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MACROECONOMIC FORECASTING IN THE EURO AREA: COUNTRY SPECIFIC VERSUS AREA-WIDE INFORMATION

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1. Introduction

The challenge of forecasting aggregate European economic performance is gaining increasing importance. Euro-area inflation forecasts are needed to implement effectively the European Central Bank's targets for inflation of the Euro. European integration also means that political and business decisions increasingly depend on aggregate European real economic activity, so it is also of increasing interest to consider the problem of forecasting real activity measures for the Euro area as a whole. Forecasting Euro-area aggregates is largely a new area and there is considerable uncertainty about the best to approach this task.

This paper investigates several time series methods for forecasting four Euro-area wide aggregate variables: real GDP, industrial production, price inflation, and the unemployment rate. We consider two empirical questions arising from this problem. First, is it better to build aggregate Euro-area wide forecasting models for these variables, or are there gains from aggregating country-specific forecasts for the component country variables? Second, are there gains from using information from additional predictors beyond simple univariate time series forecasts, and if so, how large are these gains and how are they best achieved?

These questions are attacked by applying an array of forecasting models to data on the eleven countries originally in the EMU, over the period 1982-1997, at both the monthly and quarterly level (the data set is discussed in detail in section 2). We focus on short-run forecasts at the one-, two- and four-quarter horizons. Using these data, we consider forecasts constructed at the country level and, alternatively, at the aggregate EU level. Comparable forecasting models are constructed for each country, and the resulting forecasts are aggregated to the Euro area level. This

permits a comparison of models and forecasts based on different information sets and constructed at different levels of aggregation.

Five sets of forecasting models are considered: autoregressions; vector autoregressions (VARs); a model in which the Euro-area aggregate is used at the country level as a predictor for the country-specific variable; one in which the comparable aggregate for the United States is used as a predictor; and a large-model forecasting framework in which forecasts are based on estimates of common dynamic factors. The first four of these methods are conventional.

The fifth approach, forecasting using estimated common factors, is motivated by postulating that there are common sources for co-movements across the Euro area and that these co-movements are useful for forecasting both at the country and at the aggregate level. One way to model these co-movements is as arising from one or more common dynamic factors (Geweke (1977), Sargent and Sims (1977)). Recent advances in the theory of dynamic factor models have shown that, under suitable technical conditions, it is possible to estimate the dynamic factors consistently in an approximate dynamic factor model when the time series and cross sectional dimensions are large (Forni, Hallin, Lippi and Reichlin (1999a), Stock and Watson (1998)). If the data are generated by an approximate dynamic factor model, then factors estimated by principal components can also be used for efficient forecasting under quite general conditions (Stock and Watson (1998)). Recent empirical applications of these and related methods include forecasting U.S. inflation (Stock and Watson (1999)) and constructing coincident and leading indexes for the Euro-area (Forni, Hallin, Lippi and Reichlin (1999b). (Additional references to this growing literature are contained in Stock and Watson (1998) and Forni, Hallin, Lippi and Reichlin (1999a,b).)

Although the main focus of this paper is on comparing forecasting models, our findings might be of interest to macroeconomists more generally. We have two principal conclusions. First,

there typically are gains from forecasting these series at the country level, then pooling the forecasts, relative to forecasting at the aggregate level; the coefficient restrictions that would permit direct modeling of the aggregates are strongly rejected, and the pooled forecasts are more accurate than forecasts constructed using the aggregate series. This suggests that structural macroeconometric modeling of the Euro area is appropriately done at the country-specific level, rather than directly at the aggregate level. For example, this apparent failure of the aggregation restrictions complicates the interpretation of models of Euro-wide inflation dynamics estimated at the aggregate level, cf. Gali, Gertler and López-Salido (2001).

Second, our simulated out-of-sample forecast experiment provides little evidence that forecasts from multivariate models are more accurate than forecasts from univariate models. Looking across variables and forecast horizons, the most accurate forecasts are produced by pooling country-specific univariate autoregressions, a method called "autoregressive components" by Fair and Shiller (1990). If we restrict attention to multivariate models, the forecasts based on estimated factors appear to be somewhat more accurate than the other methods. There are several possible reasons for the comparative success of the autoregressive components forecasts. One is that our sample covers a period of great economic change in Europe, and consequent instability of the multivariate relations could make simple autoregressions more reliable. Another is that our short sample (short because of data limitations) favors forecasting models with very few parameters. Our findings do not imply that there are not important multivariate relations in these data, just that it is difficult to exploit them profitably for real time forecasting.

The remainder of the paper is organized as follows. The data are discussed in Section 2, and the estimators and forecasting models are described in section 3. Results are presented in section 4, and section 5 concludes.

2. The Euro-Area Data

2.1. Country level data

The data are monthly national macroeconomic series for the eleven Euro-area countries. (Greece, which joined the EMU in 2001, is not included.) The data are taken from the OECD main economic indicators, monthly, for the period 1982:1 - 1997:8. There are approximately fifty variables for each country. These fifty variables typically include industrial production and sales (disaggregated by main sectors); new orders in the manufacturing sector; employment, unemployment, hours worked and unit labor costs; consumer, producer, and wholesale prices (disaggregated by type of goods); several monetary aggregates (M1, M2, M3), savings and credit to the economy; short term and long term interest rates, and a share price index; the effective exchange rate and the exchange rate with the US dollar; several components of the balance of payments; and some miscellaneous additional series.

Not all variables are available for the full span for all countries using the same series definitions and construction methods. An alternative approach would have been to adopt a completely harmonized dataset with a balanced panel. However the coverage and span of a balanced panel of harmonized series is small, so instead we will use a richer and significantly longer dataset. One cost of using this expanded data set is handling missing observations, an issue returned to below.

The data were preprocessed in four stages prior to use in the forecasting exercise. First, the data were inspected visually for indications of major series redefinitions or other inconsistencies. Discrepancies that could not be reconciled resulted in the series being dropped.

Second, the series were transformed to account for stochastic or deterministic trends. In general, logarithms were taken of all nonnegative series that were not already in rates or percentage units. Generally the same transformation, including degree of differencing, was applied to a group of series, and the series transformation was the same across countries. For example, real quantity variables (industrial production, sales, etc.) were generally transformed to first log differences (growth rates). Two sets of transformations were considered for prices, wages, and interest rates. In the first, prices and wages were transformed to rates of inflation (first differences of logs) and interest rates were left in levels. In the second, prices and wages were transformed to changes in rates of inflation (second differences of logs) and interest rates appear as changes. The first of these transformations will be referred to as the *I(1)* case for prices, and the second will be referred to as the *I(2)* case for prices. The *I(2)* case provided the most accurate forecasts of price inflation and this will serve as our baseline model. Results for the *I(1)* case will be summarized as a robustness check on our main results.

Third, the series were seasonally adjusted. Some of the OECD series are seasonally adjusted and some are not. The seasonal adjustment is sporadic and some of the series that are reported as seasonally adjusted in fact have pronounced and statistically significant seasonal components. We therefore passed all the series through a two-step seasonal adjustment procedure, whether or not they were reported as being seasonally adjusted. First, the transformed monthly series (as discussed in the preceding paragraph) was regressed against eleven monthly indicator variables. Second, if the HAC F-test on these eleven coefficients was significant at the 10% level, the transformed series was seasonally adjusted using Wallis's (1974) linear approximation to X-11 ARIMA.

Fourth, the transformed seasonally adjusted series were screened for large outliers (outliers exceeding six times the interquartile range). These were presumed to be coding errors or to result from an anomaly, and each outlying observation was recoded as missing data.

Forecasts are reported below both from models estimated using monthly data and from models estimated using quarterly data. Since GDP is only available quarterly, monthly forecasts are not presented for this variable. The quarterly data were constructed as the average of the monthly data in the relevant quarter, after the first three of the four stages outlined above. For example, the quarterly growth rate of IP was constructed as the growth rate of the average of the monthly seasonally adjusted values of IP for the three months in the quarter. Subsequent to this quarterly transformation, the quarterly series were passed through the fourth preprocessing screen and outliers exceeding four interquartile ranges were replaced by missing values.

This resulted in a total of 580 monthly series, and 562 quarterly series, being available for at least some of the sample; this will be referred to as the nonbalanced panel. Of these, 253 monthly series, and 401 quarterly series, were available for the full sample with no missing data, and these constitute the balanced panel subset of the data. The balanced panel is larger for quarterly than monthly data because fewer of the quarterly series contained large outliers. Specifics, including data definitions and transformation codes, are listed in the data appendix.

2.2. Euro-area aggregate data

This forecasting exercise also uses data on Euro-area aggregates. Unfortunately, the official harmonized series for the Euro area, e.g. the HICP, are available only since 1993 and thus have too short a span to be useful for forecasting experiments. We therefore constructed our own Euro-area aggregate series for GDP, industrial production, consumer price inflation, and the unemployment

rate. Quarterly data for GDP over the entire sample period were not available for Belgium, Ireland, Luxembourg and Portugal so our GDP aggregate excludes these countries.

The Euro-area aggregates were constructed as the weighted average of the (transformed) country level data for all eleven countries. Various weighting schemes were tried, including weighting by the relative share of each country's GDP in the Euro-area aggregate, quarter by quarter; a version of this with monthly interpolation; and a fixed-weight scheme using each country's share of nominal GDP for 1997, measured in DM at exchange rates averaged over 1997. Preliminary analysis showed that all three methods yielded similar aggregate series, and forecast model comparisons were insensitive to the aggregation method used. For simplicity, the results reported here use the fixed weight method based on the 1997 GDP shares.

The aggregates were computed as the share-weighted average of the transformed, seasonally adjusted series. That is, aggregate IP growth is the weighted average of individual country IP growth, aggregate inflation is the weighted average of country inflation, and similarly for GDP growth. The aggregate unemployment rate is the weighted average of the country unemployment rates. For IP, GDP and prices this corresponds to aggregation by geometric weighted averaging.

