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Markit Economic Research

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Eurozone

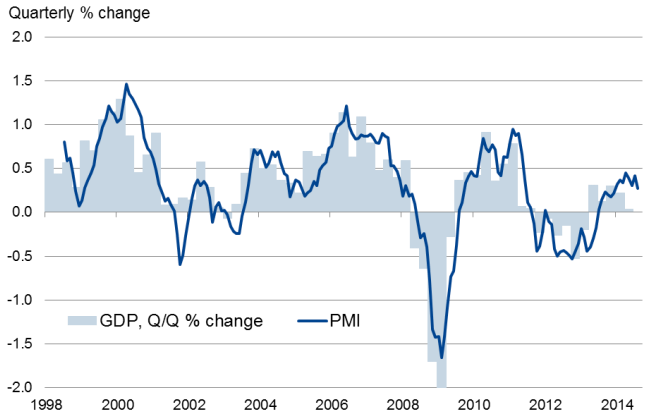
Is the eurozone stalling or growing? A diagnosis of PMI and GDP data

- **A stalling of GDP growth looks to have been a symptom of special factors – factors which tend to not affect the PMI data to the same extent**
- **We therefore expect GDP to rebound in Q3, but note that growth momentum looks weak**

Eurozone PMI survey data diverged from official gross domestic product (GDP) in the second quarter of 2014. This paper explores whether this represents a failure of the PMI to forewarn of a weakening of the region's economy, and possibly the start of a new recession, or whether the official data are understating underlying economic health.

The evidence we have found so far points to the latter, meaning we anticipate a rebound in third quarter GDP to confirm the PMI survey's more upbeat signal. But any upturn in GDP should be treated with caution.

Eurozone, GDP and PMI-implied growth rates



Source: Markit calculations from Ecowin

Stalling or growing?

Official data from Eurostat showed GDP unchanged in the second quarter of 2014. The flat reading had come as a surprise after PMI data (covering manufacturing and services) had signalled growth of roughly 0.4%.

The first observation to make is that there is usually a close relationship between PMI and GDP data, and divergences to the extent seen in the second quarter are unusual. To obtain an objective, albeit crude, measure of the PMI's track record, we use a simple regression to obtain implied GDP growth rates from the PMI series. We use all survey data available up to the end of 2010, with the PMI serving as the sole explanatory variable of quarterly changes in GDP. We have used data only up to the end of 2010 as GDP is still subject to (often significant) revision for the most recent years. Charts are provided for the eurozone as well as Germany, France, Italy and Spain, as these are the countries for which the most comprehensive PMI data are available with histories extending back to the late-1990s. The data for the eurozone are provided at the end of this analysis.

The PMI in fact exhibits a correlation of 84% with the quarterly rate of change of eurozone GDP. The regression has an adjusted r-squared of 0.72 with a standard error of 0.36.

As usual, however, simple statistical analyses do not tell the whole story. A second observation is that, while the PMI data do not always pick up sudden volatile quarterly changes in GDP, the GDP data inevitably come back into line with the PMI. This suggests that the PMI provides a steadier, less noisy, guide to the underlying trend in economic growth than the official GDP data.

GDP more volatile than PMI data

In analysing the cause of the divergence in the second quarter of 2014, it is therefore important to learn from these previous occasions when the PMI had diverged from GDP to a significant extent.

We find that these short-lived divergences between the PMI and GDP usually reflect special factors that have affected the GDP data, and in particular often extreme or unusual weather. Historically, we can see that the PMI tends to be less affected by extreme weather than the official data, thought to be due in part to many companies making an appropriate allowance for weather-related disruptions to provide a more useful guide to actual underlying business conditions.

Other divergences can be attributed to GDP being affected by swings in sectors not covered by the PMI

surveys, notably such as Germany's withdrawal from nuclear energy production, the exclusion of government spending from the French PMI data and the exclusion of the struggling construction sector from the Spanish PMI data in recent years.

In box 1 we look at the two most recent examples where the PMI has diverged from GDP to an equivalent (or greater) extent than seen in the second quarter of 2014.

Factors behind the Q2 divergence

Digging deeper into the national data highlights how the second quarter divergence was seen in Germany, Italy and Spain (see table 1). We can find a number of factors that can help explain the weakness of GDP data in the second quarter of 2014, some of which are specific to 2014 and some which are longer term issues.

