

Flow of conjunctural information and forecast of euro area economic activity*

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Abstract

Euro area GDP and components are nowcast and forecast one quarter ahead. Based on a dataset of 163 series comprising the relevant monthly indicators, simple bridge equations with one explanatory variable are estimated for each. The individual forecasts generated by each equation are then pooled, using six weighting schemes including Bayesian ones.

To take into consideration the release calendar of each indicator, six forecasts are compiled independently during the quarter, each based on different information sets: different indicators, different individual equations and finally different weights to aggregate information.

The information content of the various blocks of information at different points in time for each GDP component is then discussed. It appears that taking into account the information flow results in significant changes in the weight allocated to each block of information, especially when the first month of hard data becomes available. This conclusion, reached for all the components and most of the weighting scheme, supports and extends the findings of the recent literature.

An out-of-sample forecast comparison exercise is also carried out for each component and GDP directly. The forecast performance is found to vary widely across components. Two weighting schemes are found to outperform the equal weighting scheme in almost all cases. One-quarter ahead, the direct forecast of GDP is found to outperform the bottom-up approach. However, the nowcast resulting in the lowest forecast errors is derived from the bottom-up approach.

Keywords: Large dataset, forecast pooling, weighting scheme, GDP components, out-of-sample forecast performance, bottom-up vs. direct forecast.

JEL classification: C22, C53, E17.

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1 Introduction

The conduct of monetary policy requires the real time assessment of the state of the economy, as well as the projection of its future path. Although in most cases, national accounts provide the main source of information to do so, they are released on a quarterly basis, published with a lag, and subject to substantial revisions. For the euro area, the flash estimate, which informs only about GDP growth, is published around 45 days after the end of the reference quarter, while twenty supplementary days are necessary to get the first estimate of GDP growth and components. Finally, the second estimate which contains more information is released around 105 days after the end of the reference quarter. During these two quarters, from the beginning of the reference quarter to the publication of the second estimate, several indicators will have become available to the policy maker and their synthesis is part of the economist's work.

In this paper, we investigate how to use the flow of conjunctural information in the most efficient way, this being the way that produces the lowest forecast error while making full use of the available information in a consistent and mechanical way. Since the movements of the components underlying GDP growth are key elements to the outlook, both GDP and components are forecast separately. Since the ability to forecast with time series models deteriorates substantially after two quarters (see Darracq Pariès and Maurin, 2008), we focus on the current quarter (nowcast) and the next one. The results are analysed in terms of contribution of the sets of indicators used and in terms of out-of-sample forecast performance.

In the literature, forecasting in a data-rich environment has developed in two main avenues, factor model and forecast pooling. Both methodologies have proved delivering good forecasts and no clear conclusions have been yet reached regarding the issue of the relative empirical performances of each methodology so that investigating the two approaches is still worthwhile. The methodology we use is based on forecast pooling. This enable us to trace easily the impulse given by each indicator to the pooled forecast and to consider the publication lags which are recognised as important issue in real-time forecasting.

Using approaches based on factor models Giannone et al. (2008) as well as Bańbura and Rünstler (2007), show that the differences in publication lags result in changing weights allocated to each block of information. As soft data, defined as surveys data and financial data, lead hard data (defined as data entering the computation of national accounts), they do contain important information especially at the beginning of the quarter. We want to extend this conclusion by looking at GDP components and adopting a forecast pooling approach. There are several reasons why forecast pooling can provide better forecasts than individual forecasts. For instance, when individual forecasts are subject to out-of-sample mean shifts, forecast combinations can offset the instability in the individual forecasts and in effect provide insurance against exogenous deterministic structural breaks. Indeed, the methodology has been found to deliver improved forecast performance in the literature (see, among others Hendry and Clements, 2004).

The methodology enables us to select the indicators used in the first step, when estimating simple equations. In order to analyse the flow of real-time information during each quarter, a sequence of six forecasts is produced, differing in terms of series used, individual equations and weights applied to aggregate the underlying individual forecasts.

Differently from most of the empirical studies on forecast pooling, we use a relatively large number of individual forecasts. Over the relatively short period of time for which euro area data are available, the estimated covariance matrix of the forecast errors is poorly estimated. In

this case, the literature shows that adding more information, either in the form of constraints or in the form of priors as in Bayesian methods, can result in a better forecast than the one derived from the application of optimising procedure (see Min and Zellner, 1993).

Therefore, the large number of individual forecasts are aggregated using six weighting schemes, including Bayesian shrinkage techniques: equal weights, Akaike weights, optimised and constrained weights, weights à la Diebold and Pauly (1990) and weights à la Wright (2003) with two different values for the key parameter. Merging the indicators into type of information, we study how the weights allocated to the blocks of indicator change during the quarter and how the quality of the forecast improves across time. Moreover, a quasi real-time out-of-sample forecast exercise is carried out to compare the performance of the weighting schemes. Interestingly, we show that the forecast performance varies widely depending on the GDP components as the indicators used.

The paper consists of six sections. In the second section, we detail the database and the individual equations as well as the sequencing of information. In the third section, we present the various weighting schemes used to pool the forecasts. In the fourth section, we analyse the information content of each block of indicator across the quarter. In the fifth section, an out-of-sample forecast exercise is carried out and the performance of a GDP forecast based on the aggregation of the component (bottom-up) is compared to that obtained by forecasting directly GDP. The sixth section summarises the main findings and concludes.

2 The pool of equations estimated

Datasets are constructed for euro area Gross domestic product (GDP), private consumption, total investment, exports, imports and inventories.¹ To produce a point forecast, Euro area GDP and components are first regressed on each indicator contained in the associated dataset, one by one.² More information on this step is provided in this section, by detailing the construction of the datasets, justifying the bridge equations estimated, and explaining the sequencing of monthly information during the quarter. The second step, the pooling of individual forecast is considered in the next section.

2.1 The dataset

Monthly indicators of activity in the euro area are collected over the longer time period available up to December 2007. Various sources are used, mainly from the BIS, CPB, Datastream, ECB, European Commission, and Eurostat. Most of the series relates to the euro area: the main components of industrial production (IP), the main producer price indices, monetary and financial data (interest rates, yields, monetary aggregates and loans, stock prices and earnings, nominal bilateral and effective euro exchange rates), employment and labour market series, consumer and retail trade surveys, new passenger car registrations, business and construction surveys, and external trade series. A set of series is also added to take into account the economic activity in the US and the UK, the main world commodities markets and leading indicators or

¹All these series are at market price, chain linked volumes with reference year 2000, seasonally and partly working day adjusted. The official Eurostat classification is as follows: GDP (b1gm), household and NPISH final consumption expenditure (p31_s14_s15), gross fixed capital formation (p51), exports of goods and services (p6), imports of goods and services (p6) and changes in inventories and acquisitions less disposals of valuables (p52_p53).

²For a review on density forecasts, see Hendry and Clements (2004).

world trade.³ The resulting dataset comprises 163 series, with different starting date between January 1985 and January 1995. The series are transformed to ensure that they are stationary. Earning and stock price series are de-trended while the growth rate compared to the previous quarter is used for IP, exchange rate, money growth, loans, labour series and external trade series. Surveys are taken in level.

This core dataset is used for euro area GDP. For each component, a sub-dataset is constructed, by excluding the series that, by construction, are not expected to provide any signal for the component in the short term. These exclusions, which concern a relatively small number of series, cannot be considered as ad hoc judgement as they derive from the nature of the indicator.⁴ The series entailed in the foreign block (activity in the US, in the UK, world price of commodities and surveys of activity on foreign markets) are excluded from the sub-datasets used for private consumption, imports and inventories. Apart from the exchange rate series, the series entailed in the monetary and financial block are excluded from the sub-datasets used for exports, imports and inventories. This concerns earnings, loans, monetary aggregates, and stock prices. Finally, consumer surveys, service surveys, retail trade surveys and construction surveys are excluded from the dataset used to forecast exports. Overall, starting from the dataset of 163 series used for GDP, after this selection process, 149 series are retained for investment, 103 for private consumption, 93 for exports, 114 for imports and 113 for inventories (see Appendix 1 for the detailed list of the series used for each component).

2.2 The selection process to estimate the individual equations

By definition, a monthly indicator is released three times during a quarter. To address the frequency mismatch between quarterly and monthly data, three equations are estimated for each indicator. Each equation is based on a different quarterly series derived from the monthly indicator. The first equation uses information related to each first month of the quarter, $x_{1,t}$, the second one uses the indicator up to the second month, $x_{2,t}$, and the third one uses information for the whole quarter, $x_{3,t}$.⁵ The following generic equation is estimated for each of the monthly series retained in the dataset, with some variants depending on the explanatory variable:

$$y_{t+h} = \theta + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \beta_0 x_{i,t} + \beta_1 x_{3,t-1} + \beta_2 x_{3,t-2} + \varepsilon_t \quad i = \{1, 2, 3\} \quad (1)$$

y_{t+h} is the quarterly variable at quarter $t+h$. In the right hand side, θ is a constant term, $x_{i,t}$ is the i^{th} record of the monthly indicator x in the quarter t and consistently $x_{3,t-1}$ and $x_{3,t-2}$ are the value taken by x over respectively the previous quarter and the one before.⁶ Finally, ε_t is the equation residual and h is the forecast horizon. Three observations can be made looking at equation (1):

³Those indicators are estimated by the Netherlands Bureau of Economic Policy Analysis and available at the following address, <http://www.cpb.nl/eng/research/sector6/data/trademonitor.html>

⁴Although the results presented in the paper are robust to the implementation of the restrictions, those prevent the forecaster to explain surprising results that would not be used in a detailed conjunctural assessment. In this sense, it is easier to understand why the series are excluded than it would be to understand why they are taken into consideration.

⁵This methodology is implemented by Kitchen and Monaco (2003), who estimate 90 equations, each regressing one monthly indicator on GDP with varying months of information to obtain 3 sequences of 30 forecasts for current-quarter GDP growth.

⁶When the indicator enters the equation in growth rate, it is made made homogeneous to quarterly rates: in the first month, the growth rate is multiplied by 3, and in the second month, it is multiplied by 1.5. This facilitates the comparison of the three values of the β_0 coefficients in equation (1).

First, the equation considered is extremely simple and a more sophisticated equation could be considered, including more than one regressor, and/or non linear forms. Although this would give more degree of freedom and result in better in-sample fit, it is likely that such an equation would perform poorly out-of-sample. Moreover, we do not try to get the best equation, as in this case, it would not make sense to pool it with other equations. By regressing each variable individually, we reduce the problem of over-fitting and poor forecast performance. By using a simple formulation, we increase the probability of getting robust estimations, performing better out-of-sample. Indeed, the simple equation implies a small number of coefficients and therefore enable us to use series available over a short period: service surveys and retail trade for instance, which are available for the euro area since January 1995 only.

Second, the equation has a dynamic structure as it includes lags of both the dependent variable and the indicator. It is usually found that the correlation between surveys and hard data is stronger at a lower frequency. Moreover, there is no reason why the relationship between financial data or indicators of the foreign environment and hard data should be contemporaneous. In those cases, while for the sake of robustness, a maximum delay of two quarters is imposed, the leading properties of the indicators are estimated by allowing β_1 and β_2 to be different from 0.

Third, we do not forecast the indicator (when $h > 0$). It is reasonable to think that, at least for the small number of observation used in each equation, a direct forecast gives better results than an indirect one. In the literature, the separate forecasting of the variables in the right hand side is not generally found to improve the forecast performance.⁷

Although equation (1) is the generic form estimated for each series in the first step, the final equations used to generate the individual forecasts can differ from one indicator to the other, as a selection process is carried out at the level of each equation:

In the case of hard data, the indicator enters without lag, i.e. $\beta_1 = 0$ and $\beta_2 = 0$.⁸ This reflects the fact that by definition, those series enter the computation of GDP and components contemporaneously. The forecast resulting from the equation is excluded from the pool of equations when the sign of the relationship is not positive, as one would expect by construction. As the weights computed below are by construction positive, this sign restriction also holds for the contribution of the indicator to the pooled forecast.

For each indicator, on top of equation (1), two others equations are estimated, with no lags of order two ($\beta_2=0$ and $\alpha_2=0$), and with no lags of order one ($\beta_1=0$ and $\alpha_1=0$). The lag length retained in the final equation is selected using the AIC criteria.

In equation (1), the dependent variable y_{t+h} is successively the quarterly growth of real GDP, private consumption, investment, exports and imports and the contribution of inventories to real GDP growth. For each, chained linked series are available from the first quarter of 1995 onwards. Before this date, the series are prolonged using the AWM database. The OLS regressions are run over the period starting with the first observation of the indicator after 1993Q1 and ending in 2001Q4, a period which contains at most 36 observations.⁹ The values recorded after 2002Q1 are kept out of the estimation period for the purpose of the out-of-sample forecast exercise. The estimated equations are shown in Appendix 2 for each component and

⁷For an example on the euro area, see Rünstler and Sédillot (2003), among others, for the euro area. The authors propose a method to combine a quarterly univariate bridge equation for GDP with time-series models that forecast missing observations of monthly indicators using satellite models.

⁸This includes the component of industrial production, external trade series, retail trade and passenger car registrations.

⁹The AWM database is available at <http://www.eabcn.org/data/awm/index.htm>. In some cases, the indicator is available over a longer period, for instance up to 1985 in the case of the EC surveys. However, a longer period would increase the likelihood of structural breaks.

in Appendix 3 for GDP. Along with the estimated coefficients and their t-statistics (below the coefficient), the R-squared is reported.¹⁰

2.3 Sequencing information

Depending on their nature, the series are released with a different lag compared to the reference month: for instance, consumer surveys are released at the end of the reference month while industrial production data are released 45 days after. To take into account this diversity in the publication lags, the series incorporated in the dataset are merged into three groups (see Appendix 1 for the precise mapping). The first group of series (*Block 1*) comprises the series released at the end of the month to which they refer, mainly financial data, nominal exchange rate data and consumer and business surveys. In the second group (*Block 2*), the series are released between 15 and 35 days after the reference date. This relatively small group includes monetary and loans data, real exchange rate and passenger car registration and price series. Finally, the series belonging to the third group (*Block 3*) are released with a lag above 35 days. This group includes industrial production data, employment and labour market statistics as well as retail trade and external trade.

Tab. 1: RELEASE CALENDAR AND SEQUENCES OF INFORMATION

Forecast round	Release date	Block 1	Block 2	Block 3
1	End of month 1	B1month 1		
2	End of month 2	B1month 1 and 2	B2month 1	
3	Middle of month 3	-	-	B3month 1
4	End of month 3	B1full quarter	B2month 1 and 2	-
5	Middle of month 4	-	-	B3month 1 and 2
6	End of month 5	-	B2full quarter	-

Based on the three blocks, Table 1 shows that each quarter, six information sets can be used to produce forecasts before the publication of the GDP flash. The *first* information set comprises survey data and financial data referring only to the first month of the quarter. The *second* bears on the same set of series up to the second month of the quarter as well as money and loans data for the first month. The *third* set includes series from the three blocks, adding to the second information set the first month of observation of data from the third block (mainly IP and trade data). The *fourth* information set contains observations over the full quarter for data belonging to the first block, over the first two months for series belonging to the second block and the same information for data belonging to the third block. The *fifth* information set changes only data of the third block, substituting the first two months of observation to the first month. Finally, the *sixth* information set substitutes the full quarter observations of data from the second block to the observation from the first two months. As shown in Table 1, the third month of data from the third block is not considered. This is released after the flash estimate of euro area GDP.

Matching the equations presented in Appendix 2 and 3 with the sequence of information, six sets of individual forecasts can be produced each quarter for GDP and components, based on different series and/or different equations. Consequently, the dimension of each information set, the number of indicators used increases during the quarter, differs across component

¹⁰The results are shown only for the nowcast, when $h=0$ in equation (1). However, different equations are used for $h=1$.

and in the course of the quarter, partly reflecting the differences in the size of the original dataset, partly reflecting the selection process. As shown in Table 2, more indicators are retained for GDP and investment than for private consumption, trade flows and inventories. In all cases, the number of indicators, and therefore of individual forecasts pooled, increases by between one third and one half from the first to the sixth forecast.

Tab. 2: NUMBERS OF FORECAST RETAINED (H=0)

Forecast round	1	2	3	4	5	6
Total investment	88	100	147	147	147	147
Private consumption	72	87	107	107	107	107
Total exports	47	55	92	92	92	92
Total imports	72	79	104	104	104	104
Inventories	66	69	95	95	96	96
Real GDP	88	110	149	149	149	149

3 Pooling the individual forecasts

The pioneering work on forecast pooling goes back to Bates and Granger (1969) and since then it has been considerably extended (for a review, see Timmermann, 2006). Basically, forecast pooling implements the following formula:

$$\hat{y}_{t,t+h} = \sum_{i=1}^n \omega_{i,h} f_{i,t,t+h} \quad \text{with} \quad \sum_{i=1}^n \omega_{i,h} = 1 \quad (2)$$

Where $\hat{y}_{t,t+h}$ is the combined forecast and $w_{i,h}$ the weight assigned to $f_{i,t,t+h}$, the forecast based on the i th individual equation described. Although they could be envisaged, weights moving across time are not considered in such equation. The problem of forecast pooling is to estimate the weights, $w_{i,h}$, so as to minimise a penalty function depending on the forecast errors. In our case, the penalty function is simply the root mean square forecast error and as shown by Granger and Ramanathan (1984), the in-sample solution to this problem is the OLS constrained estimator. The optimal weights correspond to the linear projection of y on the forecast space with no constant (so that the underlying forecast have to be unbiased) and with coefficients summing to one. They can be computed from the variance-covariance matrix of the forecast errors Ω , using the optimisation program given by equation (3) where 1_n is a column vector of one:

$$\text{Min } \omega' \Omega \omega \quad \text{with} \quad 1_n' \omega = 1 \quad (3)$$

The first order condition associated with the optimisation program states that, at the optimum, each individual forecast has the same marginal contribution to the variance of the overall forecast. Suppose f_i tends to have higher covariances with other forecast, that is, the i th row of covariance matrix of forecast errors tends to have larger elements than other rows. Its marginal contribution to the overall forecast variance, will be larger than that of other individual forecasts.¹¹ To achieve optimality, its weight needs to be reduced and conversely those of the other forecasts need to be increased. Forecast i may even have a negative weight if its covariance

¹¹ $\sum_{j=1}^n \omega_j \Omega(i, j)$ is the marginal contribution of forecast i to the overall variance.

with other forecast is sufficiently high. Hence, a forecast tends to receive a negative weight in the global forecast if it has higher variance and higher covariances with other forecasts. A large collinearity between forecasts can generate weights well below 0 and well above one. The optimal individual weights, ω_i , are given by equation (4) where \mathbf{I}_n is an identity matrix of dimension n and $\hat{\sigma}_{sum}^2$ is the forecast error variance.

$$\omega_i = \Omega^{-1} \mathbf{1}_n \left(\mathbf{1}'_n \Omega^{-1} \mathbf{1}_n \right)^{-1} \quad \hat{\sigma}_{sum}^2 = \left(\mathbf{I}_n \Omega^{-1} \mathbf{I}_n \right)^{-1} \quad (4)$$

Although, by construction, this method gives the forecast with the smallest squared error in the class of linear aggregators, most of the empirical studies find that it performs poorly out-of-sample (see among other, Min and Zellner, 1993). Indeed, Diebold and Pauly (1990) show that a small sample size relative to the number of forecasts can distort the results of combination. When n is large, a strong collinearity among competing forecasts cannot be ruled out and adding more structure to the program can result in a better forecast so that the determination of the best weighting scheme is an empirical issue. In what follows, the individual forecasts are pooled using 6 weighting schemes: equal weights, Akaike weights, optimised constrained weights, and shrunk weights, using priors à la Diebold and Pauly, or à la Wright with two different values for the key parameter.

3.1 Equal weights

Forecast combinations with equal weights are often reviewed in the literature and used as benchmark for different combination schemes. Theoretically, the efficiency of this method depends on two conditions: first, that the forecast error variances are relatively similar, and second, that the correlations between forecast errors are in the same range across pairs. Although these conditions are probably too restrictive to hold, they are often assumed without being tested. Indeed, the use of equal weights can be explained by ease of computation and the simplicity to estimate the contribution of each variable to the overall forecast (see Stock and Watson, 2006; or Marcellino, 2004).

In the case at hand, the conditions for the optimality of equal weights are clearly not met. First, as shown in Appendix 2, for each component, the R-squared of the regressions vary in a wide range, and the same can be assumed for the variance of the out-of-sample forecast errors. Second, some regressors co-move more strongly together so that the forecast error covariance varies substantially from one group of regressors to the other. For instance, given the correlation between the components of surveys, the forecast errors resulting from the equations using each of their component co-move more strongly among themselves than with those of the models incorporating financial data. The fact that data are structured by block may lead to large differences in the covariance between pairs of series.