The resulting series on GDP, IP growth rates, inflation and unemployment changes are quite similar to the official harmonized series for the short span over which both series are available. For the purpose of the forecasting exercise reported here, there are three related advantages to using our constructed series. First, our aggregated series is consistently constructed over the entire sample period, so that any instabilities uncovered in our analysis reflect something other than changes in aggregation method. Instability associated with aggregation could be particularly severe for GDP because of the missing data mentioned above. Second, our aggregation method yields aggregates

that are time-invariant linear combinations of the country-specific variables (after transformation). This linear aggregation simplifies the econometric testing problem for comparing alternative forecasting methods. Third, linear aggregation makes it is straightforward to pool the country-specific forecasts to form a forecast of the aggregate. Such exact aggregation is more difficult using the official harmonized series, as construction of these series evidently includes some degree of temporal smoothing.

3. Forecasting Methods

3.1. Forecasting framework and horizons

For each series to be forecasted, several models are constructed. Each model has a similar structure. Forecasts are made at forecast horizons of one, two , and four quarters for the quarterly data and at three, six and twelve months for the monthly data. All models are specified and estimated as a linear projection of a *h*-step ahead variable, y_{t+h}^h onto t-dated predictors, which at a minimum include lagged transformed values y_t of the variable of interest. Specifically, the forecasting models all have the form,

$$y_{t+h}^h = \mu + \alpha(L)y_t + \beta(L)'Z_t + \varepsilon_{t+h}^h \qquad (3.1)$$

where $\alpha(L)$ is a scalar lag polynomial, $\beta(L)$ is a vector lag polynomial, μ is a constant, and Z_t is a vector of predictor variables. (For notational ease, we suppress the dependence of μ, $\alpha(L)$, and $\beta(L)$ on the forecast horizon *h*.)

The "*h*-step ahead projection" approach reflected in (3.1) contrasts with the textbook approach of estimating a one-step ahead model, then iterating that model forward to obtain *h*-step ahead predictions. There are two main advantages of the *h*-step ahead projection approach. First, it eliminates the need for estimating additional equations for simultaneously forecasting Z_t , e.g. by a VAR. Second, it can reduce the potential impact of specification error in the one-step ahead model (including the equations for Z_t) by using the same horizon for estimation as for forecasting.

Implementation of (3.1) requires making a decision about how to model the order of integration of the dependent variable. In the base case, the logarithm of IP, the logarithm of GDP, and the unemployment rate were all treated as *I(1),* so that y_t respectively is the growth rate of IP, the rate of growth of GDP, and the first difference of the unemployment rate. The base case modeled the logarithm of prices as *I(2),* so that y_t denotes the first difference of price inflation. As a sensitivity check, the analysis was repeated with a transformation in which log prices were modeled as *I(1)* (the "*I(1)* prices" case).

The dependent variable in (3.1), y_{t+h}^h was chosen to focus on forecasting problems that we take to be of particular interest. Specifically, in the case of quarterly inflation, at the one quarter horizon we are interested in forecasting the quarter-upon-quarter rate of inflation. At the two quarter horizon, we are interested in forecasting the average inflation rate over the next two quarters, that is, the percentage increase in prices over two quarters. For GDP, we are similarly interested in forecasting either the one-, two- or four-quarter growth of the quarterly index. For the unemployment rate, our interest focuses on the future level of the unemployment rate.

The particulars of the construction of y_{t+h}^h depend on whether the series is modeled as *I(1)* or *I(2)* and whether the model is estimated with quarterly or monthly data. First consider the case of quarterly data, so t denotes quarters. In the I(1) case (i.e. y_t is quarterly GDP or IP growth, the

quarterly rate of inflation, or the quarterly change in the rate of unemployment), $y_{t+h}^h = \sum_{s=t+1}^{t+h} y_s$. Thus, y_{t+h}^h represents growth in the series between time periods *t* and *t+h*. In the *I(2)* price case, $y_{t+h}^h = \sum_{t+1}^{t+h} \Delta p_s - h\Delta p_t$ and $y_t = \Delta^2 p_t$ where p_t is the logarithm of the price index. For the monthly models (so *t* denotes months), y_{t+h}^h is constructed to correspond to its quarterly counterpart. For example, consider IP forecasts at the 6 month horizon, and let $\overline{IP} = (IP_t + IP_{t-1} + IP_{t-2})/3$, where *IP* is the monthly seasonally adjusted index of industrial production. Then $y_{t+6}^6 = \ln(\overline{IP}_{t+6} / \overline{IP}_t)$, the rate of change in the quarterly series between months *t* and *t+6.*

The various forecasting models considered differ in their choice of Z_t. All the methods entail some model selection choices, in particular the number of autoregressive lags and the number of lags of predictor variables Z_t to include in (3.1). A standard approach to this problem is to employ data-dependent lag selection using an information criterion. However the sample size here is short and this would entail estimating some models with quite low degrees of freedom, yielding results that would be difficult to interpret. For the results reported here, we therefore fix the number of autoregressive lags and the number of predictor variables *a-priori* and do not use data-dependent model selection. In all quarterly models, two lags of y_t were used (that is, lags 0 and 1 of y_t appeared in the right hand side of (3.1)). In all monthly models, three lags are used (that is, lags 0-2 of y_t appeared in the right hand side of (3.1)).

3.2. Forecasting methods: Country-specific forecasts

Autoregressive benchmark forecast. The autoregressive forecast is a univariate forecast based on (3.1) excluding Z_t

VAR forecasts. VAR forecasts were constructed using three-variable VARs. Forecasts for industrial production, price inflation and the unemployment rate were constructed using IP-CPI-Unemployment rate VARs. When GDP data were available, GDP forecasts were constructed from a GDP-CPI-Unemployment rate VAR. In all cases the variables were transformed as described in the last section. The multistep forecasts differ from the usual VAR procedure, in that they are computed by the multistep projection method (3.1) in which the coefficients of (3.1) are estimated directly by OLS; this contrasts with the usual method in which the coefficients in (3.1) would be computed from the coefficients estimated in a one-step ahead VAR and iterating the VAR forward *h* periods. The quarterly VARs included two lags and the monthly VARs used three lags.

AR with EU aggregates. For these forecasts, Z_t is the value of the Euro-area aggregate of the specific series being forecast. For example, for forecast of IP growth, Z_t is the Euro-area aggregate IP growth series (two lags of Z_t were used for the quarterly forecasts and three lags for the monthly forecasts).

AR with US variables. For these forecasts, Z_t is the value of the U.S. aggregate variable that corresponds to the variable being forecast. For example, for forecasts of European IP growth, Z_t is U.S. IP growth; for forecasts of European CPI inflation, Z_t is U.S. CPI inflation. In the *I(1)* specifications, U.S. inflation is treated as *I(1)*, in the *I(2)* specifications, as *I(2)*. Two lags of Z_t were used for the quarterly forecasts and three lags were used for the monthly forecasts.

Principal components forecasts. These forecasts are based on setting Z_t to be the principal components from a large number of *I(0)* candidate predictor time series. Stock and Watson (1998) show that, if these data can be described by an approximate dynamic factor model, then under certain conditions the space spanned by the latent factors can be estimated consistently (as the cross section and time series dimension increase) by the principal components of the covariance matrix

of the predictor time series. Accordingly, we will refer to the principal components as the estimated factors. Stock and Watson (1998) also provide conditions under which these estimated factors can be used to construct asymptotically efficient forecasts by a second stage forecasting regression in which the estimated factors are the predictors. The dynamic factor model interpretation of the principal components forecasts is briefly reviewed in Appendix A.

Here, two sets of principal components are used to construct two alternative sets of forecasts. The first set consists of country-specific principal components of the standardized country-specific series; these will be referred to as the country-specific estimated factors. For example, the principal components for Italy were constructed using the collection of time series pertaining to the Italian economy, each transformed to have mean zero and unit variance. The second set of principal components was computed for the Euro-area as a whole by stacking the standardized data for each individual country; these will be referred to as the Euro-wide estimated factors. In all cases, missing data in the nonbalanced panel were handled by computing the principal components using the EM algorithm, as detailed in Stock and Watson (1998).

These two sets of principal components were used to create three forecasting models for each country: one includes the country specific factors, one included the Euro factors, and one included both sets of factors. For the country-specific forecasting model, Z_t consists a set of country-specific factors and for the Euro-area PC forecasting model, Z_t consists of a set of factors from the pooled Euro-area data. For the combined CS/Euro *PC* forecasting model, Z_t consists of both country-specific and Euro-area factors. In all cases, two lags of the variable being forecast was included in the regression for the quarterly specifications and three lags were used for the monthly models. Two factors were used in the benchmark quarterly *I(2)* price specification and

four factors were included in the monthly model. More discussion of these choices is provided below.

3.3. Forecasting methods: Forecasts of Euro-area aggregates

The Euro-area aggregates were forecast in two ways: by pooling country-specific forecasts, and by directly forecasting the aggregate variables using other aggregate variables.

The pooled country specific forecasts were computed as a weighted average of the individual country specific forecasts, using the same fixed 1997 real GDP share weights as were used to construct the Euro-wide aggregate series. For example, the pooled AR forecast of two-quarter IP growth is the weighted average of the eleven individual country-specific AR forecasts of two-quarter IP growth.

The other approach is to forecast directly the aggregate series at the Euro-wide level. This entails applying the forecasting methods described in the previous section to the Euro-aggregates, with the following modifications and clarifications. The AR forecasts of the aggregate were computed using two lags of the aggregate being forecast. The VAR forecasts were computed using three-variable VARs identical to the country-specific specifications, but with the Euro-aggregates replacing the country specific series. The aggregate PC forecasts were computed using Euro-wide factors; two lags of the aggregate being forecast was included in the quarterly models and three lags were included in the monthly models. The number of Euro-wide factors was determined by Bai and Ng (2001) selection criteria. Two factors were used in the benchmark quarterly *I(2)* price model, 3 factors in the quarterly *I(1)* price model and 4 factors in the monthly *I(2)* price model.[1]

[1] Bai and Ng (2001) propose several criteria that provide consistent estimators of the number of factors. We computed their ICP_1, ICP_2 and ICP_3 criteria using the pooled balanced panel for each of the dates in our out-of-sample period. The number of factors (2 for quarterly I(2), 3 for quarterly I(1) and 4 for quarterly I(2)) correspond to the modal values of the estimated number of factors over the out-of-sample period.

From a theoretical perspective, pooling the country-specific forecasts should produce lower mean squared forecast errors than directly forecasting the aggregates, provided that the country-specific models are time invariant, that they are correctly specified, that the model parameters differ across countries, that there are no data irregularities, and that there are enough observations (the theoretical results being asymptotic); see e.g. Lutkepohl (1987). Whether these assumptions are useful approximations in practice, and thus whether pooled country forecasts or direct forecasts of the aggregates actually work better, is an empirical question.