- **'Bridging holidays'**: May saw two public holidays fall on Thursdays (Labour day on 1st May and Ascension Day on 29th May). While these are accounted for in normal seasonal adjustment estimations, many people also took the Friday off work to "bridge" the holiday over the weekend. This is thought to have led to a far greater than usual drop in output during the month. Similarly, June saw a holiday on the 19th fall on a Thursday.
- **Weather**: the second quarter saw a pay-back after mild weather had boosted GDP in the first three months of the year. The first quarter (and winter in general) saw significantly above-average temperatures across many parts of Europe, and notably the northern countries. Many projects, especially in construction[1], were able to be started earlier in the year than usual as a result. According to Destatis, "Gross fixed capital formation in construction fell markedly by 4.2% [in Germany in Q2], one of the probable reasons being anticipatory effects in the first quarter caused by the unusually mild winter of 2013/2014". German GDP was in fact flat in Q2 if construction is excluded.

[1] The comparisons between PMI data and GDP are usually made using the 'composite' PMI data which weight together the manufacturing and services PMI numbers, which is what we have therefore used in this analysis. However, it should be noted that construction PMI are available in France, Italy and Germany, albeit not for Spain.

Box 1: GDP & PMI short-term divergences

Below we explore the causes of recent divergences between PMI and GDP data.

In the **second quarter of 2013**, eurozone GDP rose by 0.3%, the first rise for two years. The upturn contrasted with PMI data, which were still running at a level consistent with a 0.3% decline. The GDP growth rate then fell back to just 0.1% in the third quarter. This volatility in the GDP numbers was mainly due to two main factors.

First, growth surged in France from zero in the first quarter to 0.7%, before falling back to -0.1% in the third quarter (a surge that was itself driven by spikes in government spend, imports and a weather-related upturn in consumer spending after a long cold winter, rather than an actual increase in output).

Second, the German GDP showed a 0.4% contraction in the first quarter turning into a 0.8% expansion in the second quarter, a rate which then eased to 0.3% in the third quarter. Such volatility was not evident in the PMI and blamed by Destatis on the economy bouncing back after "extremely cold weather in the first quarter".

In the **second quarter of 2011**, GDP growth plummeted from 0.8% in the first quarter to 0.1%. PMI data had signalled a far more moderate slowdown to just 0.6%. Again, weather-related factors appear to be the cause of the volatility in the official data. Germany had seen GDP growth slump from 1.8% in first quarter to just 0.2%. France saw similar volatility, with first quarter growth of 1.1% turning into a 0.1% decline in the second quarter.

In the case of Germany, the statistical office Destatis blamed Germany's post-Fukushima withdrawal from nuclear energy production, meaning energy exports slumped and imports surged. The energy impact was exacerbated by weather, with the first quarter having been buoyed by a rebound from extreme weather in late-2010. The second quarter saw a pay-back from this rebound. A similar situation was reported in France; the first quarter saw the largest jump in manufacturing for 30 years after a decline at the end of 2010.

Similar examples can be found prior to the financial crisis, such as the marked slowing of GDP growth in the **third quarter of 2006** from a quarterly rate of 1.1% in the second quarter to just 0.6%. Growth then rebounded again to 1.1% in the fourth quarter of that year. This was caused by growth plummeting in France from 1.1% to zero, before recovering to 0.8% in the fourth quarter.

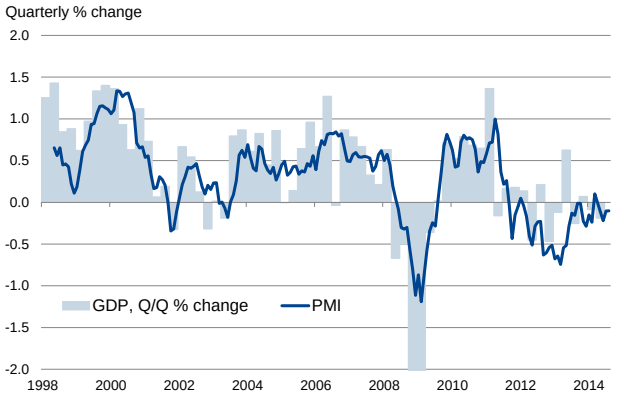
Table 1: Quarterly % change in GDP, 2014

		GDP	PMI-implied GDP
Eurozone	Q1	0.2	0.3
	Q2	0.0	0.4
Germany	Q1	0.7	0.6
	Q2	-0.2	0.6
France	Q1	0.0	-0.1
	Q2	0.0	-0.1
Italy	Q1	-0.1	0.1
	Q2	-0.2	0.2
Spain	Q1	0.4	0.9
	Q2	0.6	0.9

Notes: PMI-implied rates of growth derived from regression using PMI as X variable and quarterly % change in GDP as Y variable.

