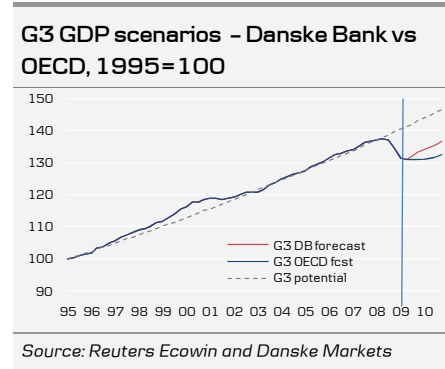
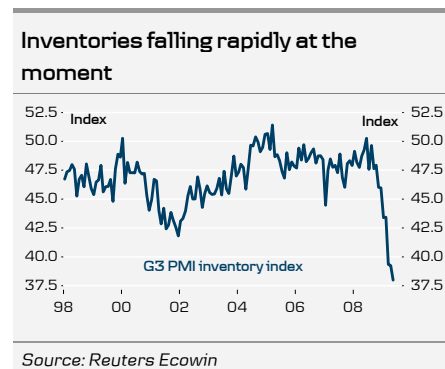
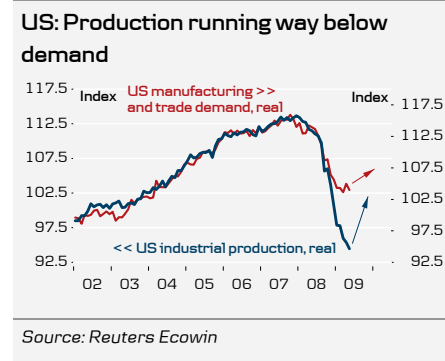


# Research

## Global: historic inventory cycle to boost growth

- A key factor behind our above-consensus global growth forecast is our view on the inventory cycle. Our thesis is that, even if the *demand* recovery is slow during 2009, we will still see a significant *production* rebound in H2 09.
- This is the main difference between our forecast and, for example, those of OECD and IMF, which predict a considerably slower and later recovery.
- The inventory cycle is a very important cyclical driver and in this downturn it has been much more forceful than we have seen historically.
- Production has been cut at a record pace in order to deplete inventories. However, with inventories lean, production substantially below demand and demand rising due to massive stimulus, we believe the ground is laid for a rapid production rebound in H2 09.
- It is important to note that inventories will continue to fall in H2 09 even as production rises. Hence it is not a case of rebuilding of inventories but a case of aligning production with demand.
- We already see recovery in Japan and other Asian countries and we expect to see it soon in US and Europe. The auto sector should be a prime example of this.

Since the beginning of the year we have argued that the strong force of the inventory cycle in this downturn would lay the ground for a manufacturing recovery during 2009 (see *Research – US: Manufacturing recovery ahead, Jan 09*). We have already seen signs that this is materialising, in surveys such as ISM and leading indicators, but we believe the story has further to run. Hence we expect ISM and global leading indicators to continue to surprise on the upside. Importantly we should also start to see improvement in the hard data over the coming quarters. This is about six months earlier than, for example, OECD and IMF are predicting; they also forecast a much slower recovery. We don't disagree that the recovery in *demand* will be slow as headwinds linger for a long time due to the financial crisis and wealth destruction. However, that does not mean we don't see a strong rebound in *production*.



### Illustration of how the inventory cycle works

Volume	08Q2	08Q3	08Q4	09Q1	09Q2	09Q3	09Q4
Demand (Sales)	100	90	80	80	85	85	85
Production	100	100	70	55	50	75	85
Inventory change (=production - sales)	0	10	-10	-25	-35	-10	0
Inventory level	100	110	100	75	40	30	30
Inventory - sales ratio	1	1.22	1.25	0.94	0.47	0.35	0.35
Sales change, % q/q		-10	-11	0	6	0	0
Production change, % q/q		0	-30	-21	-9	50	13