3.4. Model comparison methods

Full sample comparisons. The models are compared over the full sample using several conventional test statistics. These include the F-test of the restriction that Z_t does not enter (3.1). Also reported are F-tests of the restriction that the coefficients of the country-specific models are equal; under this restriction, there is no information loss by aggregation (the linear models aggregate to an aggregate model with the same coefficients) and the pooled forecasts would simply be an overparameterized version of the forecasts of the aggregates using Euro-wide data. For these comparisons, all models were estimated over the full data set (adjusted for initial conditions).

Simulated out of sample comparisons. A simulated out of sample forecasting experiment was also performed. For this exercise, all statistical calculations were done using a fully recursive, or simulated out of sample, methodology. This includes all model estimation, standardization of the data, calculation of the estimated factors, etc. At each date in the simulated out of sample period, the factors were recomputed, models re-estimated, etc. The simulated out of sample forecast periods are 1993:I - 1997:II (quarterly) and 1993:1 - 1997:8 (monthly). All forecast-based

statistics, and all discussion of forecast performance below refer to these simulated out of sample forecasts over the simulated out of sample period.

The forecasting performance of the various models were examined by comparing the simulated out of sample mean squared forecast error of a candidate forecast, relative to the mean squared forecast error of the benchmark AR forecast.

4. Empirical Results

4.1 Quarterly Models with I(2) Prices

Results for the models of the Euro-wide aggregates for the base case (quarterly data, prices modeled as *I(2)*, factors computed using the nonbalanced panel) are given in table 1. Results for the individual countries are given in Appendix C, and table 2 provides a summary of the relative performance of the various methods in the simulated out-of-sample forecast period.

Panel A of table 1 presents results based on the full sample regressions. The top section of the table shows p-values for exclusion tests for Z_t in the various specifications, and the bottom section shows p-values for equality of coefficients in the country-specific models. Panel B of table 1 presents detailed results for the simulated out-of-sample forecasting experiment for each of the three forecast horizons. The top section of each panel presents the root mean square forecast error (RMSFE) of the univariate autoregression over the out-of-sample period, and the implied RMSFE computed from the full-sample autoregression. The next section presents the mean square forecast error of each of the models over the out-of-sample period relative to the mean square forecast error for the univariate autoregression

Panel A of Table 2 summarizes the results in table 1, by presenting binary comparisons of the RMSFE of each of the forecasting methods over the out-of-sample period. For each of the 12

forecasts (4 variables, 3 horizons), the panel shows the fraction of forecasts in which the method corresponding to a given row was more accurate than the method corresponding to a given column. Panel B contains a similar summary, but now for the 120 country-specific forecasts (7 countries with 4 variables, 4 countries with 3 variables, all with 3 horizons).

These tables suggest seven conclusions.

First, looking across all variables and horizons, none of the multivariate methods consistently outperform the univariate autoregression. This result holds for the forecasts of the Euro-aggregates and the country specific variables. For example, from panel B of table 2, the VAR provided more accurate forecasts than the univariate AR model in only 33% of the country-specific forecasts. Similar results hold for the other multivariate forecasts.

Second, aggregating the country-specific forecasts provides more accurate forecasts than the forecasts based on models for the Euro-aggregates. From panel A of table 2, in 83% of the cases, the aggregated AR models were more accurate that the AR model constructed for the Euro-aggregate. Similar results hold for the VAR, the factor model (PC-Euro) and the model that incorporates the U.S. variable (AR+US). These results are consistent with the in-sample tests for coefficient equality shown in the bottom of panel A of table 1, which shows that the aggregation restriction is strongly rejected for all of the models except one.

Third, the multivariate models provided more accurate forecasts for the unemployment rate. From panel B of table 1, the best performing multivariate models are the aggregated factor models and the aggregated VAR. For the unemployment rate, these models dominate the univariate autoregression and the other models for each of forecast horizons considered.

Fourth, a general feature of these results is that the full-sample statistics and simulated out-of-sample forecasting comparisons often give conflicting conclusions. This is true both for the

forecasts of the aggregate and for the individual country forecasts. One possible explanation for this discrepancy is that the coefficients in the predictive relationships change over the course of the sample; indeed, this would be expected given the move towards European integration over this period. Another explanation is that the simulated out of sample forecast period simply is too short to make sharp inferences because of sampling uncertainty, as is suggested by the large standard errors on the relative MSEs.

Fifth, there is no compelling evidence that using the counterpart U.S. series helps to forecast the European variables. At the Euro-aggregate level, the U.S. series is significant in the in-sample regressions only for IP growth Table 2 indicates that it provides more accurate forecasts than a univariate autoregression in far fewer than half the cases.

Sixth, panel B of table 1 shows that the multivariate models perform particularly poorly for predicting GDP growth rates. The first two rows of the table suggest part of the explanation: evidently GDP was much less volatile in the out-of-sample period that in the earlier part of the sample. The multivariate models do not perform poorly relative to their historical performance; instead, the univariate autoregression performs much better than it had in past. The out-of-sample RMSFE of univariate autoregression is roughly one half of its in-sample value.

Seventh, looking across all series and horizons the best performing Euro-aggregate forecast method is the aggregated (or pooled) univariate autoregression. Evidently these pooled forecasts provide a rigorous benchmark for the other forecasting methods.

Finally, all of these conclusions must be tempered by the paucity of information in the simulated out-of-sample experiment. For each series, there are only 17 one-quarter ahead forecasts, 8 non-overlapping two-quarter ahead forecasts and only 4 non-overlapping four-quarter ahead

forecasts. This means that there is considerable uncertainty in the relative forecasting ability of the different methods.

4.2 Results from Alternative Models

Because it is unclear *a-priori* whether log prices should be treated as *I(1)* or *I(2)*, as a sensitivity check, the analysis was repeated treating log prices as *I(1)* and interest rates as *I(0)*. The results are summarized in table 3. This change in specification changes the estimated factors, both country-specific and Euro-wide, and also changes the base autoregressive specification for inflation. The table indicates that the major conclusions from the benchmark model continue to hold for this specification: the aggregated (pooled) forecasts are generally more accurate than the forecasts constructed from models using only the Euro-aggregates and the aggregated AR model continues to offer the best overall performance.

Results for monthly *I(2)* data are summarized in table 4. Here too, the major results of the quarterly data remain evident. However, in the monthly data the multivariate models appear to perform somewhat better. In particular the aggregated VAR model performs better than the aggregated AR model in more that half the cases, and the AR+US model performs better than the AR model in country-specific forecasts.

Finally, as an additional check we constructed the factor models for the EU-aggregates using the balanced panel of data series (401 series versus the 562 series in the unbalanced panel). The resulting forecasts were very close to the nonbalanced forecasts, and the forecast summaries are very similar to the results reported in Tables 1 and 2.

5. Discussion and Conclusions

Macroeconometric analysis of time series data as short as these, with as many missing observations as these, and with series definitions which vary from country to country poses special challenges. Still, some interesting conclusions emerge from this analysis.

As was discussed in the introduction, some of these findings have relevance for empirical macroeconometrics beyond the specific European forecasting problems considered here. The finding that, in many cases, pooling country-specific forecasts outperforms directly modeling the Euro-area aggregates suggests that, even if interest is in aggregate measures of Euro-area economic performance, country-specific details matter. This is consistent with the very different political and economic situations of these eleven countries over this period, and over time this might change as the economies of these countries become more closely integrated.

Looking across series and forecast horizons, no multivariate model beat the pooled univariate autoregressions. The pooled univariate autoregression therefore provides a powerful benchmark for future forecast comparisons.

Within the multivariate methods, factor models, either based on country-specific or Euro-wide factors, regularly outperform VARs at the country level based both on full-sample F statistics and on simulated out of sample forecast comparisons. This suggests that conventional small-scale macroeconometric VAR models, and associated VAR policy analysis exercises, could miss important information contained in a large number of variables excluded from the VAR.

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Appendix A
Dynamic Factor Models and Principal Components Forecasts

This appendix briefly reviews the link between the principal components forecasts and dynamic factor models. This material draws on Stock and Watson (1998).

Let X_t be a N-dimensional multiple time series of variable, observed for $t=1,...,T$. Suppose that X_t has an approximate linear dynamic factor representation with $\bar{r}$ common dynamic factors f_t:

$$X_{it} = \lambda_i(L) f_t + e_{it} \qquad \text{(A.1)}$$

for i=$1,...,N$, where $e_t = (e_{1t},\ldots,e_{Nt})'$ is a $N \times 1$ vector of idiosyncratic disturbances with limited cross-sectional and temporal dependence, and $\lambda_i(L)$ are lag polynomials in non-negative powers of L; see for example Geweke (1977), Sargent and Sims (1977), and Forni, Hallin, Lippi, and Reichlin (1999a, 1999b). If $\lambda_i(L)$ have finite orders of at most q, (A.1) can be rewritten as,

$$X_t = \Lambda F_t + e_t \qquad \text{(A.2)}$$

where $F_t = (f_t^{'},\ldots, f_{t-q}^{'})'$ is $r\times1$, where $r\leq(1+q)\bar{r}$, the *i-th* row of Λ in (A.2) is $(\lambda_{i0},\ldots,\lambda_{iq})$.

Stock and Watson (1998) show, under this finite lag assumption and some additional technical assumptions (restrictions on moments and nonstationarity), the column space spanned by the dynamic factors f_t can be estimated consistently by the principal components of the $T\times T$ covariance matrix of the X's. The principal component estimator is computationally convenient,

even for very large *N*. Importantly, it can be generalized to handle data irregularities such as missing observations using the EM algorithm.

The consistency of the estimated factors implies that they can be used to construct efficient forecasts for a single time series variable. Specifically, suppose one is interested in forecasting the scalar time series y_{t+1} using the predictors in X_t and suppose that y_{t+1} has the factor structure,

$$y_{t+1} = \beta(L) f_t + \gamma(L) y_t + \varepsilon_{t+1} \qquad \text{(A.3)}$$

where $E(\varepsilon_{t+1} | \{ f_\tau, X_\tau, y_\tau \}_{\tau=-\infty}^{t}) = 0$ (The different time subscripts used for *y* and *X* emphasize the forecasting relationship.) If $\{ f_t \}$, $\beta(L)$, and $\gamma(L)$ were known, the minimum mean square error forecast of y_{T+1} would be $\beta(L)f_T + \gamma(L)y_T$. It is shown in Stock and Watson (1998) that, if $\beta(L)$ and $\gamma(L)$ have finite orders, then forecasts that are asymptotically efficient to first order can be obtained from OLS estimation of (A.3) with the estimated factors replacing the true factors.