- **Energy:** the mild winter weather also caused energy consumption and production to be lower than usual, dragging GDP below the PMI's signal (energy production is excluded from the PMI survey coverage).
- **Government spending:** a factor in Q2, as well as a longer-term issue since the financial crisis, is the ongoing upturn in government spending in some countries. In France, as a key example, GDP was unchanged in the second quarter of 2014 but in fact fell by 0.2% once government spending is stripped out. Rising government spending is in fact a significant factor explaining a longer-term divergence between the French PMI and GDP since the financial crisis. The chart below uses a regression of the PMI against French GDP excluding government spending and illustrates the closer relationship. The 2013 Q3 spike in GDP remains a noticeable outlier for the reasons explained above.

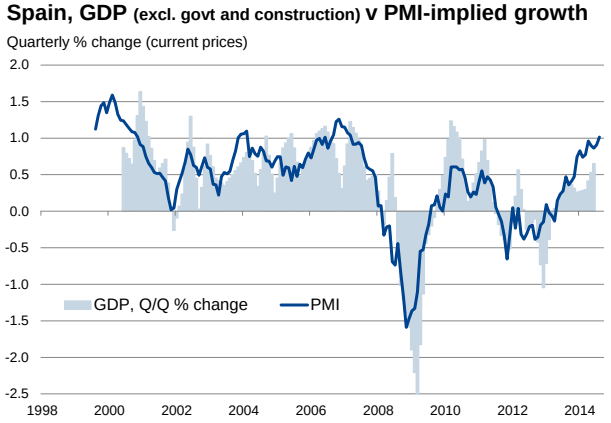
France, non-government GDP and PMI-implied growth



Source: Markit calculations from Ecowin

- **Spanish building:** in addition to the weather-related issues affecting construction, the omission in coverage of the building sector in Spain has been a contributory factor to the PMI survey understating growth relative to the headline GDP number in recent years. The chart below regresses the PMI against just manufacturing and services sector official data, illustrating that the overstatement bias of the PMI does not exist post-crisis if construction is excluded. Although not a significant factor in the second quarter of 2014 per se, this difference needs to be considered when comparing the PMI with official headline GDP data in Spain.

Spain, GDP (excl. govt and construction) v PMI-implied growth



Source: Markit calculations from Ecowin

Implications for eurozone growth

We conclude that GDP and the PMI only tend to diverge to an extent similar to that seen in the second quarter of 2014 due to special factors which affect GDP. We note that two major factors, unusual weather and changes in the number of working days, in particular are likely to have affected the GDP numbers in the three months to June. Bearing in mind the historical accuracy of the PMI in anticipating GDP, and the survey's low noise-to-signal property, it is reasonable to assume that the GDP temporarily understated economic growth in the second quarter and that a recovery will be seen in the third quarter, given recent PMI values.

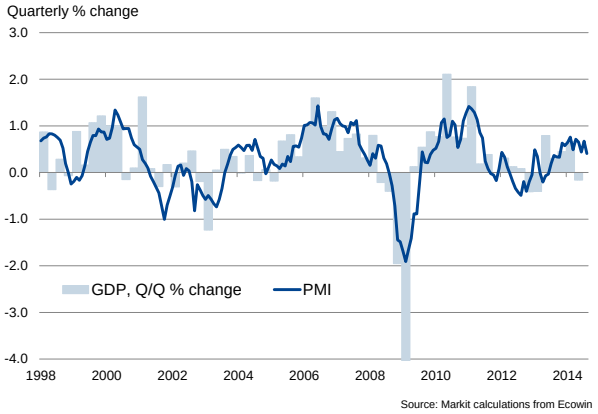
Our regression analysis indicates that the PMI is signalling a 0.25% expansion of GDP in the third quarter of 2014, a calculation which includes flash data for September. We therefore expect GDP to rebound from the downturn seen in the second quarter, and growth recorded by the GDP numbers could be stronger than the PMI signal if the bridging-holiday factor reverses. The weather factor should not affect the third quarter outcome, as the second quarter weakness was a payback from an unusually strong first quarter, meaning this effect has already played out.

However, any improvement in GDP in the third quarter should be treated with caution. With the flash PMI for September indicating that growth had slowed to the weakest seen so far this year, the survey suggests that the underlying rate of growth in the eurozone economy is fading once again.

Third quarter 'flash' GDP data are not published until 14 November.

