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# RECENT DEVELOPMENTS IN THE AUTOMOBILE INDUSTRY



## Recent Developments in the Automobile Industry

The automobile industry plays an important role in overall business cycle developments. Although the industry accounts for only a small share of industrial output in most OECD economies (around 5½ per cent in the median OECD economy), it is comparatively volatile and can thus, at times, make a large contribution to aggregate fluctuations in economy-wide activity. And with the location of final assembly and motor parts production having become increasingly internationalised over time, disruptions to supply in one country, as in the aftermath of the earthquake and tsunami in Japan this March, can potentially have adverse near-term effects in others.

This note takes stock of recent developments in global car production and sales and explores the extent to which they are contributing to the softening of global activity in the second quarter of 2011.<sup>1</sup> The main findings are the following:

- A sharp downturn in motor vehicle and parts production accounts for a sizable proportion (well above the direct share of output in total production) of the observed slowing in the growth of economic activity since the early part of 2011. The direct impact of the decline in vehicle and parts production in the second quarter is equivalent to a reduction in the annualised rate of GDP growth of 2½ percentage points in Japan, around ½ percentage point in China and between 0.1 to 0.2 percentage points in the United States, the United Kingdom and France.
- There are clear signs of global supply-chain effects, with production disruptions in Japan in the aftermath of the earthquake and tsunami having direct effects on production, sales and prices in other countries.
- In the major economies, the level of new car sales in April and May is estimated to have been 4¾ per cent below that in the previous two months. This points to some possible underlying weakness in car demand, and thereby private consumption, in the second quarter of this year, even allowing for the impact of shortages in availability and rising car prices due to supply-side disruptions and the effects from the phasing-out of earlier schemes to support car demand.
- At current low levels, car sales are well-below estimated longer-term trend levels in many OECD economies, suggesting that scope remains for strong, pent-up demand for cars to emerge as the recovery progresses.

### Motor vehicle and parts production

After declining sharply following the onset of the recession, car production has recovered gradually since the latter half of 2009, helped by considerable direct government support as well as the boost to demand provided by assorted temporary car scrapping schemes to encourage new sales. In the first quarter of 2011, car production in the United States and Germany was over 20% higher than a year earlier, with

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1. The note follows on from the earlier analysis of Haugh *et al.* (2010).

production in the United Kingdom and France having risen by 16% and 7%, respectively. This strong growth in production was an important contributor to the pick-up in GDP growth over the same period.

In May 2011, when *OECD Economic Outlook 89* was published, the global recovery was projected to gain further momentum only slowly, with the adverse supply-side shocks from high commodity prices and the earthquake and its aftermath in Japan expected to result in lower activity in the second quarter of 2011, including car production and sales. In particular, anecdotal evidence was already starting to appear that the supply-chain effects of the Japan earthquake could be larger than first assumed. Subsequent evidence has revealed the sizable extent to which motor vehicle production in Japan and elsewhere has been adversely affected, and the large contribution this has made to the softer growth of industrial production in several economies (Figure 1):

- In Japan, the average level of passenger car production in March and April was 55% lower than in January and February, with production declining to a level last seen in early 2009. Production of motor parts declined by 40% in the same period. Together, the production shortfalls in these industries accounted for almost one-half of the large aggregate decline in Japanese industrial production in these months, as well as for a large proportion of the sharp drop in Japanese export volumes. The subsequent bounce-back in production of passenger cars and parts in May represents around three-quarters of the aggregate rise in total industrial production that month. Assuming that production rises by a further 5½ per cent in June (broadly in line with the Survey of Production Forecast), the decline in passenger car and motor parts production in the second quarter is directly equivalent to a decline in GDP of just under 2½ percentage points at an annualised rate.
- In the United States, the production level of motor vehicles and parts in April and May was 5¾ per cent lower than in February and March, with the level of motor vehicles output declining by just over 7¾ per cent. In contrast, the level of non-motor vehicle industrial production was 0.6% per cent higher in April and May than in the previous two months. Assuming an unchanged level of vehicles and parts production in June, the lower level of vehicle and parts production in the second quarter is directly equivalent to a reduction in second quarter GDP growth of between 0.1-0.2 percentage points at an annualised rate.
- In the major European economies, where monthly data on industrial production are less timely, information is available only for some countries up to May. A large drop in monthly production of motor vehicles (including trailers) has occurred in France and the United Kingdom (where Japanese car affiliates make up a large share of the industry). In contrast, provisional data for Germany show that after a small decline in April, there was a marked jump in motor vehicle production in May, taking the level of output well above the first quarter average.<sup>2</sup> Motor vehicle production remained well above the levels seen during the recession in all three economies.
- In China, production data from the China Association of Automobile Manufacturers show that the number of cars produced in April and May was around 3% lower than a year earlier. On a seasonally adjusted basis, the level of production in April and May is estimated to have been some 8½ per cent weaker than the average in the first quarter of 2011. Assuming an unchanged