Appendix B: Data Description

This appendix lists the variables used to construct the estimated factors. In addition to the OECD identifying code and a short description, the table presents a transformation code (TR), frequency code (FR) and seasonal adjustment indicator (SA). The transformation codes are: 1 = no transformation; 2 = first difference; 3= second difference; 4 = logarithm; 5 = first difference of logarithm; 6 = second difference of logarithm. The frequency is M, Q, or B depending on whether the series is in the monthly dataset, in the quarterly dataset, or in both of them. SA=1 indicates that the series were seaonally adjusted, as described in Section 2

The total number of series in the monthly balanced panel is 253. The total number of series in monthly non-balanced panel is 580. The total number of series in the quarterly balanced panel is 401. The total number of series in quarterly non-balanced panel is 562.

Austria

Number of Series in Monthly Balanced Panel 35; additional Series in Monthly Non-Balanced Panel 30
Number of Series in Quarterly Balanced Panel 45; additional Series in Quarterly Non-Balanced Panel 21

OECD Code	TR	FR	SA	OECD Definition
7020349K	5	B	0	Consumer goods, sa /Industrial production /PRODUCTION 1990=100 Austria /AUTNSO-OECD STA
7020439K	5	B	0	Intermediate goods, sa /Industrial production /PRODUCTION 1990=100 Austria /AUTNSO-OECD S
7020449K	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 Austria /AUTNSO-OECD STA
7020459K	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Austria /AUTNSO-OECD STATIS
7020519K	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Austria /AUTNSO-OECD STATISTICS, PA
70206780	5	B	1	Crude steel /Commodity output /PRODUCTION tonnes '000 Austria /INTISI-OECD STATISTICS, PA
70317303	5	B	0	Total, sa /Net new orders /MANUFACTURING S mln Austria /AUTNSO-OECD STATISTICS, PARIS
70323303	5	B	0	Total, sa /Work put in place /CONSTRUCTION S mln Austria /AUTNSO-OECD STATISTICS, PARIS
7032419K	5	B	0	Total: value, sa /Retail sales /DOMESTIC TRADE 1990=100 Austria /AUTNSO-OECD STATISTICS,
7032439K	5	B	0	Durable goods: value, sa /Retail sales /DOMESTIC TRADE 1990=100 Austria /AUTNSO-OECD STA
7032449K	5	B	0	RETAIL SALES (volume), sa 1990 = 100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7032519K	5	B	0	Total: value, sa /Wholesale sales /DOMESTIC TRADE 1990=100 Austria /AUTNSO-OECD STATIST
70325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Austria /
70426780	5	B	1	Foreign workers /Employment /LABOUR '000 Austria /AUTLAB-OECD STATISTICS, PARIS"
70426880	5	B	1	Mining and manufacturing /Employment /LABOUR '000 Austria /AUTNSO-OECD STATISTICS, PAR
7042719H	5	B	1	AUT EMPLOYMENT MINING+MANUF /I/90 AUSTRIA OECD STATISTICS, PARIS"
70427383	5	B	0	Market services, sa /Employment /LABOUR '000 Austria /AUTISS-OECD STATISTICS, PARIS"
70428283	5	B	0	Registered unemployed, sa /Unemployment /LABOUR '000 Austria /AUTLAB-OECD STATISTICS, P
704284A3	2	B	0	Rate, sa /Unemployment /LABOUR % Austria /AUTLAB-OECD STATISTICS, PARIS"
70429180	4	B	1	Monthly hours worked:industry /Labour - other /LABOUR (continued) hours Austria /AUTNSO-OE
70429983	5	B	0	Unfilled vacancies, sa /Labour - other /LABOUR (continued) '000 Austria /AUTLAB-OECD STATI
7043119H	6	B	1	Hourly rates /Wages /WAGES 1990=100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7043129H	6	B	1	HOURLY EARNINGS (manufacturing) 1990 = 100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7043219K	6	B	0	Monthly earnings, sa /Wages /WAGES 1990=100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7043779H	6	B	1	PRODUCER PRICES (manufacturing) 1990 = 100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7044029H	6	B	1	Agricultural goods /Wholesale prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, PA
7044119H	6	B	0	Food /Wholesale prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, PARIS"

7044219H	6	B	1	Petroleum products /Wholesale prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, F
7044259H	6	B	1	Transport equipment /Wholesale prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS,
7044459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7044479H	6	B	1	Fuel and electricity /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, P/
7044559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, PA
7044579H	6	B	1	All items less food less rent /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STATI
7044589H	6	B	1	Rent /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7044619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STATISTICS, PARIS"
7044639H	6	B	1	All items excl. seasonal items /Consumer prices /PRICES 1990=100 Austria /AUTNSO-OECD STAT
7054821D	6	B	0	AUT MONETARY AGGREGATE M1 SA /MN SCHILLING Austria OECD STATISTICS, PARIS"
7054829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Austria /AUTCBA-OECD STATISTICS, PARIS"
7054831D	6	B	0	AUT MONETARY AGGREGATE (M3) SA /MN SCHILLING Austria OECD STATISTICS, PARIS"
7054839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Austria /AUTCBA-OECD STATISTICS, PARIS"
7054911A	6	B	1	AUT SAVINGS DEPOSITS /MN SCHILLING Austria OECD STATISTICS, PARIS"
7054911X	6	B	1	AUT FOREIGN EXCHANGE DEPOSITS /MN SCHILLING Austria OECD STATISTICS, PARIS"
7055111A	6	B	1	AUT QUASI-MONEY /MN SCHILLING Austria OECD STATISTICS, PARIS"
7055251A	6	B	1	Domestic credit /Domestic finance /DOMESTIC FINANCE S bln Austria /AUTCBA-OECD STATISTI(
705561AH	2	Q	0	Official discount /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Austria /AUTCBA-OE
705565AH	2	B	0	3-month VIBOR /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Austria /AUTCBA-OEC
7055809H	6	B	0	VSE WBI Index /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Austria /AUTSTE-O
705581AH	2	B	0	Yield of public sector bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Austria
7056009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Austria /OECD-OECD STATISTICS, PARIS"
705601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Austria /OECD-OECD STATISTICS, PAF
705611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Austria /INTIMF
7056151A	2	B	1	Net foreign position /Foreign finance /FOREIGN FINANCE S bln Austria /AUTCBA-OECD STATISTI
70663200	2	B	1	Current account balance /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCBA
70663250	2	B	1	AUT BOP CURRENT BALANCE /MN US DOLLARS Austria OECD STATISTICS, PARIS"
70663400	2	B	0	Net current transfers /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCBA-OE
70663500	2	B	1	Financial account balance /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCB
70663600	2	B	1	Net services /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCBA-OECD STA
70663700	2	B	0	Net errors and omissions /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCBA
70663900	1	B	0	Change in official reserves /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCE
70664000	2	B	1	Net investment income /Balance of payments /BALANCE OF PAYMENTS S mln Austria /AUTCBA-(
70765103	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE S bln Austria /AUTNSO-OECD STA
70765253	2	B	0	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Aust
70765303	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE S bln Austria /AUTNSO-OECD STATISTICS, PA
70765553	5	B	0	FOREIGN TRADE - Ftr Imports (fob/cif) Total, sa Billions US dollars; monthly averages Aust
70765603	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE S bln Austria /AUTNSO-OECD STATISTICS, PA
70765753	5	B	0	FOREIGN TRADE - Ftr Exports Fob Total, sa Billions US dollars; monthly averages Austria /A

Belgium

Number of Series in Monthly Balanced Panel 28; additional Series in Monthly Non-Balanced Panel 26
Number of Series in Quarterly Balanced Panel 45; additional Series in Quarterly Non-Balanced Panel 11

OECD Code	TR	FR	SA	OECD Definition
2220339K	5	B	0	Construction, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNSO-OECD STATIS
2220359K	5	B	0	Consumer durable goods, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNSO-OI
2220369K	5	B	0	Consumer non-durable goods, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNS(
2220439K	5	B	0	Intermediate goods, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNSO-OECD S
2220449K	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNSO-OECD ST
2220459K	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNSO-OECD STATI
2220519K	5	B	1	Total, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELNSO-OECD STATISTICS, P
2220539K	5	B	0	Total including construction, sa /Industrial production /PRODUCTION 1990=100 Belgium /BELN
22206780	5	B	1	Crude steel /Commodity output /PRODUCTION tonnes '000 Belgium /INTISI-OECD STATISTICS, P
2232048X	5	B	1	BEL CON BUILDING STARTED RESID /CUB METERS Belgium OECD STATISTICS, PARIS"
22321180	5	B	1	Total /Permits issued /CONSTRUCTION cu. m. '000 Belgium /BELNSO-OECD STATISTICS, PARIS
22321283	5	B	0	Residential, sa /Permits issued /CONSTRUCTION cu. m. '000 Belgium /BELNSO-OECD STATISTIC
22321380	5	B	1	BEL CON BUILDING STARTED RESID /CUBIC MTRS Belgium OECD STATISTICS, PARIS"
22321480	5	B	1	Total /Buildings started /CONSTRUCTION cu. m. '000 Belgium /BELNSO-OECD STATISTICS, PAR
22321780	5	B	1	CONSTRUCTION Thousands; monthly averages Belgium /BELNSO-OECD STATISTICS, PARIS"
2232419K	5	B	0	Total: value, sa /Retail sales /DOMESTIC TRADE 1990=100 Belgium /BELNSO-OECD STATISTICS
2232449Y	5	B	0	Total: volume, sa /Retail sales /DOMESTIC TRADE 1990=100 Belgium /BELNSO-OECD STATISTIC
22325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Belgium /
224280A3	2	B	0	Rate, sa /Unemployment /LABOUR % Belgium /BELLAB-OECD STATISTICS, PARIS"
22428183	5	B	0	Total, sa /Unemployment /LABOUR '000 Belgium /BELNSO-OECD STATISTICS, PARIS"
224284A0	2	B	1	BEL UNEMPLOY. % CIV. LAB. FORCE /PERCNT Belgium OECD STATISTICS, PARIS"
224284AX	2	B	1	BEL UNEMPL % INSURED LAB FORCE /PERCNT Belgium OECD STATISTICS, PARIS"
224286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Belgium /INTEUR-OECD STATISTICS, F