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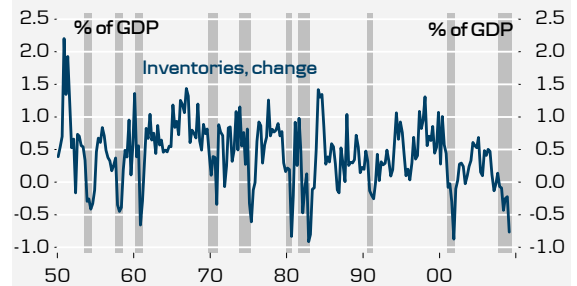
## Production – demand = change in inventory

We have tried to illustrate this point in the table on page 1. The example is fictive but it mirrors the timing of the current downturn – and prospective rebound. The numbers until Q2 09 are close to what we are actually seeing within the auto industry.

- Assume a starting point in **Q2 08**, when both production and sales are running at 100 units and the inventory is also 100 units. The inventory-sales ratio is thus 1.
- In **Q3 08** demand starts falling but production continues unchanged as the decline in demand is unexpected. Hence inventories go up by 10 to 110 units and the inventory-sales ratio rises to 1.22.
- In **Q4 08** the crisis intensifies massively and demand falls by a further 10 units to a total of 80 units. Total sales are now down 20% in just two quarters. As an effect, production is cut back sharply to 70 (-30% q/q) in order to reduce inventories and free up liquidity. But despite the production collapse it is only enough to reduce inventories by 10 units to a total of 100 units. The inventory-sales ratio has risen to 1.25.
- In **Q1 09** demand stabilises at 80 units but production is cut back further by 15 to 55 units (-21% q/q). With production at 55 and sales at 80, inventories are now reduced by 25 units to 75. The inventory-sales ratio declines to 0.94.
- In **Q2 09** demand is stimulated and increases slightly to 85 units (+6% q/q). As inventories are still viewed as too high, production is cut back further to 50 (-9% q/q). This leads to an inventory reduction of 35 units to a total inventory level of 40. The inventory-sales ratio declines to 0.47.
- In **Q3 09** we assume that demand is stable at 85 – hence zero growth in demand (in reality it is likely to rise due to the record stimulus but to illustrate the point we assume a rather pessimistic scenario). As inventories are now lean, companies need to realign production closer to actual demand. Production thus goes up sharply to 75 from 50 (50% q/q). *However, even with the production increase, inventories are still reduced by 10 since sales are still 10 units higher than production.* The inventory level is now 30 and the inventory-sales ratio falls to 0.35 (30/85).
- In **Q4 09** we again assume demand to be stable at 85 but since inventories are now very lean, production has to rise further to 85. Now production and demand are totally aligned and there is no change in inventories or the inventory-sales ratio.

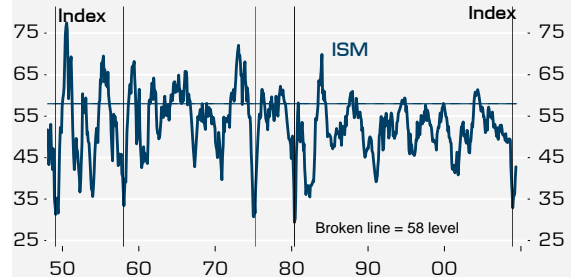
Several points are worth making here: **first, even though production rises sharply in Q3 inventories are still falling. Hence this is not a case of rebuilding inventories** but simply that production catches up with demand when inventories have reached a new preferred lower level.

US: Sharp inventory decline mark end of recessions



Source: Reuters Ecowin

US: Strong inventory swings give sharp turnarounds in ISM



Note: Vertical lines mark bottoms in ISM at instances when it fell below 35. At all instances ISM rose above 58 within next 12m  
Source: Reuters Ecowin and Danske Markets

**Second**, in the example we have assumed that inventories stay at very lean levels and that demand does not pick up in H2. **The production increase would be even stronger if either demand rises (which we expect) or inventories become too lean and need some rebuilding.**

**Third, in percentage terms the rise in production is stronger than the initial decline**, even though production does not close the whole *absolute* gap with where production started: production falls from 100 to 50 from peak to trough – a decline of 50%. But as it rises from the bottom of 50 to 85 it translates into a rise of 70%. This of course is pure mathematics, but it tells us *we should be prepared to see some very high growth rates* in production (as we already see in Asia – more on this below).