However, while equal weights may be under efficient in theory, the estimation of weights may not be efficient in practice, when using small samples. Since the in-sample covariance matrix is poorly estimated when the number of individual forecasts is large compared to the time span, ignoring the correlation between the forecast errors may result in a better forecast.¹²

3.2 Akaike Information Criteria weights

While ignoring the covariance between forecast errors, the set of weights based on Akaike criteria takes into account the differences in the variance of forecast errors. *Ceteris paribus*,

¹²To take an example, 190 parameters are necessary to estimate the variance covariance matrix of forecast error of 20 equations, and when using five years of quarterly data, 400 observations are available, slightly more than twice the number of coefficients to estimate.

more weight is given to the model which has the lowest forecast error variance. Moreover, a penalty is imposed on the number of estimated parameters. We refer to this weighting scheme as the Akaike Information Criteria (AIC):

$$AIC = -2l/T + 2k/T \quad (5)$$

Where l is the estimated likelihood, T the number of observations and k the number of estimated parameters. AIC is an asymptotic measure of two times the likelihood in absolute terms. Atkinson (1980) shows that information theoretic weights perform well, especially for the long run, as this criteria is an unbiased estimation of the difference between the KL distance of two models:¹³

$$\Delta_i = AIC_i - AIC_{\min}$$

where AIC_i refers to the estimation i and AIC_{\min} denotes the minimum of all estimated AIC values in the set of pooled equations. Hence, the difference can be interpreted as the loss in information from the use of model i compared to the best model. From differences in AIC to weights, the value are simply re-scaled in order to sum to one:

$$\omega_i = \frac{\exp(-\gamma \cdot \Delta_i)}{\sum_{r=1}^n \exp(-\gamma \cdot \Delta_r)} \quad (6)$$

The weights are all positive and the model with the lowest AIC obtains the highest weight. Taking $\gamma = 0.5$, the ratio expresses the relative likelihood of model i compared to the best model (see Kapetanios et al., 2008). It can be interpreted as the probability that model i is in fact the best model for the data.

For an univariate model, it can be shown that the Akaike criteria is made of two parts. A part proportionate to the standard deviation of the residuals, to the R-squared therefore, and a penalty function depending on the number of estimated parameters. As in the equations estimated, the number of coefficients varies in a narrow range, the AIC criteria is close to a weighting scheme based on R-squared.¹⁴ For the same reason, using weights based on the Schwarz information criteria does not change substantially the results.

3.3 Variance-covariance approach and optimised constrained weights

As shown by Jagannathan and Ma (2003), adding positivity constraint to the optimisation problem given by equation (3) can improve the out-of-sample performance by correcting for abnormally large covariance errors. This weighting scheme has the advantage of incorporating the information given by the variance covariance matrix of the in-sample forecast errors.

The authors show that solving the constrained optimisation program (3) with positivity constraints on the weights, ω , is equivalent to solving the optimisation program (7) without those constraints and based on $\tilde{\Omega}$.

$$\text{Min } \omega' \tilde{\Omega} \omega \quad \tilde{\Omega} = \Omega - (\lambda 1'_n + 1_n \lambda') \quad (7)$$

Whenever the nonnegativity constraint is binding for forecast i , the associated Lagrange multiplier, λ_i , is positive. In this case, the covariance of the forecast i with the forecasts j is

¹³The Kullback-Leibler (KL) distance is used for selecting from different models taking into account the information gain.

¹⁴Comparing M_1 and M_2 , two models with the same number of parameter: $\Delta AIC = \hat{V}(y)(\ln(1 - R_1^2) - \ln(1 - R_2^2))$, so that $\omega_1/\omega_2 = (1 - R_{M_2}^2)/(1 - R_{M_1}^2)$, where R_i^2 and ω_i are respectively the R-squared and the weight of model i .

reduced by $\lambda_i + \lambda_j$ and its variance is reduced by $2\lambda_i$. The new estimate of the covariance matrix is constructed by shrinking the large covariances that would otherwise imply negative weights towards the average covariance. In cases where the largest covariance estimates are caused by large estimation errors, the shrinkage reduces the out-of-sample forecast error.

3.4 Bayesian weights

The problem of finding the optimal weights can also be cast in a Bayesian framework (see Min and Zellner, 1993) and recently, Bayesian methods have been widely used in the literature to combine forecasts. Assume the economist has a prior belief for the probability that among n models, i is the right one, $p(M_i)$. After observation of the data, $p(M_i/D)$ is updated. The posterior probability that the model i is the right one is computed using the Bayes theorem:

$$p(M_i/D) = \frac{p(D/M_i) \cdot p(M_i)}{\sum_{j=1}^n p(D/M_j) \cdot p(M_j)} \quad \text{with} \quad p(D/M_i) = \int p(D/\theta, M_i) p(\theta/M_i) d\theta \quad (8)$$

Where $p(D/M_i)$ is the marginal likelihood of the model i , $p(\theta/M_i)$ is the prior density of the parameter vector in the model and $p(D/\theta, M_i)$ is the likelihood of model i . The posterior probabilities can be used to weight the individual forecasts, $\omega_i \propto p(M_i/D)$. In the Bayesian context, the weights can be computed once the model prior, $p(M_i)$ and the parameter priors, $p(\theta/M_i)$, have been specified.

This approach permits the integration of prior information into the estimation of the weights. A convex combination of least-squares and equal weights can be obtained by shrinking towards equal weights. Large deviations of the estimated coefficients in the covariance matrix and hence positive and negative errors can be compensated, while the weights are not forced to be equal.

For the following analysis, equation (2) can be written in the form of a standard linear multivariate regression model (where h is the forecast horizon):

$$\hat{y} = f \cdot \omega_h + \varepsilon \quad \text{with} \quad \varepsilon \sim N(0, \sigma_h^2 I) \quad (9)$$

Under the assumption of a standard normal-gamma conjugate prior for ω_h and σ_h^2 , where $\sigma_h^2 \sim G(s_h^2, v_h)$ and $\omega_h/\sigma_h \sim N(\omega_h, \Phi)$, one gets the posterior probability density function of ω_h and σ_h (see Zellner, 1971). From it, one can show that the marginal posterior of ω_h is a multivariate Student distribution and the conditional posterior is

$$p(\omega_h/\sigma_h, f) \propto \left[1 + \frac{(\omega_h - \bar{\omega}_h)' s_1^{-2} (\Phi + f' f) (\omega_h - \bar{\omega}_h)}{T + v_h} \right]^{-(n+T+v_h)/2} \quad (10)$$

$$\bar{\omega}_h = (\Phi + f' f)^{-1} (\Phi \omega_0 + f' f \omega^{ols}) \quad (11)$$

Where $\bar{\omega}_h$ is the mean vector of ω_h , ω^{ols} are the weights derived from OLS ($\omega^{ols} = (f' f)^{-1} f' y$), ω_0 is the vector of equal weights, $1/n$, and v_h is the degree of freedom, $n - k$ (k is the number of estimated coefficients). Assuming a g-prior for Φ , $\Phi = g \cdot f' f$, with $g > 0$, equation (11) can be simplified and the mean posterior weight can be expressed as:

$$\bar{\omega}_h = \omega_0 + \frac{\omega^{ols} - \omega_0}{1 + g} \quad (12)$$

This formula expresses $\bar{\omega}_h$ as the OLS estimate shrunk towards the uniform prior. The smaller is g , the larger is the weight given to the data and therefore to the OLS estimation. The computation of the weights requires the estimation of g . We limit the estimation to the two cases which have retained more attention in the literature, cases assuming uninformative priors for the models (equal weights, $p(M_i) = 1/n$): the case envisaged by Diebold and Pauly (1990) and the case presented by Wright (2003).

Diebold and Pauly (1990)

To compute the g prior estimator in a closed form, Diebold and Pauly (1990) consider forecast weights which depend on the sample size relative to the number of cross-sectional models to be combined. Assuming: $\Phi = \tau^2 (f'f)^{-1}$, substituting in equation (11) the estimated variance of the forecast error to σ^2 , and assuming a certain value for $\hat{\tau}^2$ shown in equation (13), one can show that g in the Bayes rule given by equation (12) is equal to σ^2/τ^2 . Using the following estimates for $\hat{\tau}^2$ and $\hat{\sigma}^2$, the weights can be computed:

$$\hat{\sigma}^2 = \frac{(y - f.\omega^{ols})'(y - f.\omega^{ols})}{T} \quad \text{and} \quad \hat{\tau}^2 = \frac{(\omega^{ols} - \omega_0)'(\omega^{ols} - \omega_0)}{tr(f'f)^{-1}} \quad (13)$$

Wright (2003)

The author assumes an improper prior for σ^2 which is proportional to $1/\sigma^2$ and a prior distribution of ω_h/σ_h normal and centered around zero, the case where the weights are shrunk towards zero, the case of no predictability.¹⁵ It can be shown (see Zellner, 1971) that

$$\omega_h \propto (1 + \phi)^{-n/2} . S^{-T+1} \quad \text{with} \quad S^2 = y'y - y\hat{y}^{ols} \frac{\phi}{1 + \phi} \quad \text{and} \quad \hat{y}^{ols} = f.\omega^{ols'}$$

The shrinkage, g , is governed by ϕ , which controls the relative weights of data and prior when computing the posterior. When ϕ is zero, $p(D/M_i)$ is equal for all models so that the posterior probability of each model is equal to the prior probability. More generally, a small value means more shrinkage. Conversely, the larger is ϕ , the more we move from the model priors following what is given by the data, making the -uninformative - prior more informative.

4 How do the releases change the weight allocated to individual information?

For horizons h varying from 0 to 1 and for the whole sequence of 6 forecasts generated during the quarter, the weights are computed using the various schemes exposed, for euro area GDP and its components. In case where an estimate of the covariance matrix of errors is needed, the in-sample forecasts generated over the period 1998Q1-2001Q4 are used.¹⁶ Following Kapetanios et al. (2008), we use $\phi = 20$ and $\phi = 2$ in the estimations of the Wright weights. In each equation, only one explanatory variable is included as well as sometimes the lagged explained variable. In this case, the weight given to an equation also indicates the importance of the signal associated to the indicator entailed in the equation. Since the indicators are too numerous to be analysed separately, we group them into four groups depending on their nature: (i) financial

¹⁵ $p(\omega_h/\sigma_h, f) \sim N(0, \phi\sigma_h^2(f'f)^{-1})$. The author also introduces a geometric autocorrelation in the residuals of equation 9, $cov(\varepsilon_t, \varepsilon_{t-j}) = \sigma^2 \frac{h-j}{h}$, $j \leq h-1$.

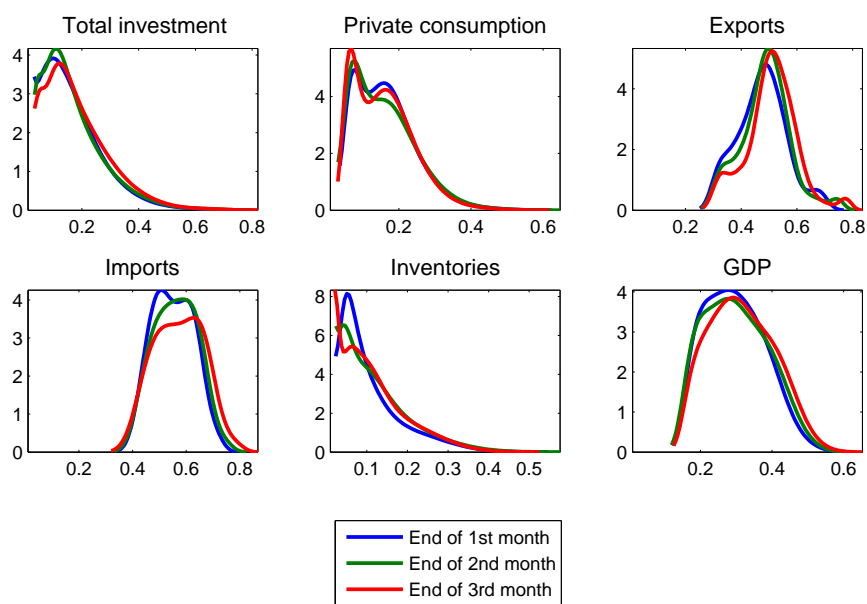
¹⁶As the residuals from all the equations are necessary to compute the covariance matrix, the shortest time series used to generate an individual forecast is binding.

variables and foreign environment, (ii) consumer and service surveys, retail trade and prices, (iii) business and construction survey, (iv) industrial production, orders, labour and external trade. The sum of the individual weights of the series belonging to each block of information represents the contribution of the block to the pooled forecast. On top of those four block, the weight given to the lagged variable is also considered by dividing the weight given to the equation into the contribution of the indicator and of the lagged variable proportionately to the R-square obtained with and without the lagged variable.

The weights of each block are shown in Figure 2 to Figure 7 for the nowcasts of GDP and the components. The bars which sum to one indicate the division of the weight into the five blocks considered, over the six forecast rounds which are represented on the horizontal axis.

Overall, the figures show that the weights depend on the component, the weighting procedure and the sequence of estimation. Looking at the underlying individual equations, it appears that the changes experienced in the weights across the six forecasts are mainly explained by the availability of the indicator and not due to a change in the performance of a forecast obtained using it. Figure 1 plots the R-squared distributions of the individual equations for GDP and components. Although from the first month to the third month, the distributions tend to shift slightly towards the right, where the R-squared are higher, the shift is relatively minor so that the informational content of each indicator increases slightly. Moreover, for each indicator, the dynamic structure of the equation as well as the coefficients appear remarkably stable in the course of the quarter, with little change in their significance ratio either (see Appendix 2 and 3).

Fig. 1: SUCCESSIVE R-SQUARED DISTRIBUTIONS OF INDIVIDUAL EQUATIONS



Note: A kernel smoothing method is applied over the interval $[0,1]$ to estimate the distribution.

Equal weights, Akaike weights and Diebold and Pauly weights give relatively similar results. Each of the two Wright weights, while different, are closer to each other than from the rest of the weights obtained, with the Wright(20) scheme concentrating more the information. The concentration of the weights is much stronger when the optimised constrained criteria is

used. In this case, one or two blocks explain more than two-third of the whole forecast. Moreover, the weights differ substantially from one round to the other. This can be explained by the fact that the implementation of this method reduces sharply the number of individual forecasts retained, less than 10 in most cases, well below the number of indicators retained in the other methods.¹⁷

In the cases of *inventories*, *private consumption* and *investment*, the lagged dependent variable has a minor impact on the pooled forecast. This impact is larger in the case of GDP and even more in the case of trade flows. It amounts to between one-third and one-half in the case of imports. Looking at the individual equations, it appears that the coefficient on the lagged dependent variable is negative in most cases.

The large changes in the allocation of weights appear in the third round and to a lesser extent in the fifth one in the cases of private consumption and investment. This coincides with the incorporation of respectively the first and the second month of hard data (industrial production and external trade series). The observation that the change is less pronounced in the fifth round can be explained by the fact that, abstracting from revisions, two thirds of the quarterly growth rate of a monthly series is known when its first observation in the quarter is released.

Interestingly, forecasting *private consumption* requires giving more weight to the information conveyed by soft data (surveys, financial variables and international environment) than forecasting investment. For *investment*, the most relevant indications are given by the business surveys on the one hand and financial variables and the external environment on the other hand, two blocks which have roughly the same weight at the beginning of the quarter. The availability of hard data in the third round (IP, orders and labour) results in a decline of 10 to 20 pp in the weight of business surveys, while the weight of financial variables and international environment remains stable.

In the case of *private consumption*, business surveys, financial variables and international environment appear relatively less important while the weight of consumer and retail trade surveys appears larger. Indeed, the individual equations with the highest R-squared are obtained with the equations including consumer and service surveys in the case of *private consumption* and industry and construction surveys in the case of *investment*.¹⁸ Looking into details, while the consumer confidence indicator as well as the assessment of the financial situation are confirmed as being relatively good indicators of private consumption, with R-squared above 20%, the performance of passenger car registrations appear to be weak (see Appendix 2).

For *inventories*, not surprisingly, the best equations are given by the questions on stock assessment entailed in the business surveys followed by the assessment on order books. For these indicators, R-square above 20% are obtained from the individual equations, for all manufacturing goods as well as each of the three main economic categories.

For *exports*, the lagged dependent variable contributes up to 35% of the forecast at the beginning of the quarter, a weight that declines to less than 20% in the sixth forecast. The block IP, orders, labour and trade plays a relatively small role, mainly explained by external trade data which give the best indications, especially extra exports. The block business surveys provides important indications as it contains surveys on export order books. The block financial variables and foreign environment plays also an important role in the forecast, as it includes exchange rates and the economic situation in the US and the UK. In the cases of Akaike and Wright weighting schemes, the first and second month of hard data result in a significant in-

¹⁷In the case of optimised weights without positivity constraint (derived from OLS), the weights vary in a wide range, much outside the $[0, 1]$ bound.

¹⁸The high performance of construction surveys in forecasting investment can be explained by the fact that construction investment accounts for roughly one-half of euro area investment.

Fig. 2: INVESTMENT: WEIGHTS ALLOCATED TO EACH BLOCK

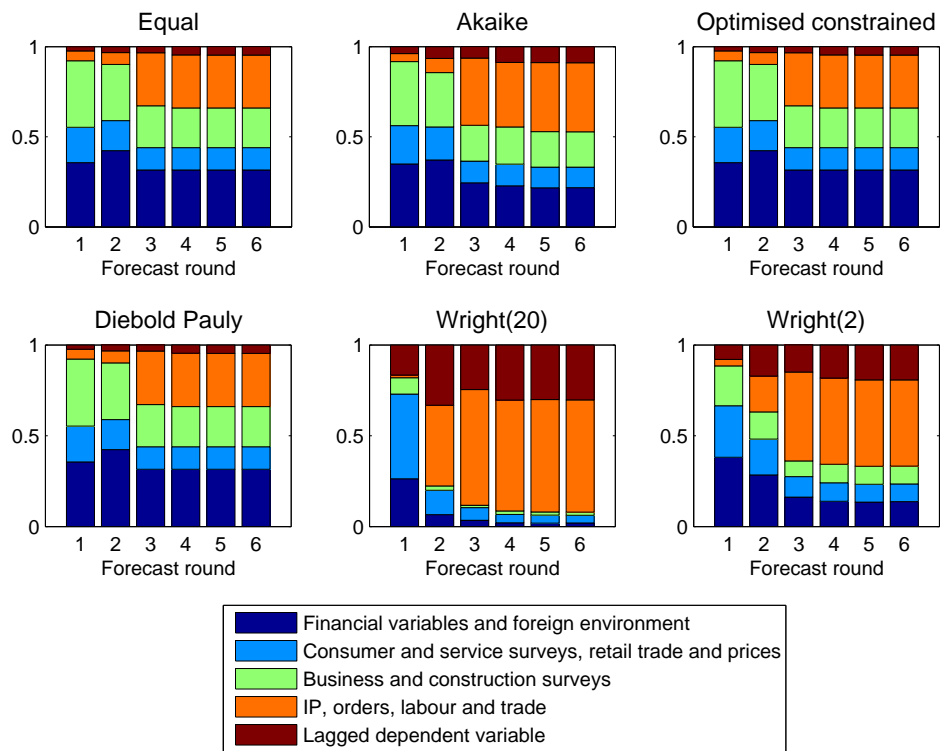


Fig. 3: PRIVATE CONSUMPTION: WEIGHTS ALLOCATED TO EACH BLOCK

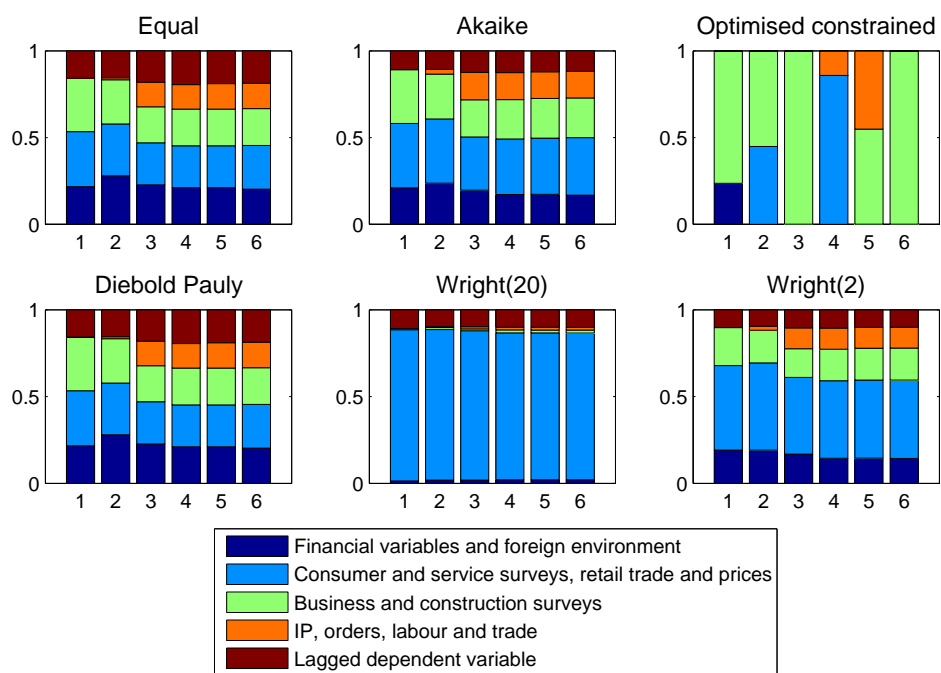
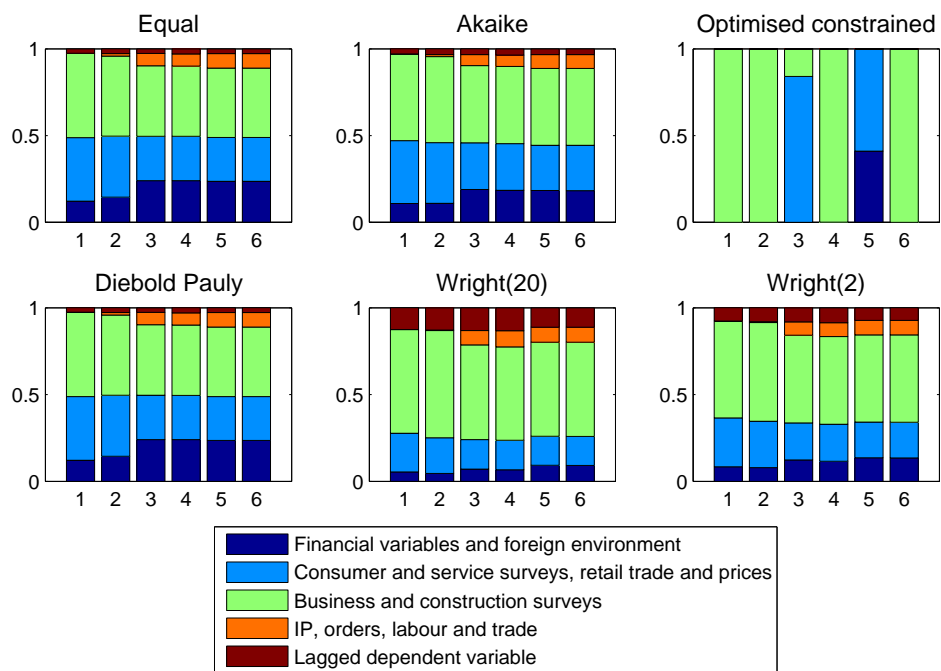