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2. In the United Kingdom, the average level of motor vehicle production in April and May was around 5¼ per cent lower than the average in the first quarter of 2011. In France, motor vehicle production in April was some 5% lower than the average level in the first quarter of 2011. Assuming unchanged vehicle production in May and/or June, the second quarter decline in vehicle production would be equivalent to a reduction of 0.1 percentage points in GDP growth in France and a reduction of 0.2 percentage points in UK GDP growth (at annualised rates).

level of production in June, the second quarter decline in production is equivalent to a reduction of around ½ percentage point in the annualised rate of GDP growth in that quarter.<sup>3</sup>

The global location of automotive production, including that by Japanese companies, has become increasingly dispersed in recent years.<sup>4</sup> By 2009, less than half of the passenger car production by the largest six Japanese producers was undertaken in Japan (Figure 2).<sup>5</sup> The most notable change over the past decade has been the increasing share of final assembly undertaken in China. Assembly production outside Japan includes sizable inputs of specialised components imported from Japan. Survey evidence indicates that around 40% of the raw materials and parts procured by Japanese motor vehicle affiliates in Asia and Oceania are sourced from Japan (JETRO, 2010). In addition, any decline in the availability of specialised parts from Japan will also affect non-Japanese car manufacturers that use such parts.

The growth and changing location of foreign production thus means that a temporary supply-chain disruption from Japan could now have larger direct spillover effects in other countries than would have previously been the case. In the aftermath of the natural disasters in Japan, it is clear that this has been the case. Indeed, even as the collapse in the domestic production levels of the major two Japanese car producers began to ease in May, their overseas production continued to weaken considerably (Figure 3).

The disruption to production in Japan and elsewhere seems likely to prove relatively short-lived, provided that disruptions to power supply fade. During the latter half of this year, production of parts and vehicles in Japan is likely to continue to gradually return towards more normal levels, providing a boost to production outside Japan as well. Such favourable effects should help global output growth to strengthen in the second half of 2011.

### **New car registrations**

Car sales are highly correlated with private consumption in many OECD countries. After having risen steadily through 2010 and the early months of 2011, new car sales have also recently weakened in several economies (Figure 4).<sup>6</sup> Combining sales data for the United States, Japan, the euro area and China, the level of sales in April and May this year was only marginally lower than in the same period a year ago, but around 4¾ per cent lower than that in the previous two months.<sup>7,8</sup>

The monthly profile of car sales and registrations through 2010 and the first part of this year is likely to have been affected to differing extents across countries by the varied timing of the expiration of remaining incentive schemes to encourage the purchase of new cars (Haugh *et al.*, 2010). More generally, part of the current weakness of car sales may also reflect an underlying weakness in household incomes in some OECD countries in the first half of the year, with rising inflation, modest job creation and the onset

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3. Official production data in China cover all transport equipment production. These data also point to a sharp slowing in production growth, with production in May 7.8% higher than a year earlier, compared to the double-digit annual growth rates seen up to March this year.
  4. See, for example, Bailey *et al.*, (2010) and Sturgeon and Van Biesebroeck (2010).
  5. The six producers are Toyota, Honda, Nissan, Mitsubishi, Mazda and Suzuki.
  6. The data for the United States are for light vehicle sales, covering passenger cars and light trucks.
  7. The sales data are seasonally adjusted. Provisional industry data for the United States suggest that seasonally adjusted light vehicle sales may have fallen by a further 2-3 per cent (month-on-month) in June. On this basis, total sales in the second quarter of 2011 would be 6¾ per cent lower than in the first quarter.
  8. To the extent that the decline in car sales will be used as an indicator of the contribution of the motor vehicle sector to GDP, the GDP impact of the weak auto sector in the second quarter in some countries could be larger than the direct production effects reported in the previous section.

of fiscal consolidation all acting to damp the growth of real household disposable incomes.<sup>9</sup> This will have added to the restraints on consumption growth arising from the need for ongoing balance sheet repair. And in China, as well as other emerging market economies in which spare capacity has largely been absorbed, policy measures to moderate the pace of GDP growth may also be damping demand at the margin.