**Fourth, the effect of realigning production with demand only works temporarily** until production is equal to demand and inventories are at preferable levels. When that effect is over a demand recovery is crucial. This means job growth is needed and that no new headwinds materialise (see *Global Scenarios, June 2009* for more on this)

### Further ISM increases in the pipeline

We believe the dynamics of the inventory cycle, as described above, give reason to expect a rebound in US production during H2 09. As can be seen from the top chart on the front page, production is now running way below demand, which has translated into a further strong decline in inventories. As inventories have become lean, production will soon have to catch up with demand. **Because the ISM index measures the change in production, we believe ISM will have to go higher over the next 3-6 months to around 55.** It currently stands at 44.8 and being below 50 it thus still indicates falling production

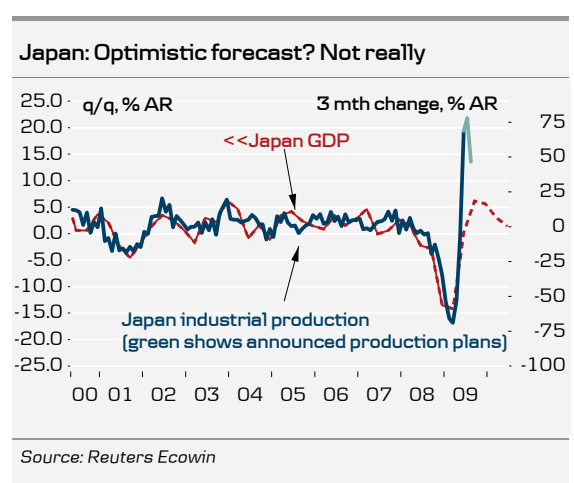
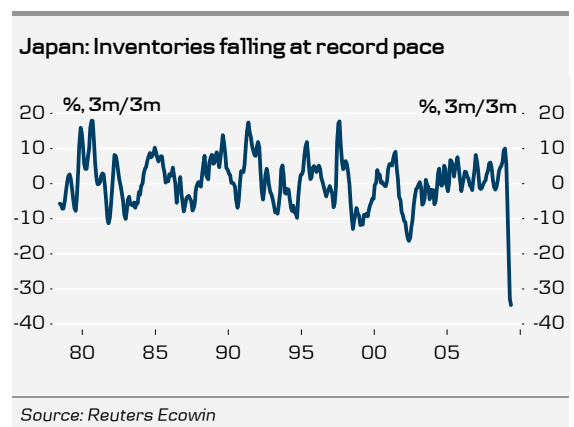
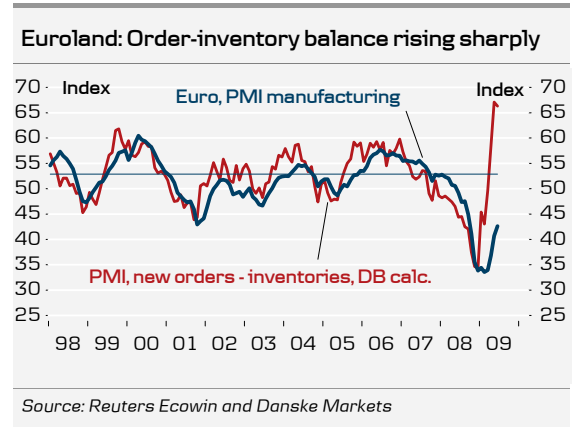
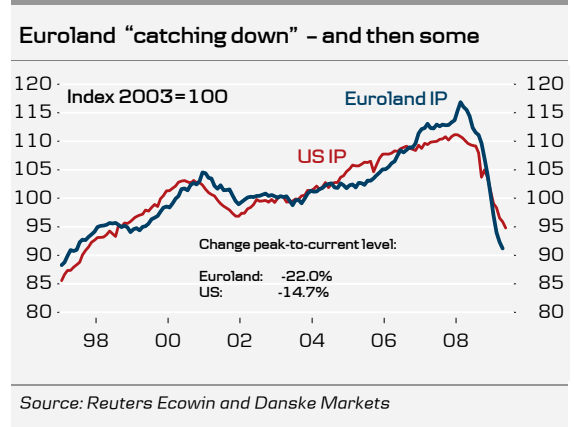
Our estimate is actually on the low side of what we have seen after past serious downturns. Whenever, ISM has fallen below 35 – and hence production has fallen rapidly – ISM has recovered to at least 58 within 12 months. The main explanation for this is exactly the inventory dynamics on top of the stimulus to demand which is always provided during recessions but which works with a lag.

