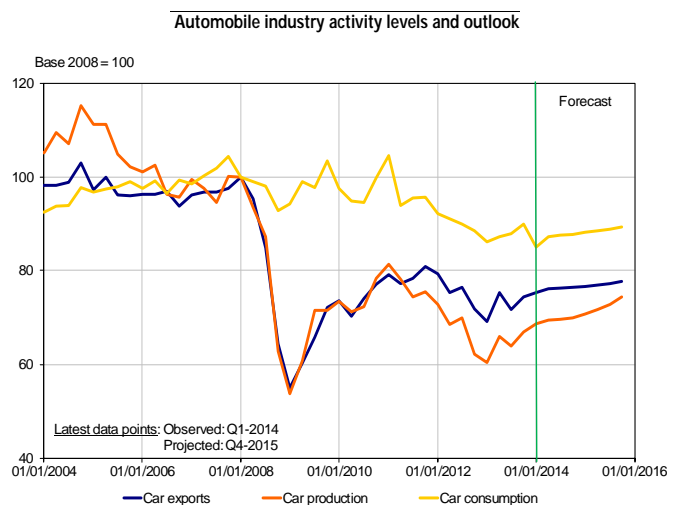


What outlook for the French automobile industry?

- French carmakers, along with the rest of the European automotive industry, had to cope with a sudden drop in demand triggered by the 2008 crisis. Several European countries, including France, introduced temporary measures, such as scrapping subsidies, to underpin demand and ease the industry's difficulties, thus giving carmakers more time to adapt to new conditions and cope with a crisis that was seen as cyclical at the time.
- These measures were phased out in a persistently weak economy and the downturn in the European market recently drove demand down to very low levels. Sluggish demand has resulted in sizeable overcapacity throughout Europe. Several structural factors, such as a high car ownership rate and persistently high fuel prices, combined with a weak economy, are likely to restrict any recovery in demand in both France and the leading European markets.
- Under the circumstances, carmakers in Europe will have to continue reducing the overcapacity revealed by the crisis. Investment in eastern European countries prior to 2008 built up automobile capacity to such an extent that it now outstrips the current level of demand. Overcapacity fuels competition between production plants and erodes the profitability of French carmakers, who were already lagging behind in terms of competitiveness before the crisis because of a poorly positioned product range and weak international expansion.
- Restructuring of production plants should continue in France in the short term, given the persistently low capacity utilisation rate and the urgent need to make competitiveness gains. In the longer run, the growth of the automobile industry in France will depend on carmakers' ability to keep pace with changing demand (energy transition issues, development of connected vehicles).



Source: INSEE, DG Trésor calculations.

1. The automobile industry is a major sector of France's economy and accounts for much of GDP volatility

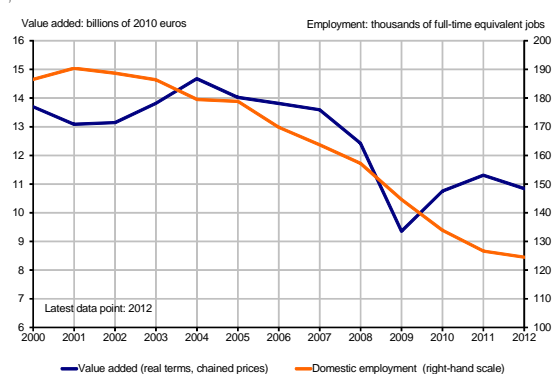
1.1 Even though the influence of the automobile industry in France has declined...

The activity of France's automobile industry has declined steadily since the middle of the last decade. Between 2004 and 2012, the industry's real value added shrank by 26% and domestic employment (excluding temporary workers) in the industry fell by 31% (see Chart 1). The decline stems primarily from the drop in vehicle production in France from 3.62 million vehicles assembled in 2003 to 1.74 million in 2013¹. Two French carmakers account for nearly all of the fall in output. The proportion of vehicles manufactured in France by foreign carmakers (primarily Toyota and Smart) ranges from 10% to 17%, depending on the year, and the foreign carmakers' contribution to variations in French output is limited². French car production by PSA and Renault contracted by 51% and 61% respectively between 2003

and 2013. The decline in French output came as car exports fell and imports climbed. According to customs data (see Chart 2), the balance of trade on automobiles went from a surplus of €0.6 billion in 2004 to a deficit of €5.8 billion in 2012.

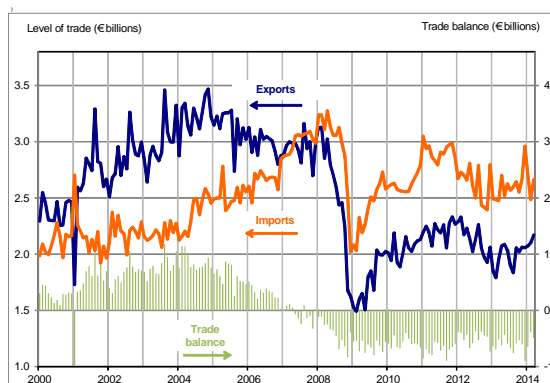
Automobile component manufacturers' dependence on carmakers' assembly activity meant that their output fell over the same period³. In contrast to carmakers, however, they maintained their trade surplus with the rest of the world, standing at €2.59 billion in 2012 compared to €2.47 billion in 2004. These surpluses stem from the performance of some major component manufacturers, such as Valéo, Faurecia and Plastic Omnium, which successfully diversified their markets and benefited from the growth of foreign carmakers⁴.

Chart 1: Value added and employment in the automobile industry in France



Source: INSEE, (national accounts by industry).

Chart 2: Trade and car trade balance



Source: Customs.

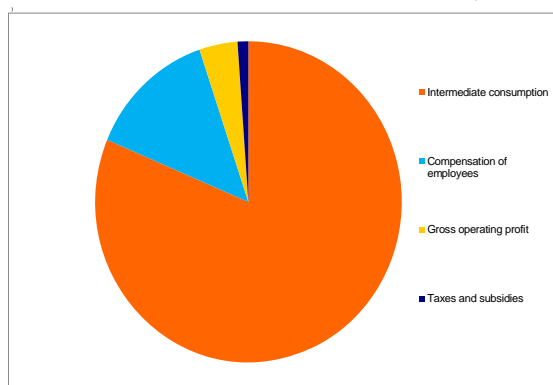
1.2 ... it is still a major driving force for the rest of the economy...