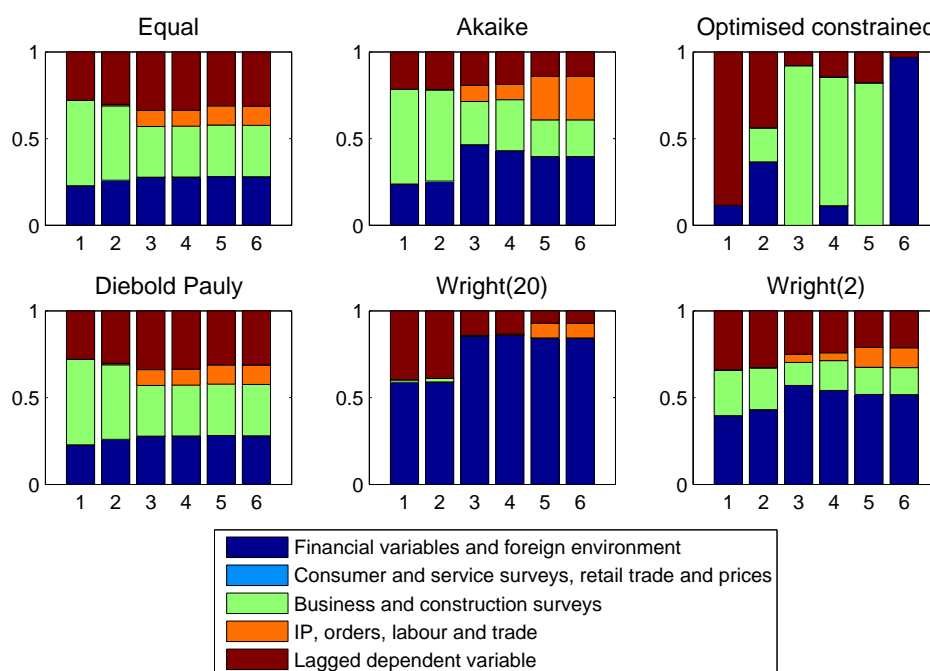
Fig. 4: INVENTORIES: WEIGHTS ALLOCATED TO EACH BLOCK



crease in the weight of this block, mainly at the expense of business surveys, which still explain more than one-third of the forecast in the sixth round.

For *imports* too, both the first and the second month of IP, orders, labour and trade data have a large influence. A more detailed analysis shows that this results from external trade series which belong to this group and to a smaller extent from industrial production data. Not surprisingly, the best individual equations are also given by external trade statistics. However, stock assessments from business surveys also give good indications, with the R-squared from the resulting equations being above 50% (see Appendix 2). This may be explained by the strong negative correlation between imports and inventories.

Fig. 5: TOTAL EXPORTS: WEIGHTS ALLOCATED TO EACH BLOCK



Finally, for *GDP*, while all type of indicators provide information, the weight of the lagged variable appears relatively high, around 30% in most of the methods. The weight given to hard data remains below 20% in most of the methods except in the case of Wright(20). Among those series, the best indication is given by the industrial production series which give the highest R-squared (see Appendix 3).

The weight given to business and construction surveys is higher than the weight given to consumer and service surveys. The importance given to financial series remains stable around 20%.

Overall, while implementing a different methodology, we find support for the conclusions reached by Bańbura and Rünstler (2007) on euro area GDP at the level of each component, namely that incorporating the differences in the publication lags modify the weight given to the indicators in the conjunctural assessment during the quarter. Business surveys are especially relevant in the months previous to the publication of hard data. Their weights in the forecast decline during the quarter but remain above 25% for investment and 40% for private

Fig. 6: TOTAL IMPORTS: WEIGHTS ALLOCATED TO EACH BLOCK

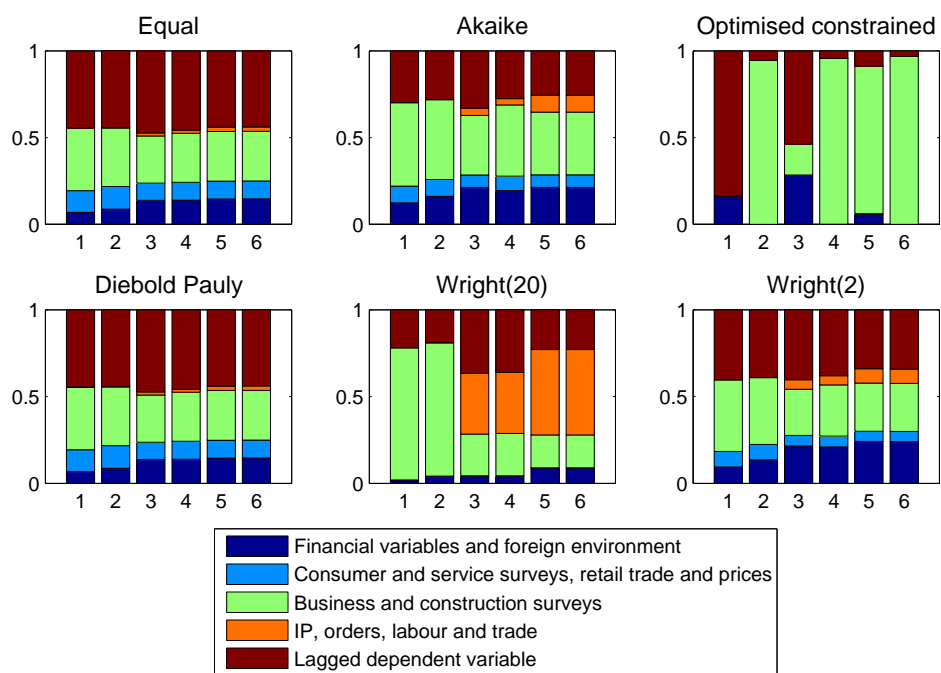
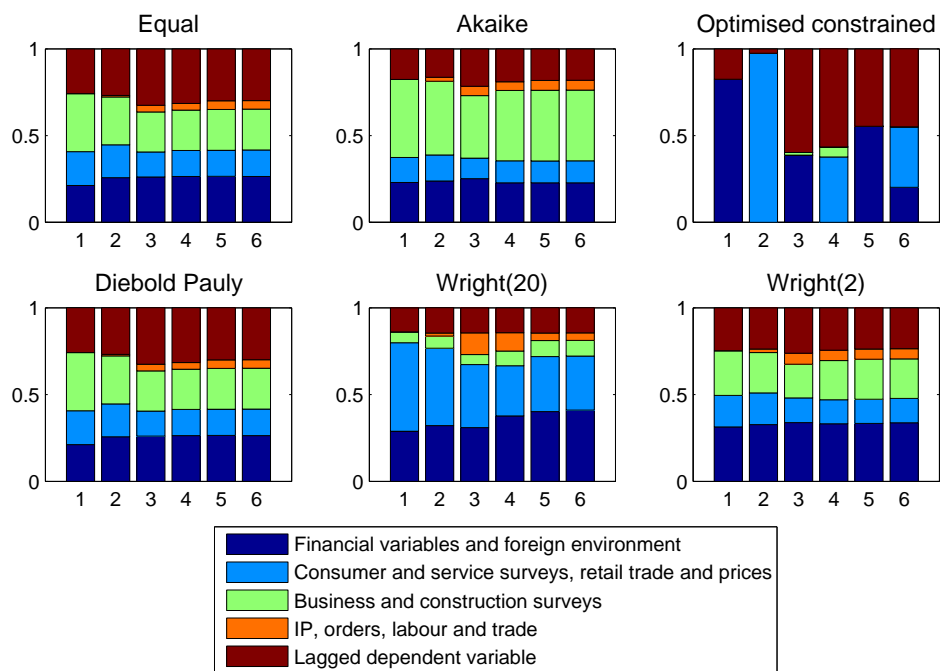


Fig. 7: GDP: WEIGHTS ALLOCATED TO EACH BLOCK



consumption. Our results also show that depending on the component, the most important surveys differ in terms of nature, with business surveys being more important for investment, consumer surveys being more important for private consumption and orders or stock assessment being more important for inventories and imports.

The contribution of the lagged dependent variable to the forecast can remain relatively high in some cases thereby explaining the small gain in forecast performance compared to an autoregressive models noted by Koop and Potter (2003). More generally, the differences observed across methods in terms of weights allocated to the indicators raise the issue of the relative forecast performance of the schemes.

5 Relative performance of weighting schemes out of sample

The empirical literature on forecast combination is usually based on a relatively small number of elementary forecasts. This literature shows that while combining methods typically outperform individual forecasts in the panel, often by a wide margin, simple methods, such as the simple mean, often perform as well as more sophisticated ones. This stylized fact has become the “forecast combining puzzle” since it comes at odds with existent statistical theories which show that it is possible to improve upon simple combination methods.

Since we use a relatively large number of individual forecasts (see Table 2), we want to compare our results with those of the literature based on a small number of forecasts. More precisely, running a pseudo real-time forecast comparison exercise, we want to provide elements to three questions.¹⁹ First, we want to evaluate the relative performance of the weighting schemes out-of-sample, partly to check if equal weights provide a relatively good benchmark. Second, we want to analyse the extent to which adding information during the quarter improves the forecast performance. Finally, we want to assess how the forecast performance varies across component and across forecast horizon.

While the pseudo out-of-sample real-time forecast exercise does not take into consideration the revisions in the underlying data, it can be seen as providing a superior limit to the forecast errors. By construction, a forecast based on model averaging should be less sensitive to data revisions, in the case where these are uncorrelated noise.²⁰ Moreover, in a proper real-time forecast, the elementary equations would be estimated over the full period and updated each quarter, with new coefficients, new elementary equations, and hence, new weights.

As mentioned above, the sample is divided into two sub-samples, enabling us to perform an out-of-sample forecast exercise. The first sub-sample includes the observations available until 2001Q4. It is used to fix the specification, i.e. to specify the individual equations and to estimate the weights. The second sub-sample which covers the period 2002Q1 to 2007Q4 is used to generate the forecasts based on the fixed specifications adopted and to compute the forecast errors. Over this period, six sequences of out-of-sample forecasts of GDP and the main GDP components are computed for each observation, i.e. 24 forecasts of quarterly increases. The forecast performances are then compared using two criteria, *RSFE*, the relative squared forecast error with respect to a unconditional mean forecast, and *CORR*, the correlation between the forecast and the observation (see equation (14)).

¹⁹The terminology “pseudo” indicates that the datasets used are truncated versions of the same final dataset so that the revisions are not taken into consideration.

²⁰This is confirmed by Diron (2008) who studies the implications of data revisions for forecasting euro area GDP growth using monthly indicators. After examining the performance of eight bridge equations relating output growth to various macroeconomic, financial, and survey data, the author concludes that the use of revised data does not bias the overall reliability assessment of short-term GDP forecasts and that, in most cases, data revisions contribute less to forecast errors than model misspecification.

$$RSFE = \frac{\sum_{t=t_0}^{t_0+24} (\hat{y}_t(\omega, x) - y_t)^2}{\sum_{t=t_0}^{t_0+24} (y_t - \bar{y})^2} \quad \text{and} \quad CORR = \frac{cov(\hat{y}_t, y_t)}{\sigma_{\hat{y}_t} \sigma_{y_t}} \quad (14)$$

Where \bar{y} , the unconditional mean, is estimated over the same period as the equations, 1993Q1 to 2001Q4. For *RSFE*, a smaller value indicates a better forecast. When it is above one, the unconditional mean provides a better forecast. *CORR* belongs to zero one and a higher value denotes a better forecast.

5.1 Comparison across components

As shown in Tables 3 and 4 for respectively the nowcast and the forecast one quarter ahead, the forecast performance varies widely across components and weighting schemes, and to a lesser extent across forecast rounds.

Starting with the nowcast, in all cases, the forecast performance increases when more data become available. However, consistently with the small improvements observed at the level of each equation, the improvement remains minor in the cases of inventories, private consumption and total investment. It seems quicker and stronger for trade flows, amounting up to 50pp during the quarter.

The bulk of the improvement is achieved between the first and the fourth round, with a relatively strong improvement during the third round. This can be explained by recalling that for most hard data, the first month is released during this round. After the fourth round, the improvement is marginal.

Comparing the results across weighting schemes, the optimised and constrained weights perform worse than all the other methods, and very badly in the cases of private consumption and exports.²¹ More generally, the differences between the weighting schemes are relatively minor in the first forecast round compared to the last one where they reach 25pp in many cases. Two notable exceptions are nonetheless given by the Weight(20) weighting scheme for private consumption and investment. Across the components, the largest differences are given for imports with 15pp in the first round and more than 30pp in the last one, or exports with respectively 14pp and more than 40pp.

The results of Diebold and Pauly weights are almost identical to the equal weights since the shrinkage procedure gives a very small weight to the individual forecasts. Among the other weighting schemes, the benchmark criteria of equal weights tends to perform worse, but to a small extent and not for all the components. This is the case for private consumption and exports in the beginning. The weights based on the information criteria improves the forecast for trade across forecast rounds up to 50%. For GDP, imports, investment and inventories, the best results are given by weights à la Wright (2). In some cases, the results obtained with Wright(20) are much worse. This tends to support the importance of the ϕ parameter in this scheme. In our case, better results are obtained when the results are more shrunk towards the uninformative prior.

The forecast performance varies more across component than across weighting scheme, with relatively better results obtained for trade flows than for investment, while inventories and private consumption appearing to be the most difficult to forecast in the short run. As shown by Figure 1, this mainly reflects the differences in the performance of the underlying indicators. The figure shows that the distribution of R-squared is tilted towards higher values for *imports*, *exports* and *GDP*, and lower R-squared for *private consumption* and *inventories*. For inventories, the forecast performance varies in a very narrow range across methods and rounds

²¹The results obtained by applying the optimised weights, without constraint, are much worse.

and the gain amounts to roughly 10pp compared to a mean forecast. Using more information result in a 20pp improvement in forecast performance for private consumption.

Moving from the nowcast to the forecast one quarter ahead results in a general worsening and an even smaller improvement during the quarter. As for the nowcast, the aggregation based on optimised and constrained weights gives the highest forecast errors. Contrastingly, the relative performance of simple weighting schemes seems to improve as the best performers tend to be the equal weights and the Akaike weights with an increase over 30pp in the forecast performance across the six rounds. This result confirms the long-run gain for AIC weights presented by Kapetanios et al. (2008). The worst outcome is given for inventories, where the best of the six weighting schemes yields an improvement in the forecast performance of less than 5% compared to a mean forecast one quarter ahead.

The right hand side of tables 3 to 4 show the correlation between the forecast and the observation.

As for the forecast performance, the coefficient increases over the forecast rounds. The highest correlation is obtained for the trade flows using Wright weights. However, these weights perform badly for inventories and private consumption. For this component, the correlation remains below 35% and hardly increases across forecasting rounds. For investment, the difference of correlation between the first forecast and the observation reaches almost 20% and for the last sequence peaks 77%. For the other GDP components, the correlation varies in a range of 46% to 83%.

As for the forecast performance, the correlation decreases with the forecast horizon. It remains over 50% only for investment and for trade flows in some cases. For this component, which is the one for which the largest number of equation is used, the correlation varies widely across the weighting schemes.

5.2 Comparing the bottom-up with the direct approach to GDP

In this subsection, we compare the GDP forecasts obtained either directly or through the bottom-up approach. In the former case, GDP is forecast as the components, using the methodology described above. In the bottom-up approach, the GDP forecast is obtained by aggregating the forecast of the main components, computed independently. The growth rate of each component is then weighted by its share in euro area GDP over the period 2002Q1 to 2007Q4: investment (21.1%), private consumption (57.3%), exports (40.8%), imports (-39.4%), inventories being yet computed as a contribution. As no forecast is done for government consumption, the mean average contribution over the period is added to the sum of forecasted contribution.

While providing detailed information of the composition of GDP growth and using relevant information for each component, it is not certain that the bottom-up method yields superior results to the direct one. Indeed, in the literature, the results obtained when comparing bottom-up and direct forecasts, have appeared highly conditional on the dataset. Moreover, differences in the forecasts resulting from the two methods may indicate the uncertainty. The forecasts are compared in Tables 5 for the nowcast and 6 for the forecast one quarter ahead using the same criteria as before.

As for the components, the forecast performance depends on the method used and improves over time. For the nowcast, the largest improvement is obtained with Wright(2) and amounts to 17pp. Overall, the relative performance of the GDP direct forecast is on the lower bound of the results obtained for the components, with relative squared forecast errors lying in a range of 50% to 69% for the nowcast.

For the direct forecast, the performance across scheme is more concentrated than for the bottom-up approach. While in the former case, the difference between the best performing method, Wright(2), and the worst one, optimised constrained, is below 20 from the third round

Tab. 3: OUT-OF SAMPLE FORECAST PERFORMANCE (NOWCAST)

Relative squared forecast error (%)					Correlation with actual quarterly changes (%)						
Total investment											
79.1	78.7	77.6	74.7	73.9	73.8	54.2	54.6	59.7	62.7	63.4	63.3
78.0	76.1	70.4	66.9	62.5	62.3	54.6	57.3	70.9	72.9	76.8	76.9
88.7	73.4	84.0	81.2	65.4	97.6	34.6	53.1	58.9	45.6	62.5	33.2
79.1	78.7	77.6	74.7	73.9	73.8	54.2	54.6	59.7	62.7	63.4	63.3
144.9	114.8	78.6	77.7	75.7	75.2	33.5	37.6	54.4	56.9	59.8	60.5
75.6	71.4	75.3	70.6	69.2	68.5	49.4	54.9	59.0	66.0	67.7	68.5
Private consumption											
94.3	90.7	92.1	92.8	92.5	92.7	31.3	33.1	31.5	30.1	30.7	29.6
85.8	84.9	86.7	87.3	87.0	87.2	35.6	36.4	35.9	35.1	35.4	34.4
92.8	112.9	102.6	84.9	94.5	102.2	25.8	19.3	30.1	33.8	23.4	30.5
94.3	90.7	92.1	92.8	92.5	92.7	31.3	33.1	31.5	30.1	30.7	29.6
166.6	133.2	131.6	142.0	142.0	144.0	24.3	23.8	23.8	21.3	21.3	21.1
73.5	75.3	77.3	78.1	77.9	78.4	40.1	41.6	41.4	40.2	40.2	38.7
Total exports											
68.9	66.7	64.1	63.9	62.3	62.2	46.6	46.5	48.0	49.2	51.8	51.8
68.2	65.1	43.9	44.8	30.7	30.7	49.4	51.2	68.1	68.3	81.2	81.2
77.5	72.6	79.6	88.2	80.6	71.2	29.7	33.7	41.6	48.3	59.0	69.9
68.9	66.7	64.1	63.9	62.3	62.2	46.6	46.5	48.0	49.2	51.8	51.8
74.7	72.3	37.4	38.6	26.9	26.8	34.8	37.3	72.8	72.3	82.6	82.7
64.7	63.3	45.1	45.9	38.5	38.5	45.1	45.8	65.1	65.0	73.4	73.3
Total imports											
76.2	75.0	70.7	69.3	67.2	67.1	39.6	39.4	41.5	43.4	46.2	46.3
70.0	68.3	60.0	58.2	52.7	52.7	47.4	48.3	53.2	57.0	63.0	63.0
80.5	68.0	67.5	75.1	65.3	72.9	36.2	51.0	41.3	47.5	58.2	51.6
76.2	75.0	70.7	69.3	67.2	67.1	39.6	39.4	41.5	43.4	46.2	46.3
85.0	76.8	45.8	45.3	40.7	40.7	51.7	55.3	73.7	74.2	75.5	75.5
71.8	69.9	60.3	59.1	54.8	54.8	44.7	45.3	52.4	54.3	59.2	59.1
Inventories											
93.7	93.1	92.9	92.9	92.5	92.5	31.7	31.3	38.3	38.8	38.0	38.0
92.7	92.2	91.6	91.6	91.3	91.3	32.1	30.9	36.9	38.0	37.4	37.4
92.7	89.9	98.9	92.3	145.0	89.9	28.4	33.3	12.2	27.2	-1.4	35.2
93.7	93.1	92.9	92.9	92.5	92.5	31.7	31.3	38.3	38.8	38.0	38.0
80.9	81.5	81.3	81.3	82.2	82.2	56.6	53.2	56.4	58.1	55.8	55.8
86.5	86.6	86.0	86.0	86.7	86.7	50.0	45.4	50.6	52.1	49.1	49.1

Note: For each component, the rows indicate the results obtained with respectively equal weights, Akaike weights, optimised and constrained weights, Diebold and Pauly weights, Wright weights with a parameter equal to 20 and to 2.

