

# Predicting the national accounts of the euro zone using business surveys

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*For several years now the leading economies in the euro zone have been tending to form a coherent economic entity. This convergence justifies the construction of specific predictive tools, based on the use of business surveys at the level of the zone. This article describes several calibrations making it possible to convert the information available at an early stage from the business surveys into quantitative data regarding activity. This conversion gives a lead time of roughly 45 days in relation to the publication of GDP figures, and 50 to 70 days for the principal components (exports, consumption, investment).*

*We show here a macroeconomic scenario for H2 2000 which it was possible to compile as early as end-October, well before the publication of the Q3 accounts in mid-December. The use of surveys as forecasting tools nevertheless seems limited to a fairly short time-horizon and other methods are needed in order to take the scenario beyond the current half-year.*

With the adoption of a single currency and a common monetary policy, analysing the economic situation at the level of the euro zone as a whole has become a necessity. The statistical information system has been obliged to adapt to this new reality. In addition to data on individual countries, the European statistical institute Eurostat regularly publishes data on the euro zone (see box). In particular, it provides, within the framework of harmonised national accounts, quarterly figures for the economy, in the form of a resource-use balance, in other words a balance sheet of supply and demand.

Predicting quarterly accounts for the euro zone is now therefore of great importance. A first method consists of aggregating the forecasts made for the various countries of the zone, to constitute by addition of the scenarios for each country an overall economic scenario. The second method consists of exploiting the basic data for the zone itself. This is a valid method and has every chance of being at some stage an improvement, inasmuch as for several years the 11 countries belonging to the euro zone have tended to form a coherent economic entity. In fact, common economic tendencies can be clearly seen, even if disparities between countries persist (see article in the June 2000 Note in this series). The existence of largely synchronous macroeconomic tendencies therefore justifies the global analysis of the economic situation in the euro zone, requiring the creation of a set of forecasting tools specific to the zone.

With this in mind, the business surveys in the euro zone, which are available at a very early stage, constitute for the short-term economic analysts a precious source of information on the current quarter and the next. However, the information collected by the surveys is initially qualitative. Business leaders' and households' replies to the questions put to them take the form of a simple sign (positive, neutral, negative). The results are then presented in the form of balances of opinion, in other words, for each survey the difference is reported between the number of respondents making positive replies and the number making negative replies. The surveys therefore provide a qualitative evaluation of the average opinions of business leaders and households concerning the economic situation and their own situations.

Despite their qualitative nature, however, the surveys can be used to make quantitative short-term predictions of the macroeconomic magnitudes. In much the same way as it is possible to transform a temperature in degrees Celsius into degrees Fahrenheit, one can also "convert" the opinions of business leaders and households as measured in the surveys, into approximate evaluations of GDP and the principal demand headings. This is a useful exercise, as it can be carried out well before the national accounts figures become available. The results of the business surveys are available more than two months before the publication of the initial estimates made by Eurostat of growth in the euro zone (see box), in other words at a particularly early point in time from the point of view of the forecasters.

The approach shown here aims at illustrating how using practically nothing but business surveys at the level of the zone can make it possible to predict growth, on the one hand and, on the other, the principal components of final demand: household consumption, investment and exports.

The “conversion” instruments, known as calibrations, have turned out to be relatively efficient for recent forecasting periods. It should be noted that this “conversion” method is not exact and remains a forecasting method. There is nothing ruling out taking into account information and forecasting available more specifically for the main countries in the zone.

Business surveys are in fact carried out in each country. The results are then collected, re-processed and harmonised by the European Commission. In particular, business leaders in different sectors of activity are questioned regarding past or future tendencies in output, on their domestic and export order books, on the evolution in their inventories as well as the outlook for prices. DG-ECFIN<sup>(1)</sup> issues a monthly publication of the balances of opinion on the six questions, for each of the euro-zone countries. The sectors of activity currently concerned are manufacturing, retailing and construction. There is as yet no harmonised business survey carried out by the Commission for the services sector.

### Predicting growth using survey data

Since the GDP for the euro zone has been published by Eurostat only since 1991, estimating a sufficiently robust equation implies limiting the number of explanatory variables, as the maximum number of observations is 37. Since the balances of opinion published by DG-ECFIN are available for individual countries<sup>(2)</sup>, it was decided

to aggregate surveys at the level of the euro zone. A priori, two methods are possible.