The particular shortfall in the availability of some Japanese cars in the second quarter of this year may also have contributed to overall sales weakness. For instance, anecdotal evidence points to rising waiting times for delivery of new cars and the June Federal Reserve *Beige Book* (covering activity until end-May) suggests that car sales in some areas have been held back by a shortage of inventories in some car dealers as a result of supply-chain disruptions.

Demand may also have been reduced in the near-term by the relative price increases for new vehicles that have occurred in some markets as a result of supply-chain shortages. This is particularly apparent in the United States consumer price data (CPI), with new motor vehicle prices in May some 2½ per cent higher than in February. Price increases have also been apparent in the United Kingdom and France, with the annual rate of growth of the motor vehicle component of the harmonised consumer price index rising from 0.8% and 1% respectively in the first quarter of 2011 to over 1½ per cent in April and May.

The shortfalls in the supply of Japanese-brand cars could, however, have been offset to some extent by the switching of demand towards non-Japanese models, rather than by the postponement of demand. There is some evidence consistent with the view that some form of switching may have been occurring in the United States and Europe in the second quarter this year (Figure 5). Even so, aggregate sales remained comparatively weak. In the United States, the second quarter decline in the sales of the three main Japanese producers accounts for only a little over one-half of the overall decline in (seasonally adjusted) car sales in the quarter.

Looking further ahead, there remains plenty of scope for strong, pent-up demand for cars to emerge as the recovery strengthens. An updated comparison of actual and trend car sales, with the latter derived as in Haugh *et al.* (2010), suggests that the annualised level of car sales in first five months of 2011 in the euro area, Japan, the United Kingdom and the United States remains below trend (Figure 6).<sup>10</sup> On this basis, in all of these economies, and the United States and Japan in particular, pent-up demand for cars is potentially an important source of shorter-term cyclical robustness when household disposable income growth and consumer confidence start to pick up once more.

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9. For instance, in the United States, real household disposable income in May 2011 was little changed from the level in December 2010.

10. The medium-term trends are estimated using a non-linear relationship between income per capita and car ownership, population growth and scrapping rates.

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- Haugh, D., A. Mourougane and O. Chantal (2010), "The Automobile Industry In and Beyond the Crisis", *OECD Economics Department Working Papers*, No. 745.
- JETRO (2010), *Survey of Japanese-Affiliated Firms in Asia and Oceania (FY 2010 Survey)*, Japanese External Trade Organisation.
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Figure 1. Industrial production and motor vehicle and part production  
(2006=100)