As can be seen in the top chart on page 2, strong declines in inventories normally take place towards the end of the recession, which should be no surprise given the dynamics described above. **This gives further support to the case that an end to the US recession is near.**

### Euroland production should also recover

**In Euroland the collapse in production has been even stronger than in the US.** From the peak to the current level, industrial production is down 22% compared to a decline of ‘only’ 14.7% in the US. One reason for this is that the decline in demand came as a much bigger surprise in Euroland. During H1 08 many companies still believed in a decoupling case – and produced accordingly. This led to massive inventory build-up when demand collapsed during the summer and autumn. Production had to be cut very sharply for Euroland companies to work their way through their inventories. **There are signs, however, that the need for much further inventory reduction is coming to an end – and hence that production has to rise back to match demand.** The order-inventory balance in the PMI statistics has improved markedly, for example. This reflects a sharp decline in the inventory index and a rise in the new orders index. Historically this has been a good leading indicator for Euroland production.

Hence, even in Euroland we expect to see some production recovery in H2 09. This should be further supported by a turn in external demand as rising production on export markets should spur a rebound in export growth.



### Case #1: Japan

Fortunately we have already seen some quite strong cases where the inventory cycle has turned and started to boost production. Japan is a good example. From peak to trough, Japanese industrial production fell 36.9%. However, **since the bottom in February to May industrial production has risen by 14%** (in the chart on page 3 it is shown as a 3M annualized growth rate of 68%). The strength of the turnaround here is exactly due to the turn in the inventory cycle. Inventories fell at record speed during the first months of 2009. Fiscal policy and rising exports have also helped boost demand and as such spurred an even stronger decline in inventories.

**We expect Japanese growth in Q3 to rise to around 6% q/q annualized.** This is quite a bit stronger than consensus (and especially OECD, which expects 0.9% q/q annualized) but after the rise in industrial production seen recently our forecast does not seem very optimistic in our view (see also *Research – Japan: From underperformer to outperformer*)

### Case #2: South Korea and Taiwan

A similar picture has been evident in most Asian countries. **Production in South Korea and Taiwan has also rebounded sharply** from the bottom reached in early 2009. Asia was particularly hard hit when the financial crisis was at its highest because of the break-down of trade finance. Other factors included high exposure to the cyclical electronics industry as well as the auto industry. The Chinese slowdown also hit its neighbours hard. As a consequence, sales dropped massively and production had to fall even more strongly to cope with the rise in inventories. In Taiwan production declined by 42% from peak to the bottom, reached in January. However, since then Taiwanese industrial production has risen 33.3% (latest data from May).

The turn in production is also supported by a rise in sales – not least exports to China, which has recovered briskly. As the inventory cycle boosts production in the US and Europe (if we are right) export demand should rise further and support a further production increase.