Despite its relatively small share of total output (1.5% in 2012), the automobile industry is still a powerful driving force for the rest of the French economy, particularly through its intermediate consumption of goods (see Charts 3 and 4) and services related to car sales. There is a structural trend towards greater interdependence with the rest of the economy. First, manufacturing vehicles is an increasingly complex process that incorpo-

rates a growing variety of technologies from other industries, such as embedded electronics, batteries and telecommunications equipment. Second, services devoted exclusively to car users are on the increase, such as after-sales services, car financing, vehicle rentals, parking, battery recharging, and on-board audio-visual content. This means that an economic shock to the automobile industry is likely to have major repercussions on many sectors in manufacturing and in services.

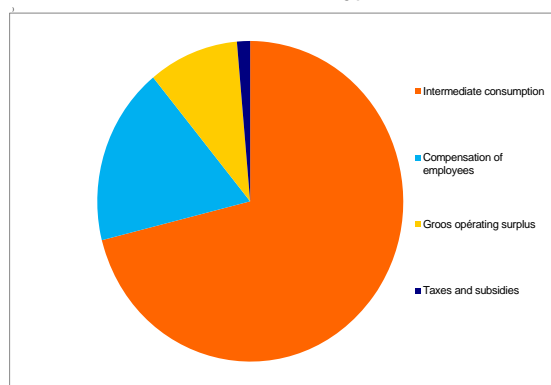
- (1) Source: International Organization of Motor Vehicle Manufacturers (OICA). These figures correspond to cars made at production plants in France: some of the components in these vehicles are manufactured in other countries.
- (2) Between 2004 and 2007, the volume of vehicles manufactured by foreign carmakers increased by 70,000 units, whereas total output shrank by 650,000 units. Between 2007 and 2012, total output in France declined by some 1.05 million vehicles, whereas the output of foreign carmakers fell by 122,000 units, accounting for 11.6% of the total variation.
- (3) See Box 2 in Bechler, C., Quille B. and Sala M. (2014), "Trajectoires divergentes pour les industries automobiles européennes", INSEE, Note de conjoncture, March.
- (4) In some cases, component manufacturers' exports may also go to French carmakers' factories in other European countries.

Chart 3: Breakdown of car production



Source: INSEE, Annual National Accounts (2012).

Chart 4: Breakdown of manufacturing production other than cars



Source: INSEE, Annual National Accounts (2012).

The multiplier effect of a shock to the automobile industry can be estimated by calculating the direct impact of the shock on the industry and the indirect impact on other industries caused by intermediate consumption. According to France's National Institute of

Statistics and Economic Studies (INSEE), this multiplier is particularly large in the automobile industry⁵. An increase in value added in the automobile industry leads to a fourfold increase in value added in the entire economy⁶ (see Table 1).

Table 1: Value added multipliers by industry (excluding coking and refining)

Sectors	Agriculture (CZ)	Food products (C1)	Capital goods (C3)	Motor vehicles (C29)	Air and space craft (C30C)	Other transport equipment (excl. aircraft)	Other industrial goods	Energy, water, waste (DE)	Construction (FZ)	Trade and services
Multiplicateur	2.3	2.8	2.3	4.1	4.8	3	2.3	2.1	2	1.5

Sources: INSEE, Note de conjoncture (March 2009) *ibid*.

1.3 ... and contributes greatly to GDP volatility, especially during upturns and downturns

Automobile industry output is not only closely linked to the rest of the economy; it is also more volatile than manufacturing output as a whole⁷. This stems from the greater sensitivity of spending on capital goods to cyclical variations⁸ and the advanced internationalisation of the automobile industry, with an export rate of 56% in 2011⁹, which makes the industry particularly sensitive to changes in the international economy.

Consequently, the automobile industry accounts for a large share of GDP volatility, especially during downturns and upturns, as a result of the knock-on effects cited above. This share stood at 14% between 2007 and 2011 (see Chart 5). This means the ability to predict fluctuations in the activity of the automobile industry can be helpful for forecasting GDP, especially during upturns and downturns. However, the predictive power of surveys still seems to be limited in the automobile industry (see Box 1).

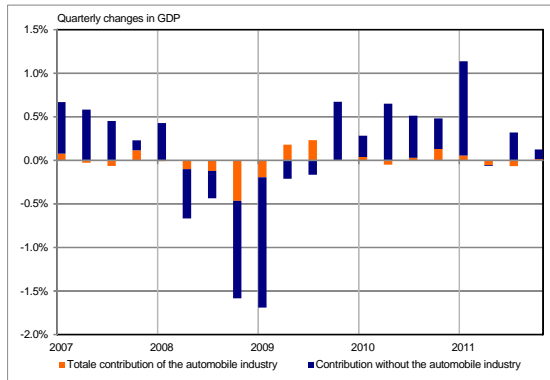
- (5) See INSEE (2009), "Éclairage - le coup de frein à la production automobile : sa part dans la récession", *Note de conjoncture*, p.91, March.
- (6) See INSEE (2012), "Construction aéronautique et construction automobile, deux secteurs qui ont un effet d'entraînement marqué sur le reste de l'économie", *Note de conjoncture de l'Insee*, p.91, March. This is an accounting calculation that measures the effect of a one-point increase in value added in the car industry on the added value in the economy as a whole. The multiplier effect of an industry is increased by (i) large amounts of intermediate consumption, (ii) with low import content and (iii) from high value-added industries.
- (7) The standard deviation of the industrial production index (IPI) data series for the car industry is more than three times that of manufacturing production as a whole.
- (8) In a recession, households and corporations will delay their purchases of capital goods rather than cut back their current consumption.
- (9) Source: INSEE (Esane) (2011), "The export rate is the share of sales revenue from exports".

Box 1: What do car-related economic data contribute to estimates of manufacturing output?

Forecasting model calibration techniques rely on a combination of survey data, which usually means balances of opinion about companies' order books, inventories, cash positions, etc. The number of variables used for calibrating the model is limited because of statistical significance. This means forecasting manufacturing output with a single calibration variable could fail to capture some data that might be helpful. This is particularly true for the automobile industry, which accounts for a significant share of manufacturing output volatility.

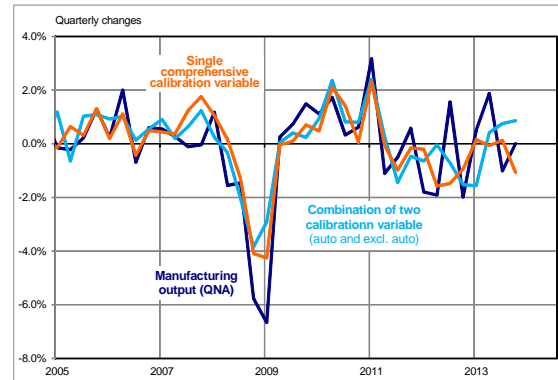
One way to ensure that the car-related data contained in the surveys is used effectively in forecasts is to combine two calibrations: the first based on balances of opinion in the automobile industry and the second based on balances in the rest of the manufacturing sector. This forecast is then compared to a comprehensive calibration based on the balances of opinion in the manufacturing sector as a whole (Chart 6).