First, one can construct for each question the euro-zone balance of opinion as the weighted average of the national balances. The weighting scale used is then the share of each country in the value added of the sector in question for the zone as a whole. In practice, it is possible to confine the calculation to the six leading countries (Germany, France, Italy, Spain, Netherlands, Belgium), which account for more than 90% of the zone’s value added.

The second approach does not involve imposing a priori weighting in order to summarise the common information contained in the surveys. Applied to the manufacturing sector, this method, known as factor analysis, attempts to extract, using each of the five balances of opinion<sup>(3)</sup> for the six largest countries in the zone, information that is common to all these balances, considered as being directly linked to global activity in the zone.

This second method is adopted in particular because it makes it possible to reduce the number of explanatory variables and hence envisage equations with more robust predictive qualities. In fact, merely aggregating the balances, weighted by value added, provides as many balances as there are questions, whereas factorial analysis provides in a direct manner a single indicator, known as the common factor<sup>(4)</sup>. Moreover, in our calibrations, the use of a common factor has turned out to be more fruitful as regards the quality of the forecasts than is provided by the direct aggregation of the balances derived from the surveys. A priori, an indicator of this type can be compiled for each of the sectors covered by the business surveys (manufacturing, retailing and construction).

The information contained by the common factor for manufacturing alone already provides a good estimate of the GDP growth rate. This is because, despite the small weight of industry in value added, this sector, with its marked cyclical fluctuations, leaves a strong imprint on overall variations in activity. However, in the recent past, taking account only of manufacturing industry has led to overestimating the strength of growth.

In order to improve the quality of the forecasts, attempts are therefore being made to include other sectors. Taking into account the common element in the situation in retailing, calculated using factorial analysis as for manufacturing<sup>(5)</sup>, significantly improves the performance of the equation.

1) DG-ECFIN is the Directorate-General of the European Commission responsible for economic and financial matters.

2) In this study, for Germany, France and Italy, use is made of the series provided directly by the national institutes (respectively, IFO, ISAE and INSEE). These are seasonally adjusted by INSEE’s short-term economic analysis division in the case of the French and Italian series, with IFO’s own seasonal adjustment being used for the German series. The other series are provided by the Commission.

3) The balances of opinion concerned are those related to the production outlook, the tendencies in past production, the outlook for orders (total and export) and assessments of the level of inventories. In practice, these factors are calculated only for the six main countries, the only ones to have sufficiently long series. The manufacturing common factor “encapsulates” the information that is common to these 30 balances of opinion.

4) See in the June 2000 Note in this series the special article “Two composite indicators for industrial activity in the euro zone”.

5) In this case, four balances of opinion derived from the surveys are used. These correspond to questions regarding the general outlook for activity, the past tendency in activity, inventories and purchasing intentions, again taken for each of the six largest countries in the zone, the only ones to have sufficiently long series.

As regards construction, given the virtual absence of synchronous short-term movements between the various countries of the zone, as well as the somewhat dubious quality of some of the data (*see box "Construction in the euro zone", in the March 2000 Note in this series*), constructing a common factor is less meaningful. Moreover, the balances of opinion relating to this sector do not produce any improvement in the quality of the forecasts.

For the period 1991-1999, therefore, a calibration is obtained which models quarterly GDP growth on the basis of its past values, the past and current values of the common factor for industry (F<sub>ind</sub>), and the past values of the common factor for retailing (F<sub>ret</sub>) (*see equation 1*).

It should be noted that the standard deviation of the forecasting error does not exceed 0.2%, which is small in relation to the quarterly variations in GDP. Moreover, the equation satisfactorily identifies turning points. The coefficients obtained in this equation for the balances of opinion<sup>(6)</sup> confirm a well-known rule: in order to obtain a satisfactory description of macro-economic activity on the basis of survey data, it is necessary to take account both of the level of the balances of opinion (in other words, the absolute difference between the number of business leaders who are optimistic and who are pessimistic) and also the variations (in other words the number who have changed their diagnosis since the previous survey).

It should nevertheless be stressed that the robustness of the estimates remains relative, given the small number of observations available and despite the use of common factors.