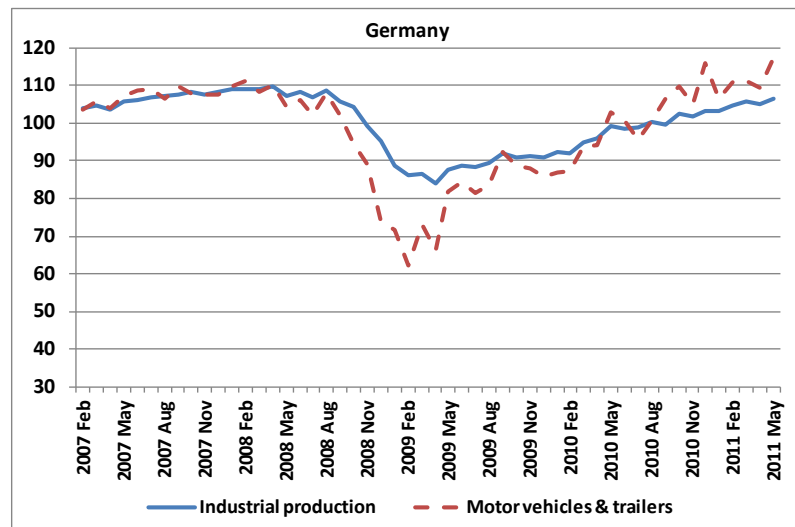
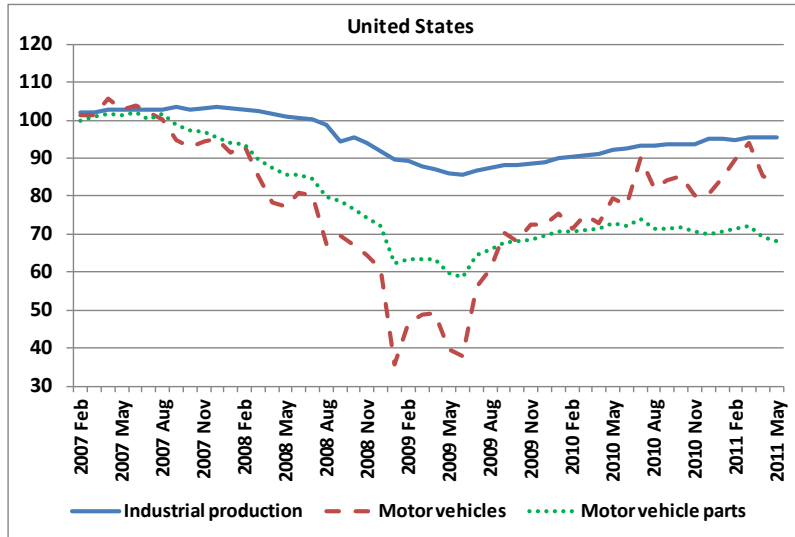
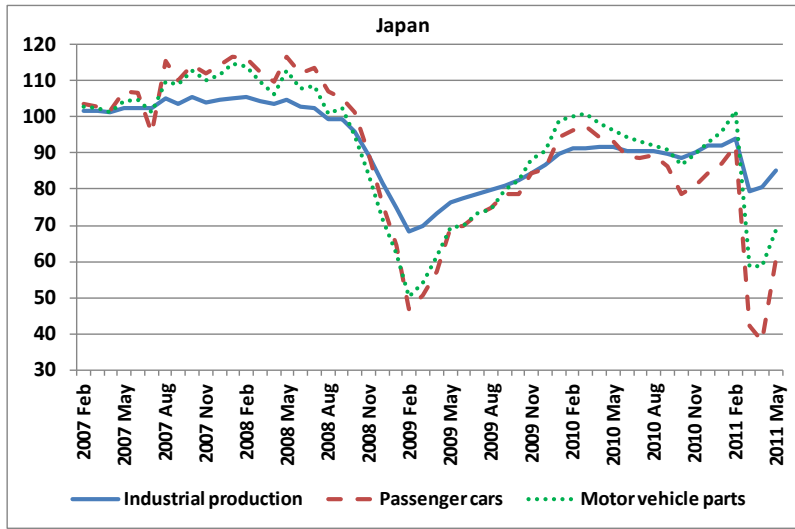
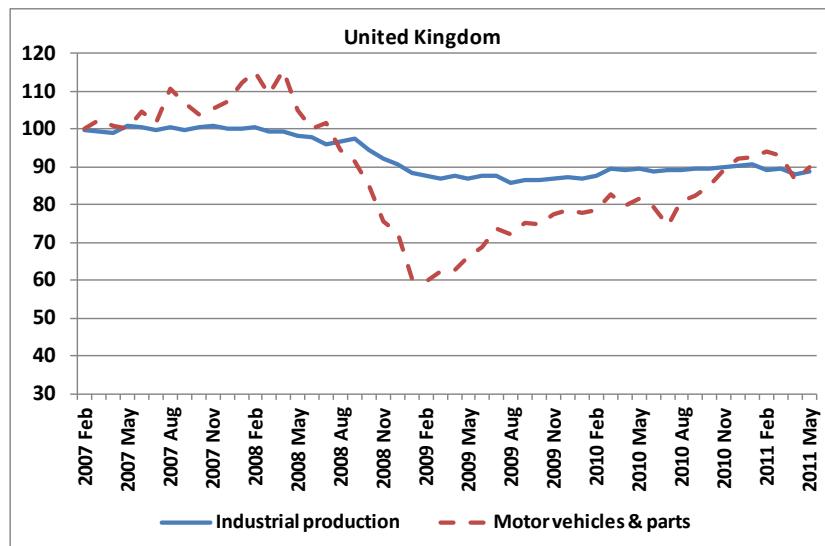
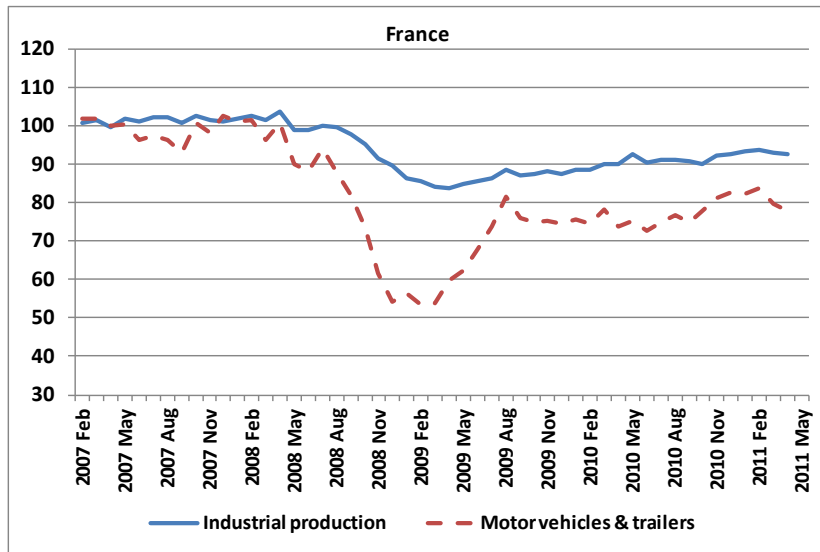