Chart 5: Estimated contribution of automobile industry output to variations in GDP



Source: INSEE, DG Trésor calculations.

Chart 6: Comparison of the two calibration variables on manufacturing output



Source: INSEE, DG Trésor calculations

Adding a second calibration variable produces only a slight improvement in the manufacturing output forecast. The coefficient of determination (R^2), which measures the variance explained by the model, increases from 62% to 68%. This is only a minor improvement because the automobile industry's modest share of manufacturing output, which stood at slightly more than 7% in 2013, and, more especially, the low coefficient of determination of the automobile industry output calibration variable, which stands at only 37%, or 35% for the adjusted R^2 . The latter finding shows how difficult it is to capture developments in the automobile industry using surveys. This limits economic forecasters' ability to anticipate the major impact that the automobile industry can have at times on GDP growth (see Chart 5).

2. Despite temporary government support measures, the automobile industry is still feeling the repercussions of the 2008-2009 crisis

Two French carmakers, PSA and Renault, account for the bulk of motor vehicle production in France (see 1.1). The last decade can be divided into three distinct phases: (i) lagging competitiveness of French carmakers before the crisis at the same time as production was relocated to eastern European countries; (ii) weakening demand

on the European market during the 2008/2009 financial crisis, which was partially offset by contra-cyclical measures, such as the scrapping subsidy; (iii) the aftermath when the measures ended and overcapacity appeared in Europe, which was particularly acute for the French industry.

Table 2: Automobile industry activity in France

	2008	2009	2010	2011	2012	2013	2013 level/ 2007 level
Production*	-12.4%	-25.0%	14.6%	4.9%	-11.7%	-6.2%	-34%
Consumption**	-3.8%	1.2%	-1.9%	0.8%	-7.2%	-2.9%	-15%
Registrations***	-1.0%	10.8%	-3.7%	-1.4%	-13.8%	-5.0%	-17%
Exports (nominal terms)	-1.0%	10.8%	-3.7%	-1.4%	-13.8%	-5.0%	-22%
Imports (nominal terms)	-7.5%	-6.6%	-4.1%	-2.4%	1.6%	-32.9%	-12%

Sources: Insee, (IPI, consumption), SOeS (registrations) and customs (exports and imports), DG Trésor calculations.

* Includes production of carmakers and component manufacturers.

** In addition to new passenger vehicle registrations, this includes spending on components and demonstration vehicles.

*** New passenger car registrations.

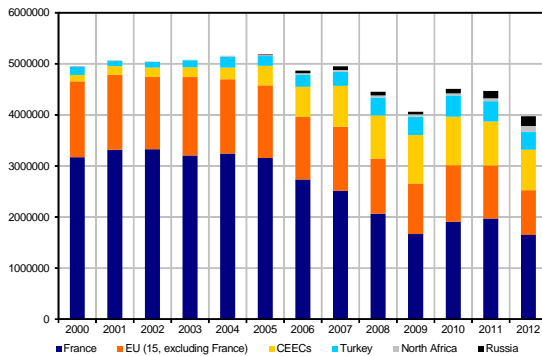
2.1 French carmakers' lack of competitiveness was already apparent before the financial crisis

The decline in French car production has been perceptible since 2005, with an 18% drop between 2004 and 2007. It started when two French carmakers decided to relocate some of their production to Central and Eastern European Countries (CEECs), and, to a lesser extent, to

North Africa and Turkey (see Chart 7). This choice was motivated by both the low production costs in these countries and the determination to penetrate emerging European markets in line with the regionalisation of car production. The carmakers want to minimise transport costs, their exposure to exchange rate fluctuations and stock turnover times, since the major global markets

(greater Europe, Southeast Asia, North America, etc.) are self-sufficient in terms of production¹⁰. This regionalisation of production means that France is basically competing with the other European countries and those around the Mediterranean (Morocco, Turkey) as a location for production plants. Under the circumstances, the manufacturing of certain economy and/or basic models, where sales and profits are very sensitive to costs, was partially transferred to eastern Europe¹¹.

Chart 7: PSA and Renault car production in Europe



Source: OICA, DG Trésor calculations.

NB : the increased share of production in CEECs and Turkey is valid for both Renault and PSA.

Despite relocating some of their production offshore, PSA and Renault lost market share in western Europe between 2003 and 2007¹². PSA's share shrank by 1.7 points and Renault's by 2.5 points. The beneficiaries were German carmakers, with a 1.3 point gain for Volkswagen and a 1.2 point gain for BMW, Italian carmakers, with a 0.7 point gain for Fiat and Asian carmakers, with a 1-point gain for Toyota and a 0.8 point gain for Hyundai-Kia.

French carmakers' problems stem primarily from the positioning of their products. They have historically specialised in mid-range models, which means that PSA and Renault are increasingly competing with cars produced in European countries with low production costs (CEECs, Turkey) and are unable to penetrate the premium-range market, which is dominated by the

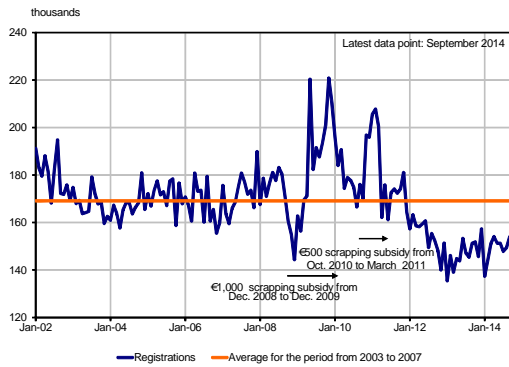
Germans¹³. Furthermore, French carmakers, and especially PSA, seem to have been slower than the other leading European carmakers to join the movement to relocate production¹⁴. This delay probably meant that they had to squeeze their margins more, thus restricting their ability to invest in non-price competition factors, such as innovation and quality¹⁵. Several developments in the European market were also adverse for the French industry. On the one hand, the growth of diesel-powered cars' market share started to slow in 2004¹⁶, eroding the French carmakers' comparative advantage in this segment¹⁷. In addition, the proportion of 4WD cars in new car registrations continued to grow, reaching 10% in 2007 compared to 6.2% in 2003 and 4.5% in 2000. French carmakers missed out on this boon, since they did not offer any 4WD cars at the time. The two French carmakers' lack of competitiveness led to relatively weak output growth that prevented them from achieving significant economies of scale.