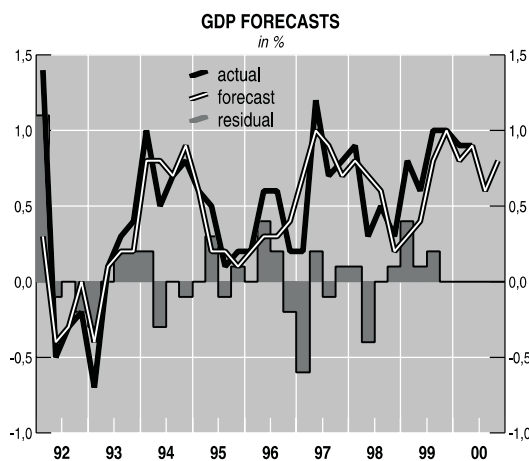
It would seem that from the dynamic standpoint<sup>(7)</sup>, the common factor for manufacturing industry is responsible for the greatest share of the movements in growth pre-

dicted by the equation (roughly 6/7 of the forecasting variance, as against 1/7 in the case of the retailing common factor)<sup>(8)</sup>.

For both manufacturing industry and retailing, the results of business surveys show a slight deterioration in Q3. Our equation makes it possible to provide a quantitative measurement of the slowdown in

GDP compatible with this deterioration. Over the recent past, the equation indicates for Q3 2000 a slowdown in the growth rate to 0.6%, following the firm rate seen in the four previous quarters.

Postulating that the composite indicator for manufacturing industry remains at its October level until the end of Q4, the model would indicate that the quarterly growth has recovered in Q4 to around 0.8%.



## Equation 1

$$\Delta \ln GDP_t = 0,01 - 0,30 \Delta \ln GDP_{t-1} - 0,34 \Delta \ln GDP_{t-2} + 0,78 CF_{ind}_t$$

$$[0,00] \quad [0,13] \quad [0,11] \quad [0,12]$$

$$- 0,46 CF_{ind}_{t-1} + 0,38 CF_{ret}_{t-1} - 0,32 CF_{ret}_{t-2} + \varepsilon_t$$

$$[0,11] \quad [0,15] \quad [0,14]$$

$$R^2=0,81; \sigma=0,21\% ; DW=1,88 ; N(\text{obs}) = 36 ; d^{\circ}(\text{freedom})=30$$

6) This can be written as follows:

$$0,78 CF_{ind}_t - 0,46 CF_{ind}_{t-1} = 0,32 CF_{ind}_t + 0,46 \Delta CF_{ind}_t$$

with  $\Delta CF_{ind}_t = CF_{ind}_t - CF_{ind}_{t-1}$

7) In the initial equation, the explanatory variables include, instead of past GDP, the past GDP as estimated by the equation.

8) Indeed, in de-composing the variance in the dynamic simulation as the sum of the contributions of the two factors, a relationship of this kind is observed between the variances for the two contributions. Moreover, the latter turn out to be only weakly (and negatively) correlated. The contribution of each factor is defined for this purpose as the difference between the initial dynamic prediction and the dynamic prediction obtained by eliminating the value of the said factor starting at date t, in this case Q1 1993.

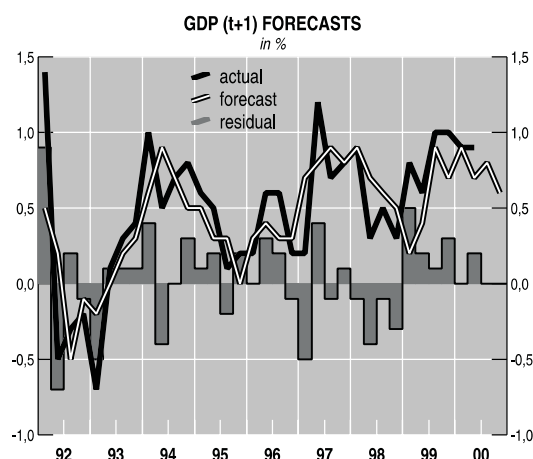
However, rather than postulate *ex nihilo* its behaviour in the near future, one can also try to base this forecast of the indicator on a calibration using all the information available for the preceding quarter. This method is tantamount in fact to regressing the GDP for the coming quarter on all the information available in the current quarter. In this manner, one obtains<sup>9)</sup> equation 2.