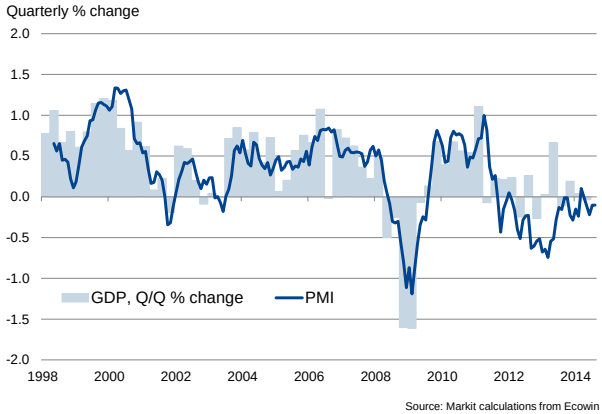
See over for more charts and data.

Germany, GDP and PMI-implied growth rates



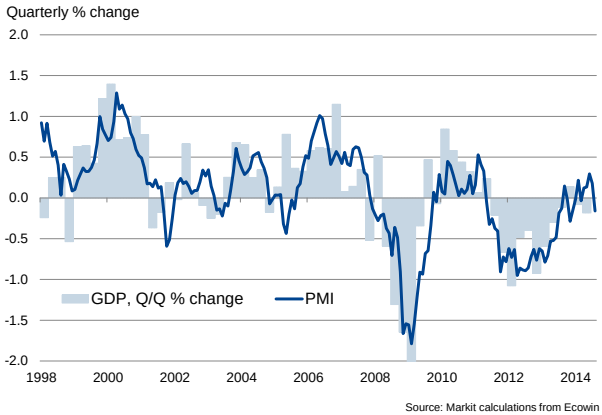
Source: Markit calculations from Ecowin

France, GDP and PMI-implied growth rates



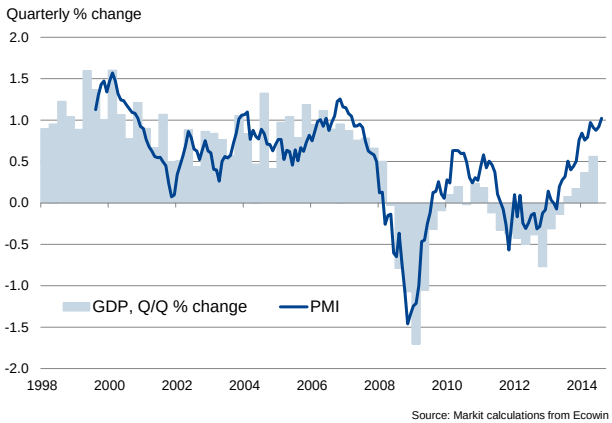
Source: Markit calculations from Ecowin

Italy, GDP and PMI-implied growth rates



Source: Markit calculations from Ecowin

Spain, GDP and PMI-implied growth rates



Source: Markit calculations from Ecowin

Eurozone PMI and GDP divergences

		GDP, quarterly % change	PMI-implied GDP change	Divergence (PMI over/under-statement)
2006	Q1	0.9	0.9	-0.0
	Q2	1.1	1.1	-0.0
	Q3	0.6	0.9	+0.3
	Q4	1.1	0.9	-0.2
2007	Q1	0.8	0.9	+0.1
	Q2	0.5	0.8	+0.3
	Q3	0.6	0.7	+0.1
	Q4	0.4	0.5	+0.1
2008	Q1	0.6	0.2	-0.4
	Q2	-0.4	0.1	+0.5
	Q3	-0.6	-0.3	+0.3
	Q4	-1.7	-1.2	+0.5
2009	Q1	-2.9	-1.5	+1.4
	Q2	-0.3	-0.8	-0.6
	Q3	0.4	-0.1	-0.4
	Q4	0.5	0.4	-0.0
2010	Q1	0.4	0.5	+0.1
	Q2	0.9	0.8	-0.2
	Q3	0.4	0.6	+0.3
	Q4	0.6	0.6	+0.0
2011	Q1	0.8	0.9	+0.1
	Q2	0.1	0.6	+0.6
	Q3	0.0	0.0	-0.0
	Q4	-0.2	-0.4	-0.1
2012	Q1	-0.1	-0.1	-0.0
	Q2	-0.3	-0.5	-0.2
	Q3	-0.2	-0.5	-0.3
	Q4	-0.5	-0.4	+0.1
2013	Q1	-0.2	-0.3	-0.1
	Q2	0.3	-0.3	-0.6
	Q3	0.1	0.1	+0.0
	Q4	0.3	0.2	-0.1
2014	Q1	0.2	0.3	+0.1
	Q2	0.0	0.4	+0.4

Notes: PMI-implied rates of growth derived from regression using PMI as X variable and quarterly % change in GDP as Y variable.

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