2.2 Government stimulus measures in France and neighbouring countries helped limit the decline in production in 2009 and 2010

When the crisis started in 2008, the automobile industry saw a sudden and severe contraction of the European market. The French government, like the governments of other European countries, introduced contra-cyclical measures to sustain car demand (see Box 2) and prevent a wave of bankruptcies in the industry. France's scrapping subsidy caused sales to peak in 2009 and 2010, reversing the decline in output that started in 2008. Furthermore, carmakers' shrinking cash piles and their problems obtaining loans warranted the government loans granted under the Automobile Pact of February 2009. Each carmaker received a €3 billion loan while Renault Trucks received €250 million loan. The carmakers' captive finance companies (PSA Finance and RCI) also each received a €1.1 billion loan from the Corporation for Financing the French Economy (SFEF). Short-time working arrangements and cash loans distributed by Oséo (now Bpifrance) also facilitated carmakers' adjustment to a shrinking European market.

- (10) According to the OECD, only 11% of produced passenger cars were traded between North America, Europe and Southeast Asia in 2011. See OECD (2013), "Medium-Run Capacity Adjustment in the Automobile Industry," OECD Economics Department Policy Notes, No. 21, November.
- (11) This strategy is not the exclusive preserve of French carmakers. German carmakers also relocated production of their economy/low-end range models offshore. See Chiappini, R. (2012), "Offshoring and export performance in the European automotive industry," *Competition and Change*, Vol. 16, No. 4, October.
- (12) Source: CCFA (the data also show French carmakers' market shares shrinking between 2006 and 2012).
- (13) See Sartorius and Serris (2012), "Rapport à Monsieur le Ministre du Redressement Productif sur la situation de PSA Peugeot Citroën", Conseil général de l'économie, de l'industrie, de l'énergie et des technologies (CGEIT), 11 September.
- (14) In 2000, 1% of PSA's European production (including Turkey, Russia and North Africa) was manufactured outside the EU 15 countries and the figure for Renault was 12%. These figures compare to 16% for Volkswagen, 20% for Fiat, 8% for Toyota, 5% for General Motors and 3% for Ford (source: OICA, DG Trésor calculations).
- (15) See Ferrero, G., A. Gazaniol and G. Lalanne (2014), "Challenges facing the French manufacturing sector," *Trésor-Economics* No. 124, February.
- (16) The average growth of diesel's share was 4 points per year between 2000 and 2004, as opposed to 1.7% between 2004 and 2007 (source: CCFA).
- (17) However, this advantage tended to wane between 2003 and 2007. Over that period, French carmakers' share of the European diesel car market shrank from 31% to 23% according to CCFA

Chart 8: Monthly new car registrations in France and the scrapping subsidy



Source: SOeS.

In addition to these measures designed to attenuate cyclical problems, the government took several steps to enhance the competitiveness of the industry in the long term and to facilitate its restructuring. These include:

- the €650 million fund for the modernisation of the automobile component manufacturers (FMEA) with the objective of strengthening the automobile industry's

suppliers by making equity investments in them;

- the "Vehicles of the Future" programme, which is part of the "Invest for the Future" programme (PIA), which provides support for carmakers' R&D, especially for the development of clean cars¹⁸;
- the work of the automobile industry strategic committee, which is a forum for industry players and an opportunity to improve coordination.

Despite these support measures, French production shrank by nearly 13% between 2008 and 2010, as external trade with the leading European countries declined. Car exports were hit particularly hard¹⁹. The measures introduced in several European countries to simulate demand failed to stop the European car market, including Turkey and Russia, from shrinking by 18% between 2007 and 2010, according to OICA. Furthermore, French carmakers' shares of the main European markets shrank in 2008, with a 0.7 point decrease in western Europe according to CCFA. This may have dampened activity in French production plants.

Box 2: Measures to simulate car demand during the 2008/2009 crisis

Scrapping subsidies

Several European governments introduced "scrapping subsidies", which subsidised the purchase of a new vehicle in exchange for scrapping an old one. The subsidy scheme ran in France between December 2008 and December 2010. The subsidy was tied to the age of the scrapped car (at least 10 years old) and the CO₂ emissions of the car purchased (less than 160g of CO₂/km). The original subsidy of €1,000 was reduced to €700 for cars ordered in the first half of 2010, and then to €500 for cars ordered in the second half of 2010, so as to attenuate the backlash inherent in such measures. The scrapping subsidy did speed up replacement of the car population, and bringing car purchases forward had a knock-on effect on registrations^a (see Chart 8).

Very similar schemes were run in the other leading European countries between the end of 2008 and the middle of 2009, such as Germany, Italy, Spain and the United Kingdom, for varying amounts and periods. The simultaneous schemes meant that the stimulus for the European market was relatively uniform, even though the decline in France was smaller, at 9% between the start of 2007 and the end of 2011, than the decline in the euro area as a whole, which stood at 16%.

Subsidies for purchases of clean cars

The 2008/2009 financial crisis also coincided with several European governments' decision to introduce subsidies for purchases of more environmentally-friendly cars^b. The original purpose of the subsidies was to accelerate the "greening" of the cars population, but they also helped carmakers by stimulating demand.

The French government introduced an ecological subsidy/tax scheme in December 2007 as part of the "Grenelle" environmental initiative. The scheme either subsidises or taxes purchases of new cars depending on their CO₂ emissions. The requirements are periodically adjusted to account for carmakers' technological advances and the budgetary trajectory of the scheme, since the taxes collected are supposed to finance the subsidies paid. The subsidies paid were greater than the taxes collected in every year except 2012. This means the scheme has been an indirect subsidy for the automobile industry since it was first introduced. The impact of the scheme was more beneficial for French cars, which emit lower levels of CO₂^c.

- See Adda, J. and R. Cooper (2000), "Balladurette and Jupette: a discrete analysis of scrapping subsidies," *Journal of Political Economy*, 108 (4): 778-806.
- Other countries' measures include Italy's subsidies for purchases of electric, methane, LPG or hydrogen-powered cars between 2008 and 2009. Between June 2009 and December 2010, Germany also introduced a one-year exemption from the registration tax on new cars that varied according to engine capacity and CO₂ emissions.
- The two French carmakers' models rank among those with the lowest CO₂ emissions. See CCFA (2013), "Tableau de bord de l'automobile, année 2013," No. 37.

(18) The "Car for the Future" programme has a total budget of €950 million (source: ADEME), of which more than 70% is devoted to road transport. ?

(19) Automobile exports to the euro area fell by 32% between 2007 and 2010, while imports fell by 16% (source: Customs).