The growth that is forecast in this manner comes very close to the actual out-turn. The standard deviation of the forecasting error rises to 0.3%, as against 0.2% in a calibration of the coincident GDP. This loss of precision, which is inevitable since the information available for forecasting over a longer time-horizon is necessarily restricted, remains acceptable. The main shortcoming of this second calibration method is that the turning points are less well identified.

This second instrument arrives at a forecast of 0.6% growth in Q4, as against 0.8% with the previous equation. Note that in Q2 its use would have led us to forecast 0.8% for Q3, instead of 0.6% using the coincident information.

For the second half of the year, therefore, both equations indicate an annualised growth rate of below 3%, providing confirmation of the moderate slowdown. However, the two equations do not indicate the same movements over time. Deciding between the two therefore depends on other information that may be available. Taking account of data for individual countries, but also quantitative information regarding activity in manufacturing (IPI), demand (retail sales, car registrations) and foreign trade (customs data) makes it possible to do this.

9) This method is equivalent to carrying out a Choleski transformation following the estimation of a VAR model on the vector [GDP; Fcinf; Fccom].



## Equation 2

$$\Delta \ln GDP_{t+1} = -0,01 - 0,34 \Delta GDP_{t-1} - 0,28 \Delta GDP_{t-2} + 0,62 CFind_t$$

$$- 0,42 CFind_{t-1} + 0,63 CFret_{t-1} - 0,50 CFret_{t-1} + \varepsilon_t$$

[0,00] [0,13] [0,11] [0,12]  
[0,11] [0,15] [0,14]

$R^2=0,61$ ;  $\sigma=0,30\%$ ;  $DW=2,11$ ;  $N(\text{obs})=36$ ;  $d^\circ(\text{freedom})=30$

## Predicting final demand

In order to construct a global scenario for activity in the euro zone, it is also necessary to be able to predict the main demand headings in the zone's quarterly accounts. The same approach is adopted as for the prediction of GDP. Here too, the business surveys turned out to constitute a good predictive vector for the main resource uses: household consumption, investment and exports. It is these equations that we shall now present.

Predicting general government consumption has been left on one side. Except where there is specific information for individual countries, we have merely assumed stability in the current year-on-year change.

Another point to note is that predicting the contribution from inventories on the basis of the surveys has turned out to be less satisfactory. This is not entirely surprising. In most countries, the national accounts statisticians have

little infra-annual information on inventory changes, these being in most cases obtained by difference between the totals of resources and uses, and in this way are exposed to all the statistical "blips" in other items. As a result, variations in inventories at the level of the zone contain a large quantity of statistical "noise", making them more difficult to capture directly with the help of short-term economic indicators.

## Household consumption

In order to predict household consumption, information emanating from three sources is mobilised. First of all, household surveys are a precious source of information for the forecaster. Here too, the European Commission is proceeding with the harmonisation of balances of opinion in the member countries.

Even more than in the preceding section, the substantial number of balances of opinion that are a priori exploitable necessitates the con-

struction of an aggregate indicator for the euro zone, in order to limit to some extent the number of explanatory variables. Using factorial analysis, we therefore calculate a household common factor. This is deemed to represent in summary form the common underlying tendency that is simultaneously present in the nine balances obtained from household surveys, for each of the 6 major countries in the zone<sup>(10)</sup>. This common factor was preferred to the “consumer confidence” indicator, which, for each country in the zone and for the zone itself, is a mean of five balances from the household surveys. This indicator turned out in fact to have less predictive power for private consumption in the euro zone.

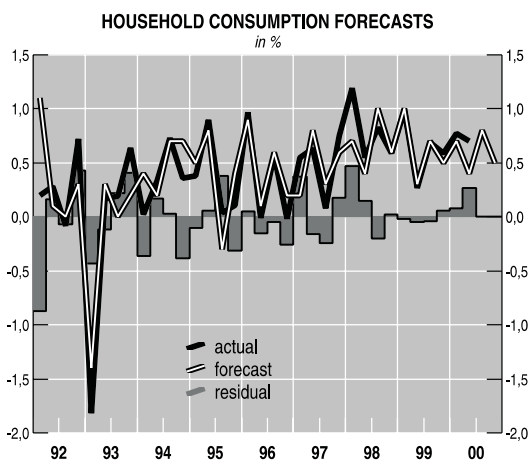
The second source used is the retail business survey, which was already used in predicting GDP. However, the use of the retailing common factor constructed in the previous section turned out to be less fruitful in predicting household consumption. Instead, the “business outlook” balance of opinion in retailing, aggregated at the level of the euro zone<sup>(11)</sup>, was used.