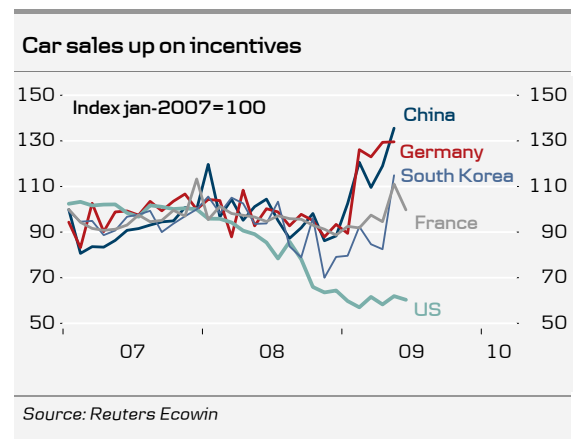
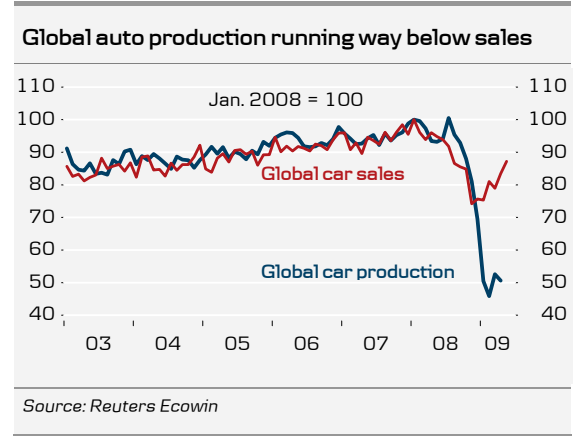
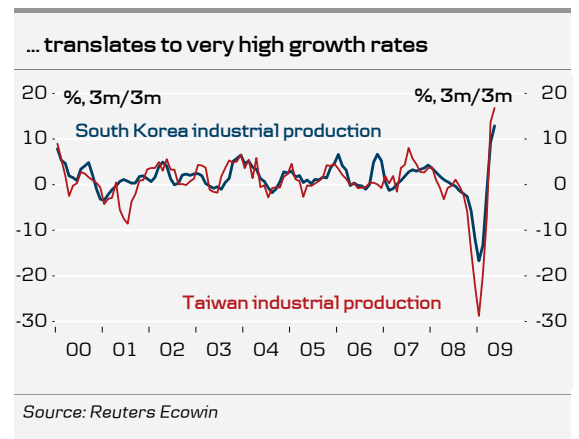
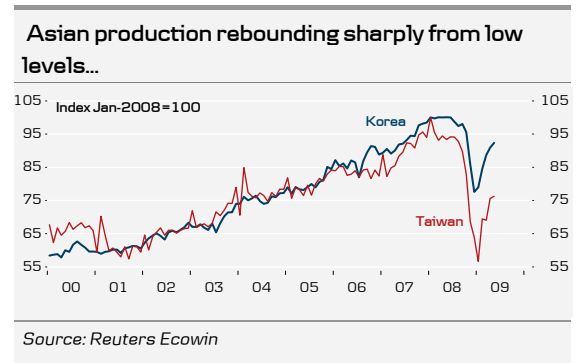
### Case #3: Global auto industry

**One sector that has been hit particularly hard by the financial and economic crisis has been the auto industry.** Its long supply chain meant the slowdown had severe effects on production worldwide. The example shown in the table on the front page mirrors what has been going on in the auto sector. Going into the downturn, car production outpaced sales and inventories rose fast. Global car sales declined 20% over six months, which is unprecedented. The response from manufacturers was of course severe: Production was cut in half from July 2008 to January 2009!

In the mean time **sales have started to recover globally.** A range of incentives have been launched worldwide leading to a strong increase of 17% in sales from the bottom. The gap between production and sales is now huge, meaning inventories are being slashed. Ultimately car production needs to increase as inventories run out and we are therefore likely to see very high growth rates in this area. In fact we are already seeing this in Japan where auto production rose 34% m/m.

**In the US the decline in car sales has beaten all records** with sales down 40.5% y/y in February. And although, there has been some stabilisation in early 2009 we have not seen a turnaround as in other countries.