2.3 Overcapacity in Europe continues to hold back French production

The phasing out of government support measures, at a time when purchasing power was restricted, led to a backlash: sales fell by 9% in Europe between 2010 and 2013²⁰, and by 22% in France, revealing sizeable overcapacity. European carmakers invested heavily in the CEECs before the crisis on the basis of optimistic growth forecasts for these countries. This investment resulted in increased production capacity that outstrips the structural level of demand. Overcapacity, combined with fierce competition on the European market, led to major financial losses, especially for carmakers that concentrate specifically on the European market. The operating margin of PSA's car division fell from a surplus equal to 1.4% of sales in 2010 to a loss equal to 15% of sales in 2012. Renault fared better, going from a surplus of 1.1% on sales to a loss of 0.1%. Under the circumstances, many companies had to shut down production plants (PSA, Opel, Ford, Fiat and Volvo) or stopped marketing certain marques on the continent (withdrawal of Maybach and Dahatsu, and the partial withdrawal of Chevrolet).

French and Italian car production turned out to be more vulnerable to the slump than that of the other leading

car-making countries in Europe. French car production fell by 22% and Italian production was down by 21% between 2010 and 2013, compared to declines of 13% in Belgium, 9% in Spain, and 3% in Germany and an increase of 14% in the United Kingdom. French plants were plagued by the competitiveness problems that were already apparent before the crisis (see 2.2).

The restructuring of production facilities in France brought PSA's announcement in 2012 of the closure of the Aulnay-Sous-Bois plant²¹. In January 2013, Renault announced that 7,600 departing employees would not be replaced by 2016, but it made a commitment not to close any plants. In 2013, both French carmakers also negotiated "competitiveness" agreements with their respective labour unions to boost productivity at their French plants. The agreements increase the flexibility of the production process and held down wages in exchange for commitments about activity levels in France²². Thus, PSA made a commitment to maintain production in France at one million vehicles per year (some 939,000 cars were manufactured in 2013), while Renault also made a commitment to manufacture at least 710,000 vehicles per year²³ (some 506,000 cars were manufactured in 2013).

3. As demand is unlikely to recover significantly, maintaining car production capacity in France will require competitiveness gains and a shift to higher-end models

3.1 Our model points to persistently soft demand in the medium term

The French market, like the other major European car markets, is now a replacement market. The growth of the car population has been driven by urban sprawl and households' purchases of a second car or even a third. These growth factors are running out of steam as shown by the stable, but high, rate of car ownership in France²⁴. Rising running costs (maintenance and fuel - see Chart 9) tend to hold down car traffic²⁵ and mean that households keep their cars longer²⁶ and/or reduce their use

of them (see Chart 10). Under the circumstances, the recent dip in new car purchases came on the back of an expansion of the used car market, which traditionally sees an increase in activity during a crisis²⁷. The used car market now accounts for a larger share of household budgets than the new car market²⁸. These structural trends, combined with an economic slump that squeezed purchasing power, a higher unemployment rate and weaker consumer confidence, should restrict the scale of any recovery in the French car market.

(20) Sales of passenger cars in Europe (excluding Russian and Turkish markets), source: OICA.

(21) PSA announced 8,000 job cuts, with 3,000 jobs cut at the Aulnay-Sous-Bois plant, 1,400 jobs cut at the Rennes plants and 3,600 jobs cut in the group structure. At the end of 2013, 7,300 employees had signed a mobility agreement or an agreement to leave the company, and 2,250 had actually left the company (source: PSA 2013 registration document).

(22) Under the terms of its "new social contract", signed in October 2013, PSA has also made a commitment to give employees and their representatives a greater say in the group's strategic decisions.

(23) Some of these vehicles come from car-making partners (Nissan, Daimler).

(24) In 2012, 83% of households had a car. In 1960, only three in ten households had a car and the figure was five in ten in 1967 and seven in ten in 1980. The overall car ownership ratio has been stable since 2006 (source CCFA).

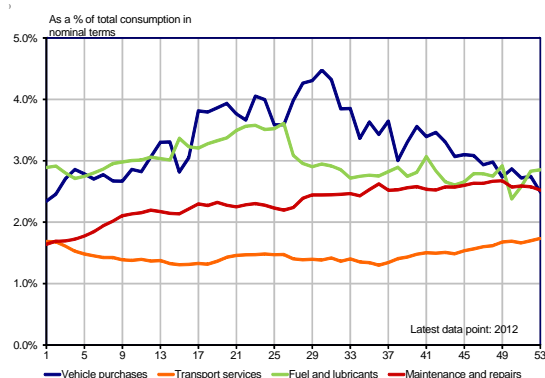
(25) Between 2002 and 2011, households' car running costs increased by 3.7% per year in nominal terms, but decreased by 0.4% in real terms. Traffic growth was nearly flat with a 0.1% increase in vehicle kilometres per year. Sources: CCFA; TNS-Sofres; Ademe; INSEE; SOeS.

(26) The average age of the car population stood at 8.3 years in 2012, compared to less than 6 years in 1990. Source: CCFA.

(27) Source: Baron, J.F. (2002), "La consommation automobile depuis quarante ans", *Insee Première* No. 844.

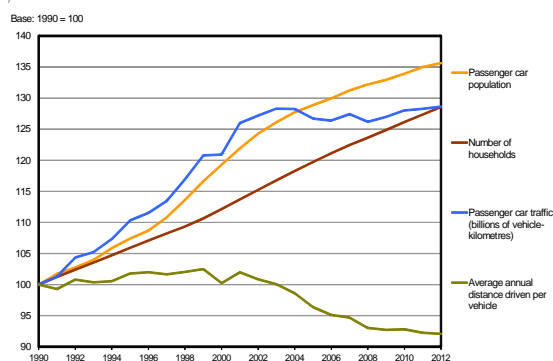
(28) Since the early 1980s, households have purchased an average of three used cars for every new car. Source: Baron, J.F. (2002), "La consommation automobile depuis quarante ans", *Insee Première* No. 844.

Chart 9: French car budget



Source: INSEE

Chart 10: French car population^a



Source: CCFA-Setra-Asfa-TNS Sofres-CPDP-SoeS-Insee.

- a. Passenger car traffic is the total distance driven by all of the passenger cars in the car population. This traffic increased by 31.7% between 1990 and 2003, or by 2.1% per year. However, the growth of traffic in metropolitan France started to slow in 2003 and seems to have plateaued since then, with overall growth of 1.4% between 2003 and 2010, which works out at an increase of 0.2% per year.