Tab. 4: OUT-OF SAMPLE FORECAST PERFORMANCE (ONE QUARTER AHEAD)

Relative squared forecast error (%)					Correlation with actual quarterly changes (%)						
Total investment											
76.9	77.4	76.7	76.5	77.1	77.1	50.0	49.8	51.9	52.1	50.6	50.5
76.3	77.0	74.9	74.4	75.7	75.7	50.4	49.9	54.1	54.6	52.0	52.0
85.0	87.4	84.9	81.6	84.6	101.8	38.8	35.1	38.7	52.9	39.9	35.1
76.9	77.4	76.7	76.5	77.1	77.1	50.0	49.8	51.9	52.1	50.6	50.5
209.2	161.7	101.8	80.5	87.5	87.2	50.9	52.0	55.2	56.6	55.5	55.7
79.0	75.2	70.3	69.8	71.3	71.1	52.8	53.2	56.7	57.4	55.7	55.8
Private consumption											
95.2	91.3	92.1	92.1	92.2	91.2	31.1	34.5	35.4	35.1	34.1	37.0
86.4	85.6	86.4	86.9	86.9	86.0	35.3	35.4	36.5	35.7	35.1	37.7
100.1	94.3	101.7	105.4	78.6	99.9	28.1	15.8	20.5	6.7	35.6	0.9
95.2	91.3	92.1	92.1	92.2	91.2	31.1	34.5	35.4	35.1	34.1	37.0
153.3	168.6	167.4	154.4	154.3	152.2	24.8	18.0	18.0	15.5	15.5	15.7
75.4	77.1	78.4	79.6	79.6	78.6	36.7	32.8	33.6	33.6	33.5	36.1
Total exports											
78.3	74.0	74.6	71.8	71.3	70.8	36.6	38.7	32.9	38.4	41.2	41.7
82.5	77.9	74.9	71.8	73.1	72.5	35.2	38.5	36.5	42.9	40.9	41.2
89.8	76.1	95.0	105.9	71.9	95.7	24.1	36.2	26.3	12.6	31.9	30.7
78.3	74.0	74.6	71.8	71.3	70.8	36.6	38.7	32.9	38.4	41.2	41.7
81.2	77.2	75.0	66.0	101.9	95.4	46.5	42.1	40.5	42.4	30.9	31.6
77.3	73.7	72.6	67.1	70.7	68.8	42.3	41.3	37.3	44.3	39.8	40.7
Total imports											
69.3	68.3	68.7	66.8	67.2	66.9	44.8	45.4	41.6	44.6	45.2	45.5
68.5	67.5	66.3	64.1	64.3	64.2	50.2	50.6	49.2	51.8	51.0	51.0
89.8	76.4	92.8	70.0	75.9	69.6	32.5	53.9	37.0	44.2	52.9	43.5
69.3	68.3	68.7	66.8	67.2	66.9	44.8	45.4	41.6	44.6	45.2	45.5
99.0	99.0	98.8	99.2	99.3	99.3	60.2	60.0	60.0	60.2	60.2	60.2
73.2	72.8	69.4	67.7	67.5	67.2	55.0	55.3	53.3	54.5	54.7	54.7
Inventories											
102.5	100.4	100.4	99.9	99.8	99.7	-10.0	-0.7	-4.6	-2.3	-1.5	-0.9
104.5	101.9	101.4	100.9	101.0	100.9	-14.0	-5.1	-7.0	-5.2	-5.3	-4.9
106.6	102.0	100.0	94.4	100.8	96.8	-10.8	6.2	14.0	23.6	5.4	18.7
102.5	100.4	100.4	99.9	99.8	99.7	-10.0	-0.7	-4.6	-2.3	-1.5	-0.9
108.3	106.0	105.8	107.5	107.5	107.5	1.5	7.9	6.5	1.5	1.9	2.0
110.7	107.5	106.7	106.8	106.9	106.8	-12.3	-5.0	-6.2	-7.8	-7.8	-7.7

Note: For each component, the rows indicate the results obtained with respectively equal weights, Akaike weights, optimised and constrained weights, Diebold and Pauly weights, Wright weights with a parameter equal to 20 and to 2.

to the sixth one, it is above 150pp in the later case. Indeed, the weighting scheme has a much more important impact on the forecast performance in the case of a bottom-up forecast.

In some cases, the bottom-up forecast is worse than an unconditional mean forecast even for the nowcast, and therefore worse than a direct forecast. This is the case for optimised constrained weights and Wright(20). Contrastingly, the results obtained with AIC weights and Wright(2) are better than those obtained with the direct approach and result in a gain of more than 60pp in the forecast performance compared to a mean forecast.

The performance of bottom-up approach one-quarter ahead is close to that of the mean forecast and worse than that of a direct forecast. In this case, the gain amounts to 30 to 40pp compared to the mean forecast and does not increase strongly during the quarter.²²

For the nowcast, while the correlation between the forecast and the observation is almost over 60% in both the direct approach and the bottom-up approach and reaches 78%. The highest change in correlation over the sequence of information emerges from AIC weights and the Wright(2) in both approaches. After one quarter, the performance measured by the correlation diminishes, as for the relative mean squared errors and especially for the bottom-up approach.

Tab. 5: OUT-OF SAMPLE FORECAST PERFORMANCE (NOWCAST)

Relative squared forecast error (%)					Correlation with actual quarterly changes (%)						
Real GDP (direct)											
58.8	57.1	56.2	54.2	53.9	53.8	65.9	67.8	68.4	70.6	71.0	70.6
59.0	55.3	54.0	50.7	50.6	50.4	64.3	68.5	69.6	73.5	73.7	73.6
151.2	52.9	49.7	68.1	78.5	69.4	32.5	62.4	69.3	55.0	42.8	49.6
58.8	57.1	56.2	54.2	53.9	53.8	65.9	67.8	68.4	70.6	71.0	70.6
78.7	73.7	63.7	60.0	62.4	61.7	45.0	48.2	57.1	60.3	57.9	58.6
57.3	55.9	54.3	51.7	51.3	51.1	62.7	65.3	67.6	70.7	71.1	71.1
Real GDP (bottom-up)											
70.5	64.9	64.7	63.2	62.5	62.4	65.0	65.5	64.3	66.4	67.7	67.6
62.3	57.5	52.8	49.3	39.3	39.2	68.4	70.7	69.5	71.3	77.4	77.4
103.4	105.9	302.6	97.4	107.6	151.0	45.6	45.5	42.6	66.5	55.2	57.7
70.5	64.9	64.7	63.2	62.5	62.4	65.0	65.5	64.3	66.4	67.7	67.6
293.4	251.5	206.0	218.3	192.5	193.4	21.4	29.6	45.8	44.9	54.4	54.5
62.5	56.6	46.5	43.3	35.3	35.2	58.3	62.9	68.9	71.6	77.8	77.9

Note: For each component, the rows indicate the results obtained with respectively equal weights, Akaike weights, optimised and constrained weights, Diebold and Pauly weights, Wright weights with a parameter equal to 20 and to 2.

6 Concluding remarks

In this paper, we have analysed the forecasts obtained by pooling a relatively large number of equations, for euro area GDP and components. A special attention has been given to the flow of information during the quarter as well as the weighting scheme adopted to aggregate the forecasts.

²²At this horizon, the correlation between the forecast and the outcome is around zero independently of the round and for most of the weighting schemes.

Tab. 6: OUT-OF SAMPLE FORECAST PERFORMANCE (ONE QUARTER AHEAD)

Relative squared forecast error (%)						Correlation with actual quarterly changes (%)					
Real GDP (direct)											
73.2	72.1	72.3	70.4	69.6	69.0	46.1	47.2	45.5	48.9	50.7	51.5
73.6	70.9	70.5	67.7	66.9	66.0	42.6	46.2	45.9	50.6	51.9	52.9
91.2	85.2	75.0	76.6	86.9	112.6	43.8	32.1	46.6	33.0	36.0	-23.6
73.2	72.1	72.3	70.4	69.6	69.0	46.1	47.2	45.5	48.9	50.7	51.5
95.8	77.9	73.7	67.7	68.0	67.2	35.5	45.3	48.7	53.6	53.6	49.9
67.9	67.5	68.3	65.8	64.9	63.4	47.4	50.1	49.2	52.6	53.7	54.9
Real GDP (bottom-up)											
123.0	110.6	107.8	100.8	101.1	100.2	33.3	32.9	28.1	32.9	35.1	35.3
122.3	110.9	102.8	92.6	98.0	96.3	29.8	32.6	28.9	39.0	38.8	39.4
263.1	204.6	171.9	294.8	182.4	125.1	30.1	-7.2	25.7	-9.4	3.0	43.4
123.0	110.6	107.8	100.8	101.1	100.2	33.3	32.9	28.1	32.9	35.1	35.3
94.1	140.8	179.1	285.4	309.4	304.3	33.4	16.9	8.3	4.1	11.0	11.2
98.0	98.3	89.8	85.0	95.3	92.4	36.2	29.7	32.3	37.0	33.8	34.8

Note: For each component, the rows indicate the results obtained with respectively equal weights, Akaike weights, optimised and constrained weights, Diebold and Pauly weights, Wright weights with a parameter equal to 20 and to 2.

Although the results differ widely from a weighting scheme to the other, no one emerges as universally the best. Contrastingly, the optimised and constrained weights provide by far the worse scheme. The results provide some supports for two weighting schemes, based on Akaike information criteria and on Wright scheme. In this case however, the results heavily depend on the parameter fixed which appear to be key.

We have shown that while the successive releases of monthly indicators result in an improvement of the forecast for the components, the improvement is relatively minor for the current quarter and negligible for the next quarter. However, using efficiently the flow of information results in substantial changes in the weight given to a special indicator across the quarter.

The forecast performance, measured relatively to the mean forecast varies from one component to another, inventories being the most difficult to forecast, followed by private consumption. For GDP as a whole, we found that the direct approach performs better than the bottom-up approach at one quarter ahead. However, in the case of the nowcast, depending on the weighting scheme used, the bottom-up approach can provide better forecast. Compared to a mean forecast, this can result in an improvement of 50% in the performance for the current quarter and up to 30pp one quarter ahead. However, in the case of the nowcast, the bottom-up approach with the two best weighting schemes give even stronger gains, above 60pp.

We have departed somewhat from the literature by selecting the individual models used to generate the forecasts retained in the pool from a large number of models. While relatively large compared to most of the studies, the number of models could be substantially extended, by using data related to country belonging to the euro area, or adding new types of equations. In such case, before computing the weights, the selection criteria may play an even more prominent role and require further research.

References

- Atkinson AC. 1980. A Note on the Generalized Information Criterion for Choice of a Model. *Biometrika* **67**: 413-418. DOI:10.1093/biomet/67.2.413.
- Bañbura M, Rünstler G. 2007. A look into the factor model black box - publication lags and the role of hard and soft data in forecasting GDP. Working Paper no. 751. European Central Bank.
- Bates JM, Granger CW. 1969. The Combination of Forecasts. *Operational Research Quarterly* **20**: 451-468.
- Darracq Pariès M, Maurin L. 2008. The role of country-specific trade and survey data in forecasting euro area manufacturing production: perspective from large panel factor models. Working Paper no. 894. European Central Bank.
- Diebold F, Pauly P. 1990. The use of prior information in forecast combination. *International Journal of Forecasting* **6**: 503-508. DOI: doi:10.1016/0169-2070(90)90028-A
- Diron M. 2008. Short-term forecasts of euro area real GDP growth: an assessment of real-time performance based on vintage data. *Journal of Forecasting* **27**: 371-390. DOI: 10.1002/for.1067
- Giannone, D, Reichlin L, Small D. 2008. Nowcasting: The real-time informational content of macroeconomic data. *Journal of Monetary Economics* **55**: 665-676. DOI: 10.1016/j.jmoneco.2008.05.010
- Granger CW, Ramanathan R. 1984. Improved Methods of Combining Forecasting. *Journal of Forecasting* **3**: 197-204. DOI: 10.1002/for.3980030207
- Hendry DF, Clements MP. 2004. Pooling of forecasts. *Econometrics Journal* **7**: 1-31. DOI: 10.1111/j.1368-423X.2004.00119.x
- Jagannathan R, Ma T. 2003. Risk Reduction in Large Portfolios: Why Imposing the Wrong Constraints Helps. *The Journal of Finance* **58**: 1651-1684. DOI: 10.1111/1540-6261.00580
- Kapetanios G, Labhard V, Price, S. 2008. Forecasting using bayesian and information-theoretic model averaging: an application to U.K. inflation, *Journal of Business and Economics Statistics* **26**: 33-41. DOI: 10.1198/073500107000000232
- Kitchen J, Monaco R. 2003. Real-Time Forecasting in Practice. *Business Economics* **38**: 10-19.
- Koop G, Potter S. 2003. Forecasting in Large Macroeconomic Panels Using Bayesian Model Averaging. Federal Reserve Bank of New York Report, no.163.
- Marcellino M. 2004. Forecast Pooling for European Macroeconomic Variables. *Oxford Bulletin of Economics and Statistics* **66**: 91-112. DOI: 10.1111/j.1468-0084.2004.00071.x
- Min, CK, Zellner A. 1993. Bayesian and non-Bayesian methods for combining models and forecasts with applications to forecasting international growth rates. *Journal of Econometrics* **56**: 89-118. DOI: 10.1016/0304-4076(93)90102-B
- Rünstler G, Sédillot F. 2003. Short-term estimates of euro area real GDP by means of monthly data, Working Paper no. 276. European Central Bank.

Stock JH, Watson MW. 2006. Forecasting with Many Predictors. In *Handbook of Economic Forecasting*, Elliott G, Granger C, Timmermann A. (ed.). Elsevier; 515-554. DOI: 10.1016/S1574-0706(05)01010-4

Timmermann A. 2006. Forecast Combinations. In *Handbook of Economic Forecasting*, Elliott G, Granger C, Timmermann A. (ed.). Elsevier; 135-196. DOI: 10.1016/S1574-0706(05)01004-9

Wright JH. 2003. Forecasting U.S. inflation by Bayesian Model Averaging. International Finance Discussion Papers no. 780. Board of Governors of the Federal Reserve System (U.S.).

Zellner A. 1971. An introduction to Bayesian inference in econometrics. Wiley: New York.

APPENDIX I - Series used in the individual equations

		Inv.	Pr. Cons.	Exp.	Imp.	Invent.	GDP		
First block (end of the ref. month)									
Stock prices	Eurostoxx 50	1	1				1		
	EUROSTOXX 325 (LHS)	1	1				1		
	S&P 500	1	1				1		
Earnings	US, Dow Jones	1	1				1		
	Manuf	1	1	1			1		
	Services	1	1	1			1		
	Total	1	1	1			1		
	Basic materials	1	1	1			1		
Finance	Utilities	1	1	1			1		
	PER manuf	1	1				1		
	PER services	1	1				1		
	PER total	1	1				1		
Exch rate	Effective exchange rate	1	1	1	1	1	1		
	Effective exchange rate (var.)	1	1	1	1	1	1		
	Exch rate: USD	1	1	1	1	1	1		
	Exch rate: GBP	1	1	1	1	1	1		
	Exch rate: JPY	1	1	1	1	1	1		
	Exch rate: USD (var)	1	1	1	1	1	1		
	Exch rate: GBP (var)	1	1	1	1	1	1		
	Exch rate: JPY (var)	1	1	1	1	1	1		
	US, Treasury bills, 3-MONTH	1		1	1		1		
Interest rate	US, 10 years Yields on US treasury notes and bonds	1		1	1		1		
	Long term bond yield	1	1				1		
	Diff 10-year bond yield (bp)	1	1				1		
	Short term interest rate	1	1				1		
Survey	Diff short term interest rates (bp)	1	1				1		
	Economic Sentiment Indicator	1	1		1	1	1		
	Consumer survey	Business climate indicator	1	1		1	1	1	
		Savings over next 12 months	1	1		1	1	1	
		Savings at present	1	1		1	1	1	
		Statement on financial situation of household	1	1		1	1	1	
		Financial situation over next 12 months	1	1		1	1	1	
		Financial situation over last 12 months	1	1		1	1	1	
		General economic situation over last 12 months	1	1		1	1	1	
		General economic situation over next 12 months	1	1		1	1	1	
		Price trends over last 12 months	1	1		1	1	1	
		Price trends over next 12 months	1	1		1	1	1	
		Unemployment expectations over next 12 months	1	1		1	1	1	
		Major purchases at present	1	1		1	1	1	
		Major purchases over next 12 months	1	1		1	1	1	
		Consumer Confidence Indicator	1	1		1	1	1	
		Retail trade survey	Present business situation	1	1		1	1	1
			Assessment of stocks	1	1		1	1	1
			Orders placed with suppliers	1	1		1	1	1
			Expected business situation	1	1		1	1	1
Retail confidence indicator			1	1		1	1	1	
Service surveys	Employment expectations	1	1		1	1	1		
	Evolution of demand in recent months	1	1		1	1	1		
	Evolution of demand expected in the months ahead	1	1		1	1	1		
	Evolution of employment in recent months	1	1		1	1	1		
	Evolution of employment expected in the months ahead	1	1		1	1	1		
Industry survey	Assessment of order-book levels (all)	1		1	1	1	1		
	Assessment of export order-book levels (all)	1		1	1	1	1		
	Assessment of stocks of finished products (all)	1		1	1	1	1		
	Production expectations for the months ahead (all)	1		1	1	1	1		
	Selling price expectations for the months ahead (all)	1		1	1	1	1		
	Employment expectations for the months ahead (all)	1		1	1	1	1		
	Industrial Confidence Indicator (all)	1	1	1	1	1	1		
	Assessment of order-book levels (CG)	1		1	1	1	1		
	Assessment of export order-book levels (CG)	1		1	1	1	1		
	Assessment of stocks of finished products (CG)	1		1	1	1	1		
	Production expectations for the months ahead (CG)	1	1	1	1	1	1		
	Selling price expectations for the months ahead (CG)	1	1	1	1	1	1		
	Employment expectations for the months ahead (CG)	1	1	1	1	1	1		
	Industrial Confidence Indicator (CG)	1	1	1	1	1	1		
	Assessment of order-book levels (IG)	1		1	1	1	1		
	Assessment of export order-book levels (IG)	1		1	1	1	1		
	Assessment of stocks of finished products (IG)	1		1	1	1	1		
	Production expectations for the months ahead (IG)	1		1	1	1	1		
	Selling price expectations for the months ahead (IG)	1		1	1	1	1		
	Employment expectations for the months ahead (IG)	1	1	1	1	1	1		
	Industrial Confidence Indicator (IG)	1	1	1	1	1	1		
	Assessment of order-book levels (KG)	1		1	1	1	1		
	Assessment of export order-book levels (KG)	1		1	1	1	1		
	Assessment of stocks of finished products (KG)	1		1	1	1	1		
	Production expectations for the months ahead (KG)	1		1	1	1	1		
	Selling price expectations for the months ahead (KG)	1		1	1	1	1		
	Employment expectations for the months ahead (KG)	1	1	1	1	1	1		
Construction survey	Industrial Confidence Indicator (KG)	1	1	1	1	1	1		
	Trend of activity compared with preceding months	1	1		1	1	1		
	Assessment of order-books	1	1		1	1	1		
	Price expectations for the months ahead	1	1		1	1	1		
	Construction Confidence Indicator	1	1		1	1	1		
Foreign	Construction employment	1	1		1	1	1		
	US, Production expectations	1		1	1		1		
	US, Consumer expectations	1		1	1		1		
	World market price of raw materials in Euro	1		1	1		1		
	World market price of raw materials excl energy in Euro	1		1	1		1		

