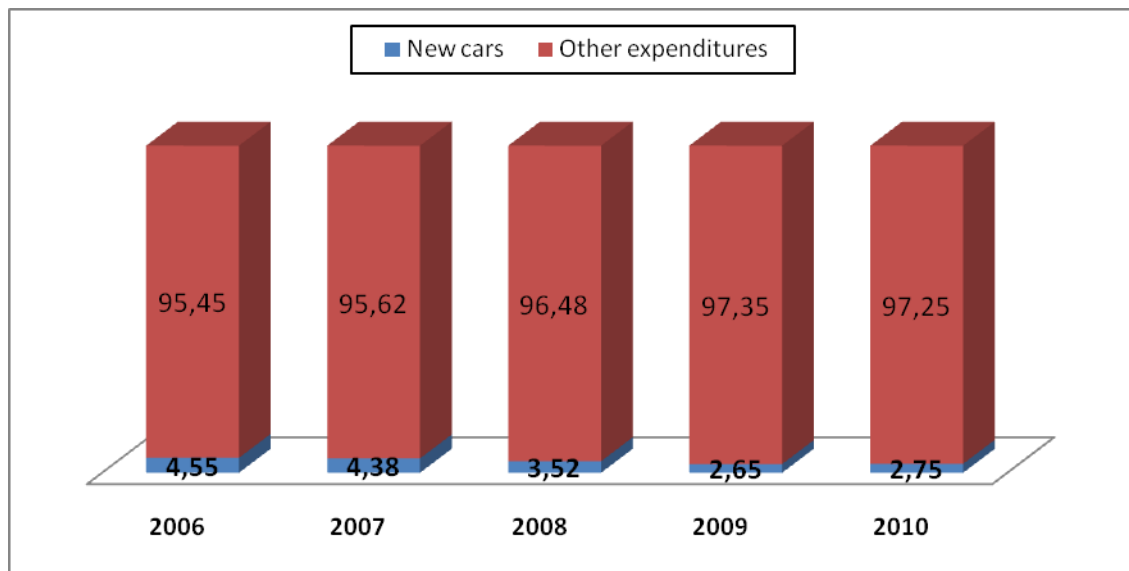
Following data from the Spanish household panel the number of households purchasing a car has shrunk 24.4% from 2006 to 2009, but the ones buying a used car only fell 8% whereas the households buying a new vehicle dropped 36% (BBVA 2011). The average expenditure on car purchase dropped in the same period from €15,600 (2006) to €13,500 (2009).

The crisis has accelerated a car consumer habit trend which already appeared during the last two decades as a result of growing income inequalities and changing life-styles. 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 living costs. Whereas the older generation developed consumer habits such as mortgage financed 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 the negative correlation between housing ownership and purchasing used cars (BBVA 2011).

The growing immigrant population also contributes to a trend which might indicate a long-term change.

Figure 13: Vehicles total expenditure 2006-2009 (€).

Source: Household Budget Survey.INE.

Figure 14: Expenditure shares (2006-2010).

Source: Household Budget Survey.INE.

The crisis accelerated a longer trend in Spanish consumer habits known as low-cost consuming. Particularly young and often well educated people with relatively low income –in Spain they are called ‘mileuristas’³- develop specific consumer strategies buying in discounters no-brand or white label products, using the Internet for cheap shopping or free downloads, travelling with low-cost agencies, etc. Concerning the car demand this is reflected in an increase of used cars, of car purchasing via Internet and of cheap models. The average age of the cars in use is also rising since 2007 and the average price of car transactions is falling.

There is a particular increase of demand for cheap used cars below €3,000, a phenomenon which received the label ‘mileurista car’.

³ The term refers to people earning about 1,000 €/month and living in big cities with high living costs.