At the same time, short-term economic analysis of private consumption is also based in traditional fashion on the monitoring of quantitative indicators liable to capture jerky movements from quarter to quarter, such as those seen in retail sales or new car registrations. Using the retail sales series has no practical interest in relation to the calibration exercise, since there is no historical series going back beyond 1995<sup>(12)</sup>. On the other hand, the series for new car registrations in the euro zone, published by Eurostat, is available over a long period and is published at an early stage, roughly 15 days after the end of the reference period (making almost 55 days before the initial publication of the quarterly accounts).

The equation used to predict private consumption therefore in the end uses the common factor emanating from household surveys (CF<sub>hous</sub>), the car registrations series (Car)<sup>(13)</sup>, and the business outlook reported by retailers (BOR) (see equation 3).

The forecasting error (standard deviation of 0.3%) may seem small, but is far from negligible when one remembers the relatively “smooth” nature of past consumption.

The three variables used are indeed positively correlated with household consumption. To be more precise, car registrations contribute half of the explained variance and the lagged retail business outlook one-third, with the remainder coming from the common factor in household surveys<sup>(14)</sup>. Despite the fact that purchases of new vehicles account for only around 6% of private consumption, the amplitude of fluctuations in this item accounts for a substantial share of the variations in consumption.



### Equation 3

$$\Delta \ln Cons_t = 0,01 - 0,37 \Delta \ln Cons_{t-1} + 0,19 CF_{hous_t} + 0,06 \Delta Car_t + 0,48 BOR_{t-2} - 0,40 BOR_{t-3} + \varepsilon_t$$

[0,00] [0,12] [0,08] [0,01]  
[0,15] [0,12]

$$R^2=0,75 ; \sigma=0,29\% ; DW=2,28 ; N(\text{obs})=36 ; d^{\circ}(\text{freedom})=31$$

10) The balances used are households' assessments of their past and future financial situation, their present and planned major purchases, their past and planned saving, the past and future general economic situation and the recent tendency in unemployment.

11) The aggregation is carried out weighting the relative balance in each country by its share in the total consumption of the zone.

12) It can nevertheless contain information. Until mid-1999, there was in fact a very good correlation with the series for household consumption. Since then, the relationship seems to have become less relevant, probably because the French data are no longer published and are therefore no longer included in the euro zone series.

13) This series, obtained unadjusted at the level of the euro zone through Eurostat, is seasonally adjusted in INSEE using ARIMA-X11.

14) Cf. footnote 7 describing the method used to calculate the contributions.

## DATES OF AVAILABILITY OF THE VARIOUS ECONOMIC INDICATORS AT EURO-ZONE LEVEL

As part of the monitoring of the economic situation in the euro zone, the use of leading indicators such as business surveys or car registrations is essential in order to compile forecasts as early as possible. These two types of indicator (the only ones required for the equations in this article) are all available roughly a fortnight after the end of the period they refer to (the reference period). The equations shown here can therefore be applied almost two months before the first estimation by Eurostat of the quarterly accounts.