		Inv.	Pr. Cons.	Exp.	Imp.	Invent.	GDP
Second block (20-30 days after the end of the ref. month)							
Financing	NFC loans, total outstanding	1					1
	NFC loans, <1yr outstanding	1					1
	HH house purchase credit		1				1
	HH loans, total outstanding		1				1
	HH consumer credit loans		1				1
	HH other loans		1				1
Monetary aggregates	M1	1	1				1
	M2	1	1				1
	M3	1	1				1
Foreign	World market price of crude oil (USD)	1	1	1			1
Cars	Passenger car registration	1	1		1	1	1
Consumer	Overall HICP index		1				1
	HICP - Energy		1				1
	HICP - food and non alcoholic beverages		1				1
	HICP - alcoholic beverages, tobacco		1				1
	Retail trade		1				1
Exch rate	Real effective exch. rate (CPI)	1	1	1	1	1	1
	Real effective exch. rate (CPI, var.)	1	1	1	1	1	1
Labour	Unemployment rate, Total	1	1	1		1	1
Foreign	UK, unemployment rate			1	1		1
	UK, Retail trade			1	1		1
	US, Retail trade	1		1	1		1
	US, unemployment rate	1		1	1		1
Third block (45 to 60 days after the end of the ref. month)							
Wages and salary	Construction	1	1				1
	Indicator of negotiated wage rates	1	1				1
	Mining and quarrying	1	1				1
	Electricity, gas and water supply	1	1				1
	Manufacture of office machinery and computers	1	1				1
Employment	Manufacturing of medical, precision and optical instrument	1	1				1
	Transport equipment	1	1				1
New orders (non domestic)	Motor vehicles, trailers and semi-trailers	1	1				1
	Leather and leather products	1		1	1	1	1
	Manufacture of machinery and equipment n.e.c.	1		1	1	1	1
Turnover index (non domestic)	Manufacture of furniture; manufacturing n.e.c.	1		1	1	1	1
	Leather and leather products	1		1	1	1	1
	Manufacture of machinery and equipment n.e.c.	1		1	1	1	1
	Mining of coal and lignite; extraction of peat	1		1	1	1	1
Exports	Manufacture of furniture; manufacturing n.e.c.	1		1	1	1	1
	Intra exports			1	1	1	1
Imports	Extra exports			1	1		1
	Intra imports			1	1	1	1
Industrial production	Extra imports			1	1	1	1
	Total industry	1	1	1	1	1	1
	PPI	1	1	1	1	1	1
	Intermediates	1	1	1	1	1	1
	Capital	1	1	1	1	1	1
	Energy	1	1	1	1	1	1
	Manufacturing	1	1	1	1	1	1
	Durable Consumer Goods	1	1	1	1	1	1
	Non-durable Consumer Goods	1	1	1	1	1	1
	Basic metals	1	1	1	1	1	1
	Chemicals products	1	1	1	1	1	1
	Electrical machinery and apparatus n.e.c.	1	1	1	1	1	1
PPI	Manufacture of machinery and equipment n.e.c.	1	1	1	1	1	1
	PPI - Energy	1				1	1
	PPI - Intermediate Goods Industry	1				1	1
Labour	PPI-MIG Non-durable Consumer Goods	1				1	1
	Index of Employment, Construction	1	1			1	1
	Index of Employment, Manufacturing	1	1			1	1
Foreign	Index of Employment, Total Industry	1	1			1	1
	UK, manufacturing production	1		1		1	1
	US, manufacturing production	1		1		1	1
	World trade	1		1	1	1	1
	World imports	1		1	1	1	1
	Imports Industrial countries (a)	1		1	1	1	1
	Imports United States	1		1	1	1	1
	Imports Japan	1		1	1	1	1
	Imports EU15	1		1	1	1	1
	Imports other countries	1		1	1	1	1
	World exports	1		1	1	1	1
	exports Industrial countries (a)	1		1	1	1	1
	exports United States	1		1	1	1	1
	exports Japan	1		1	1	1	1
	exports EU15	1		1	1	1	1
	exports other countries	1		1	1	1	1
Number of series (out of 163)		149	103	93	114	113	163

APPENDIX 2 - Estimated individual equations for GDP components

		1st month only					Up to the 2nd month						Full quarter						
		β_0	β_1	β_2	α_1	α_2	R^2 (%)	β_0	β_1	β_2	α_1	α_2	R^2 (%)	β_0	β_1	β_2	α_1	α_2	R^2 (%)
Total investment																			
Stock prices	Eurostoxx 50	-0.17 [0.16]	0.09 [0.06]				9.2	-0.17 [0.15]	0.09 [0.06]			9.5	-0.16 [0.14]	0.09 [0.06]					9.4
Stock prices	EUROSTOXX 325 (LHS)	0.07 [0.09]	0.06 [0.09]	0.06 [0.09]	0.13 [0.08]		18.4	0.06 [0.12]	0.07 [0.1]	0.13 [0.09]		17.4	0.07 [0.09]	0.06 [0.09]	0.08 [0.09]	0.14 [0.09]			18.4
	S&P 500	-0.02 [0.1]	-0.06 [0.06]				2.2	0 [0.1]	-0.05 [0.06]			2	0.01 [0.06]	-0.05 [0.06]					2.2
	US, Dow Jones	-0.04 [0.09]	-0.03 [0.04]				2.5	-0.08 [0.07]	-0.03 [0.04]			5.4	-0.05 [0.03]	-0.03 [0.03]					6.5
Earnings	Manuf	-0.02 [0.15]	-0.08 [0.14]				9.7	-0.02 [0.08]	-0.08 [0.08]			9.8	-0.02 [0.07]	-0.07 [0.07]					10
	Services	-0.1 [0.09]	0.12 [0.11]	0.12 [0.11]	-0.09 [0.06]		21.7	-0.05 [0.07]	0.08 [0.1]	-0.09 [0.07]		20	-0.05 [0.06]	0.08 [0.09]	0.08 [0.09]	-0.09 [0.06]			20.2
	Total	-0.13 [0.12]	0.16 [0.16]	0.16 [0.16]	-0.11 [0.07]		22.7	-0.08 [0.1]	0.1 [0.15]	-0.11 [0.09]		21.3	-0.07 [0.07]	0.09 [0.12]	0.09 [0.12]	-0.11 [0.08]			21.8
	Basic materials	0 [0.07]	0.04 [0.08]	0.04 [0.08]	-0.12 [0.07]		21.6	-0.01 [0.07]	0.05 [0.08]	-0.12 [0.07]		21.7	-0.1 [0.06]	0.12 [0.08]	0.12 [0.08]	-0.13 [0.07]			26.7
	Utilities	0.08 [0.16]	-0.03 [0.17]				2.4	-0.03 [0.11]	0.07 [0.11]			1.6	0.06 [0.08]	0.02 [0.09]					3.1
Finance	PER manuf	-0.05 [0.32]	0.46 [0.35]				21.1	-0.09 [0.31]	0.5 [0.32]			21.3	-0.04 [0.27]	0.45 [0.28]					21.1
	PER services	0.14 [0.18]	0.01 [0.19]				12.2	0.14 [0.18]	0.01 [0.18]			12.2	0.14 [0.16]	0.01 [0.16]					12.6
	PER total	0.17 [0.21]	-0.01 [0.22]				12	0.16 [0.2]	0.01 [0.21]			11.9	0.16 [0.18]	0.01 [0.19]					12.2
Exch rate	Effective exchange rate	-0.1 [10.95]	0.12 [10.17]				0.3	-0.05 [10.49]	0.08 [9.86]			0.5	-0.05 [9.72]	0.08 [9.84]					1
	Effective exchange rate (var.)	-0.01 [0.11]	0.01 [0.12]				0.1	-0.03 [0.11]	0.04 [0.11]			0.3	-0.05 [0.11]	0.05 [0.1]					0.6
	Exch rate: USD	1.75 [5.82]	-0.98 [5.92]				0.9	0.92 [5.6]	-0.15 [5.66]			0.8	-0.54 [5.39]	1.27 [5.4]					0.7
	Exch rate: GBP	6.03 [12.5]	-6.91 [12.62]				1	3.2 [12.08]	-4.09 [12.06]			0.6	-2.29 [11.44]	1.25 [11.34]					0.5
	Exch rate: JPY	0.02 [0.04]	-0.04 [0.06]	-0.04 [0.06]	0.04 [0.03]		17.2	0.01 [0.04]	-0.03 [0.05]	0.03 [0.03]		16.6	0.01 [0.03]	-0.03 [0.05]	-0.03 [0.05]	0.03 [0.03]			16.6
	Exch rate: USD (var)	1.99 [6.34]	-0.78 [5.74]				0.3	0.77 [6.07]	-0.54 [5.69]			0.1	-1.12 [5.82]	-0.3 [5.68]					0.1
	Exch rate: GBP (var)	4.04 [9.03]	-3.39 [8.53]	-3.39 [8.53]	-8.74 [7.02]		17.1	3.34 [8.62]	-2.97 [8.35]	-8.95 [7.05]		17	0.2 [8.14]	-2.17 [8.29]	-2.17 [8.29]	-8.72 [7.07]			16.6
	Exch rate: JPY (var)	0.67 [4.74]	-3.5 [3.93]				2.2	0.22 [4.26]	-3.39 [3.88]			2.2	-3.25 [3.89]	-3.25 [3.85]					2.2
Foreign	US, Treasury bills, 3-MONTH	1 [0.58]	-0.81 [0.61]				11	1.05 [0.51]	-0.86 [0.53]			14.2	0.99 [0.44]	-0.79 [0.47]					15.5
	US, 10 years Yields on US treasury notes and bonds	1.45 [0.57]	-1.44 [0.63]				15.2	1.32 [0.58]	-1.21 [0.92]	-0.19 [0.57]		28.8	0.96 [0.51]	-0.69 [0.83]	-0.69 [0.83]	-0.34 [0.57]			25.7
Interest rate	Long term bond yield	0.3 [0.59]	-1.43 [0.58]				16.5	1.08 [0.59]	-1.2 [0.54]			14.3	0.81 [0.49]	-0.94 [0.47]					12.1
	Diff 10-year bond yield (bp)	0.01 [0.01]	0.03 [0.01]				12.9	0 [0.01]	0.03 [0.01]			12.5	0 [0.02]	0.03 [0.01]					12.5
	Short term interest rate	0.43 [0.72]	-0.61 [0.66]				10.3	0.41 [0.63]	-0.57 [0.56]			10.4	0.36 [0.55]	-0.52 [0.48]					10.5
	Diff short term interest rates (bp)	0.01 [0.01]	0.01 [0.01]				4.8	0.02 [0.01]	0 [0.01]			7.1	0.02 [0.02]	0 [0.01]					6.3
Survey	Economic Sentiment Indicator	0.17 [0.07]	-0.14 [0.06]	-0.12 [0.06]			21	0.15 [0.06]	-0.1 [0.05]		-0.1	22.4	0.16 [0.05]	-0.09 [0.04]	-0.09 [0.04]				25.7
Consumer survey	Business climate indicator	1.11 [0.6]	-0.79 [0.58]				12.4	0.98 [0.51]	-0.64 [0.48]			13.2	2.44 [0.95]	-3.25 [1.51]	-3.25 [1.51]	1.45 [0.83]			28.5
	Savings over next 12 months	0.2 [0.15]	-0.18 [0.15]				5.3	0.26 [0.14]	-0.23 [0.14]			8.9	0.3 [0.13]	-0.26 [0.13]					13
	Savings at present	0.24 [0.14]	-0.27 [0.13]				11	0.06 [0.14]	-0.14 [0.15]	-0.08 [0.12]		20.6	0.03 [0.13]	-0.13 [0.15]	-0.13 [0.15]	-0.08 [0.12]			20.1
	Statement on financial situation of household	-0.2 [0.45]	-0.18 [0.56]	-0.18 [0.56]	0.57 [0.47]		16.5	-0.51 [0.39]	0.04 [0.52]	0.68 [0.47]		20.1	-0.54 [0.44]	0.07 [0.55]	0.07 [0.55]	0.67 [0.47]			19.7
	Financial situation over next 12 months	0.36 [0.22]	-0.3 [0.21]				9	0.42 [0.19]	-0.35 [0.19]			13.6	0.39 [0.17]	-0.31 [0.16]					14.6
	Financial situation over last 12 months	0.4 [0.17]	-0.38 [0.17]				13.4	0.38 [0.15]	-0.36 [0.15]			15.9	0.35 [0.13]	-0.32 [0.13]					17.2
	General economic situation over last 12 months	0.15 [0.05]	-0.14 [0.05]				19.5	0.15 [0.05]	-0.12 [0.04]			21.3	0.12 [0.04]	-0.1 [0.04]					20.7
	General economic situation over next 12 months	0.07 [0.07]	-0.04 [0.07]				7.2	0.07 [0.06]	-0.04 [0.06]			8.4	0.08 [0.05]	-0.04 [0.05]					10.6
	Price trends over last 12 months	-0.01 [0.06]	-0.03 [0.07]				17	-0.02 [0.05]	-0.02 [0.06]			17.2	-0.01 [0.05]	-0.03 [0.05]					16.9
	Price trends over next 12 months	-0.02 [0.06]	0 [0.08]	0 [0.08]	-0.11 [0.06]		37.1	-0.04 [0.06]	0.03 [0.08]	-0.12 [0.06]		37.8	-0.03 [0.06]	0.02 [0.08]	0.02 [0.08]	-0.12 [0.06]			37.4
	Unemployment expectations over next 12 months	-0.07 [0.05]	0.06 [0.05]				6.4	-0.08 [0.04]	0.06 [0.04]			9.1	-0.08 [0.04]	0.06 [0.04]					11.4
	Major purchases at present	0.11 [0.08]	0.03 [0.12]	0.03 [0.12]	-0.13 [0.07]		29.4	0.09 [0.08]	0.05 [0.12]	-0.13 [0.07]		28.5	0.08 [0.07]	0.07 [0.11]	0.07 [0.11]	-0.13 [0.07]			28
	Major purchases over next 12 months	-0.15 [0.24]	0.49 [0.34]	0.49 [0.34]	-0.35 [0.24]		18	0.25 [0.21]	-0.12 [0.22]			7	0.27 [0.22]	-0.14 [0.22]					7.5
	Consumer Confidence Indicator	0.16 [0.1]	-0.13 [0.1]				8	0.16 [0.09]	-0.13 [0.08]			10.6	0.16 [0.08]	-0.12 [0.07]					13
Retail trade survey	Present business situation	0.07 [0.04]	0.05 [0.06]	0.05 [0.06]	-0.12 [0.04]		31.2	0.05 [0.05]	0.06 [0.06]	0.06 [0.05]	-0.12 [0.05]	29.3	0.06 [0.05]	0.07 [0.06]	0.07 [0.06]	-0.12 [0.05]			29.7
	Assessment of stocks	0.06 [0.13]	-0.18 [0.16]				3.8	0.18 [0.14]	-0.18 [0.15]			7.7	0.3 [0.15]	-0.2 [0.16]	-0.2 [0.16]	0.05 [0.15]			23.2
	Orders placed with suppliers	0.06 [0.06]	0.01 [0.07]				6.2	0.07 [0.07]	0 [0.07]			6.6	0.14 [0.07]	-0.06 [0.07]					14.1
	Expected business situation	-0.03 [0.05]	0.15 [0.07]	0.15 [0.07]	-0.12 [0.05]		25.1	0.04 [0.06]	0.09 [0.08]	-0.11 [0.05]		25.1	0.13 [0.06]	-0.06 [0.05]					16.9
	Retail confidence indicator	0.01 [0.09]	0.28 [0.13]	0.28 [0.13]	-0.29 [0.09]		35.2	0.04 [0.1]	0.26 [0.13]	-0.29 [0.09]		35.5	0.1 [0.1]	0.22 [0.12]	0.22 [0.12]	-0.29 [0.08]			37.2
	Employment expectations	0.14 [0.07]	-0.06 [0.08]				14	0.13 [0.08]	-0.05 [0.08]			9.4	0.16 [0.09]	-0.06 [0.08]					11.1
Service surveys	Evolution of demand in recent months	0.05 [0.03]	0.02 [0.03]	0.02 [0.03]			28.5	0.05 [0.03]	0.03 [0.03]	0.03 [0.03]		28.5	0.05 [0.03]	0.03 [0.03]	0.03 [0.03]				28.7
	Evolution of demand expected in the months ahead	0.07 [0.04]	-0.04 [0.04]				10.3	0.07 [0.04]	-0.04 [0.04]			13.2	0.07 [0.03]	-0.04 [0.04]					14.6
	Evolution of employment in recent months	0.09 [0.05]	0.02 [0.05]	0.02 [0.05]			33.1	0.09 [0.05]	0.01 [0.05]	0.01 [0.05]		33.5	0.09 [0.05]	0.02 [0.05]	0.02 [0.05]				33.9
	Evolution of employment expected in the months ahead	0 [0.03]	0.01 [0.02]				1	0 [0.03]	0.01 [0.02]			1.5	0 [0.03]	0.01 [0.02]					1
Industry survey	Assessment of order-book levels (all)	0.11 [0.05]	-0.08 [0.05]				13.1	0.08 [0.04]	-0.06 [0.04]			12.5	0.08 [0.03]	-0.06 [0.03]					14.9
	Assessment of export order-book levels (all)	0.07 [0.05]	-0.05 [0.05]				6.4	0.07 [0.04]	-0.04 [0.04]			7.8	0.06 [0.04]	-0.04 [0.03]					9.7
	Assessment of stocks of finished products (all)	-0.22 [0.11]	0.16 [0.11]				13.1	-0.63 [0.18]	0.91 [0.29]	-0.41 [0.15]		36.5	-0.6 [0.16]	0.86 [0.26]	0.86 [0.26]	-0.43 [0.15]			38.4
	Production expectations for the months ahead (all)	0.06 [0.06]	0.06 [0.06]				11.4	0.05 [0.05]	0.05 [0.05]			11.9	0.05 [0.05]	0.05 [0.05]					13.8
	Selling price expectations for the months ahead (all)	0.01 [0.12]	0.03 [0.																

