

## RECOVERY IN GERMANY? WHAT SENTIMENT INDICATORS ARE TELLING US

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The German economy is struggling. After the forceful year 2000, growth has slowed considerably in the first half of this year. How will this continue?

The evidence from a number of indicators point to an improvement of sentiment. In order to assess the implications for the real economy, we have examined the relationship between sentiment indicators and industrial production. The indicators under examination are the expectations component of the ifo business climate index, the ZEW economic expectations index and the Purchasing Manager Index.

While we can not exclude the possibility of a rapid deterioration of the external environment, the result of the analysis points to a bottoming out of the German growth slowdown. The trough of industrial production should be reached in the third quarter, with a likely recovery sometime around the turn of this year.

However, the remaining wildcard for the future of the German economy remains just how strong the recovery will be. Our best guess is that it will only be a very modest one.

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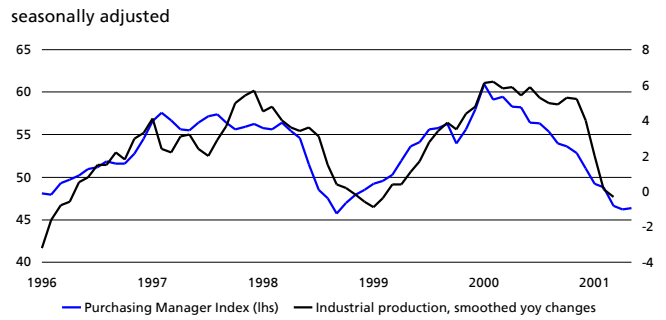
## RECOVERY IN GERMANY? WHAT SENTIMENT INDICATORS ARE TELLING US

The German economy is struggling. After the forceful year 2000, where GDP grew by 3% – the strongest growth rate since the reunification – , the economy has slowed considerably in the first half of this year. In the second quarter, growth had even come to a halt. Nevertheless, despite the gloom of the last months, it looks as if a full blown recession may be averted in Germany. Various signs indicating the end of the decline are emerging. In a recent paper<sup>1</sup>, we have shown that the pick-up in Eurozone money growth bodes well for a recovery of industrial production for the beginning of 2002. Turning to the German economy, we will consider a number of sentiment indicators and try to determine whether and when a recovery may take place.

### LEADING INDICATORS SEEM TO INDICATE A TURNING POINT

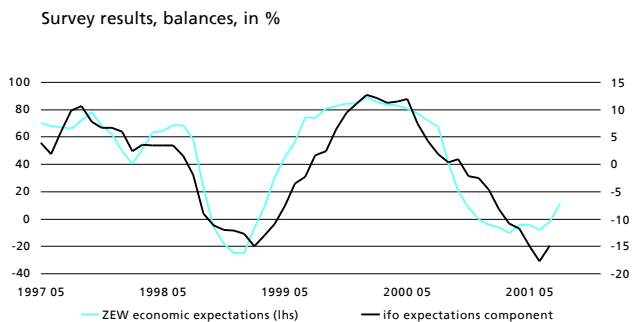
While the weakness of the real economy has been confirmed once again by the decline of July factory orders (seasonally adjusted -1.4% m/m; June: -2.4%) and industrial production (seasonally adjusted -1.5% m/m; June: +0.1%), there are several sentiment indicators which have stopped their downtrend recently. The latest proof came with Mondays release of the August Purchasing Manager Index. The Index, which reflects the development of business activity in the industrial sector, continues to signal a decline in activity given that it remains below the critical mark of 50. However, the small rise to 46.3 from 46.2 in July shows that the pace of decline is slowing for the first time in thirteen months.

### PMI INDEX FINDING A FLOOR



A similar development had already been indicated by other sentiment indexes, such as the ifo business climate. Especially the increase of the expectations component<sup>2</sup>, which reflects entrepreneurs' view of the business conditions in six months time, from 93.5 in June to 95.0 in July is promising. Another indicator expressing economists' assessment of the state of the economy in six months time – the ZEW economic expectations indicator – had stopped its decline already in April of this year.

### RECOVERY AHEAD?



In order to assess the outlook for the German economy, we must first know whether these improvements of the sentiment indexes are actually a turning point<sup>3</sup> in the time series, or just a blip in a continued downtrend. The fact that we have three indicators, which stopped their path of decline in a relative narrow time span, leads us to believe that

<sup>1</sup> Landesberger, Julian von, Better Times ahead? What forward looking monetary indicator are telling us, HypoVereinsbank Policy Watch, August 2001

<sup>2</sup> In the following analysis, only the expectations component of the ifo Index is used, since it expresses the expectations of business leaders of the business activity in six months time.

<sup>3</sup> A turning point can either be a 'peak' (when the acceleration in the growth rate of economic activity comes to an end) or a 'trough' (when the growth rate of economic activity stops decreasing). In this analysis, we are talking about the latter.

an actual turning point may have emerged. Indeed, the three indicators are strongly correlated with each other; the cross-correlations range between 64.7% and 88.4%. Introducing lags, these correlations increase even further. The best correlations are obtained for the following lags:

- when the ifo expectations component is lagged one month behind the ZEW economic expectations indicator (87.2% between December 1991, the beginning of the time series of the ZEW indicator, and July 2001)
- when the PMI Index is lagged one month behind the ifo expectations component (75.7% between April 1996, the beginning of the PMI time series, and July 2001)
- when the PMI is lagged two months behind the ZEW economic expectations indicator (92.0% between April 1996 and August 2001).