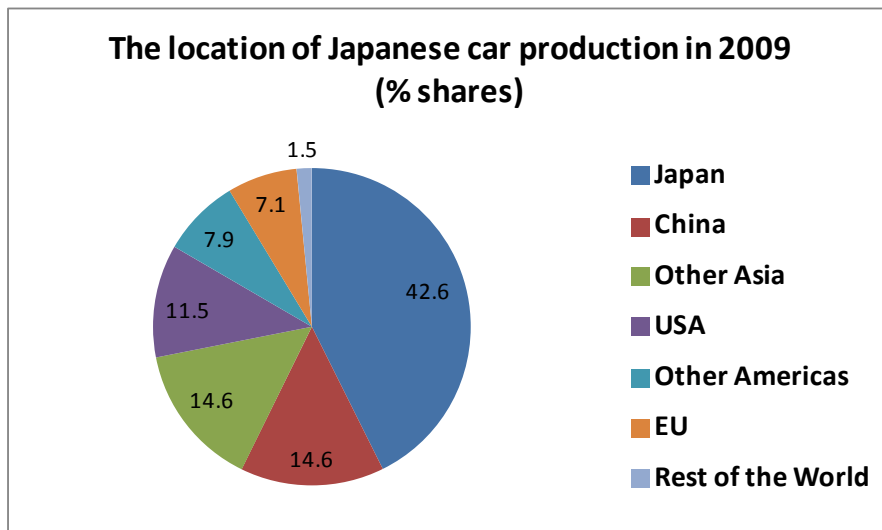
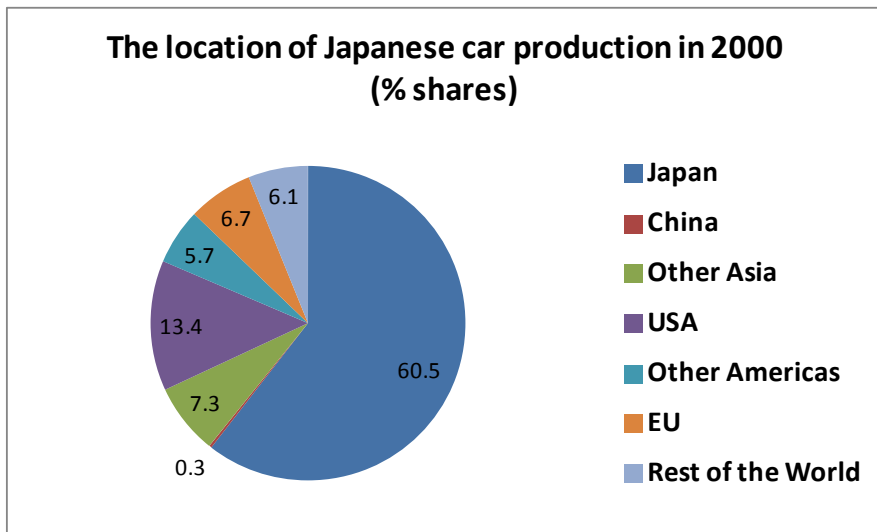
Figure 1. (continued)



Source: Federal Reserve; METI; Deutsche Bundesbank; Office for National Statistics; INSEE.