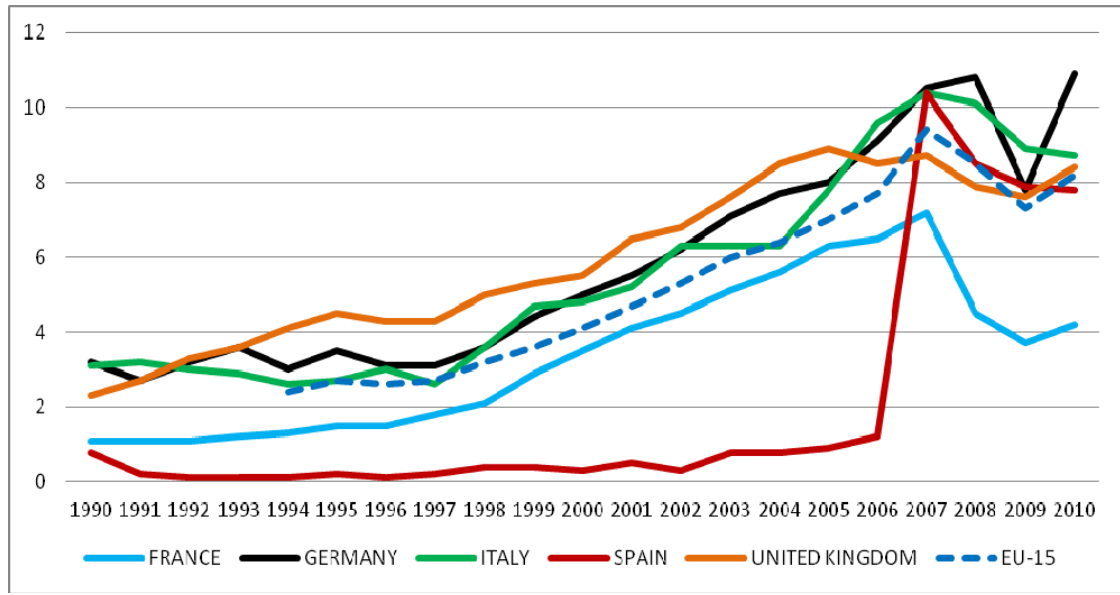
Table 5: New car registrations by segment

	2008		2009		2010	
	Unidades <i>Units</i>	Cuota <i>Share</i>	Unidades <i>Units</i>	Cuota <i>Share</i>	Unidades <i>Units</i>	Cuota <i>Share</i>
<i>Micro/Mini</i>	56.292	4,8	42.520	4,5	48.443	4,9
<i>Pequeño/Low</i>	288.871	24,9	248.697	26,1	262.430	26,7
<i>Medio-bajo/Lower medium</i>	363.089	31,3	303.248	31,8	281.924	28,7
<i>Medio-alto/Upper medium</i>	169.136	14,6	133.741	14,0	129.392	13,2
<i>Ejecutivo/Executive</i>	22.418	1,9	13.431	1,4	14.693	1,5
<i>Deportivo/Sport</i>	9.876	0,9	7.061	0,7	8.395	0,9
<i>Lujo/Luxury</i>	2.987	0,3	1.499	0,2	1.341	0,1
<i>Monovolumen pequeño/ Lower MPV</i>	140.046	12,1	108.632	11,4	113.985	11,6
<i>Monovolumen grande/ Upper MPV</i>	16.538	1,4	12.771	1,3	12.719	1,3
<i>Todo terreno Pequeño/ Small Off-Road Vehicle</i>	26.492	2,3	19.020	2,0	28.222	2,9
<i>Todo terreno Medio/ Medium Sized Off-Road Vehicle</i>	42.664	3,7	47.517	5,0	65.174	6,6
<i>Todo terreno Grande/ Large Off-Road Vehicle</i>	7.459	0,6	4.823	0,5	6.019	0,6
<i>Todo terreno Lujo/ Luxury Off-Road Vehicle</i>	15.308	1,3	9.812	1,0	9.278	0,9
Total	1.161.176	100,0	952.772	100,0	982.015	100,0