	Assessment of stocks of finished products (CG)	-0.07	-0.08		7.5	-0.17	0			10.1	-0.24	0.05			12.6
		[0.17]	[0.19]			[0.16]	[0.16]				[0.16]	[0.15]			
	Production expectations for the months ahead (CG)	0.08	-0.02		9.9	0.09	-0.03			11.2	0.2	-0.08	-0.08		23
		[0.08]	[0.08]			[0.07]	[0.07]				[0.08]***	[0.06]	[0.06]		
	Selling price expectations for the months ahead (CG)	-0.02	0.09	0.09	-0.15	30.8	0.01	0.05	0.05	-0.14	30.7	0.01	0.06	0.06	-0.15
		[0.08]	[0.12]	[0.12]	[0.07]**		[0.07]	[0.1]	[0.1]	[0.07]**		[0.06]	[0.1]	[0.1]	[0.07]**
	Employment expectations for the months ahead (CG)	0.18	-0.13		17.4	0.18	-0.13			18.4	0.18	-0.14			22
		[0.07]**	[0.07]**			[0.07]**	[0.06]**				[0.06]**	[0.06]**			
	Industrial Confidence Indicator (CG)	0.19	-0.12		13.3	0.2	-0.12			15.2	0.31	-0.16	-0.18		27.6
		[0.11]**	[0.1]			[0.11]**	[0.08]				[0.09]**	[0.08]**	[0.08]**		
	Assessment of order-book levels (IG)	0.06	-0.04		8.6	0.06	-0.04			11.2	0.05	-0.03			13.2
		[0.04]	[0.04]			[0.03]*	[0.03]				[0.02]**	[0.02]			
	Assessment of export order-book levels (IG)	0.05	-0.04		7.3	0.05	-0.03			8.4	0.05	-0.03			9.9
		[0.04]	[0.04]			[0.03]	[0.03]				[0.03]*	[0.03]			
	Assessment of stocks of finished products (IG)	-0.14	0.09		10.8	-0.12	0.08			11.3	-0.33	0.47	0.47	-0.24	28.3
		[0.08]*	[0.08]			[0.07]*	[0.07]				[0.12]**	[0.2]**	[0.2]**	[0.12]**	
	Production expectations for the months ahead (IG)	0.07	-0.02		12.7	0.06	-0.01			12.8	0.06	-0.01			13.3
		[0.05]	[0.05]			[0.04]	[0.04]				[0.04]	[0.04]			
	Selling price expectations for the months ahead (IG)	0.06	-0.05		4.9	0.05	-0.04			5.8	0.05	-0.04			6
		[0.04]	[0.04]			[0.03]	[0.03]				[0.03]	[0.03]			
	Employment expectations for the months ahead (IG)	0.09	-0.05		8.4	0.08	-0.05			8.5	0.08	-0.05			9.9
		[0.06]	[0.05]			[0.05]	[0.05]				[0.05]*	[0.05]			
	Industrial Confidence Indicator (IG)	0.09	-0.06		10.9	0.08	-0.05			12.1	0.07	-0.04			13.3
		[0.05]	[0.05]			[0.04]*	[0.04]				[0.04]*	[0.04]			
	Assessment of order-book levels (KG)	0.12	-0.1		17.5	0.09	-0.07			14.6	0.1	-0.08	-0.08		19.9
		[0.05]**	[0.04]**			[0.04]**	[0.04]**				[0.04]**	[0.03]**	[0.03]**		
	Assessment of export order-book levels (KG)	0.07	-0.06		9	0.07	-0.05			10.2	0.07	-0.05			11.7
		[0.05]	[0.04]			[0.04]*	[0.04]				[0.03]*	[0.03]			
	Assessment of stocks of finished products (KG)	-0.06	0.01		7.7	-0.1	0.05			11.8	-0.12	0.06			14.1
		[0.08]	[0.08]			[0.07]	[0.06]				[0.07]*	[0.06]			
	Production expectations for the months ahead (KG)	0.04	-0.01		10.7	0.04	-0.01			10.1	0.04	-0.01			11.9
		[0.04]	[0.04]			[0.04]	[0.03]				[0.03]	[0.03]			
	Selling price expectations for the months ahead (KG)	-0.08	0.13	0.13	-0.14	27.4	-0.06	0.11	0.11	-0.14	26.9	-0.02	0.07	0.07	-0.13
		[0.09]	[0.12]	[0.12]	[0.07]**		[0.09]	[0.12]	[0.12]	[0.07]**		[0.07]	[0.11]	[0.11]	[0.07]*
	Employment expectations for the months ahead (KG)	0.09	-0.07		9.3	0.08	-0.06			8.8	0.08	-0.06			10
		[0.05]*	[0.04]			[0.05]*	[0.04]				[0.04]*	[0.04]			
	Industrial Confidence Indicator (KG)	0.1	-0.07		12.1	0.08	-0.05			12	0.12	-0.07			18.4
		[0.06]*	[0.06]			[0.05]*	[0.05]				[0.05]**	[0.04]	[0.04]		
Construction survey	Trend of activity compared with preceding months	0.14	-0.12		25	0.15	-0.13			27.2	0.16	-0.13			28.6
		[0.04]**	[0.04]**			[0.04]**	[0.04]**				[0.04]**	[0.04]**			
	Assessment of order-books	0.18	-0.18		24.7	0.15	-0.15			18.5	0.18	-0.17			25.1
		[0.05]**	[0.05]**			[0.05]**	[0.05]**				[0.05]**	[0.05]**			
	Price expectations for the months ahead	0.04	0.07	0.07	-0.13	27.3	0.08	0.02	0.02	-0.11	30.2	0.09	0	0	-0.1
		[0.07]	[0.1]	[0.1]	[0.06]**		[0.06]	[0.1]	[0.1]	[0.06]**		[0.06]	[0.09]	[0.09]	[0.06]**
	Construction Confidence Indicator	0.2	-0.2		29.2	0.17	-0.17			20.2	0.19	-0.18			23.4
		[0.05]**	[0.05]**			[0.06]**	[0.06]**				[0.06]**	[0.05]**			
	Construction employment	0.16	-0.16		24.8	0.14	-0.13			16.3	0.14	-0.13			16
		[0.05]**	[0.05]**			[0.05]**	[0.05]**				[0.05]**	[0.05]**			
Foreign	US, Production expectations	0.02	0		7.7	0.03	0			8.3	0.03	0		9.2	
		[0.02]	[0.03]			[0.02]	[0.02]				[0.02]	[0.02]			
	US, Consumer expectations	0.04	0		12.8	0.04	0			13.3	0.06	-0.01			15.7
		[0.04]	[0.04]			[0.04]	[0.04]				[0.04]	[0.04]			
	World market price of raw materials in Euro	-0.03	0.04	0.04	-0.04	17.9	0.01	-0.03		3.8	0.02	-0.03			4.3
		[0.04]	[0.06]	[0.06]	[0.04]		[0.04]	[0.04]			[0.04]	[0.04]			
	World market price of raw materials excl energy in Euro	0.04	-0.02		1.9	0.05	-0.03			3	0.04	-0.02			3
		[0.05]	[0.05]			[0.05]	[0.05]				[0.05]	[0.04]			
Financing	NFC loans, total outstanding	0.35	-0.41		12.7	0.33	-0.39			14.2	0.29	-0.34			15
		[0.19]*	[0.19]**			[0.16]**	[0.16]**				[0.13]**	[0.13]**			
	NFC loans, <1yr outstanding	0.27	-0.31		23.1	0.25	-0.28			24.9	0.2	-0.23			24.2
		[0.09]**	[0.09]**			[0.08]**	[0.08]**				[0.07]**	[0.07]**			
Monetary aggregates	M1	8.67	22	22	27.65	22.9	5.8	23	23	27.51	22.6	4.84	23.16	23.16	27.51
		[19.24]	[19.87]	[19.87]	[19.74]		[20.84]	[19.82]	[19.82]	[19.24]		[19.24]	[19.81]	[19.81]	[19.82]
	M2	-1.8	19.8	19.8	39.39	16	-23.17	26.03	26.03	39.59	16.7	-29.95	28.44	28.44	39.63
		[41.59]	[44.3]	[44.3]	[40.85]		[45.23]	[43.64]	[43.64]	[40.69]		[40.6]	[43.23]	[43.23]	[40.52]
	M3	-22.34	-27.6		1.9	-86.67	3	6.2	6.2	-82.48	6.92	53.07	53.07		7.8
		[68.71]	[57.51]			[65.45]	[56.1]			[53.07]	[53.07]				
Foreign	World market price of crude oil (USD)	-0.03	0.04	0.04	-0.03	20.3	0.01	-0.03		5.6	0.01	-0.03			5.9
		[0.03]	[0.05]	[0.05]	[0.03]		[0.03]	[0.03]			[0.03]	[0.03]			
Cars	Passenger car registration	0.01	0.02	0.32	12.1	0.02	0.02		0.02	0.33	12.4	0.03	0	0.35	13.4
		[0.02]	[0.15]	[0.15]**		[0.04]	[0.04]		[0.15]	[0.15]**		[0.04]	[0.15]	[0.15]**	
Exch rate	Real effective exch. rate (CPI)	0.02	-0.02		0.3	0.01	0			0.1	-0.02	0.02			0.2
		[0.1]	[0.1]			[0.09]	[0.09]				[0.09]	[0.09]			
	Real effective exch. rate (CPI, var.)	0.1	-0.15		7.6	0.06	-0.06			5.4	-0.01	-0.04			5.5
		[0.1]	[0.11]			[0.06]	[0.07]				[0.05]	[0.05]			
Labour	Unemployment rate, Total	-6.58	7.03	7.03	35.5	-6.16	6.59	6.59		40	-5.46	5.87	5.87		41.2
		[1.66]**	[1.71]**	[1.71]**		[1.39]**	[1.43]**	[1.43]**			[1.21]**	[1.24]**	[1.24]**		
Foreign	US, Retail trade	0	0	0	0	21.8	0	0	0	0	22.4	0	0	0	24
		[0]	[0]	[0]	[0]**		[0]	[0]	[0]	[0]**		[0]	[0]	[0]**	
	US, unemployment rate	-2.5	2.11		15.3	-3.86	3.1	3.1		61.5	-3.7	2.87	2.87		28.8
		[1.22]**	[1.21]**			[1.27]**	[1.16]**	[1.16]**			[1.1]**	[0.98]**	[0.98]**		
Industrial production	Construction	27.07		0.27	0.27	57.2	29.88			25.4	31.86		0.26	0.23	61.9
		[4.45]**		[0.11]**	[0.1]**		[4.45]**			[0.1]**	[0.1]**		[0.1]**	[0.1]**	
Wages and salary	Indicator of negotiated wage rates	-1.2	0.19		21	-1.17	-0.14	-0.14		28.2	-1.17	-1.13	-1.13	1.04	34.9
		[0.73]	[0.6]			[0.56]**	[0.51]	[0.51]			[0.72]	[0.92]	[0.92]	[0.58]**	
	Mining and quarrying	-0.29	-2.44	-2.44	-1.75	15.9	-0.67	-2.81	-2.81	-1.81	16.1	-0.83	-2.9	-2.9	-1.85
		[0.96]	[1.98]	[1.98]	[1.84]		[1.51]	[2.25]	[2.25]	[1.84]		[1.88]	[2.4]	[2.4]	[1.88]
	Electricity, gas and water supply	0.11	-0.73		1	0.12	-0.7			1	0.26	-0.63			1
		[0.83]	[1.37]			[1.33]	[1.54]				[1.66]	[1.62]			
	Manufacture of office machinery and computers	4	1.24		1.9	0.96	-0.06			0.5	1.76	0.58			0.8
		[5.14]	[3.62]			[3]	[3.38]				[4.03]	[4]			
	Manufacturing of medical, precision and optical instrument	-1.04	-0.81		0.4	0.59	0.12			0.2	1.27	0.64			0.4
		[3.33]	[2.38]			[2.79]	[2.98]				[3.6]				

	Evolution of demand expected in the months ahead	0.02	0		17.7	0.02	0		19.5	0.02	0		19.9
		[0.01]	[0.01]			[0.01]	[0.01]			[0.01]	[0.01]		
	Evolution of employment in recent months	0.02	0		29	0.02	0		30.2	0.02	0		30.3
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
	Evolution of employment expected in the months ahead	0	0.02	0.02	-0.02	28	0	0.02	0.02	-0.02			28
		[0.01]	[0.01]**	[0.01]**	[0.01]**		[0.01]	[0.01]**	[0.01]**	[0.01]**	[0.01]**	[0.01]**	[0.01]**
Industry survey	Assessment of order-book levels (all)	0.02	-0.01		18.6	0.02	-0.01		17.9	0.01	0		18.7
		[0.01]	[0.01]			[0.01]	[0.01]			[0.01]	[0.01]		
	Assessment of export order-book levels (all)	0	0		13.4	0	0		14.4	0.01	0		14.6
		[0.01]	[0.01]			[0.01]	[0.01]			[0.01]	[0.01]		
	Assessment of stocks of finished products (all)	0	-0.03		14.4	-0.01	-0.02		14.8	-0.01	-0.01		15.2
		[0.03]	[0.03]			[0.03]	[0.03]			[0.02]	[0.02]		
	Production expectations for the months ahead (all)	0	0.02		20.2	0	0.02		20	0	0.02		20
		[0.02]	[0.02]			[0.01]	[0.01]			[0.01]	[0.01]		
	Selling price expectations for the months ahead (all)	0.02	-0.02	-0.02	9.1	0.02	-0.01	-0.01	8.2	-0.02	0.06	0.06	-0.05
		[0.02]	[0.02]	[0.02]		[0.02]	[0.02]	[0.02]		[0.02]	[0.04]	[0.04]	[0.02]
	Employment expectations for the months ahead (all)	0.03	[0.04]*	[0.04]*	-0.04	29.6	-0.01	0.07	-0.04	29.5	0.02	-0.01	
		[0.03]	[0.04]*	[0.04]*	[0.02]**		[0.02]	[0.04]*	[0.04]*	[0.02]	[0.01]		
	Industrial Confidence Indicator (all)	0.01	0.01		17.1	0.01	0		17.6	0.01	0		18.1
		[0.02]	[0.02]			[0.02]	[0.02]			[0.01]	[0.01]		
	Assessment of order-book levels (CG)	0.02	0		21.1	0.02	0		21.7	0.03	-0.01		23.8
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
	Assessment of export order-book levels (CG)	-0.01	0.03		16.9	0	0.02		15.9	0	0.02		16
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.01]		
	Assessment of stocks of finished products (CG)	0.04	-0.11		17.1	0.01	-0.07		15.3	-0.03	-0.04		15.8
		[0.05]	[0.05]**			[0.04]	[0.05]			[0.05]	[0.04]		
	Production expectations for the months ahead (CG)	0.03	0		22.8	0.02	0.01		21	0.03	0		22.5
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
	Selling price expectations for the months ahead (CG)	0	0.04	0.04	-0.05	22.4	-0.02	0.06	0.06	-0.05			23.6
		[0.03]	[0.04]	[0.04]	[0.02]**		[0.02]	[0.03]*	[0.03]*	[0.02]**			
	Employment expectations for the months ahead (CG)	-0.01	0.07		19.2	-0.01	0.07		20.1	0.03	-0.01		20.9
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
	Industrial Confidence Indicator (CG)	0.03	0		21.4	0.03	0.01		21.4	0.04	0		23.6
		[0.03]	[0.03]			[0.03]	[0.03]			[0.03]	[0.02]		
	Employment expectations for the months ahead (IG)	0.03	-0.01		19.4	0.03	-0.01		19.6	0.02	-0.01		20.5
		[0.02]*	[0.01]			[0.01]*	[0.01]			[0.01]*	[0.01]		
	Industrial Confidence Indicator (IG)	0.02	0		17.4	0.01	0		17.5	0.01	0		17.6
		[0.01]	[0.01]			[0.01]	[0.01]			[0.01]	[0.01]		
	Employment expectations for the months ahead (KG)	0.03	-0.02		20.3	0.03	-0.02		19.7	0.03	-0.02		19.6
		[0.01]**	[0.01]			[0.01]**	[0.01]			[0.01]**	[0.01]		
	Industrial Confidence Indicator (KG)	0.01	0.01		19	0.01	0.01		19.5	0.01	0.01		19.4
		[0.02]	[0.02]			[0.01]	[0.01]			[0.01]	[0.01]		
Construction survey	Trend of activity compared with preceeding months	0.01	0		11.8	0	0.01		11	0.01	0.01		11.5
		[0.01]	[0.01]			[0.01]	[0.01]			[0.01]	[0.01]		
	Assessment of order-books	0	0.01		3.4	0	0		3.7	0.02	-0.01		5.6
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
	Price expectations for the months ahead	0	0.05	0.05	-0.04	23.8	0	0.04	0.04	-0.04			13.1
		[0.02]	[0.03]	[0.03]	[0.02]**		[0.02]	[0.03]	[0.03]	[0.02]**			
	Construction Confidence Indicator	0.01	0		5.4	0.01	0		4.9	0.01	-0.01		6.3
		[0.02]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
	Construction employment	0.02	-0.01		8.8	0.01	0		6.5	0.01	0		7.1
		[0.01]	[0.02]			[0.02]	[0.02]			[0.02]	[0.02]		
Financing	HH house purchase credit	0.01	0.02		4.7	0.01	0.02		4.7	0.01	0.02		4.8
		[0.04]	[0.04]			[0.04]	[0.04]			[0.04]	[0.04]		
	HH loans, total outstanding	0.02	0.07		13.8	0.02	0.07		13.7	0.02	0.07		13.8
		[0.06]	[0.06]			[0.06]	[0.06]			[0.05]	[0.05]		
	HH consumer credit loans	0.06	0.01		9.7	0.04	0.02		8.9	0.02	0.04		8
		[0.06]	[0.07]			[0.06]	[0.06]			[0.06]	[0.06]		
	HH other loans	-0.02	0.06	0.06	13.3	-0.02	0.06	0.06	13.2	-0.01	0.05	0.05	12.9
		[0.04]	[0.04]	[0.04]		[0.04]	[0.04]	[0.04]		[0.04]	[0.04]	[0.04]	
Monetary aggregates	M1	2.95	3.89		2.5	1.74	4.32		2.1	-1.64	3.76	3.76	6.9
		[5.92]	[5.98]			[6.47]	[5.97]			[6.01]	[5.94]	[5.94]	
	M2	0.31	-14.73		4.5	-6.84	-12.33		5.2	-10.11	-10.88		6.4
		[12.28]	[12.08]			[13.18]	[12.03]			[11.64]	[11.92]		
	M3	19.91	-33.14		10.8	11.45	-29.62		7.5	2.5	-25.61		8.1
		[19.01]	[15.91]**			[18.7]	[16.17]**			[15.37]	[15.98]		
Foreign	World market price of crude oil (USD)	-0.01	0.02	0.02	-0.02	18.2	0	0	9	0	-0.01	-0.01	7.7
		[0.01]	[0.01]	[0.01]	[0.01]**		[0.01]	[0.01]	[0.01]		[0.01]	[0.01]	
Consumer	Overall HICP index	-0.44	0.17		26.7	-0.18	-0.08		22.6	-0.03	-0.22		21.1
		[0.27]	[0.26]			[0.21]	[0.21]			[0.2]	[0.19]		
	HICP - Energy	-0.07	0.06	0.06	12.8	-0.01	0.01	0.01	6.2	0.01	-0.01		1.3
		[0.04]	[0.03]	[0.03]		[0.03]	[0.03]	[0.03]		[0.02]	[0.02]		
	HICP - food and non alcoholic beverages	0.07	-0.16	-0.16	18.7	0.01	-0.09	-0.09	18.1	-0.06	-0.14		15.4
		[0.15]	[0.16]	[0.16]		[0.1]	[0.1]	[0.1]		[0.07]	[0.07]**		
	HICP - alcoholic beverages, tobacco	0.07	-0.18		13.9	-0.01	-0.11		13.4	-0.14	-0.02		17.4
		[0.16]	[0.15]			[0.12]	[0.1]			[0.1]	[0.09]		
Exch rate	Real effective exch. rate (CPI)	0.04	-0.04	-0.04	12.4	0.04	-0.04	-0.04	11.3	0.03	-0.03	-0.03	9.3
		[0.03]	[0.03]	[0.03]		[0.03]	[0.03]	[0.03]		[0.03]	[0.02]	[0.02]	
	Real effective exch. rate (CPI, var.)	0.07	-0.08		16.2	0.01	-0.02	-0.02	9.5	0	-0.01	-0.01	7.9
		[0.03]**	[0.03]**			[0.02]	[0.02]	[0.02]		[0.02]	[0.02]	[0.02]	
Labour	Unemployment rate, Total	-1.47	1.52		29.2	-1.25	1.29		28.5	-1.08	1.12		28.1
		[0.39]**	[0.4]**			[0.34]**	[0.34]**			[0.29]**	[0.3]**		
Wages and salary	Indicator of negotiated wage rates	0.17	-0.31		14.3	-0.01	-0.18		12.9	-0.14	-0.09		13.8
		[0.22]	[0.18]**			[0.18]	[0.15]			[0.22]	[0.17]		
	Mining and quarrying	-0.27	-0.14	-0.14	8.3	-0.4	-0.27	-0.27	8	-0.51	-0.32	-0.32	8.1
		[0.28]	[0.42]	[0.42]		[0.44]	[0.5]	[0.5]		[0.54]	[0.53]	[0.53]	
	Electricity, gas and water supply	-0.25	-0.15	-0.15	8.7	-0.39	-0.27	-0.27	8.5	-0.48	-0.32	-0.32	8.5
		[0.24]	[0.39]	[0.39]		[0.38]	[0.44]	[0.44]		[0.48]	[0.46]	[0.46]	
	Manufacture of office machinery and computers	-0.27	0.06	0.06	6	-0.56	-0.22	-0.22	7.1	-0.88	-0.49	-0.49	7.5
		[1.49]	[1.05]	[1.05]		[0.86]	[0.98]	[0.98]		[1.16]	[1.16]	[1.16]	
	Manufacturing of medical, precision and optical instrument	-0.15	0.44		2.4	0.01	0.51		2.3	0.39	0.81		2.7
		[0.96]	[0.68]			[0.8]	[0.85]			[1.03]	[0.98]		
Employment	Transport equipment	6.45	14.13		18.3	6.79	13.24		18.5	6.87	12.52		18.7
		[12.54]	[8.78]			[10.99]	[9.06]			[10.13]	[9.4]		
	Motor vehicles, trailers and semi-trailers	3.95	15.03		21.7	4.36	14.36		21.8	5.12	13.47		22.1
		[10.74]	[7.58]**			[9.78]	[7.99]**			[9.01]	[8.21]		
Industrial production	Total industry	13.6			10.1	12.01			7	9.02			4.6
		[6.66]**				[7.18]				[6.76]			
	Intermediates	8.36		0.17	12.5	6.93			5	4.26		0.17	8.3
		[5.03]		[0.11]		[4.94]				[4.24]		[0.12]	
	Capital	9.4			14.5	9.27			10.8	7.03			7
		[3.76]**				[4.37]**				[4.21]			
	Energy	5.77		0.2	16.1	7.74		0.2	18.3	5.78		0.2	12.9

	Non-durable Consumer Goods	4.8	0.66	-0.23	33.6	7.42		0.65	-0.23	33.7	14.92		0.64	-0.23	34.2
		[19.42]	[0.16]**	[0.16]		[21.51]		[0.17]**	[0.16]		[23.67]		[0.17]**	[0.16]	
	Basic metals	24.99	0.42		38.4	36.51		0.31		50.7	23.14		0.32		48.5
		[11.1]**	[0.14]**			[9.32]**		[0.13]**			[8.05]**		[0.13]**		
	Chemicals products	29.5	0.52		39	32.44		0.47		40.7	30.46		0.49		41.5
		[12.63]**	[0.13]**			[12.57]**		[0.13]**			[11.3]**		[0.13]**		
	Electrical machinery and apparatus n.e.c.	27.05	0.39		40.3	35.08		0.43	-0.22	45.3	41.73		0.39	-0.26	54.1
		[10.73]**	[0.14]**			[12.74]**		[0.17]**	[0.15]		[10.53]**		[0.15]**	[0.13]**	
	Manufacture of machinery and equipment n.e.c.	15.03	0.6	-0.29	36.2	28.25		0.58	-0.36	39	42.05		0.56	-0.43	46.8
		[16.07]	[0.17]**	[0.17]**		[14.36]**		[0.16]**	[0.17]**		[14.19]**		[0.15]**	[0.16]**	
Foreign	UK, manufacturing production	0.18	-0.21	-0.21	31.6	0.53	-0.52	-0.52		36.4	0.65	-0.62	-0.62		39.1
		[0.33]	[0.31]	[0.31]		[0.3*]	[0.28]**	[0.28]**			[0.3]**	[0.27]**	[0.27]**		
	US, manufacturing production	0.43	0.02	0.02	-0.44	48.3	0.25	0.25	0.25	-0.5	47.2	0.21	0.3	0.3	-0.51
		[0.4]	[0.64]	[0.64]	[0.31]		[0.37]	[0.64]	[0.64]	[0.33]		[0.3]	[0.55]	[0.55]	[0.31]
	World trade	0.46	-0.08	-0.08	-0.39	65.7	0.44	-0.04	-0.04	-0.41	64	0.41	-0.03	-0.03	-0.39
		[0.18]**	[0.35]	[0.35]	[0.21]**		[0.2]**	[0.39]	[0.39]	[0.22]**		[0.17]**	[0.35]	[0.35]	[0.22]**
	World imports	0.17	[0.32]	[0.32]	[0.18]**	61.5	[0.18]	[0.34]	[0.34]	[0.19]**	61.2	[0.15]**	[0.3]	[0.3]	[0.19]**
	Imports Industrial countries (a)	0.19	0.32	0.32	-0.51	55.9	0.22	0.24	0.24	-0.47	56.6	0.31	0.07	0.07	-0.38
		[0.17]	[0.29]	[0.29]	[0.17]**		[0.17]	[0.3]	[0.3]	[0.18]**		[0.16]**	[0.3]	[0.3]	[0.18]**
	Imports United States	0.11	0.14	0.14	-0.25	47.9	0.15	0.05	0.05	-0.21	49	0.27	-0.27	-0.27	
		[0.12]	[0.17]	[0.17]	[0.11]**		[0.12]	[0.2]	[0.2]	[0.11]**		[0.09]**	[0.09]**	[0.09]**	
	Imports Japan	0.06	0.06	0.06	-0.12	41.4	0.03	0.07	0.07	-0.11	39.4	0.04	0.06	0.06	-0.11
		[0.05]	[0.07]	[0.07]	[0.07]**		[0.06]	[0.07]	[0.07]	[0.07]**		[0.08]	[0.08]	[0.08]	[0.06]**
	Imports EU15	0.31	-0.01	-0.01	-0.31	51.7	0.36	-0.09	-0.09	-0.28	54.6	0.44	-0.23	-0.23	-0.22
		[0.15]**	[0.23]	[0.23]	[0.15]**		[0.14]**	[0.22]	[0.22]	[0.15]**		[0.13]**	[0.21]	[0.21]	[0.14]
	Imports other countries	0.24	-0.25	-0.25		45.8	0.15	0.02	0.02	-0.18	49	0.14	0.03	0.03	-0.18
		[0.08]**	[0.08]**	[0.08]**			[0.11]	[0.19]	[0.19]	[0.11]		[0.1]	[0.17]	[0.17]	[0.11]**
	World exports	0.7	-0.72	-0.72		69	0.73	-0.74	-0.74		66	0.68	-0.69	-0.69	
		[0.11]**	[0.11]**	[0.11]**			[0.12]**	[0.12]**	[0.12]**			[0.11]**	[0.11]**	[0.11]**	
	exports Industrial countries (a)	0.24	0.27	0.27		67.7	0.23	0.28	0.28	-0.52	68.7	0.27	0.2	0.2	-0.47
		[0.13]**	[0.13]**	[0.13]**			[0.13]**	[0.12]**	[0.12]**			[0.11]**	[0.11]**	[0.11]**	
	exports United States	0.17	0	0	-0.17	48.6	0.14	0.02	0.02	-0.16	47.1	0.16	0	0	-0.15
		[0.08]**	[0.11]	[0.11]	[0.08]**		[0.08]**	[0.11]	[0.11]	[0.08]**		[0.07]**	[0.11]	[0.11]	[0.08]**
	exports Japan	0.12	-0.05	-0.05	-0.09	45.5	0.2	-0.22	-0.22		45.2	0.16	-0.18	-0.18	
		[0.06]**	[0.09]	[0.09]	[0.07]**		[0.07]**	[0.07]**	[0.07]**			[0.06]**	[0.06]**	[0.06]**	
	exports EU15	0.68	-0.7	-0.7		68.3	0.73	-0.75	-0.75		74.2	0.82	-0.82	-0.82	
		[0.11]**	[0.11]**	[0.11]**			[0.11]**	[0.11]**	[0.11]**			[0.07]**	[0.07]**	[0.07]**	
	exports other countries	0.18	0.01	0.01	-0.2	55	0.17	0.06	0.06	-0.24	52.3	0.19	0.03	0.03	-0.24
		[0.08]**	[0.16]	[0.16]	[0.11]**		[0.11]**	[0.17]	[0.17]	[0.11]**		[0.11]**	[0.17]	[0.17]	[0.11]**