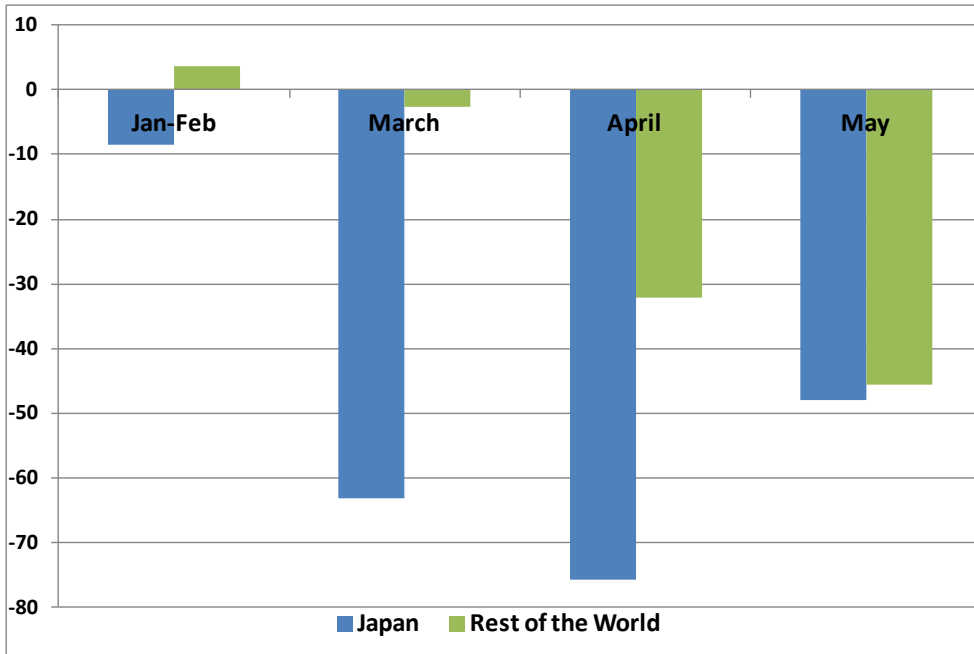
Figure 2. The changing location of Japanese car production (% shares)



Source: The International Organisation of Motor Vehicle Manufacturers

**Figure 3. Japanese automobile production**

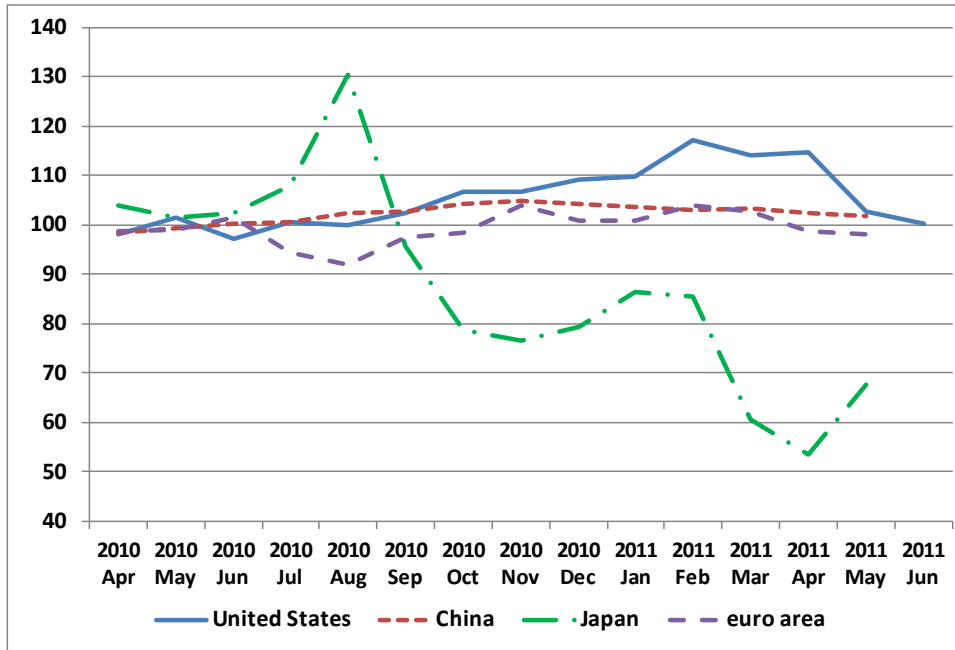
(% change from year earlier, number of units produced)



Source: Toyota Motor corporation and Honda Motor Co. Ltd monthly reports of production inside and outside Japan.