Source ANFAC

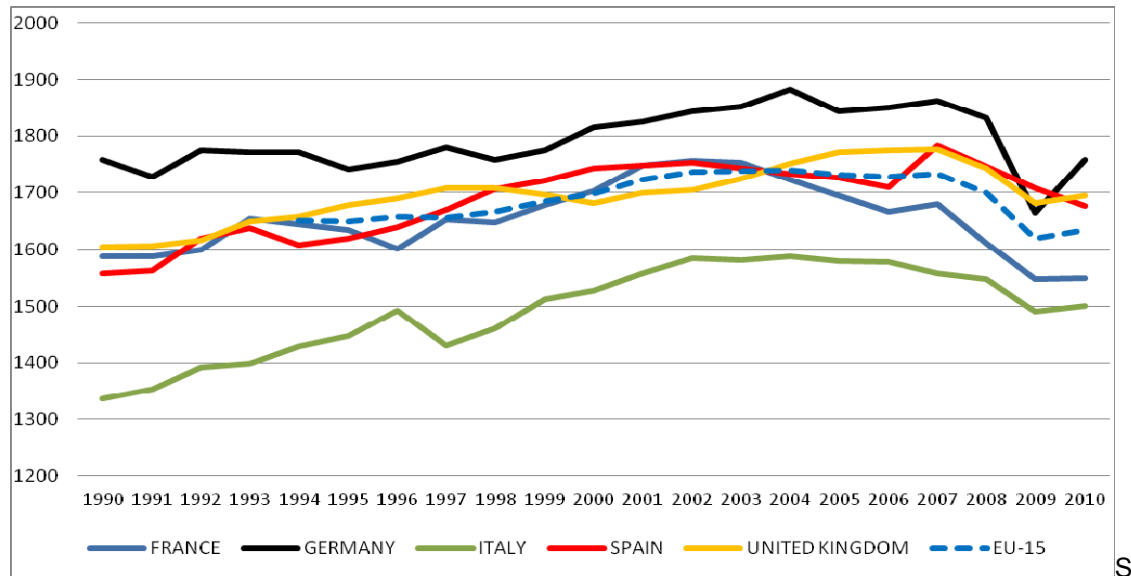
In the following we will have a closer look at the evolution of the demand for cars concerning the type of fuel, share of 4x4 models, average power and motor volume. “In economics and marketing literature, the purchase of a car is defined as a form of ‘complex buying behaviour’. Given that the car is a high involvement product, the car buying process is seen as a high involvement process, leading to active search and use of information, deliberate evaluation of alternatives, and a careful choice. More specifically, the consumer’s search for information usually includes both ‘internal search’– retrieval of information based on previous searches and personal experiences – and ‘external search’ – accessing of different types of information sources (Dijk and Nijhuis, 2011). 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 4x4 wheel-drive boom in 2005 – 2007. The crisis stopped and inverted this trend towards smaller, cheaper and less powerful cars. Despite car sales have fallen significantly since the beginning of the economic recession, there is a certain polarization in the passenger car market. Fuel-efficient and cheap cars from the low segment are becoming top sales whilst, on the other hand, luxury car sales have increased sales by 83% in 2012 (ANFAC).