However, there are some reasons to believe that US car sales will recover in H2 09. **First, the US is now also launching an incentive plan to replace old cars with newer and more fuel-efficient vehicles – the so-called ‘cash-for-clunkers’ law** (for more see [www.cars.gov](http://www.cars.gov)).



This plan has been worked on for some months and was signed into law on 24 June. It will provide a credit of USD3500 to USD4500, depending on the difference in fuel efficiency between the car bought and the car sold. It will have effect from July but all details are not available until 23 July. Hence the biggest effect may not come until August. As the incentive expires in November, or when funds are exhausted, **the incentive will probably have maximum effect in the first months.**

In addition, the law itself has probably held back car sales recently as potential car buyers eligible for the credit have most likely postponed their car purchase. The stabilisation in car sales seen this year may mask an underlying improvement in demand, albeit from very depressed levels.

But this is part of the point: car sales have fallen to such low levels that even a slight improvement in fundamentals or incentives should lift sales. The chart to the right shows vehicle sales per household. On average, each household has bought 0.16 cars per year corresponding to a car purchase each 5½ years. At the current pace, though, this has fallen to 0.075 cars per year – and thus a car purchase per household every 11 years. This is most likely not sustainable and car sales should rise sooner or later.

**Car makers in the US have sent more positive messages recently** forecasting that the bottom has been reached (see *WSJ article of 2 July*). Production is now starting again at Chrysler after a nine-week production closedown. GM will shut down production for nine weeks over the summer and hence hold back overall production for a while yet. But the cut-backs mean inventories are clearing even faster. Ford this week announced an increase to its production target for Q3 to 16% y/y, which is an upward revision from only a four-week old target of 10% y/y.

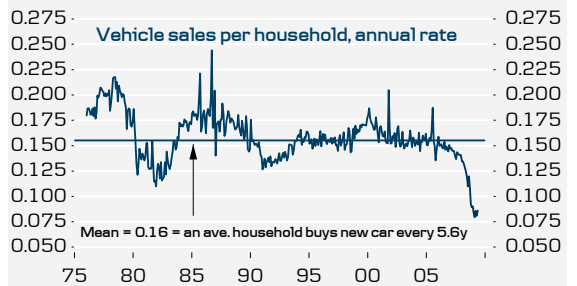
**Bottom line: global production to rise in H2, perhaps strongly**

As illustrated the inventory cycle has been extremely forceful in this downturn. **The distinction between demand and production has never been more important** in explaining and forecasting activity levels worldwide. We believe the dramatic extent of production cut-backs (which was a surprise to everyone) can be explained by the need to reduce inventories – and reduce them fast – to free up liquidity. As inventories are lean in most sectors and current production is way below demand there is only one way companies can meet demand: they have to raise production.

This is a corner stone of our more optimistic view relative to consensus and especially relative to IMF and OECD. We believe what is playing out in Asia right now is a precursor of what we could see in the US and Europe, although not quite as strongly as in Asia due to a weaker demand recovery.

**Ultimately demand needs to recover as well** and this will be the main focus for 2010. For this to happen, we need the kick-start from higher production to translate into jobs. We also require that no new headwinds arise. **Whether this will happen is far from clear; but in the coming quarters we believe the production turnaround will be the biggest surprise and feed optimism that the recovery can be sustained in 2010.**

**US car sales at record lows - but will get lift soon on "cash-for-clunkers" law and heavy discounts**



Source: Reuters Ecowin

**Global growth forecasts**

% y/y	2009				2010			
	Danske Bank	Consensus	IMF	OECD	Danske Bank	Consensus	IMF	OECD
USA	-2.4	-2.7	-2.5	-2.8	2.6	1.9	0.8	0.9
Euroland	-3.9	-4.2	-4.2	-4.8	2.0	0.5	-0.4	0.0
Japan	-6.2	-6.8	-6.2	-6.8	3.2	1.0	0.5	0.7
China	7.9	7.8	6.5	7.7	9.5	8.5	7.5	9.3

Source: Danske Bank, Bloomberg, IMF and OECD

## Disclosure

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