**Figure 4. Recent trends in new car registrations**

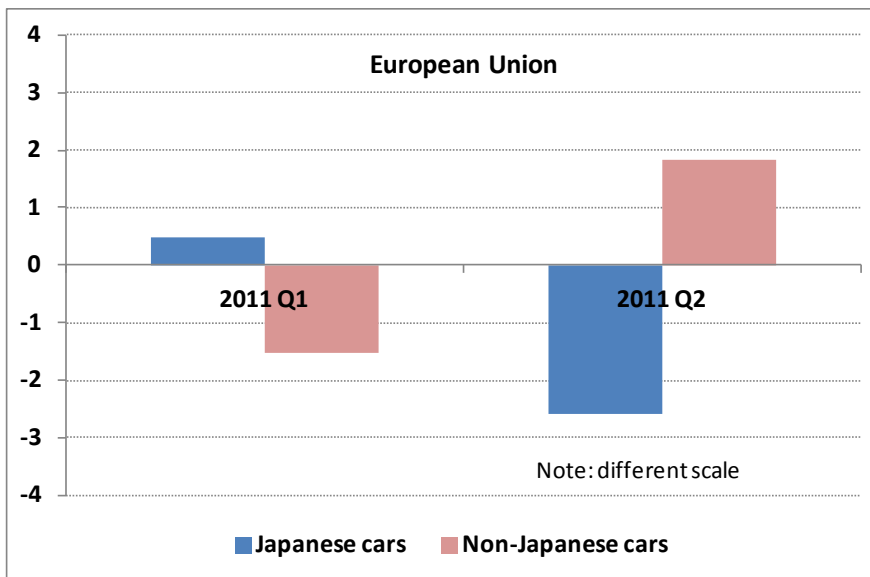
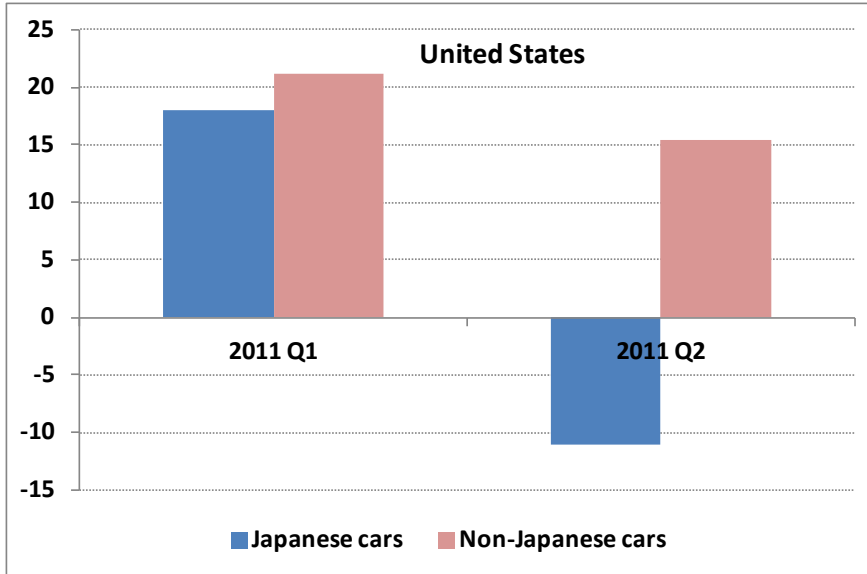
(2010=100)



Source: Bureau of Economic Analysis; European Central Bank; China Association of Automobile Manufacturers; Japan Automobile Manufacturers Association.