22429983	5	B	0	Unfilled vacancies, sa /Labour - other /LABOUR (continued) '000 Belgium /BELNSO-OECD STATI
2243459H	6	B	0	Chemicals /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PARIS"
2243479H	6	B	0	Consumer goods /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PAF
2243529H	6	B	0	Food,, beverages and tobacco /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STA
2243649H	6	B	1	Intermediate goods /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, P/
2243659H	6	B	1	Investment goods /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PA
2243749H	6	B	1	Petroleum products /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, P
2243759H	6	B	0	Textiles and clothing /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, I
2243779H	6	B	1	Manufactured goods /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, I
2243869H	6	B	1	Total /Producer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PARIS"
2244449H	6	B	1	BEL CPI ENERGY /I/90 Belgium OECD STATISTICS, PARIS"
2244459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PARIS"
2244479H	6	B	1	Fuel and electricity /Consumer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, F
2244499H	6	B	1	All goods less food /Consumer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, F
2244559H	6	B	1	BEL CPI NON FOOD /I/90 Belgium OECD STATISTICS, PARIS"
2244589H	6	B	1	Rent /Consumer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PARIS"
2244599H	6	B	1	Services less rent /Consumer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, P/
2244619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Belgium /BELNSO-OECD STATISTICS, PARIS"
2254829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Belgium /BELCBA-OECD STATISTICS, PARIS"
2254839D	6	B	1	MONETARY AGGREGATES, sa 1990 = 100 Belgium /BELCBA-OECD STATISTICS, PARIS"
225561AH	2	Q	0	BEL OFFICIAL DISCOUNT RATE /PERCNT PA Belgium OECD STATISTICS, PARIS"
2255631H	2	B	1	BEL CALL MONEY RATE /PERCNT PA BELGIUM OECD STATISTICS, PARIS"
225567AH	2	B	1	Treasury certificates /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Belgium /BELCB
225578AH	2	B	0	Yield of government bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Belgium /B
2255809H	6	B	0	BEL SHARE PRICES INDUSTRIALS /I/90 BELGIUM OECD STATISTICS, PARIS"
225582AH	2	B	0	Central Bank rate /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Belgium /BELCBA-O
2255849H	6	B	0	BSE Belgian All Shares /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Belgium /BE
2256009H	6	B	0	EFFECTIVE EXCHANGE RATES 1990 = 100 Belgium /OECD-OECD STATISTICS, PARIS"
225601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Belgium /OECD-OECD STATISTICS, PA
225611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Belgium /INTIMF
22765103	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE FB bln Belgium /BELNSO-OECD ST
22765303	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE FB bln Belgium /BELNSO-OECD STATISTICS, F
22765603	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE FB bln Belgium /BELNSO-OECD STATISTICS,

Finland

Number of Series in Monthly Balanced Panel 27; additional Series in Monthly Non-Balanced Panel 35
Number of Series in Quarterly Balanced Panel 44; additional Series in Quarterly Non-Balanced Panel 19

OECD Code	TR	FR	SA	OECD Definition
6420349J	5	B	0	Consumer goods, sa /Industrial production /PRODUCTION 1990=100 Finland /FINNSO-OECD STA
6420439J	5	B	0	Intermediate goods, sa /Industrial production /PRODUCTION 1990=100 Finland /FINNSO-OECD ST
6420449J	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 Finland /FINNSO-OECD STA
6420459J	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Finland /FINNSO-OECD STATIS
6420519J	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Finland /FINNSO-OECD STATISTICS, PA
64206780	5	B	0	Crude steel /Commodity output /PRODUCTION tonnes '000 Finland /INTISI-OECD STATISTICS, PA
64206980	5	B	0	Paper /Commodity output /PRODUCTION tonnes '000 Finland /FINNSO-OECD STATISTICS, PARIS
64207182	5	B	0	Wood fellings, sa /Commodity output /PRODUCTION cu. m. mln Finland /FINNSO-OECD STATISTI
64321180	5	B	0	Total /Permits issued /CONSTRUCTION cu. m. mln Finland /FINNSO-OECD STATISTICS, PARIS"
64321280	5	B	0	Residential /Permits issued /CONSTRUCTION cu. m. mln Finland /FINNSO-OECD STATISTICS, P/
6432239H	5	B	1	Total /Cost of construction /CONSTRUCTION 1990=100 Finland /FINNSO-OECD STATISTICS, PAI
6432419J	5	B	0	Value, sa /Retail sales /DOMESTIC TRADE 1990=100 Finland /FINNSO-OECD STATISTICS, PARI
6432449J	5	B	0	Volume, sa /Retail sales /DOMESTIC TRADE 1990=100 Finland /FINNSO-OECD STATISTICS, PAI
6432519J	5	B	0	Value, sa /Wholesale sales /DOMESTIC TRADE 1990=100 Finland /FINNSO-OECD STATISTICS, F
64325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Finland /
6432589J	5	B	0	Volume, sa /Wholesale sales /DOMESTIC TRADE 1990=100 Finland /FINNSO-OECD STATISTICS
643510A2	2	B	0	Consumer confidence indicator, sa /Consumer surveys /BUSINESS AND CONSUMER OPINIONS %
64426580	5	B	0	FIN EMPLOYMENT TOTAL /PERSONS Finland OECD STATISTICS, PARIS"
6442659H	5	B	0	TOTAL EMPLOYMENT 1990 = 100 Finland /FINNSO-OECD STATISTICS, PARIS"
64426883	5	B	0	FIN EMPLOYMENT INDUSTRY SA /PERSONS Finland OECD STATISTICS, PARIS"
64427480	5	B	0	Part-time (economic reasons) /Employment /LABOUR '000 Finland /FINNSO-OECD STATISTICS, F
644280A2	2	B	0	Rate, sa /Unemployment /LABOUR % Finland /FINNSO-OECD STATISTICS, PARIS"
64428182	5	B	0	Total, sa /Unemployment /LABOUR '000 Finland /FINNSO-OECD STATISTICS, PARIS"
644286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Finland /INTEUR-OECD STATISTICS, P/
64429180	5	B	0	Total hours worked: industry /Labour - other /LABOUR hrs mln Finland /FINNSO-OECD STATISTI
64429983	5	B	0	Unfilled vacancies, sa /Labour - other /LABOUR '000 Finland /FINNSO-OECD STATISTICS, PARIS
6443259H	6	B	1	FIN UNIT LABOUR COST /I/90 Finland OECD STATISTICS, PARIS"
6443479H	6	B	1	Consumer goods /Producer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PARI
6443649H	6	B	1	Intermediate goods /Producer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PA

6443659H	6	B	0	Investment goods /Producer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PAR
6443749H	6	B	1	Petroleum products /Producer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PA
6443869H	6	B	1	PRODUCER PRICES (manufacturing) 1990 = 100 Finland /FINNSO-OECD STATISTICS, PARIS"
6444419H	6	B	1	Beverages and tobacco /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTIC
6444459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PARIS"
6444479H	6	B	1	Fuel and electricity /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PA
6444509H	6	B	1	All items less food less housing /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD ST
6444529H	6	B	1	Housing /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PARIS"
6444559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PA
6444619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Finland /FINNSO-OECD STATISTICS, PARIS"
6444709H	6	B	1	FIN CPI NON FOOD NON ENERGY /I/90 Finland OECD STATISTICS, PARIS"
6454821D	6	B	0	Monetary aggregate (M1), sa /Domestic finance /DOMESTIC FINANCE Fmk bln Finland /FINCBA-O
6454829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Finland /FINCBA-OECD STATISTICS, PARIS"
6454831D	6	B	0	Monetary aggregate (M3), sa /Domestic finance /DOMESTIC FINANCE Fmk bln Finland /FINCBA-O
6454839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Finland /FINCBA-OECD STATISTICS, PARIS"
6454841B	6	B	0	Monetary aggregate (M2), sa /Domestic finance /DOMESTIC FINANCE Fmk bln Finland /FINCBA-O
6455231A	6	B	1	Credit to economy /Domestic finance /DOMESTIC FINANCE Fmk bln Finland /FINCBA-OECD STAT
645561AH	2	Q	0	Base rate /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Finland /FINCBA-OECD STA
6455631H	2	B	0	Liquidity credit rate /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Finland /FINCB
645565AH	2	B	0	3-month HELIBOR /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Finland /FINCBA-O
645578AH	2	B	0	Yield of public bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Finland /FINCB
6455849H	6	B	0	HEX All Share Index /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Finland /FINCE
6456009H	6	B	0	EFFECTIVE EXCHANGE RATES 1990 = 100 Finland /OECD-OECD STATISTICS, PARIS"
645601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Finland /OECD-OECD STATISTICS, PAR
645611AS	5	B	1	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Finland /INTIMF
64663100	2	B	1	Trade balance /Balance of payments /BALANCE OF PAYMENTS Fmk bln Finland /FINCBA-OECD S
64663200	2	B	1	Current account balance /Balance of payments /BALANCE OF PAYMENTS Fmk bln Finland /FINCB
64663400	2	B	1	Net current transfers /Balance of payments /BALANCE OF PAYMENTS Fmk bln Finland /FINCBA-O
64663500	2	B	0	Financial account balance /Balance of payments /BALANCE OF PAYMENTS Fmk bln Finland /FINC
64663700	2	B	0	Net errors and omissions /Balance of payments /BALANCE OF PAYMENTS Fmk bln Finland /FINCE
64664000	2	B	1	Net investment income /Balance of payments /BALANCE OF PAYMENTS Fmk bln Finland /FINCBA
64765103	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE Fmk bln Finland /FINNSO-OECD S
64765303	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE Fmk bln Finland /FINNSO-OECD STATISTICS,
64765603	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE Fmk bln Finland /FINNSO-OECD STATISTICS,

France

Number of Series in Monthly Balanced Panel 26; additional Series in Monthly Non-Balanced Panel 31
Number of Series in Quarterly Balanced Panel 44; additional Series in Quarterly Non-Balanced Panel 13