Figure 15: Share of 4x4 wheel drive models

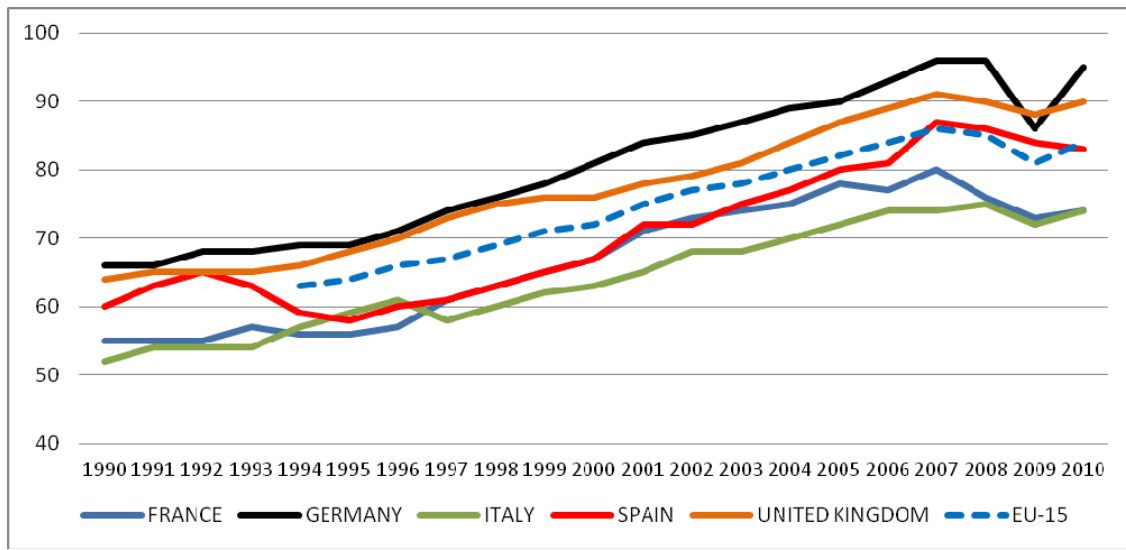


Source: ACEA

Figure 16: Average Motor volume (CC cm3)



Source: ACEA

Figure 17: Average Power (Kw)

Source: ACEA

The automotive demand in Spain thus experiences a fundamental shift since 2008. The impact of the crisis, the high unemployment and uncertainty, the ongoing credit restrictions, the growing income inequality and the demand policies in favour of low-emission vehicles shifted the lion's share of the market towards small and medium-sized segments and used cars. The policies to promote e-mobility, however, don't show significant effects so far.

5. Conclusions

The analysis of car demand evolution offers rich information on economic development, consumer habits, life-style, and policy impacts in a given economy. Spain is a latecomer among the highly motorized societies where policy incentives and public infrastructure investments played a prominent role in developing the automobile market. The structure of the car demand in Spain experiences 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 with the burst of the home-made real estate bubble which led to a severe and long-term recession that affected the consumption and the car markets in a particular manner. During the long expansive period since the early 1990s the market for new cars lived constant growth rates with a steady trend to higher segments culminating in the minivan and 4x4 wheel-drive boom in the last years before the crash. The banks and savings banks fuelled the boom with easy credits 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 urbanization generated already a new low-cost consumer class among the young urban and the immigrant population. The impact of the crisis stopped the expansive credit financed consumption boom and shifted the consumer habits towards low-cost products. Whereas the market for new cars is shrinking since 2008 the low-cost car segment is gaining market shares and the used car market (in sales volume, not yet in expenditure) exceeded the new cars for the first time in recent history. The age of the Spanish car pool is increasing and the economic forecasts don't submit any hope for short-term changes in these trends. Spain thus confirms a trend observed in other West European and North American countries where stagnation of median real household's income and return of high income inequality leads to a highly segmented and polarized automobile market between cheap and used and expensive luxury vehicles, although the luxury vehicle segment maintains very low market shares in Spain (hypotheses 1 and 2).

The public policies under the pressure of depth control and austerity abandoned the scrappage programs which maintained the passenger car demand stable during the first two crisis years – the commercial vehicles suffered immediate downturns – and concentrate on subsidies and incentives for electric and hybrid vehicles. The ambitious goals of these e-mobility programs, however, are far from reality and the private demand for electric vehicles is still not 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 by electric driving systems is only a long-term alternative not possible to implement by short-term policies in adverse economic contexts. Our third hypothesis has to be qualified in a sense that automotive policies like tax and scrappage schemes have significant impacts on car demand structure but fundamental shifts towards new propulsion or mobility systems require long-term policies in align with changing consumer habits and life-styles.

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