It therefore seems to be the case that the ZEW indicator tends to be the first to turn, followed by the ifo expectations component, and then by the PMI Index. This is exactly the chronological order that we have observed this time round.

#### IMPLICATIONS FOR THE REAL ECONOMY

But what does this mean for the real economy? In order to assess this, we should look at the relationship between sentiment indicators and real economic activity. As a method, we smoothed industrial production data to proxy for economic growth<sup>4</sup>. Introducing different time lags, and using the three most recent turning points of our sentiment indicators, we can then say something about the most likely timing of the turnaround of economic activity.

For this analysis, we also need to define when the turning point of our indicators has occurred. Although some uncertainty remains, we assume for the remainder of this paper that the recent up-ticks have indeed marked a turning point. This means that we assume the turning point of the ifo expectations component to have occurred in June and the turning point of the PMI Index in August.

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<sup>4</sup> We are using the 3-months averages of the y/y growth rates of industrial production in order to reduce volatility of the index. The main reason for using industrial production data is that it is available on a monthly basis, while GDP data only on a quarterly basis.

The identification of the turning point for the ZEW economic expectations indicator is a complicated by the fact that it recorded a small rise as early as April, but fell again in June to recover again in July. Using the method of the National Bank of Belgium to smooth the indicator<sup>5</sup>, and assuming that it will not fall back significantly, the turning point is identified to have occurred in March. As a caveat, it should be noted that the pinpointing of the exact turning points is complicated by the fact that it is emerging during the summer holiday season. Although the numbers used in the analysis are seasonally adjusted ones, this does not account for changes in the timing of the summer holidays. Furthermore, the fact that the seasonal adjustment may not be independent of the position in the economic cycle implies that the adjustment factor could be sensitive to the recent economic downswing. The results should therefore be interpreted as a rough indication, rather than an accurate forecast of the month in which we expect a recovery to set in.

Looking at the correlations of the indicators with industrial production (see table below), we find that the relationship between each individual indicator and industrial production is consistent with the cross-correlations of the indicators among each other. The ZEW economic expectations index has the highest correlation with industrial production when it is leading five to six months, the ifo expectations index with a lead of three or four months and the PMI Index has the highest correlation with a lead of two months. While performance of the PMI Index must be used with caution due to the short history of the times series (it only started in April 1996), the performance of the latter two indicators has been confirmed by recent research<sup>6</sup>. It finds that the ZEW economic expectations index performs best at predicting turning

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<sup>5</sup> The method is to first calculate the centered moving median over five months is used to exclude outlier and second, the resulting series is smoothed by a centered 5-month moving average, with weights of 1/8, 1/4, 1/4, 1/4, 1/8. In addition, some restrictions are introduced. See NBB Working Paper No. 12, November 2000.

<sup>6</sup> See Hübner, Felix and Michael Schröder, Unternehmens- versus Analystenbefragung – Zum Prognosegehalt von ifo-Geschäftserwartungen und ZEW Konjunkturerwartungen, ZEW-Discussion Paper No. 01-04, February 2001

points of industrial production with a lead time of up to six months and the ifo expectations component with a lead of up to four months. The reason for the longer lead of the ZEW economic expectations index may lie in the choice of the survey participants. The ifo business climate index reflects the expectations of managers in certain sectors of the economy and the ZEW economic expectations indicator is based on the answers of economists and institutional investors. The latter are likely to have a broader spectrum of factors in assessing future economic activity, including the influence of inflation, the development of interest rates, exchange rates as well as growth perspectives in export markets. This may be the reason that the lead of the ZEW indicator is longer than the ifo index.<sup>7</sup>

A caveat to the results of this analysis must be that the industrial production data is often subject to heavy revisions, which could possibly change the results.

should be reached in the third quarter, with a likely recovery sometime around the turn of this year. However, the remaining wildcard for the future of the German economy remains just how strong the recovery will be. Our best guess is that it will only be a very modest one. With the bleak outlook for the US economy, external impulses will be moderate. The continued deterioration of the German stock market highlights the vulnerability of the economic environment. As a consequence, investment activity will remain subdued for some time to come. Furthermore, economic policy will be of no significant help: neither monetary, nor fiscal policy looks set to generate a similar recovery to the one seen in 1999. Thus, at this point in time, the outlook is a very uncertain one for the German economy.

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Lead times	Correlations with industrial production (3-months moving averages of y/y changes)		
	ZEW*	ifo*	PMI**
-1	40,7%	67,0%	68,3%
0	50,0%	75,7%	79,7%
+1	60,8%	83,5%	86,0%
+2	69,7%	89,1%	<b>88,1%</b>
+3	77,1%	<b>91,7%</b>	85,2%
+4	81,6%	<b>91,7%</b>	78,3%
+5	<b>84,3%</b>	88,9%	68,5%
+6	<b>84,3%</b>	83,6%	56,2%
+7	81,7%	75,7%	42,9%

\*ZWE economic expectations index and ifo expectations component during December 1991 and June 2001

\*\*during April 1996 and June 2001

## RECOVERY AT TURN OF THE YEAR – BUT HOW STRONG?

While we can not exclude the possibility of a rapid deterioration of the external environment, the information from the sentiment indicators point to a bottoming out of the German growth slowdown. With the assumptions that we have made concerning the turning points of the indicators, we conclude that the trough of industrial production

<sup>7</sup> See Hüfner and Schröder (2001)

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