OECD Code	TR	FR	SA	OECD Definition
1420339J	5	B	0	Construction, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD STATIST
1420349J	5	B	0	Consumer goods, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD STA
1420399J	5	B	0	Energy, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD STATISTICS,
1420439J	5	B	0	Intermediate goods, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD ST
1420449J	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD STA
1420459J	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD STATIS
1420519J	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 France /FRANSO-OECD STATISTICS, PA
14206183	5	B	0	Passenger cars, sa /Commodity output /PRODUCTION '000 France /FRAIND-OECD STATISTICS,
14206780	5	B	0	Crude steel /Commodity output /PRODUCTION tonnes '000 France /INTISI-OECD STATISTICS, PA
14321283	5	B	0	Residential, sa /Permits issued /CONSTRUCTION '000 France /FRATRA-OECD STATISTICS, PAR
14321483	5	B	0	FRA CON DWELLING STARTED SA /UNITS France OECD STATISTICS, PARIS"
14321780	5	B	1	CONSTRUCTION Thousands; monthly averages France /FRATRA-OECD STATISTICS, PARIS"
1432419J	5	B	0	Value, sa /Retail sales /DOMESTIC TRADE 1990=100 France /FRACHA-OECD STATISTICS, PARI
1432449J	5	B	0	Volume, sa /Retail sales /DOMESTIC TRADE 1990=100 France /FRACHA-OECD STATISTICS, PA
14325382	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 France /F
1432549J	5	B	0	Manufact. products - 1980 prices, sa /Retail sales /DOMESTIC TRADE 1990=100 France /FRANSO
14428282	5	B	0	Registered unemployed, sa /Unemployment /LABOUR '000 France /FRALAB-OECD STATISTICS, F
144286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent France /INTEUR-OECD STATISTICS, PA
1442879J	5	B	0	New jobseekers, sa /Unemployment /LABOUR 1990=100 France /FRALAB-OECD STATISTICS, PA
14429780	4	B	1	Labour disputes: time lost /Labour - other /LABOUR days '000 France /FRALAB-OECD STATISTIC
1443249H	6	B	1	Labour cost: engineering industries /Wages /WAGES 1990=100 France /FRANSO-OECD STATISTI
1443259H	6	B	0	Labour cost: textile industries /Wages /WAGES 1990=100 France /FRANSO-OECD STATISTICS, P
1443419J	6	B	0	Agricultural goods, sa /Producer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS,
1443459H	6	B	1	Chemicals /Producer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PARIS"
1443649H	6	B	1	Intermediate goods /Producer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PA
1443699H	6	B	0	Metal products /Producer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PARIS'
1443809H	6	B	0	FRA WPI INTERM PRICE OF RAW MATER /I/90 France OECD STATISTICS, PARIS"
1444449H	6	B	1	FRA CPI ENERGY /I/90 France OECD STATISTICS, PARIS"

1444459H	6	B	1	Food /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PARIS"
1444479H	6	B	1	Fuel and electricity /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, P
1444499H	6	B	1	All goods less food /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, P
1444559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PA
1444589H	6	B	1	Rent /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PARIS"
1444599H	6	B	1	Services less rent /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PA
1444619H	6	B	1	All items /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PARIS"
1444659H	6	B	1	Paris: all items /Consumer prices /PRICES 1990=100 France /FRANSO-OECD STATISTICS, PARIS
1454822B	6	B	0	Monetary aggregate (M1), sa /Domestic finance /DOMESTIC FINANCE FF bln France /FRACBA-OE
1454829B	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 France /FRACBA-OECD STATISTICS, PARIS"
1454832B	6	B	0	Monetary aggregate (M3), sa /Domestic finance /DOMESTIC FINANCE FF bln France /FRACBA-OE
1454839B	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 France /FRACBA-OECD STATISTICS, PARIS"
1454892B	6	B	0	Investment aggregate (P1), sa /Domestic finance /DOMESTIC FINANCE FF bln France /FRACBA-C
1455631H	2	B	0	Call money /Interest rates /INTEREST RATES - SHARE PRICES % p.a. France /FRACBA-OECD S
145565AH	2	B	0	3-month PIBOR /Interest rates /INTEREST RATES - SHARE PRICES % p.a. France /FRACBA-OEC
1455761H	2	B	0	Bond yields: gvt. guaranteed /Interest rates /INTEREST RATES - SHARE PRICES % p.a. France
1455791H	2	B	0	Bond yields: not guaranteed /Interest rates /INTEREST RATES - SHARE PRICES % p.a. France /
145581AH	2	B	0	Bonds: public and semi-public /Interest rates /INTEREST RATES - SHARE PRICES % p.a. France
1455849H	6	B	0	Paris Stock Exchange: SBF 250 /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Fra
1456009H	6	B	0	EFFECTIVE EXCHANGE RATES 1990 = 100 France /OECD-OECD STATISTICS, PARIS"
145601AH	6	B	0	EXCHANGE RATES National currency units per US dollar France /OECD-OECD STATISTICS, PAR
145611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln France /INTIMF-
1456151A	2	B	1	Net foreign position /Foreign finance /FOREIGN FINANCE FF bln France /FRACBA-OECD STATIST
14765102	2	B	0	Net trade (f.o.b.-f.o.b.), sa /Foreign trade /FOREIGN TRADE FF bln France /FRACUS-OECD STA
14765252	2	B	0	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Fran
14765302	5	B	0	Imports f.o.b., sa /Foreign trade /FOREIGN TRADE FF bln France /FRACUS-OECD STATISTICS, P
14765552	5	B	0	FOREIGN TRADE - Ftr Imports (fob/cif) Total, sa Billions US dollars; monthly averages Fran
14765602	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE FF bln France /FRACUS-OECD STATISTICS, F
14765752	5	B	0	FOREIGN TRADE - Ftr Exports Fob Total, sa Billions US dollars; monthly averages France /FR

Germany

Number of Series in Monthly Balanced Panel 12; additional Series in Monthly Non-Balanced Panel 67
Number of Series in Quarterly Balanced Panel 29; additional Series in Quarterly Non-Balanced Panel 43

OECD Code	TR	FR	SA	OECD Definition
1220519J	5	B	0	INDUSTRIAL PRODUCTION, sa 1990 = 100 Germany /DEUCBA-OECD STATISTICS, PARIS"
12206180	5	B	0	Passenger cars /Commodity output /PRODUCTION '000 Germany /DEUNSO-OECD STATISTICS, P
12206780	5	B	0	Crude steel /Commodity output /PRODUCTION tonnes '000 Germany /INTISI-OECD STATISTICS, P
1231082H	1	B	1	Total: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-OECD STATISTICS, PAR
1231092H	1	B	1	Exports: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-OECD STATISTICS, PA
1231102H	1	B	1	Domestic: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-OECD STATISTICS, P
1231112H	1	B	1	Consumer durable goods: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-OECD
1231122H	1	B	1	Consumer non-durable goods: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-C
1231342H	1	B	1	Investment goods: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-OECD STATI
1231352H	1	B	1	Intermediate goods: volume /Sales /MANUFACTURING 1991=100 Germany /DEUNSO-OECD STAT
1231712J	5	B	0	Consumer goods: volume, sa /New orders /MANUFACTURING 1991=100 Germany /DEUCBA-OEC
1231922J	5	B	0	Domestic: volume, sa /New orders /MANUFACTURING 1991=100 Germany /DEUCBA-OECD STAT
1231932J	5	B	0	Export: volume, sa /New orders /MANUFACTURING 1991=100 Germany /DEUCBA-OECD STATIS
1231942J	5	B	0	Intermediate goods: volume, sa /New orders /MANUFACTURING 1991=100 Germany /DEUCBA-OE
1231952J	5	B	0	Investment goods: volume, sa /New orders /MANUFACTURING 1991=100 Germany /DEUCBA-OEC
1232032J	5	B	0	Total: volume, sa /New orders /MANUFACTURING 1991=100 Germany /DEUCBA-OECD STATISTI
12321100	5	B	0	Total /Permits issued /CONSTRUCTION DM bln Germany /DEUNSO-OECD STATISTICS, PARIS"
12321200	5	B	0	Residential /Permits issued /CONSTRUCTION DM bln Germany /DEUNSO-OECD STATISTICS, PA
12321780	5	B	0	CONSTRUCTION Thousands; monthly averages Germany /DEUNSO-OECD STATISTICS, PARIS"
12323000	5	B	0	Private non-residential /Work put in place /CONSTRUCTION DM bln Germany /DEUNSO-OECD ST
1232300X	5	B	0	DEU CON PUT IN PLACE NON RESID /MN DEU MARK Germany OECD STATISTICS, PARIS"
12323203	5	B	0	Residential, sa /Work put in place /CONSTRUCTION DM bln Germany /DEUNSO-OECD STATISTIC
1232449K	5	B	0	RETAIL SALES (volume), sa 1990 = 100 Germany /OECD-OECD STATISTICS, PARIS"
1232512H	1	B	1	Value /Wholesale sales /DOMESTIC TRADE 1991=100 Germany /DEUNSO-OECD STATISTICS, P
12325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Germany /
1232582K	1	B	0	Volume, sa /Wholesale sales /DOMESTIC TRADE 1991=100 GERMANY /DEUNSO-OECD STATIS
1242669K	5	B	1	DEU CIVILIAN EMPLOYMENT SA /I/90 Germany OECD STATISTICS, PARIS"
12426983	5	B	0	DEU EMPLOYMENT MINING+MFG SA /PERSONS GERMANY OECD STATISTICS, PARIS"
12427183	5	B	0	Manufacturing, sa /Employment /LABOUR '000 Germany /DEUNSO-OECD STATISTICS, PARIS"
12427480	5	B	1	Part-time (economic reasons) /Employment /LABOUR '000 Germany /DEUNSO-OECD STATISTICS
124280A2	2	B	0	Rate, sa /Unemployment /LABOUR % Germany /DEULAB-OECD STATISTICS, PARIS"
12428280	5	B	1	Registered unemployed /Unemployment /LABOUR '000 Germany /DEULAB-OECD STATISTICS, P