Econometric analysis (see the model used in Box 3 and the findings in Table 3 and Chart 11) gives us a clearer picture of changes in French car demand by highlighting the contribution of internal factors, such as higher unemployment and weak confidence, and external factors, such as oil prices. We can draw the following conclusions from the analysis:

- **The overall contribution of oil prices was negative between 2000 and 2013.** Oil prices rose significantly during the period under review (1997-2013), contributing to a sharp increase in fuel prices, which rose at a rate that was three times greater than the rise in the overall consumer price index²⁹. This development, combined with the rise in maintenance and repair expenditure³⁰, drove up running costs. Looking forward, the contribution of oil prices is more neutral. The model assumes that oil prices will stabilise at the
- **Higher car prices have dampened consumption since the crisis.** Car prices have tended to increase faster than overall inflation since 2008, in part because of higher taxes (ecological subsidy/tax).
- **France's weaker economy led French households to take a more prudent stance, which is unfavourable for car consumption.** There are two variables in our model that account for this behaviour: the balance of opinion on the timeliness of major purchases, taken from the INSEE monthly household survey, and changes in the unemployment rate. Households' prudent behaviour has restricted car consumption substantially since the crisis.

level seen at the beginning of 2014, when the price of a barrel of Brent crude stood at €79.

Table 3: Main determinants of car consumption

	Contributions to car consumption (in points)					Average annual growth rates***		
	2000-2007 (1)	2008-2013 (2)	2014-2015 (3)	Growth differential from 2000 to 2013	Growth differential from 2013 to 2015	2000-2007	2008-2013	2014-2015
Average growth rate of real car consumption	1.9	-2.8	2.5	-4.7	5.3	1.9 %	-2.8 %	2.5 %
Unemployment rate	0.1	-0.6	1.0	-0.7	1.5	-2.4 %	4.7 %	-2.8 %
Balance of opinion on timeliness of major purchases*	0.0	0.0	0.0	-0.1	0.0	-6.3	-26.0	-
Real oil price**	-1.5	-1.8	0.1	-0.4	1.8	16.4 %	8.8 %	-2.2 %
Real car price**	0.9	0.7	-0.3	-0.3	-1.0	-0.8 %	-0.5 %	0.7 %
GDP per capita	2.1	-0.1	0.7	-2.3	0.8	1.2 %	-0.4 %	1.0 %
Unexplained	0.2	-0.4	0.3	-0.5	0.7	-	-	-
Support measures (indicative)	-0.4	-0.8	0.7	-0.4	1.5	-	-	-

Source: INSEE, DG Trésor calculations.

* Balance.

** Deflated by the CPI, on the assumption that the price of Brent crude oil remains stable at €79 a barrel.

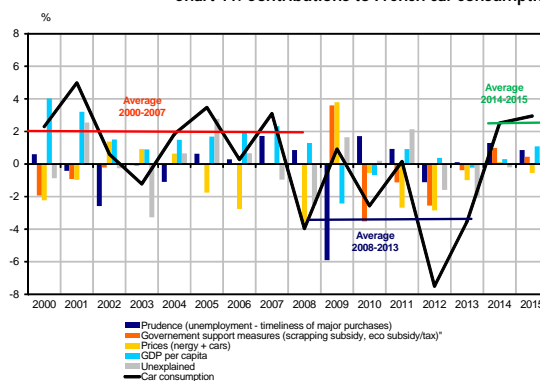
*** Forecasts (2014-2018 Stability Programme).

(29) Average annual inflation between 2000 and 2013 stood at 1.7%. Energy inflation was much higher: energy prices rose by an average of 5.6% per year over the same period.

(30) Expenditure on maintenance and repairs is the transportation budget item that showed the fastest increase over the long run.

The pace of car demand growth seems to have changed since the crisis. Car consumption has deviated substantially from its long-term level, falling by an average of 2.8% per year since 2008, after growing by nearly 2% per year between 2000 and 2007. **Several factors should continue to dampen households' consumption in the coming months.** More specifically, energy and car prices should continue to rise fairly briskly, contributing to a lower level of car consumption than before the crisis. Furthermore, the slow improvement in household confidence reflects the very gradual improvement in employment. These factors point to continuing sluggish domestic demand in France, which is also what the CCFA calls for in its forecasts.

Chart 11: Contributions to French car consumption



Source: DG Trésor calculations.

Box 3: Household car consumption model

Household consumption of transport equipment, within the meaning of the quarterly accounts, primarily covers vehicle purchases (new and used cars^a, motorcycles and bicycles) and capital expenditure. The method used is an error-correction model. The model captures short-term fluctuations around a long-term target with an "error-correction term": if households consume more than the level estimated by the long-run relationship, then a correction of this imbalance should lead to lower consumption during the next period, in view of the changes in the main determinants. .

The equation used is written as follows:

$$\begin{aligned} \Delta \ln(\text{Conso}) = & 4,01 - 0,03 \Delta Tcho - 0,25 \left[\ln \text{conso} - (1,4 \ln Gdpniv - 0,5 \ln Roil - 1,2 \ln Pauto) \right]_{-1} \\ & + 0,12 \text{Mesures} + 0,005 \text{Oppach} - 0,20 \Delta \ln \text{Conso}_{-1} - 0,06 \Delta \text{Roil}_{-1} \\ & - 0,15 \Delta \ln Gdpniv_{-1} + 0,31 \Delta Pauto_{-1} \end{aligned}$$

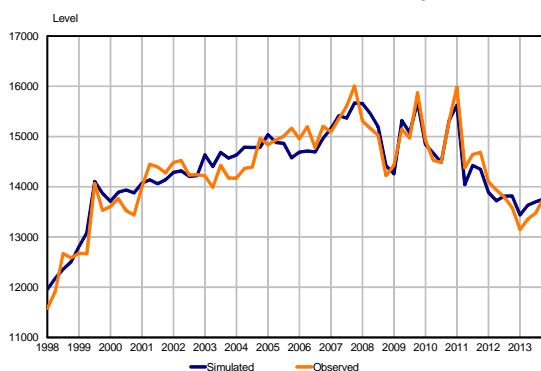
(2,31) (3,03) (2,6) (*) (*) (*) (7,64) (4,04) (2,37) (1,02) (0,3) (0,67)

(T-stat in parentheses)

Forecast period: Q1-1997 to Q4-2013, SER = 0.17%; DW = 1.88; R² = 0.78

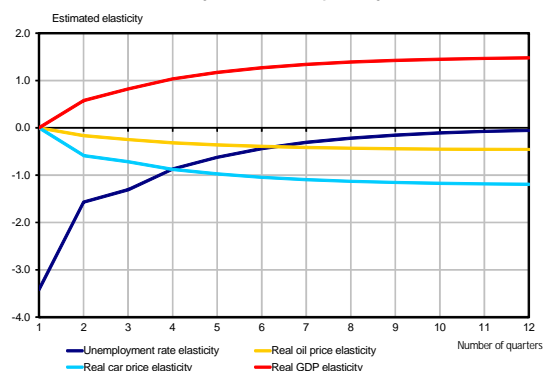
Where *Conso* denotes real household expenditure on transportation equipment; *Gdpniv* denotes gross domestic product per capita; *Roil* denotes the real price of a barrel of Brent crude^b; *Pauto* denotes the monthly new car price index^c; *Mesures* denotes an indicator of exceptional government measures to support the automobile industry (scrapping subsidy, changes in the ecological subsidy/tax); *Oppach* denotes the balance of opinions reported by households about the timeliness of major purchases.