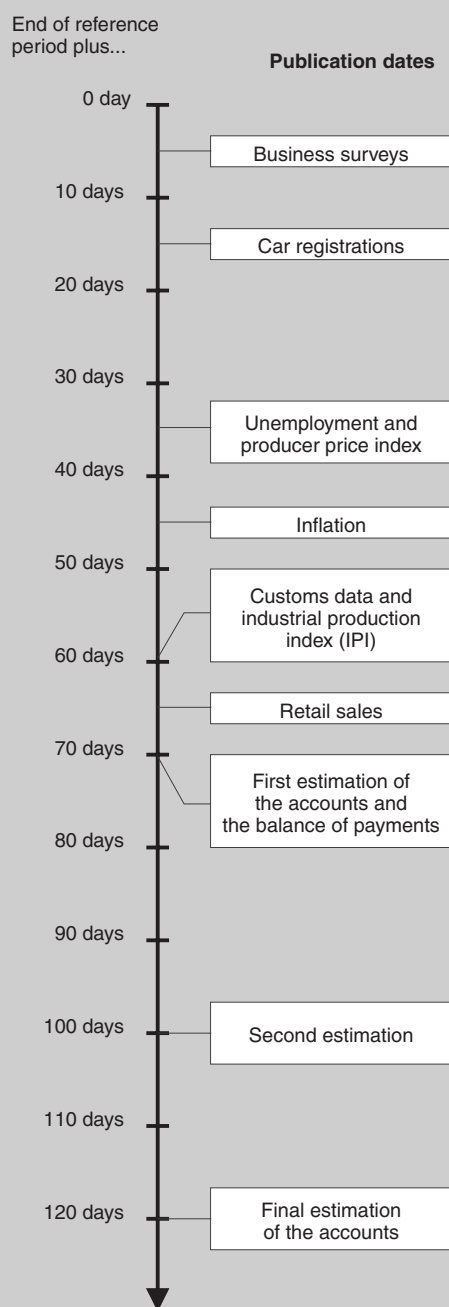
Other economic data are available somewhat later (*see table opposite*). These provide useful supporting material for the macroeconomic scenario derived from the calibrations. Moreover, they are indispensable in order to extend the forecasting time-horizon.

Finally, it should be noted that the three successive estimations published by Eurostat are not strictly equivalent. Broadly speaking, at the time of publication, each of them is based almost exclusively on information available at national level, in terms of national quarterly accounts.

For the first estimates, quarterly accounts are available for Germany and France and "flash-estimates"<sup>(1)</sup> for the Netherlands and Italy<sup>(2)</sup>. However, the Eurostat national accounts statisticians also rely on privileged information provided by their Italian counterparts. For the second estimation, roughly one month later, Eurostat incorporates into its calculation detailed accounts for Italy, Spain, Finland and sometimes Austria. Appreciable modifications in the accounts can occur at this stage. The final estimation is carried out by adding the detailed information from the quarterly accounts for Belgium, Netherlands and, if necessary, Austria. The other countries (Ireland, Luxembourg and Portugal) do not publish regular quarterly accounts. ■

(1) A flash-estimate is an estimate for growth alone made by the national accounts statisticians of the country concerned. These estimates are liable to be slightly revised at the time of the publication of the definitive detailed accounts.

(2) This Italian flash-estimate was published for the first time this autumn, 45 days after the end of the quarter. There is not sufficient experience to evaluate its liability to revision at the time of the complete publication of the accounts, which takes place 40 days later.



For Q3, this calibration predicts continuing brisk growth for private consumption (close to 3.5% at annualised rate). This surprisingly high figure in view of the present economic situation (slowdown in purchasing power due to the oil shock) reflects the firmness of the common factor in the surveys of consumers, but also the sensitivity of the calibration to retailers' assessments in previous quarters of their business outlook (until the

summer, the impact of the oil shock had practically not been expected by retailers). Conversely, new car registrations, which eased slightly in Q3, indeed made a negative contribution to the evolution in this prediction of private consumption.

Given that private consumption had been distinctly underestimated in the previous quarter, a decision was made to adjust the protection for Q3 by applying an amputation

of 0.3%<sup>(15)</sup>. The predicted annual growth rate for household consumption is then brought back to below 2%.

15) The choice was thus made to compensate for the residual previously derived, in other words the gap of -0.3% between the prediction obtained and the figure for private consumption that was finally included in the accounts for Q2, deducting this from the prediction for Q3.

## Investment

Infra-annual data for investment are difficult to predict using short-term economic information. Being subject to frequent and substantial revisions, the short-term economic significance of quarter-to-quarter variations in the figures is sometimes difficult to discern, especially as the information used by the national accounts statisticians to estimate them is often limited.

The most effective and most economical approach consists of writing an equation of the accelerator type using the link between GDP and investment. This is supplemented by survey data regarding business leaders' assessments of the adequacy of productive capacity (*capa*).

This balance of opinion corresponds to the question, "in the light of your current order book and the probable evolution of new orders over the next twelve months, do you consider that your present productive capacity is sufficient?". A positive response is therefore, a priori, unfavourable to investment. This is indeed what emerges in the equation, since *capa* carries a negative coefficient.