Total imports

Exch rate	Effective exchange rate	-21.78	-1.47	-1.47	54.8	-20.93	-3.27	-3.27		54.8	-17.63	-3.7	-3.7		52.9
		[7.65]**	[7.36]	[7.36]		[7.55]**	[7.14]	[7.14]			[7.22]**	[7.31]	[7.31]		
Exch rate	Effective exchange rate (var.)	-0.23	0.25	0.25	55.3	-0.22	0.24	0.24		54.6	-0.19	0.21	0.21		53
		[0.08]**	[0.08]**	[0.08]**		[0.08]**	[0.08]**	[0.08]**			[0.08]**	[0.08]**	[0.08]**		
	Exch rate: USD	-7.93	9.29	9.29	49.7	-6.4	7.73	7.73		48.3	-5.94	7.2	7.2		48
		[4.37]**	[4.45]**	[4.45]**		[4.25]	[4.3*]	[4.3*]			[4.1]	[4.11]**	[4.11]**		
	Exch rate: GBP	-28.06	29.66	29.66	56.4	-26.09	27.4	27.4		55.5	-23.65	24.77	24.77		54.5
		[8.77]**	[8.87]**	[8.87]**		[8.54]**	[8.56]**	[8.56]**			[8.19]**	[8.15]**	[8.15]**		
	Exch rate: JPY	-0.07	0.08	0.08	53.7	-0.07	0.07	0.07		53.7	0.07	0.07	0.07		54.5
		[0.03]**	[0.03]**	[0.03]**		[0.03]**	[0.02]**	[0.02]**			[0.02]**	[0.02]**	[0.02]**		
	Exch rate: USD (var)	-10.46	0.75	0.75	49.5	-8.89	0.07	0.07		48	-8.32	-0.06	-0.06		47.7
		[4.75]**	[4.31]	[4.31]		[4.6]	[4.33]	[4.33]			[4.43]**	[4.33]	[4.33]		
	Exch rate: GBP (var)	-23.69	6.24	6.24	58.4	-22.34	4.69	4.69		57.9	-20.24	3.56	3.56		56.7
		[6.52]**	[6.29]	[6.29]		[6.27]**	[6.19]	[6.19]			[5.99]**	[6.19]	[6.19]		
	Exch rate: JPY (var)	-10.78	1.75	1.75	-6.29	63.3	-9.07	1.07	1.07	-5.81	61.6	-8.54	1	1	-5.64
		[0.05]	[2.9]	[2.9]	[2.54]**		[2.93]**	[2.92]	[2.92]	[2.59]**		[2.68]**	[2.89]	[2.89]	[2.58]**
Foreign	US, Treasury bills, 3-MONTH	1.91	-1.91	-1.91	63.2	1.83	-1.81	-1.81		66.5	1.69	-1.65	-1.65		68.7
		[0.44]**	[0.43]**	[0.43]**		[0.37]**	[0.36]**	[0.36]**			[0.32]**	[0.31]**	[0.31]**		
	US, 10 years Ylleds on US treasury notes and bonds	0.79	-0.52	-0.52	48.9	0.75	-0.44	-0.44		49.9	0.67	-0.34	-0.34		49.2
		[0.47]**	[0.52]	[0.52]		[0.44]**	[0.47]	[0.47]			[0.38]**	[0.41]	[0.41]		
Survey	Economic Sentiment Indicator	0.22	-0.2	-0.2	63.4	0.2	-0.18	-0.18		65.3	0.2	-0.17	-0.17		67.1
		[0.06]**	[0.05]**	[0.05]**		[0.05]**	[0.04]**	[0.04]**			[0.04]**	[0.03]**	[0.03]**		
Consumer survey	Business climate indicator	3.04	2.55	2.55	61.5	3.04	-1.73	-1.73		63.8	2.28	-1.68	-1.68		65.4
		[0.42]**	[0.41]**	[0.41]**		[0.51]**	[0.38]**	[0.38]**			[0.29]**	[0.27]**	[0.27]**		
	Savings over next 12 months	0.01	-0.05	-0.05	45.3	-0.02	-0.03	-0.03		45.3	-0.03	-0.02	-0.02		45.3
		[0.12]	[0.12]	[0.12]		[0.12]	[0.12]	[0.12]			[0.12]	[0.12]	[0.12]		
	Savings at present	-0.05	0.15	0.15	-0.24	51.8	-0.09	0.18	0.18	-0.24	52.8	-0.13	0.2	0.2	-0.24
		[0.12]	[0.13]	[0.13]	[0.11]**		[0.1]	[0.12]	[0.12]	[0.11]**		[0.1]	[0.12]	[0.12]	[0.11]**
	Statement on financial situation of household	0.24	-0.08	-0.08	43.5	-0.11	0.2	0.2		43	-0.09	0.18	0.18		42.9
		[0.37]	[0.35]	[0.35]		[0.35]	[0.36]	[0.36]			[0.37]	[0.39]	[0.39]		
	Financial situation over next 12 months	0.11	-0.17	-0.17	47.1	0.21	-0.26	-0.26		48.8	0.2	-0.24	-0.24		49
		[0.19]	[0.18]	[0.18]		[0.18]	[0.17]	[0.17]			[0.16]	[0.14]**	[0.14]**		
	Financial situation over last 12 months	-0.03	-0.02	-0.02	45.9	0.03	-0.08	-0.08		45.9	0.03	-0.08	-0.08		46
		[0.16]	[0.16]	[0.16]		[0.14]	[0.14]	[0.14]			[0.13]	[0.12]	[0.12]		
	General economic situation over last 12 months	0.05	-0.06	-0.06	48.4	0.06	-0.08	-0.08		49.8	0.07	-0.08	-0.08		50.4
		[0.06]	[0.05]	[0.05]		[0.05]	[0.05]	[0.05]			[0.04]	[0.04]**	[0.04]**		
	General economic situation over next 12 months	0.07	0.06	0.06	-0.09	55	0.06	0.03	0.03	-0.08	55.1	0.08	-0.09	-0.09	51
		[0.07]	[0.09]	[0.09]	[0.05]**		[0.06]	[0.09]	[0.09]	[0.05]**		[0.04]**	[0.04]**	[0.04]**	
	Price trends over last 12 months	0.08	-0.11	-0.11	50.7	0.06	-0.08	-0.08		49.4	0.04	-0.07	-0.07		49
		[0.05]	[0.05]**	[0.05]**		[0.04]	[0.05]**	[0.05]**			[0.04]	[0.04]**	[0.04]**		
	Price trends over next 12 months	0	-0.06	-0.06	48.6	-0.01	-0.04	-0.04		48.7	-0.01	-0.05	-0.05		48.7
		[0.06]	[0.06]	[0.06]		[0.05]	[0.06]	[0.06]			[0.05]	[0.05]	[0.05]		
	Unemployment expectations over next 12 months	-0.06	0.08	0.08	52.5	-0.08	0.09	0.09		55.1	-0.08	0.09	0.09		56.2
		[0.05]	[0.04]**	[0.04]**		[0.04]**	[0.04]**	[0.04]**			[0.04]**	[0.03]**	[0.03]**		
	Major purchases at present														

	Production expectations for the months ahead (CG)	0.09	0.02	0.02	-0.16	60	0.12	0.02	0.02	-0.16	61.4	0.2	0	0	-0.16	65.5
		[0.07]	[0.09]	[0.09]	[0.06]**		[0.07]**	[0.08]	[0.08]	[0.06]**		[0.07]**	[0.08]	[0.08]	[0.05]**	
	Selling price expectations for the months ahead (CG)	-0.01	0.04	0.04	-0.16	68.2	0.06	-0.03	-0.03	-0.15	69.4	0.07	-0.04	-0.04	-0.14	70.3
		[0.06]	[0.08]	[0.08]	[0.05]**		[0.05]	[0.07]	[0.07]	[0.05]**		[0.05]	[0.07]	[0.07]	[0.05]**	
	Employment expectations for the months ahead (CG)	0.07	0.03	0.03	-0.12	54.6	0.08	0.02	0.02	-0.12	54.9	0.09	0.02	0.02	-0.12	55.2
		[0.08]	[0.09]	[0.09]	[0.07]**		[0.08]	[0.09]	[0.09]	[0.07]**		[0.08]	[0.09]	[0.09]	[0.07]**	
	Industrial Confidence Indicator (CG)	0.25	0.01	0.01	-0.23	65.7	0.23	0.02	0.02	-0.22	65.8	0.29	-0.03	-0.03	-0.19	68.6
		[0.11]**	[0.13]	[0.13]	[0.08]**		[0.11]**	[0.13]	[0.13]	[0.08]**		[0.11]**	[0.13]	[0.13]	[0.08]**	
	Assessment of order-book levels (IG)	0.12	-0.11	-0.11		60.4	0.06	-0.09	-0.09		61.4	0.09	-0.08	-0.08		63.5
		[0.04]**	[0.03]**	[0.03]**			[0.03]**	[0.02]**	[0.02]**			[0.03]**	[0.02]**	[0.02]**		
	Assessment of export order-book levels (IG)	0.06	-0.03	-0.03	-0.04	65	0.04	-0.01	-0.01	-0.05	64.8	0.09	-0.08	-0.08		62.5
		[0.06]	[0.08]	[0.08]	[0.04]		[0.05]	[0.07]	[0.07]	[0.03]		[0.02]**	[0.02]**	[0.02]**		
	Assessment of stocks of finished products (IG)	-0.01	-0.15	-0.15	0.19	65.7	-0.02	-0.15	-0.15	0.18	65.7	-0.02	-0.14	-0.14	0.18	65.7
		[0.12]	[0.16]	[0.16]	[0.07]**		[0.1]	[0.15]	[0.15]	[0.08]**		[0.09]	[0.15]	[0.15]	[0.08]**	
	Production expectations for the months ahead (IG)	0.12	-0.08	-0.08	-0.05	65	0.16	-0.1	-0.1		63.9	0.18	-0.08			65.7
		[0.04]**	[0.06]	[0.06]	[0.03]		[0.03]**	[0.03]**	[0.03]**			[0.03]**	[0.02]**			
	Selling price expectations for the months ahead (IG)	0.11	-0.1	-0.1		58.3	0.09	-0.09	-0.09		59.6	0.09	-0.08	-0.08		60.5
		[0.03]**	[0.03]**	[0.03]**			[0.03]**	[0.02]**	[0.02]**			[0.02]**	[0.02]**	[0.02]**		
	Employment expectations for the months ahead (IG)	0.06	-0.01	-0.01	-0.09	62.7	0.07	-0.01	-0.01	-0.09	63.1	0.08	-0.03	-0.03	-0.08	64
		[0.06]	[0.08]	[0.08]	[0.05]**		[0.06]	[0.07]	[0.07]	[0.05]**		[0.05]	[0.07]	[0.07]	[0.05]**	
	Industrial Confidence Indicator (IG)	0.2	-0.17	-0.17		63.3	0.17	-0.14	-0.14		63.8	0.15	-0.11	-0.11		65.7
		[0.05]**	[0.04]**	[0.04]**			[0.04]**	[0.03]**	[0.03]**			[0.03]**	[0.02]**	[0.02]**		
	Assessment of order-book levels (KG)	0.13	-0.14	-0.14		56.4	0.13	-0.13	-0.13		58	0.17	-0.15			60
		[0.06]**	[0.05]**	[0.05]**			[0.05]**	[0.04]**	[0.04]**			[0.04]**	[0.03]**			
	Assessment of export order-book levels (KG)	0.1	-0.11	-0.11		55.3	0.11	-0.11	-0.11		57.1	0.11	-0.11	-0.11		59.1
		[0.05]**	[0.04]**	[0.04]**			[0.05]**	[0.04]**	[0.04]**			[0.04]**	[0.03]**	[0.03]**		
	Assessment of stocks of finished products (KG)	-0.08	0.1	0.1		48	-0.14	0.13	0.13		51.6	-0.18	0.16	0.16		56.1
		[0.07]	[0.06]	[0.06]			[0.07]**	[0.05]**	[0.05]**			[0.06]**	[0.05]**	[0.05]**		
	Production expectations for the months ahead (KG)	0.02	0	0	-0.06	60.5	0.06	-0.02	-0.02	-0.05	62.6	0.07	-0.02	-0.02	-0.05	64.3
		[0.04]	[0.05]	[0.05]	[0.03]**		[0.04]	[0.04]	[0.04]	[0.03]**		[0.04]**	[0.04]	[0.04]	[0.02]**	
	Selling price expectations for the months ahead (KG)	0.06	-0.14	-0.14		56.7	0.13	-0.2	-0.2		60.6	0.13	-0.18	-0.18		60.1
		[0.07]	[0.07]**	[0.07]**			[0.06]**	[0.06]**	[0.06]**			[0.05]**	[0.05]**	[0.05]**		
	Employment expectations for the months ahead (KG)	0.1	-0.11	-0.11		56.6	0.1	-0.11	-0.11		57.1	0.11	-0.12	-0.12		58.4
		[0.05]**	[0.04]**	[0.04]**			[0.05]**	[0.04]**	[0.04]**			[0.05]**	[0.04]**	[0.04]**		
	Industrial Confidence Indicator (KG)	0.08	-0.05	-0.05	-0.05	58.7	0.15	-0.14	-0.14		57.8	0.16	-0.14	-0.14		61.6
		[0.07]	[0.09]	[0.09]	[0.05]		[0.05]**	[0.04]**	[0.04]**			[0.05]**	[0.03]**	[0.03]**		
Construction survey	Trend of activity compared with preceding months	0.06	0.01	0.01	-0.09	58.4	0.05	0.01	0.01	-0.08	57.4	0.05	0.01	0.01	-0.08	57.5
		[0.03]	[0.05]	[0.05]	[0.03]**		[0.05]	[0.05]	[0.05]	[0.03]**		[0.05]	[0.05]	[0.05]	[0.04]**	
	Assessment of order-books	0.08	-0.1	-0.1		50.5	0.06	-0.08	-0.08		48.8	0.07	-0.09	-0.09		49.6
		[0.05]	[0.05]**	[0.05]**			[0.05]	[0.05]	[0.05]			[0.05]	[0.05]	[0.05]		
	Price expectations for the months ahead	0.13	-0.15	-0.15		53.9	0.12	-0.14	-0.14		54.8	0.11	-0.13	-0.13		55.4
		[0.06]**	[0.05]**	[0.05]**			[0.05]**	[0.05]**	[0.05]**			[0.04]**	[0.04]**	[0.04]**		
	Construction Confidence Indicator	0.1	-0.12	-0.12		51.8	0.1	-0.11	-0.11		51.6	0.1	-0.11	-0.11		51.5
		[0.05]**	[0.05]**	[0.05]**			[0.05]**	[0.05]**	[0.05]**			[0.05]**	[0.05]**	[0.05]**		
	Construction employment	0.06	0.03	0.03	-0.11	58.4	0.06	0.01	0.01	-0.11	59.7	0.07	0.02	0.02	-0.11	58.8
		[0.04]	[0.06]	[0.06]	[0.05]**		[0.04]	[0.06]	[0.06]	[0.04]**		[0.04]	[0.07]	[0.07]	[0.05]**	
Foreign	US, Production expectations	0.05	0.01	0.01	0.03	71.4	0.05	0	0	0.03	73.3	0.06	0	0	0.03	73.6
		[0.01]**	[0.02]	[0.02]	[0.02]**		[0.01]**	[0.02]	[0.02]	[0.02]**		[0.01]**	[0.02]	[0.02]	[0.02]**	
	US, Consumer expectations	0.06	-0.04	-0.04		49.3	0.08	-0.06	-0.06		53.8	0.09	-0.01	-0.01	-0.06	60.5
		[0.03]**	[0.03]	[0.03]			[0.03]**	[0.03]**	[0.03]**			[0.03]**	[0.04]	[0.04]	[0.03]**	
	World market price of raw materials in Euro	0.1	-0.12	-0.12		64.2	0.1	-0.12	-0.12		65.5	0.09	-0.1	-0.1		63.9
		[0.03]**	[0.03]**	[0.03]**			[0.02]**	[0.02]**	[0.02]**			[0.02]**	[0.02]**	[0.02]**		
	World market price of raw materials excl energy in Euro	0.09	-0.07	-0.07	-0.05	60	0.07	-0.05	-0.05	-0.05	58.8	0.07	-0.05	-0.05	-0.05	58.9
		[0.04]**	[0.06]	[0.06]	[0.03]		[0.04]**	[0.06]	[0.06]	[0.04]		[0.04]**	[0.06]	[0.06]	[0.04]	
Cars	Passenger car registration	-0.01	0.54	0.54		42.8	-0.01	0.54	0.54		42.8	-0.02	0.54	0.54		42.8
		[0.02]	[0.11]**	[0.11]**			[0.03]	[0.11]**	[0.11]**			[0.03]	[0.11]**	[0.11]**		
Exch rate	Real effective exch. rate (CPI)	-0.22	0.24	0.24		58	-0.19	0.21	0.21		56.6	-0.19	0.2	0.2		56.8
		[0.07]**	[0.07]**	[0.07]**			[0.06]**	[0.06]**	[0.06]**			[0.06]**	[0.06]**	[0.06]**		
	Real effective exch. rate (CPI, var.)	-0.16	0.1	0.1		54	-0.01	0.1	0.1		52.3	-0.07	0.02	0.02		53.2
		[0.08]**	[0.09]	[0.09]			[0.05]	[0.05]	[0.05]			[0.04]	[0.04]	[0.04]		
Foreign	UK, unemployment rate	0.21	-0.11	-0.11		45.1	-0.41	0.49	0.49		45.2	-1.29	1.35	1.35		46.5
		[2.42]	[2.39]	[2.39]			[1.67]	[1.63]	[1.63]			[1.36]	[1.32]	[1.32]		
	UK, Retail trade	-0.03	0.01	0.01		45	-0.1	0.09	0.09		46.4	-0.02	0	0		45
		[0.11]	[0.12]	[0.12]			[0.11]	[0.11]	[0.11]			[0.1]	[0.1]	[0.1]		
	US, Retail trade	0	0	0		46.6	0	0	0		46.2	0	0	0		45.6
		[0]	[0]	[0]			[0]	[0]	[0]			[0]	[0]	[0]		
	US, unemployment rate	-3.62	3.66	3.66		59.6	-3.67	3.55	3.55		59.6	-3.32	3.15	3.15		61
		[1.03]**	[0.98]**	[0.98]**			[0.96]**	[0.87]**	[0.87]**			[0.88]**	[0.79]**	[0.79]**		
New orders (non domestic)	Leather and leather products	4.07	4.24	4.24		48.4	6.66	4.92	4.92		53	7.18	4.51	4.51		54.2
		[3.09]	[2.81]	[2.81]			[2.89]**	[2.7]	[2.7]			[2.84]**	[2.65]**	[2.65]**		
	Manufacture of machinery and equipment n.e.c.	4.98	9.68	9.68		52	9.62	8.18	8.18		56.2	7.98	8.36	8.36		54.6
		[3.36]	[4.18]**	[4.18]**			[4.01]**	[3.99]**	[3.99]**			[3.83]**	[4.06]**	[4.06]**		
	Manufacture of furniture; manufacturing n.e.c.	8.62	2.43	2.43		49.9	8.24	2.98	2.98		51.1	8.15	-0.54	-0.54		49.8
		[3.85]**	[4.3]	[4.3]			[4.33]**	[4.28]	[4.28]			[4.13]**	[4.37]	[4.37]		
Turnover index (non domestic)	Leather and leather products	7.78	3.42	3.42		49	8.59	3.36	3.36		52.4	8.72	2.82	2.82		52.4
		[4.09]**	[3.61]	[3.61]			[3.4]**	[3.48]	[3.48]			[3.45]**	[3.49]	[3.49]		
	Manufacture of machinery and equipment n.e.c.	10.93	-3.27	-3.27	-13.19	53	12.81	-5.78	-5.78	-13.19	53.3	14.58	-3.65	-3.65	-12.79	55
		[5.49]**	[6.89]	[6.89]	[6.48]**		[6.23]**	[6.59]	[6.59]	[6.46]**		[6.15]**	[6.62]	[6.62]	[6.29]**	
	Mining of coal and lignite; extraction of peat	-0.62	-0.13	-0.13		42.6	-1.97	-0.21	-0.21		43.4	-2.49	-0.17	-0.17		44
		[1.65]	[2.36]	[2.36]			[2.48]	[2.34]	[2.34]			[2.45]	[2.32]	[2.32]		</