Chart 12: Observed and simulated changes



DG Trésor calculations.

Chart 13: Elasticity of car consumption by determinant



DG Trésor calculations.

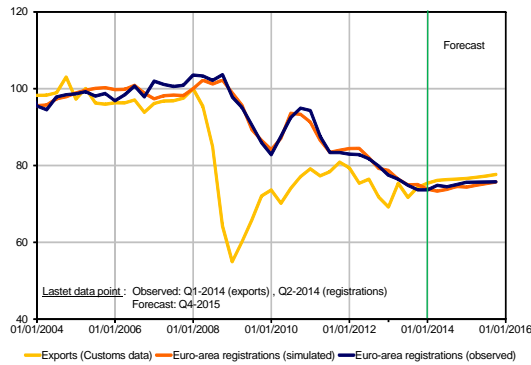
The proposed model has certain limitations and weaknesses stemming from a lack of indicators that can be used to explain certain behaviours. More specifically, it does not fully account for the potential response of car demand to past changes in taxation (ecological subsidy/tax). Furthermore, the longer average lifespan of vehicles seen in recent years could also hamper the growth in car demand. At the same time, the model does not account directly for the impact of new models of cars, which could spur households to consume more when new models are launched, and then opt for less consumption in the following periods.

- Household consumption of used cars only covers demonstration vehicles, sales by institutional sectors other than households and dealers' profits on resales. In this aggregate, vehicle sales account for 62% of transportation equipment consumption, while automobile equipment accounts for nearly 29%.
- Deflated by the total consumer price index, as are car prices.
- This index is calculated on a sample of French and foreign brands and models that are representative of the structure of car purchases in terms of brands, types of fuel, etc. It is revised annually. The weightings and household budget shares are taken from national accounts data.

Based on the growth forecasts and the associated aggregates in the 2014-2018 Stability Programme, car consumption should recover moderately in the next two years³¹. Even though it should bounce back strongly from the slump seen during the crisis and return to the pre-crisis growth rate, consumption will still not be enough to clear overcapacity.

The expected recovery in southern European countries, where domestic demand may bounce back more strongly, could benefit French car production by boosting exports. With the regionalisation of production mentioned above, the revival of French car production will depend on the strength of the recovery in the main European markets³², since car buyers in emerging markets primarily purchase cars produced in local plants³³. When the model presented in Box 3 is applied to the main European markets, it suggests that car demand could bounce back in Italy and Spain in the short term (see Charts 14 and 15). INSEE also puts forward the same scenario (Bechler et al., op. cit.), which is underpinned by the latest data showing especially strong demand growth in Spain and firm demand in Italy³⁴.

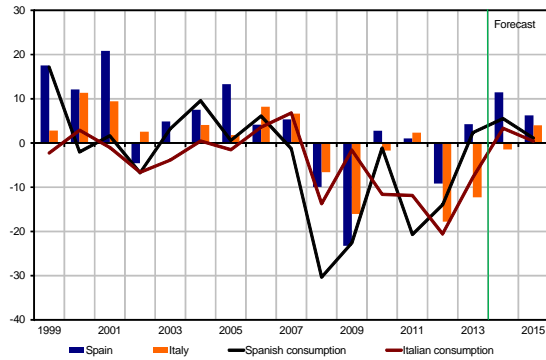
Chart 14: Car demand in the main euro-area countries (excluding France)



Source: Customs (exportations), ACF (registrations).

Note de lecture : Despite relatively robust demand, car exports slumped during the 2008/2009 recession since the automobile industry primarily met demand by drawing down inventories. Car exports were also hit by the large dip in world trade seen during the 2008 crisis, particularly in markets outside the euro area and in the United Kingdom in particular. French exports are estimated by modelling German, Italian and Spanish car demand using the method presented in Box 3. The estimates are then aggregated to compare the simulated trend to the observed trend in the euro area. Looking forward, inventories will no longer inhibit growth and exports should keep pace with euro-area demand, as seen in the recent past.

Chart 15: Southern Europe - contribution of domestic demand factors (GDP and unemployment) to car consumption

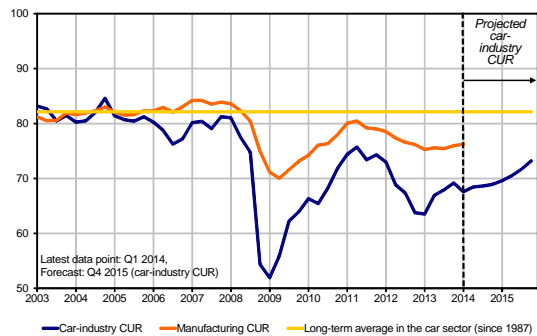


Source: Eurostat, DG Trésor calculations.

3.2 The recovery of the French automobile industry will depend on the carmakers' ability to shift to technology-intensive growth markets

The prospects for euro-area demand are still limited, pointing to a slow recovery for French car production. According to a projection based on the prospects for French consumption and exports presented above, the level of production should be lower than before the crisis. Under the circumstances, overcapacity will persist (see Chart 16)³⁵.

Chart 16: Past capacity utilisation rates in manufacturing and outlook for the automobile industry in France



Source: Banque de France, DG Trésor calculations.