This question is therefore "inverted" compared to that concerning the CUR<sup>(16)</sup>, which is in fact more quantitative in nature, i.e., "by what percentage could you increase your output by hiring additional staff?". This reply is then re-processed and what is known as CUR then corresponds practically to the inverse of the initial percentage, so that a high CUR indicates a greater propensity to invest.

In addition, the bi-annual survey of investment addressed to business leaders in manufacturing can serve as a very crude check on the annual rate of investment growth. For the year 2000, this indicates growth in manufacturing investment of the order of 5% compared with 1999 in

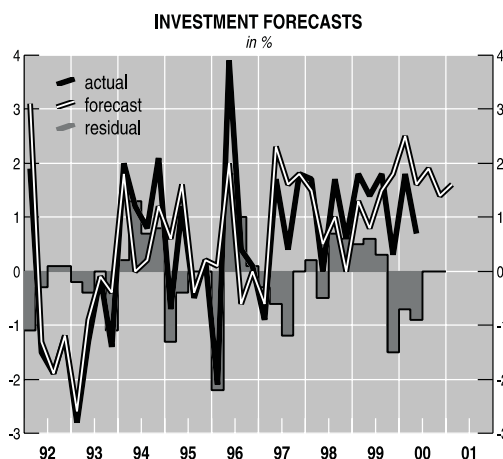
the euro zone. However, since the survey dates back only to 1995, its direct use in the calibration cannot be envisaged.

The accelerator equation finally used is equation 4.

The forecasting error remains substantial (standard deviation of 0.8%), even in the light of the variations occurring in investment. Moreover, the prediction assumes that growth in the current quarter is known and therefore depends on the quality of the GDP prediction previously carried out. Even so, the *capa* variable obtained from the surveys contains substantial predictive power.

The predictions of investment growth estimated in this manner for Q3 and Q4 are 1.9% and 1.1% (for this purpose, GDP growth for the same periods was set at 0.7% and 0.6%). However, given the low degree of precision in the equation, these estimates remain partly indicative. The decision was therefore made to «smooth» this time-pattern somewhat by using figures of the order of 1.6% and 1.2%. Annual growth in investment then comes out at 5.5%.

Assuming GDP growth of 0.6% in Q1 2001, the investment growth predicted by the model for the first half of 2001 would be 1.3%.



### Equation 4

$$\Delta \ln INV_t = -0,01 + 2,39 \Delta \ln GDP_t + 1,47 \Delta \ln GDP_{t-1} - 0,47 \Delta \ln INV_{t-1} - 0,40 \text{capa}_{t-2} + \varepsilon_t$$

[0,00]
[0,36]
[0,55]

[0,17]
[0,19]

$R^2=0,71$  ;  $\sigma=0,85\%$  ;  $DW=1,96$

<sup>16)</sup> It turned out that the capacity utilisation rates (CURs) were much less effective in capturing the short-term evolution in investment than the qualitative judgement of business leaders regarding productive capacity.

## Exports

In attempting to predict exports, one again has the data provided by business surveys in industry, especially the quarterly survey, which includes the series for “tendency in external demand” (*ext\_dem*). The use of this series turns out in fact to be very effective in predicting exports.

It should be noted that the series, being built up on the basis of aggregate national data<sup>(17)</sup>, includes the demand from countries in the zone addressed to all the other countries. It is thus said to include “intra-zone” trade. However, the same is true for the exports (and imports) as shown in the quarterly accounts published by Eurostat. Being obtained as the sum of exports of the member countries, these figures are also subject to the same type of double counting, which reflects a shortcoming in the concept used (an export from France to Germany, which is also shown as an import by Germany from France, is not an external flow for the euro zone taken as a whole). This means that the two series are mutually consistent.

The calibration obtained corresponds to equation 5.

Forecasting errors seem to have a slight cyclical content. However, the so-called “portmanteau” test leads to the conclusion that these errors are not cyclical to a significant extent.

Given the wide variations in the export series, the forecasting error for this equation is in fact limited. As the graph shows, this calibration therefore turned out to be satisfactory, both as concerns the orders of magnitude and for the prediction of turning points.