**Figure 5. Car sales by manufacturer**

(% change from year earlier, number of sales)

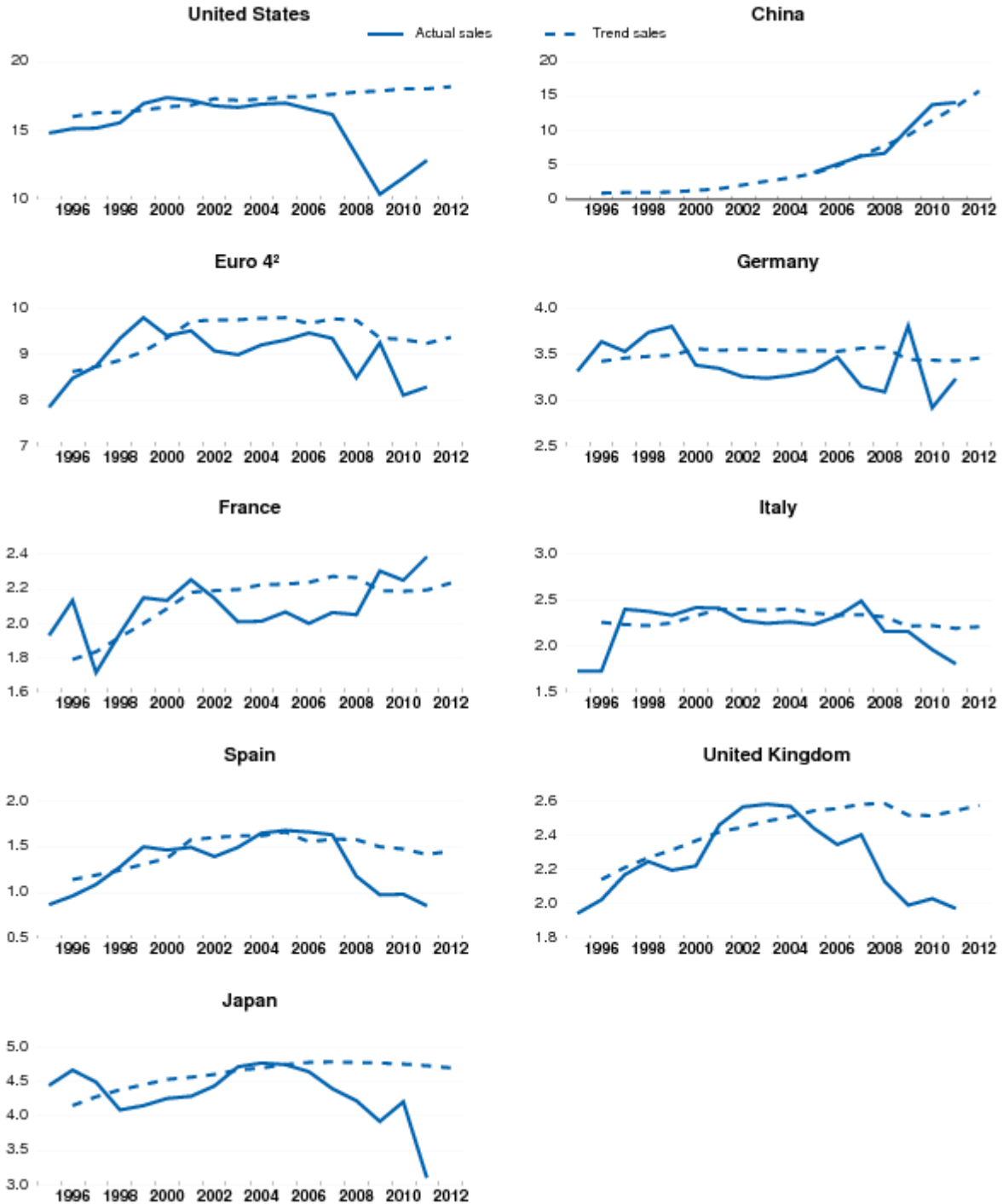


Note: United States data are for light vehicle sales and European data are for passenger car sales. The European Q2 data are for April and May only. The data for Japanese cars cover sales by Toyota, Honda and Nissan in the United States and Europe, plus sales by Mitsubishi, Mazda and Suzuki in Europe.

Source: Bureau of Economic Analysis; Autodata; Association des Constructeurs Européens d'Automobiles; company sales reports.

**Figure 6. Car sales generally remain below trend levels**

Actual and trend car sales 1995-2012, number of cars in million



Note: Estimates for 2011 are based on annualised sales in the first five months of 2011.

Source: Haugh et al. (2010); Datastream; China Association of Automobile Manufacturers; Japan Automobile Manufacturers Association; and OECD calculations.

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