Even though it is difficult to assess the European capacity utilisation rate with any precision, several studies find that overcapacity has not yet disappeared in the automobile industry. In a recent study, the OECD states that several European countries, including France, must reduce their produc-

- (31) Our projection for French growth in 2014 is in line with the growth foreseen by all French carmakers, who see a very slight recovery in the market, with an expansion of some 2% per year on average.
- (32) Germany, Italy and Spain taken together account for 56% of French car exports to the EU27 countries (Source: macmap.org).
- (33) See OECD (op. cit.). The growth and profitability of French carmakers depend greatly on conquering emerging markets, but these markets are not likely to have much impact on car production in Europe.
- (34) In 2014, the cumulative growth at the end of August stood at 13.2% in Spain and 2.4% in Italy, with Germany posting more moderate 1.1% growth.
- (35) The car production forecast shown in Chart 1 was derived by means of a linear regression of domestic and export demand (losses of market share are reflected in the negative constant). The demand forecast was obtained using the method explained in Box 3. This forecast assumes that the carmakers' market shares remain constant. The capacity utilisation rate forecast is also based on these projections. The projected rate was obtained on the assumption that potential output remains constant from the start of 2014. Potential output is defined as the ratio between estimated output and the capacity utilisation rate.

tion capacity still further to achieve a capacity utilisation rate that is more in line with the long-term level³⁶. These projections are consistent with an Inovev study that finds 68% of the capacity in Europe (including Turkey and Russia) was utilised in 2013, which is the lowest rate since 2009 (62%)³⁷. The study finds that the recovery of the European market, combined with further plant closures³⁸, should lift the capacity utilisation rate by one or two points in 2014. Despite their efforts to adjust their workforce to changing demand, French carmakers, and PSA³⁹ in particular, still have the lowest capacity utilisation rates⁴⁰. Banque de France data on capacity utilisation rates in the French automobile industry show that the rate is still far lower than before the crisis (see Chart 16), which suggests that French plants still have the capacity to increase output.

Under the circumstances, it appears unlikely that new production capacity will be built in France in the short-to-medium term. France's industry still needs to restructure and modernise to compete with low-wage countries that can supply the European market (CEECs, North Africa, Turkey). The measures that both carmakers have already announced, including competitiveness agreements (see above), investment in modernising plants⁴¹, logistical reviews of plants and using the same platforms for different models, should be ramped up in the coming years. They will be combined with government policies to reduce labour costs, such as the Competitiveness and Employment Tax Credit (CICE) and the Responsibility and Solidarity Pact, and policies to reduce business taxes, such as the announced cut in

corporate income tax and the phasing out of the corporate social security contribution by 2017. These policies will not be enough to close the labour cost differential with low-wage countries in Europe, but they will help save jobs in the industry in the short-to-medium term against the backdrop of cutthroat competition between European car plants.

In the longer term, the development of the automobile industry in France will depend on the two carmakers' ability to increase the quality and technological content of their products and stop competing on production costs. Several structural trends in the car market point to growth opportunities for French carmakers:

- Both carmakers have strengths to meet the challenges of energy transition, which is increasingly shaping global car demand⁴². Renault has made electric cars one of its main development thrusts and its main electric models are manufactured in France. Meanwhile, PSA is focusing its investment on improving combustion engines (petrol and diesel) and the development of hybrids.
- PSA and Renault are working on connected cars, which means they are integrating new information and communication technology into daily driving, transforming cars into workspaces that interact with electronic devices in the home and elsewhere. As part of this strategy, they have forged partnerships with telecommunications and/or computer companies. Renault has joined forces with Orange and PSA with IBM.

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(36) OECD (op. cit.). The OECD calculations need to be interpreted with care; they are based on demand projections and they assume that different countries' market shares of intra-area trade remain stable between 2011 and 2020.

(37) The Inovev study is available from: <http://www.inovev.com/index.php/fr/analyses-list/1377-2014-10-9>

(38) Opel will close its Bochum plant in Germany and Ford will close its Genk plant in Belgium.

(39) In 2013, the group's car division posted an operating loss of 6% of sales, versus an operating profit of 1.3% of sales for Renault.

(40) Inovev found that German (BMW, Daimler, Volkswagen), Chinese (Tata, Geely) and Korean carmakers (Hyundai-Kia) posted the highest capacity utilisation rates in 2013 that exceeded the breakeven point (capacity utilisation rate at which overheads are covered), which was estimated at 75%. In contrast, PSA's capacity utilisation rate stood at approximately 55% and Renault-Nissan's was slightly less than 70% (as was Toyota's).

(41) As part of its "Back in the race" plan presented on 14 April 2014, PSA confirmed its intention to invest €1.5 billion in France by 2016. Half of this investment will be devoted to modernising production plants.

(42) Regulation (EC) No. 443/2009 imposes an average emissions target of 95gCO₂/km on sales of new passenger cars by 2021. Several emerging countries also promote the development of hybrids and electric vehicles. For example, the city of Beijing, China has set quotas on licence plates, with a share set aside for electric vehicles.

Another viewpoint by...

Jean-Luc SCHNEIDER

A recent study by the OECD, "Medium-Run Capacity Adjustment in the Automobile Industry," broadly confirms the findings of this paper: the European automobile industry is facing sweeping changes in demand that have revealed huge overcapacity, some of which dates from before the crisis. This is particularly true in France, Italy and Spain.

The bulk of demand growth in the future will come from emerging countries. Average annual demand growth will stand at 3% in the OECD countries up until 2020, whereas the BRIICS will see 9% demand growth, assuming no change in policies to fight CO₂ emissions and road congestion. This will create the need for more production capacity at the worldwide level, but there will be only limited opportunities for European car plants to benefit, since most cars are manufactured and sold within the same region.

Overcapacity will persist in Europe, especially in France and Italy. This overcapacity can be reduced only by increasing market share or by closing down production units.

Carmakers with overcapacity can increase their market share if they improve their competitiveness or quickly change their specialisation to market segments that promise strong growth. Current overcapacity is often associated with an increasing mismatch between the cars produced and the cars consumers demand. However, even a very large increase in the market share of carmakers with overcapacity does not seem to be enough to clear the current excess capacity.

This means that capacity reductions appear to be inevitable. The reductions are likely to take time, since, given the uncertainty, carmakers should delay closing down production lines. There may be a period of destructive competition between carmakers with overcapacity, and government intervention could make it worse. The geographical concentration of the industry means that plant closures could undermine local economies.

For example, the United States undertook sweeping restructuring of its automobile industry: the three leading American carmakers reduced their capacity by 29% between 2004 and 2012. This step enabled the industry to become profitable again and regain its competitiveness, even though employment in the industry has not recovered at the same pace as production and is still some 20% below its initial level. Nevertheless, the aggregate effect of closing unviable plants was positive, with a better allocation of resources at the level of the whole economy.

Experience has taught us that, when dealing with overcapacity, it is better to provide support measures to accompany plant closures rather than to delay them. More specifically, using support and subsidies for car buyers has been counterproductive in most cases. By giving demand a temporary boost, these policies delay treatment of structural overcapacity problems, while creating artificial fluctuations that undermine all carmakers

Jean-Luc Schneider

Directeur adjoint of economic department of OECD

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139, rue de Bercy
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Publication manager:

Sandrine Duchêne

Editor in chief:

Jean-Philippe Vincent
+33 (0)1 44 87 18 51
tresor-eco@dgtresor.gouv.fr

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