	Manufacture of machinery and equipment n.e.c.	1.98	2.27			5.4	2.6	1.87			6.6	1.78	1.86			4
		[1.67]	[1.94]				[1.88]	[1.83]				[1.89]	[1.88]			
	Mining of coal and lignite; extraction of peat	0.17	-0.58			2.4	-0.14	-0.81			2.2	-0.18	-0.61			2.2
		[0.48]	[0.69]				[0.73]	[0.69]				[0.73]	[0.69]			
	Manufacture of furniture; manufacturing n.e.c.	0.37	3.07	3.07	3.64	25.6	0.42	3.05	3.05	3.64	25.6	0.99	2.92	2.92	3.78	26.4
		[1.54]	[1.57]*	[1.57]*	[1.58]***		[1.57]	[1.58]*	[1.58]*	[1.58]***		[1.57]	[1.57]*	[1.57]*	[1.59]***	
Exports	Intra exports	1.74				0.8	3.12				3.9	3.95				7.6
		[3.1]					[2.55]					[2.27]*				
Imports	Intra imports	-0.89				0.5	1.74				1.9	2.87				5.5
		[2.06]					[2.06]					[1.96]				
	Extra imports	5.05				13.6	4.54				16.7	3.8				15.5
		[2.09]***					[1.67]***					[1.46]***				
Industrial production	PPI											-0.09	0.3	0.3	-0.21	22.8
												[0.09]	[0.16]*	[0.16]*	[0.09]***	
	Energy						-0.43				0.1	-0.35				0
							[2.93]					[2.87]				
PPI	PPI - Energy	0.02	-0.02			2.8	0.02	-0.02			3.5	0.01	0			2.1
		[0.03]	[0.03]				[0.02]	[0.02]				[0.02]	[0.02]			
	PPI - Intermediate Goods Industry	-0.14	0.3	0.3	-0.15	26.4	0.09	-0.07			14.3	0.07	-0.04			14.2
		[0.18]	[0.24]	[0.24]	[0.08]**		[0.04]***	[0.04]				[0.03]***	[0.03]			
	PPI-MIG Non-durable Consumer Goods	0.1	-0.11			0.7	0.11	-0.12			1.9	0.04	-0.05			0.6
		[0.27]	[0.27]				[0.14]	[0.14]				[0.1]	[0.1]			
Foreign	World trade	0.01	-0.02			5.4	0.03	-0.03			6.2	0.03	-0.03			6.9
		[0.04]	[0.04]				[0.04]	[0.04]				[0.04]	[0.04]			
	World imports	0.02	-0.02			5.7	0.04	-0.04			7.7	0.04	-0.04			7.8
		[0.04]	[0.04]				[0.04]	[0.04]				[0.04]	[0.04]			
	Imports Industrial countries (a)	0	-0.01			5.1	0.03	-0.03			6.2	0.03	-0.04			7.3
		[0.04]	[0.04]				[0.04]	[0.04]				[0.04]	[0.04]			
	Imports United States	-0.02	0.02			5.9	-0.05	0.12	0.12	-0.07	21.7	-0.04	0.11	0.11	-0.07	19.3
		[0.03]	[0.03]				[0.03]*	[0.05]***	[0.05]***	[0.03]***		[0.03]	[0.05]**	[0.05]**	[0.03]***	
	Imports Japan	0.01	-0.01			7.2	0.01	-0.01			6.4	0.01	-0.02			7.7
		[0.01]	[0.01]				[0.02]	[0.01]				[0.02]	[0.02]			
	Imports EU15	0.01	-0.02			5.6	0.04	-0.04			9.1	0.05	-0.05			10.4
		[0.04]	[0.04]				[0.03]	[0.03]				[0.03]	[0.03]			
	Imports other countries	0.01	-0.02			6.2	0.03	-0.03			7.9	0.02	-0.02			6.7
		[0.02]	[0.02]				[0.03]	[0.03]				[0.02]	[0.02]			
	World exports	0.01	-0.01			5.1	0.01	-0.02			5.2	0.02	-0.03			6
		[0.04]	[0.04]				[0.04]	[0.04]				[0.04]	[0.04]			
	exports Industrial countries (a)	-0.01	0			4.8	0.01	-0.01			4.9	0.02	-0.03			5.7
		[0.05]	[0.05]				[0.04]	[0.04]				[0.04]	[0.04]			
	exports United States	-0.01	0.05	0.05	-0.05	19.6	-0.02	0.06	0.06	-0.05	21	-0.01	0.06	0.06	-0.05	19.9
		[0.02]	[0.03]	[0.03]	[0.02]***		[0.02]	[0.03]**	[0.03]**	[0.02]***		[0.02]	[0.03]*	[0.03]*	[0.02]***	
	exports Japan	0.02	-0.02			6.4	0.02	-0.03			5.7	0.02	-0.02			5.7
		[0.02]	[0.02]				[0.02]	[0.02]				[0.02]	[0.02]			
	exports EU15	-0.01	0.01			5.5	0.01	-0.02			5.7	0.02	-0.03			6.4
		[0.04]	[0.04]				[0.03]	[0.03]				[0.03]	[0.03]			
	exports other countries	0.01	-0.01			5.9	0.01	-0.01			5.4	0.01	-0.02			6
		[0.02]	[0.02]				[0.02]	[0.03]				[0.03]	[0.03]			

APPENDIX 3 - Estimated individual equations for GDP

		1st month only					Up to the 2nd month						Full quarter						
		β_0	β_1	β_2	α_1	α_2	R^2 (%)	β_0	β_1	β_2	α_1	α_2	R^2 (%)	β_0	β_1	β_2	α_1	α_2	R^2 (%)
Stock prices	Eurostoxx 5C	0	0.01	0.01			16.4	-0.01	0.01	0.01			16.4	-0.01	0.01	0.01			16.4
		[0.05]	[0.02]	[0.02]				[0.04]	[0.02]	[0.02]				[0.04]	[0.02]	[0.02]			
Stock prices	EUROSTOXX 325 (LHS)	0.01	0.01	0.01	0.04		27.6	0.02	0.02	0.02	0.04		28.3	0.01	0.02	0.02	0.04		28.3
		[0.02]	[0.02]	[0.02]	[0.02]*			[0.03]	[0.03]	[0.03]	[0.02]*			[0.02]	[0.03]	[0.03]	[0.02]*		
	S&P 500	0.01	-0.04	-0.04	-0.03		35.9	0.01	-0.04	-0.04	-0.03		35.9	0	-0.04	-0.04	-0.03		36
		[0.02]	[0.02]**	[0.02]**	[0.02]			[0.02]	[0.02]**	[0.02]**	[0.02]			[0.02]	[0.02]**	[0.02]**	[0.02]		
	US, Dow Jones	0	-0.01	-0.01			17.6	-0.01	-0.01	-0.01			18.1	-0.01	-0.01	-0.01	-0.01		26.5
		[0.02]	[0.01]	[0.01]				[0.02]	[0.01]	[0.01]				[0.01]	[0.01]	[0.01]	[0.01]		
Earnings	Manuf	0.01	-0.04	-0.04	-0.02		42.9	-0.01	-0.02	-0.02	-0.02		42.9	-0.01	-0.01	-0.01	-0.02		43.7
		[0.04]	[0.04]	[0.04]	[0.02]			[0.02]	[0.02]	[0.02]	[0.02]			[0.02]	[0.02]	[0.02]	[0.02]		
	Services	-0.01	0.01	0.01	-0.02		32.1	-0.02	0.02	0.02	-0.03		33.7	0	0.01	0.01	-0.02		31.8
		[0.02]	[0.03]	[0.03]	[0.02]			[0.02]	[0.03]	[0.03]	[0.02]*			[0.02]	[0.02]	[0.02]	[0.02]		
	Total	0	0	0	-0.03		35.5	-0.02	0.02	0.02	-0.04		36.7	-0.01	0	0	-0.03		35.6
		[0.03]	[0.04]	[0.04]	[0.02]			[0.03]	[0.04]	[0.04]	[0.02]			[0.02]	[0.03]	[0.03]	[0.02]		
	Basic materials	0	-0.02	-0.02	-0.03		48.5	0	-0.02	-0.02	-0.03		48.4	-0.01	-0.01	-0.01	-0.03		49.7
		[0.02]	[0.02]	[0.02]	[0.02]			[0.02]	[0.02]	[0.02]	[0.02]			[0.02]	[0.02]	[0.02]	[0.02]		
	Utilities	0.01	0.03	0.03			24.1	-0.02	0.05	0.05			25.1	0.01	0.01	0.01	0.03		32
		[0.04]	[0.04]	[0.04]				[0.03]	[0.03]*	[0.03]*				[0.02]	[0.03]	[0.03]	[0.02]		
Finance	PER manuf	-0.02	0.18				40.2	-0.02	0.18				40.2	0	0.16				40.1
		[0.08]	[0.08]**					[0.07]	[0.08]**					[0.07]	[0.07]**				
	PER services	0.06	-0.01	-0.01			27.3	0.06	-0.01	-0.01			23.7	0.07	-0.01	-0.01			25.3
		[0.05]	[0.05]	[0.05]				[0.05]	[0.05]	[0.05]				[0.04]	[0.04]	[0.04]			
	PER total	0.07	0				24.4	0.07	0				24.5	0.07	0				25.7
		[0.05]	[0.06]					[0.05]	[0.05]					[0.05]	[0.05]				
Exch rate	Effective exchange rate	-1.9	-3.64	-3.64	-3.8		37.9	-1.89	-3.8	-3.76			38	-1.76	-3.79	-3.77			38
		[2.58]	[2.41]	[2.41]	[2.36]			[2.47]	[2.34]	[2.34]	[2.36]			[2.34]	[2.34]	[2.34]	[2.36]		
	Effective exchange rate (var.)	-0.03	-0.02	-0.02	0.05		34.7	-0.02	-0.02	-0.02	0.05		34.6	-0.02	-0.03	-0.03	0.05		34.4
		[0.03]	[0.05]	[0.05]	[0.03]*			[0.03]	[0.04]	[0.04]	[0.03]**			[0.03]	[0.04]	[0.04]	[0.03]**		
	Exch rate: USD	-0.01	-1.82	-1.82	2.18		28.1	-0.21	-1.59	-1.59	2.15		28.2	-0.16	-1.65	-1.65	2.15		28.2
		[1.49]	[2.18]	[2.18]	[1.33]			[1.42]	[2.06]	[2.06]	[1.31]			[1.37]	[2.01]	[2.01]	[1.31]		
	Exch rate: GBP	0.68	-5.95	-5.95	5.6		28.8	0.47	-5.64	-5.64	5.5		28.8	-0.07	-4.95	-4.95	5.33		28.7
		[3.42]	[5.42]	[5.42]	[3.08]*			[3.21]	[5.07]	[5.07]	[3.02]*			[3]	[4.78]	[4.78]	[2.98]**		
	Exch rate: JPY	-0.01	-0.01	-0.01	0.02		36.7	-0.01	0	0	0.02		38.8	-0.01	0	0	0.02		39.8
		[0.01]	[0.01]	[0.01]	[0.01]**			[0.01]	[0.01]	[0.01]	[0.01]**			[0.01]	[0.01]	[0.01]	[0.01]**		
	Exch rate: USD (var)	-0.13	-2.37	-2.37			22.6	-0.33	-2.35	-2.35			22.6	-0.39	-2.34	-2.34			22.7
		[1.58]	[1.43]	[1.43]				[1.52]	[1.42]	[1.42]				[1.47]	[1.42]	[1.42]			
	Exch rate: GBP (var)	0.24	-3.36	-3.36	-2.65		32.6	0.15	-3.32	-3.32	-2.66		32.6	-0.26	-3.23	-3.23	-2.62		32.6
		[2.27]	[2.15]	[2.15]	[1.93]			[2.18]	[2.1]	[2.1]	[1.94]			[2.06]	[2.08]	[2.08]	[1.94]		
	Exch rate: JPY (var)	-1.24	-1.75	-1.75	-1.37		40.8	-1.49	-1.75	-1.75	-1.29		42.6	-0.88	-1.78	-1.78	-1.23		43.3
		[1.08]	[0.93]*	[0.93]*	[0.86]			[0.97]	[0.9]*	[0.9]*	[0.85]			[0.88]**	[0.89]**	[0.89]**	[0.85]		
Foreign	US, Treasury bills, 3-MONTH	0.47	-0.37				33.1	0.44	-0.34				36.6	0.4	-0.29				37.1
		[0.14]**	[0.15]**					[0.12]**	[0.13]**					[0.11]**	[0.11]**				
	US, 10 years Yields on US Treasury notes and bond	0.34	-0.24	-0.24			31.5	0.3	-0.19	-0.19			30.6	0.17	0.08	0.08	-0.17		35.2
		[0.15]**	[0.16]	[0.16]				[0.14]**	[0.15]	[0.15]				[0.13]	[0.21]	[0.21]	[0.14]		
Interest rate	Long term bond yield	0.39	-0.38	-0.38			28.1	0.31	-0.3	-0.3			24.8	0.24	-0.23	-0.23			23.1
		[0.16]**	[0.16]**	[0.16]**				[0.15]**	[0.15]**	[0.15]**				[0.13]**	[0.13]**	[0.13]**			
	Diff 10-year bond yield (bp)	0	0.01	0.01	-0.01		37.6	0.01	0	0	-0.01		30.4	0	0.01	0.01	-0.01		30.5
		[0]	[0]**	[0]**	[0]			[0]	[0]**	[0]**	[0]			[0]	[0]**	[0]**	[0]		
	Short term interest rate	0.55	-0.55				25.1	0.51	-0.49				27.4	0.46	-0.44				29.1
		[0.18]**	[0.17]**					[0.16]**	[0.14]**					[0.14]**	[0.12]**				
	Diff short term interest rates (bp)	0.01	0				22	0.01	0				24.5	0.01	0				26.8
		[0]**	[0]					[0]**	[0]					[0]**	[0]				
Survey	Economic Sentiment Indicato	0.06	-0.05				36.4	0.05	-0.04				40.1	0.05	-0.04				43.5
		[0.01]**	[0.01]**					[0.01]**	[0.01]**					[0.01]**	[0.01]**				
Consumer survey	Business climate indicato	0.59	-0.46				35.9	0.52	-0.38				39.4	0.47	-0.32				42.5
		[0.14]**	[0.14]**					[0.12]**	[0.11]**					[0.11]**	[0.09]**				
	Savings over next 12 months:	0.01	-0.01	-0.01			16.3	0.02	-0.02	-0.02			16.6	0.05	-0.05	-0.05			20.3
		[0.04]	[0.04]	[0.04]				[0.04]	[0.04]	[0.04]				[0.04]	[0.04]	[0.04]			
	Savings at present	0	0	0	-0.05		28.9	-0.01	0.02	0.02	-0.05		29.3	-0.02	0.02	0.02	-0.05		29.3
		[0.04]	[0.05]	[0.05]	[0.03]			[0.04]	[0.04]	[0.04]	[0.03]			[0.04]	[0.04]	[0.04]	[0.03]		
	Statement on financial situation of household	0.07	-0.07	-0.07			17.2	-0.1	0.07	0.07			18.3	-0.16	0.13	0.13			20.8
		[0.12]	[0.12]	[0.12]				[0.11]	[0.12]	[0.12]				[0.12]	[0.12]	[0.12]			
	Financial situation over next 12 month	0.09	-0.08	-0.08			20.7	0.16	-0.14	-0.14			23.7	0.16	-0.13	-0.13			28.3
		[0.06]	[0.06]	[0.06]				[0.05]**	[0.05]**					[0.04]**	[0.04]**				
	Financial situation over last 12 month	0.06	-0.06	-0.06			19.5	0.07	-0.07	-0.07			21.9	0.07	-0.06	-0.06			23.7
		[0.05]	[0.05]	[0.05]				[0.04]	[0.04]	[0.04]				[0.04]**	[0.04]**	[0.04]**			
	General economic situation over last 12 month	0.05	-0.04				23.7	0.04	-0.04				29.6	0.04	-0.03				30.7
		[0.01]**	[0.01]**					[0.01]**	[0.01]**					[0.01]**	[0.01]**				
	General economic situation over next 12 month	0.05	-0.03				20.1	0.04	-0.03				22.8	0.04	-0.03				26.4
		[0.02]**	[0.02]**					[0.02]**	[0.01]**					[0.01]**	[0.01]**				
	Price trends over last 12 months:	-0.01	0.02	0.02	-0.03		37.9	-0.01	0.02	0.02	-0.03		38.1	0	0.01	0.01	-0.03		37.8
		[0.02]	[0.03]	[0.03]	[0.01]*			[0.01]	[0.02]	[0.02]	[0.01]*			[0.01]	[0.02]	[0.02]	[0.01]*		
	Price trends over next 12 months:	0	0.01	0.01	-0.03		29.5	-0.01											

Imports United States	[0.05]	[0.09]	[0.09]	[0.05]	40.6	[0.05]*	[0.09]	[0.09]	[0.05]	40.2	[0.04]***	[0.04]***	0.03	-0.06	40.6
	0.03	0.04	0.04	-0.07		0.02	0.04	0.04	-0.06		0.03	0.03	0.03	-0.06	
Imports Japan	[0.03]	[0.05]	[0.05]	[0.03]***	32.3	[0.03]	[0.05]	[0.05]	[0.03]***	28.4	[0.03]	[0.05]	[0.05]	[0.03]**	29.3
	0.03	-0.04	-0.04			0.03	-0.04	-0.04			0.04	-0.04	-0.04		
Imports EU15	[0.01]***	[0.01]***	[0.01]***		23.4	[0.02]**	[0.02]***	[0.02]***		25.7	[0.02]***	[0.02]***	[0.02]***		31.8
	0.07	-0.07	-0.07			0.13	-0.13				0.13	-0.13			
Imports other countries	[0.04]	[0.05]	[0.05]		32.8	[0.04]***	[0.04]***	0.07	-0.06	32.7	[0.03]***	[0.03]***	0.07	-0.06	32.9
	-0.01	0.07	0.07	-0.06		-0.02	0.07	0.07	-0.06		-0.02	0.07	0.07	-0.06	
World exports	[0.03]	[0.05]	[0.05]	[0.03]*	39.7	[0.03]	[0.06]	[0.06]	[0.03]*	39	[0.03]	[0.05]	[0.05]	[0.03]*	40.5
	0.05	0.03	0.03	-0.08		0.04	0.04	0.04	-0.09		0.06	0.01	0.01	-0.08	
exports Industrial countries (a)	[0.05]	[0.1]	[0.1]	[0.06]	42.8	[0.06]	[0.1]	[0.1]	[0.06]	41.9	[0.05]	[0.1]	[0.1]	[0.06]	44.4
	0.07	0.03	0.03	-0.1		0.05	0.05	0.05	-0.11		0.08	0.02	0.02	-0.09	
exports United States	[0.05]	[0.09]	[0.09]	[0.05]**	34.8	[0.05]	[0.09]	[0.09]	[0.05]**	32.6	[0.05]	[0.08]	[0.08]	[0.05]*	34
	0.03	0.02	0.02	-0.04		0.01	0.04	0.04	-0.05		0.02	0.02	0.02	-0.04	
exports Japar	[0.02]	[0.03]	[0.03]	[0.02]***	30.8	[0.02]	[0.03]	[0.03]	[0.02]***	30.8	[0.02]	[0.03]	[0.03]	[0.02]**	28.1
	0.04	-0.05	-0.05			0.05	-0.05	-0.05			0.04	-0.04	-0.04		
exports EU15	[0.02]***	[0.02]***	[0.02]***		36.4	[0.02]***	[0.02]***	[0.02]***		38.1	[0.02]***	[0.02]***	[0.02]***		41.7
	0.04	0.04	0.04	-0.08		0.05	0.02	0.02	-0.08		0.08	-0.02	-0.02	-0.07	
exports other countries	[0.04]	[0.07]	[0.07]	[0.05]*	32	[0.04]	[0.07]	[0.07]	[0.05]	31.9	[0.04]*	[0.07]	[0.07]	[0.04]	32.4
	0.02	0	0	-0.03		0.03	0	0	-0.04		0.03	0	0	-0.04	
	[0.03]	[0.05]	[0.05]	[0.03]		[0.03]	[0.05]	[0.05]	[0.03]		[0.03]	[0.05]	[0.05]	[0.03]	