124284A0	2	B	0	DEU UNEMP DEP CIVIL LABOR FORCE /PERCNT Germany OECD STATISTICS, PARIS"
124286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa -- ADJUSTED Down by 2% in xxx (AC) Per cent G
12429180	5	B	1	Monthly hours of work /Labour - other /LABOUR hrs mln Germany /DEULAB-OECD STATISTICS, P
12430082	5	B	0	Unfilled vacancies, sa /Labour - other /LABOUR '000 Germany /DEUCBA-OECD STATISTICS, PAR
1243272J	6	B	0	Unit labour cost, sa /Wages /WAGES 1991=100 Germany /DEUCBA-OECD STATISTICS, PARIS"
1243472H	6	M	1	Consumer goods /Producer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, P/
1243522H	6	B	0	Food,, beverages and tobacco /Producer prices /PRICES 1991=100 Germany /DEUNSO-OECD ST/
1243569H	6	B	1	PRODUCER PRICES (manufacturing) 1990 = 100 Germany /DEUNSO-OECD STATISTICS, PARIS
1243642H	6	M	1	Intermediate goods /Producer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS,
1243652H	6	M	1	Investment goods /Producer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, P/
1243862H	6	M	1	Total /Producer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, PARIS"
1244262H	6	M	1	Total /Wholesale prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, PARIS"
1244442H	6	B	0	Fuel and electricity /Consumer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS,
1244452H	6	M	1	Food /Consumer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, PARIS"
1244557H	6	M	1	All items less food /Consumer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS,
1244582H	6	M	1	Rent /Consumer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, PARIS"
1244612H	6	M	1	All items /Consumer prices /PRICES 1991=100 Germany /DEUNSO-OECD STATISTICS, PARIS"
1244619H	6	B	1	CONSUMER PRICES 1990 = 100 Germany /DEUNSO-OECD STATISTICS, PARIS"
1254821B	6	B	0	Monetary aggregate (M1), sa /Domestic finance /DOMESTIC FINANCE DM bln Germany /DEUCBA-
1254829B	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Germany /DEUCBA-OECD STATISTICS, PARIS"
1254829D	6	B	0	DEU MONETARY AGGT M1 RFA+RDA EST SA /I/90 Germany OECD STATISTICS, PARIS"
1254831B	6	B	0	Monetary aggregate (M3), sa /Domestic finance /DOMESTIC FINANCE DM bln Germany /DEUCBA-
1254839B	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Germany /DEUCBA-OECD STATISTICS, PARIS"
1254839D	6	B	0	DEU M1 + QUASI MONEY RFA+RDA(EST)SA /I/90 Germany OECD STATISTICS, PARIS"
1254841B	6	B	0	Monetary aggregate (M2), sa /Domestic finance /DOMESTIC FINANCE DM bln Germany /DEUCBA-
1254911A	6	B	1	Personal savings deposits /Domestic finance /DOMESTIC FINANCE DM bln Germany /DEUCBA-OE
1254931B	6	B	0	Monetary aggregate (M3+), sa /Domestic finance /DOMESTIC FINANCE DM bln Germany /DEUCBA
1255231D	6	B	0	Credit to economy, sa /Domestic finance /DOMESTIC FINANCE DM bln Germany /DEUCBA-OECD
1255291D	6	B	0	DEU CREDITS ALL INSTITUTIONS SA /MN DEU MARK Germany OECD STATISTICS, PARIS"
125561AH	6	Q	0	Official discount /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Germany /DEUCBA-O
1255631H	2	B	0	Call money /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Germany /DEUCBA-OECD
125565AH	2	B	0	3-month FIBOR /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Germany /DEUCBA-OI
125581AH	2	B	0	Public sector bond yield /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Germany /DE
1255849H	6	B	0	CDAX Share Price Index /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Germany /
1256009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Germany /OECD-OECD STATISTICS, PARIS"
125603AH	6	B	0	US $ exchange rate: forward /Foreign finance /FOREIGN FINANCE Cents/DM Germany /INTIMF-OI
125611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Germany /INTIMF
1256151A	2	B	1	Net foreign position /Foreign finance /FOREIGN FINANCE DM bln Germany /DEUCBA-OECD STAT
12663200	2	B	1	Current account balance /Balance of payments /BALANCE OF PAYMENTS DM bln Germany /DEU
12663250	2	B	1	FDR/DEU BOP CURRENT BALANCE /MN US DOLLARS Germany OECD STATISTICS, PARIS"
12663500	2	B	1	Financial account balance /Balance of payments /BALANCE OF PAYMENTS DM bln Germany /DE
12663700	2	B	1	Net errors and omissions /Balance of payments /BALANCE OF PAYMENTS DM bln Germany /DEU
12663900	2	B	0	Change in official reserves /Balance of payments /BALANCE OF PAYMENTS DM bln Germany /DE
12765102	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE DM bln Germany /DEUNSO-OECD ST
12765252	2	B	0	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Germ
12765302	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE DM bln Germany /DEUNSO-OECD STATISTICS
12765552	5	B	0	FOREIGN TRADE - Ftr Imports (fob/cif) Total, sa Billions US dollars; monthly averages Germ
12765602	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE DM bln Germany /DEUNSO-OECD STATISTICS
12765752	5	B	0	FOREIGN TRADE - Ftr Exports Fob Total, sa Billions US dollars; monthly averages Germany /D

Ireland

Number of Series in Monthly Balanced Panel 12; additional Series in Monthly Non-Balanced Panel 29
Number of Series in Quarterly Balanced Panel 28; additional Series in Quarterly Non-Balanced Panel 11

OECD Code	TR	FR	SA	OECD Definition
2820349J	5	B	0	Consumer goods, sa /Industrial production /PRODUCTION 1990=100 Ireland /IRLNSO-OECD STATIS
2820439J	5	B	0	Intermediate goods, sa /Industrial production /PRODUCTION 1990=100 Ireland /IRLNSO-OECD ST
2820449J	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 Ireland /IRLNSO-OECD STAT
2820459J	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Ireland /IRLNSO-OECD STATIST
2820519J	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Ireland /IRLNSO-OECD STATISTICS, PAR
2832249H	5	B	1	Residential /Cost of construction /CONSTRUCTION 1990=100 Ireland /IRLENV-OECD STATISTICS,
2832419J	5	B	0	Value, sa /Retail sales /DOMESTIC TRADE 1990=100 Ireland /IRLNSO-OECD STATISTICS, PARIS"
2832449J	5	B	0	Volume, sa /Retail sales /DOMESTIC TRADE 1990=100 Ireland /IRLNSO-OECD STATISTICS, PARIS"
28325383	5	B	1	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Ireland /
28427480	5	B	1	Part-time (economic reasons) /Employment /LABOUR '000 Ireland /IRLNSO-OECD STATISTICS, PAR
28428282	5	B	0	Registered unemployed, sa /Unemployment /LABOUR '000 Ireland /IRLNSO-OECD STATISTICS, PAR
284286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Ireland /INTEUR-OECD STATISTICS, PARIS
2843399H	6	B	0	Agricultural products: output /Producer prices /PRICES 1990=100 Ireland /IRLNSO-OECD STATI

2843409H	6	M	1	Agricultural products: input /Producer prices /PRICES 1990=100 Ireland /IRLNSO-OECD STATIS
2844049H	6	B	0	Investment goods /Wholesale prices /PRICES 1990=100 Ireland /IRLNSO-OECD STATISTICS, PARIS
2844119H	6	B	1	Food /Wholesale prices /PRICES 1990=100 Ireland /IRLNSO-OECD STATISTICS, PARIS"
2844189H	6	B	0	Manufactured goods /Wholesale prices /PRICES 1990=100 Ireland /IRLNSO-OECD STATISTICS, PAR
2844269H	6	B	1	Total /Wholesale prices /PRICES 1990=100 Ireland /IRLNSO-OECD STATISTICS, PARIS"
2854829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Ireland /IRLCBA-OECD STATISTICS, PARIS"
2854839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Ireland /IRLCBA-OECD STATISTICS, PARIS"
2854869D	6	B	0	IRE MONETARY AGGREGATE M3E SA /I/90 Ireland OECD STATISTICS, PARIS"
2855041A	6	B	1	IRE BANK CREDIT TO DOMESTIC SECTOR /IREPND Ireland OECD STATISTICS, PARIS"
2855301A	6	M	1	Credit to private sector (£Ir) /Domestic finance /DOMESTIC FINANCE pdIr mln Ireland /IRLCB
2855311A	6	B	0	IRE CREDIT TO PVT SECT. FOR. CUR. /IREPND Ireland OECD STATISTICS, PARIS"
2855311X	6	B	0	Credit to private sector (FX) /Domestic finance /DOMESTIC FINANCE pdIr mln Ireland /IRLCBA
2855341A	6	M	1	Residential mortgage credit /Domestic finance /DOMESTIC FINANCE pdIr mln Ireland /IRLCBA-O
2855631H	2	B	0	Call money /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Ireland /IRLCBA-OECD STAT
285564AH	2	B	0	3-month interbank rate /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Ireland /IRLC
285575AH	2	B	0	IRE 10-YEAR GOVERNMENT BONDS /PERCNT PA Ireland OECD STATISTICS, PARIS"
285578AH	2	B	0	Yield of government bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Ireland /I
2855809H	6	B	0	ISEQ Index - Overall /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Ireland /IRLCBA
285592AH	2	B	0	Short-term facility (STF) /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Ireland /I
2856009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Ireland /OECD-OECD STATISTICS, PARIS"
285601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Ireland /OECD-OECD STATISTICS, PARIS"
285611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Ireland /INTIMF
2856151A	2	B	0	IRE NET FOREIGN POS LICENSED BANKS /MN IREPND Ireland OECD STATISTICS, PARIS"
28765102	2	B	1	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE pdIr mln Ireland /IRLNSO-OECD
28765252	2	B	1	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Irel
28765302	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE pdIr mln Ireland /IRLNSO-OECD STATISTICS,
28765552	5	B	0	FOREIGN TRADE - Ftr Imports (fob/cif) Total, sa Billions US dollars; monthly averages Irel
28765602	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE pdIr mln Ireland /IRLNSO-OECD STATISTICS,
28765752	5	B	0	FOREIGN TRADE - Ftr Exports Fob Total, sa Billions US dollars; monthly averages Ireland /I

Italy

Number of Series in Monthly Balanced Panel 40; additional Series in Monthly Non-Balanced Panel 28
Number of Series in Quarterly Balanced Panel 56; additional Series in Quarterly Non-Balanced Panel 11