This indicates firm growth in exports for Q3 2000, at a rate of 2.1%. As they stand, the survey data seem to indicate that exports from the zone stood up well in Q3 2000.

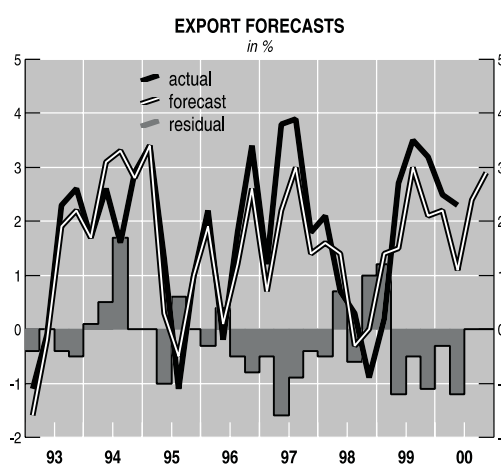
The customs data available indicate that this figure might have to be raised slightly, to 2.4%.

The forecasting time-horizon is limited by the use of coincident business surveys so that a similar approach to the one we adopted for GDP would be necessary in order to go further. For the prediction of the Q4 figure, if one opts to stabilise the judgement regarding foreign demand at its October level, the prediction obtained for export growth is 2.8%. This figure seems high in the light of the current slowdown in world demand, at a time when the beneficial effects of the fall in the euro seem likely to start to fade. The assumption of stabilisation of the balance of opinion regarding foreign trade could therefore be erroneous.

## Conclusion

All the calibrations provide us with indications regarding the evolution of the national accounts for H2 2000, even though the figures for Q3 are not yet known. They thus make it possible to draw up a short-term economic analysis for H2 2000.

With growth predicted to be slightly below 3% at annualised rate, the slowdown expected in Q3 is confirmed, although it still remains modest. The quarterly growth figure, estimated to be 0.7%, would tend to show that growth is for the moment standing up well to the oil shock. This shock is in fact being felt in household consumption, which is showing a distinct fall in its growth rate to



### Equation 5

$$\Delta Export_t = 0,03 - 0,39\Delta Export_{t-1} - 0,79\Delta Export_{t-2} - 0,29\Delta Export_{t-4} + 2,26ext\_dem_t - 0,69ext\_dem_{t-3} + \epsilon_t$$

[0,00] [0,16] [0,15] [0,14]  
[0,31] [0,21]

$$R^2=0,73 ; \sigma=0,87\% ; DW=1,8 ; N(obs)=36 ; d^{\circ}(freedom)=31$$

<sup>17)</sup> As previously, the balance for “tendency in foreign demand” is re-processed from national data in the case of Germany, Italy and France, and from data provided by the Commission for other countries in the region, then aggregated with weightings corresponding to the share of exports in the total for the zone.



0.4% (from 0.8%), but this weakness seems to be compensated by the strength of investment, expected to rise by roughly 1.7% in Q3. Moreover, exports also seem to have remained lively, showing growth of almost 2.4% in Q3\*. The continuing robust domestic demand, combined with the strength of exports, also point to a continuing firm growth rate for imports.

In Q4, growth in the euro zone could suffer from the deterioration in the international environment that has been seen since Q2. With the beneficial effects of the fall in the euro on price-competitiveness gradually waning, and under the

impact of the levelling off in world demand, exports can be expected to slow down, even if this tendency is not yet visible in the survey data available for our calibration. Growth in domestic demand, meanwhile, is likely to stabilise, with a slight shift in favour of household consumption (0.6%), whereas growth in investment, although still lively, will slow down somewhat (to around 1.2%).

While business surveys therefore make it possible to describe and quantify recent macroeconomic evolutions, experience shows that they are less useful, being more "short-sighted", for the six-month

time-horizon. Predictions for H1 2001 therefore rely to some extent on the use of other instruments from the global macroeconomic scenario, possibly supplemented by behavioural equations. ■

**\*NB:**

*The results for Q3 were published by Eurostat on 12 December 2000. The GDP growth rate is 0.7% and the consumption growth rate 0.4%, in conformity with the predictions shown in this article. Investment was below the prediction (1.3% instead of 1.6%), and exports above (3% instead of 2.4%).*