OECD Code	TR	FR	SA	OECD Definition
1620349J	5	B	0	Consumer goods, sa /Industrial production /PRODUCTION 1990=100 Italy /ITANSO-OECD STATISTI
1620439J	5	B	0	Industrial materials, sa /Industrial production /PRODUCTION 1990=100 Italy /ITANSO-OECD ST
1620449J	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 Italy /ITANSO-OECD STATIS
1620459J	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Italy /ITASCO-OECD STATISTIC
1620519J	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS
16206180	5	B	0	Passenger cars /Commodity output /PRODUCTION '000 Italy /ITANSO-OECD STATISTICS, PARIS"
16206480	5	B	0	Commercial vehicles /Commodity output /PRODUCTION '000 Italy /ITANSO-OECD STATISTICS, PARI
16206780	5	B	0	Crude steel /Commodity output /PRODUCTION tonnes '000 Italy /INTISI-OECD STATISTICS, PARIS
1631299H	5	B	0	Consumer goods /Sales /MANUFACTURING 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1631309H	5	B	0	Intermediate goods /Sales /MANUFACTURING 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1631319H	5	B	0	Investment goods /Sales /MANUFACTURING 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1631329H	5	B	0	Total /Sales /MANUFACTURING 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1632019H	5	B	0	Total /New orders /MANUFACTURING 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1632249H	5	B	0	Residential /Cost of construction /CONSTRUCTION 1990=100 Italy /ITANSO-OECD STATISTICS, PA
1632419K	5	B	0	Major outlets: value, sa /Retail sales /DOMESTIC TRADE 1990=100 Italy /ITANSO-OECD STATIST
1632449K	4	B	0	RETAIL SALES (volume), sa 1990 = 100 Italy /ITANSO-OECD STATISTICS, PARIS"
16325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Italy /IT
164286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Italy /INTEUR-OECD STATISTICS, PARIS"
16429880	4	B	1	Labour disputes: time lost /Labour - other /LABOUR hrs '000 Italy /ITANSO-OECD STATISTICS,
1643119H	6	B	1	Hourly rates /Wages /WAGES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1643429H	6	B	1	Machinery and equipment /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, P
1643459H	6	B	1	Chemical products /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1643529H	6	B	1	Food,, beverages and tobacco /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTI
1643709H	6	B	1	Non-metallic mineral products /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATIST
1643719H	6	B	1	Metal and metal products /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS,
1643749H	6	B	1	Petroleum products /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1643759H	6	B	1	Textiles and clothing /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PAR
1643869H	6	B	1	Total /Producer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1644419H	6	B	0	Beverages and tobacco /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PAR
1644459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1644489H	6	B	1	Fuel and electricity /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARI
1644499H	6	B	0	All goods less food /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS

1644559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS
1644589H	6	B	1	Rent /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1644599H	6	B	1	Services less rent /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1644619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Italy /ITANSO-OECD STATISTICS, PARIS"
1644679H	6	B	1	CONSUMER PRICES 1990 = 100 Italy /ITANSO-OECD STATISTICS, PARIS"
1654822D	6	B	0	Monetary aggregate (M1), sa /Domestic finance /DOMESTIC FINANCE Lit '000 bln Italy /ITACBA
1654832A	6	B	1	ITA TOTAL LIQUIDITY /BN ITA LIRA Italy OECD STATISTICS, PARIS"
1654833D	6	B	0	Monetary aggregate (M2), sa /Domestic finance /DOMESTIC FINANCE Lit '000 bln Italy /ITACBA
1654839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Italy /ITACBA-OECD STATISTICS, PARIS"
165498AH	2	B	1	3-month interbank deposits /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Italy /IT
1655121A	6	M	1	Gross bond issues: public sector /Domestic finance /DOMESTIC FINANCE Lit '000 bln Italy /I
1655131A	6	B	1	Gross bond issues: banking sector /Domestic finance /DOMESTIC FINANCE Lit '000 bln Italy /
1655251A	6	B	1	Domestic credit /Domestic finance /DOMESTIC FINANCE Lit '000 bln Italy /ITACBA-OECD STATIS
1655292A	6	B	1	Finance to the non state sector /Domestic finance /DOMESTIC FINANCE Lit '000 bln Italy /IT
1655751H	2	B	1	Bond yield /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Italy /ITACBA-OECD STATIS
165578AH	2	B	0	Long-term treasury bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Italy /ITAC
1655849H	6	B	0	ISE MIB Storico /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Italy /ITACBA-OECD S
1656009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Italy /OECD-OECD STATISTICS, PARIS"
165601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Italy /OECD-OECD STATISTICS, PARIS"
165611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Italy /INTIMF-O
1656152A	2	B	1	Net foreign position /Foreign finance /FOREIGN FINANCE Lit '000 bln Italy /ITACBA-OECD STA
16663100	2	B	1	Trade balance /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /ITACBA-OECD ST
16663200	2	B	1	Current account balance /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /ITAC
16663250	2	B	1	ITA BOP CURRENT BALANCE US $ /MN US $ Italy OECD STATISTICS, PARIS"
16663400	2	B	1	Net current transfers /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /ITACBA
16663500	2	B	1	Financial account balance /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /IT
16663600	2	B	1	Net services /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /ITACBA-OECD STA
16663700	2	B	0	Net errors and omissions /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /ITA
16663900	2	B	0	Change in official reserves /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /
16664000	2	B	1	Net income /Balance of payments /BALANCE OF PAYMENTS Lit '000 bln Italy /ITACBA-OECD STATI
16765103	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE Lit bln Italy /ITASCO-OECD STA
16765253	2	B	0	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Ital
16765303	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE Lit bln Italy /ITASCO-OECD STATISTICS, PA
16765553	5	B	0	FOREIGN TRADE - Ftr Imports (fob/cif) Total, sa Billions US dollars; monthly averages Ital
16765603	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE Lit bln Italy /ITASCO-OECD STATISTICS, PA
16765753	5	B	0	FOREIGN TRADE - Ftr Exports Fob Total, sa Billions US dollars; monthly averages Italy /ITA

Luxembourg

Number of Series in Monthly Balanced Panel 6; additional Series in Monthly Non-Balanced Panel 13
Number of Series in Quarterly Balanced Panel 18; additional Series in Quarterly Non-Balanced Panel 1

OECD Code	TR	FR	SA	OECD Definition
2420339K	5	B	0	Construction, sa /Industrial production /PRODUCTION 1990=100 Luxembourg /LUXNSO-OECD ST/
2420459K	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Luxembourg /LUXNSO-OECD S
2420519K	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Luxembourg /LUXNSO-OECD STATISTIC
24206780	5	B	0	Crude steel /Commodity output /PRODUCTION tonnes '000 Luxembourg /INTISI-OECD STATISTIC
24321383	5	B	0	Permits issued, sa /Construction /CONSTRUCTION number Luxembourg /LUXNSO-OECD STATIS
24325383	5	B	0	New passenger car registrations, sa /Domestic trade /DOMESTIC TRADE number Luxembourg /LU
2442699H	5	B	1	Industry: employees /Employment /LABOUR 1990=100 Luxembourg /LUXNSO-OECD STATISTICS
24427080	5	B	1	Iron and steel: wage earners /Employment /LABOUR '000 Luxembourg /LUXNSO-OECD STATISTIC
24428283	5	B	0	Registered unemployed, sa /Unemployment /LABOUR number Luxembourg /LUXNSO-OECD STAT
244286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Luxembourg /INTEUR-OECD STATISTIC
2442929H	5	B	0	Monthly hours of work /Labour - other /LABOUR 1990=100 Luxembourg /LUXNSO-OECD STATISTI
24429983	5	B	0	Unfilled vacancies, sa /Labour - other /LABOUR number Luxembourg /OECD-OECD STATISTICS, F
2443159H	6	B	0	Monthly earnings /Wages /WAGES 1990=100 Luxembourg /LUXNSO-OECD STATISTICS, PARIS"
2443589H	6	B	0	Industrial goods /Producer prices /PRICES 1990=100 Luxembourg /LUXNSO-OECD STATISTICS, F
2444459H	6	B	0	Food /Consumer prices /PRICES 1990=100 Luxembourg /LUXNSO-OECD STATISTICS, PARIS"
2444479H	6	B	0	Fuel and electricity /Consumer prices /PRICES 1990=100 Luxembourg /LUXNSO-OECD STATISTIC
2444559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 Luxembourg /LUXNSO-OECD STATISTIC
2444619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Luxembourg /LUXNSO-OECD STATISTICS, PARIS
245575AH	2	B	0	Bond yield /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Luxembourg /LUXIML-OECI

Netherlands

Number of Series in Monthly Balanced Panel 27; additional Series in Monthly Non-Balanced Panel 20
Number of Series in Quarterly Balanced Panel 32; additional Series in Quarterly Non-Balanced Panel 10

OECD Code	TR	FR	SA	OECD Definition
1820459J	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Netherlands /NLDNSO-OECD STA
1820519J	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Netherlands /NLDNSO-OECD STATISTICS,
18206680	5	B	1	Crude petroleum /Commodity output /PRODUCTION tonnes '000 Netherlands /NLDNSO-OECD STATIS
18206780	5	B	1	Crude steel /Commodity output /PRODUCTION tonnes '000 Netherlands /INTISI-OECD STATISTICS,
18206880	5	B	1	Natural gas /Commodity output /PRODUCTION cu. m. mln Netherlands /NLDNSO-OECD STATISTICS,
18321100	5	B	1	Total /Permits issued /CONSTRUCTION f. mln Netherlands /NLDNSO-OECD STATISTICS, PARIS"
18321203	5	B	0	Residential, sa /Permits issued /CONSTRUCTION f. mln Netherlands /NLDNSO-OECD STATISTICS,
1832419K	5	B	0	Total: value, sa /Retail sales /DOMESTIC TRADE 1990=100 Netherlands /NLDNSO-OECD STATISTIC
1832449K	5	B	1	RETAIL SALES (volume), sa 1990 = 100 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
18325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Netherlan
18428180	5	M	1	Total /Unemployment /LABOUR '000 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
184286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Netherlands /INTEUR-OECD STATISTICS, I
1843149H	6	B	1	Hourly rates: manufacturing /Wages /WAGES 1990=100 Netherlands /NLDNSO-OECD STATISTICS, P
1843469H	6	B	1	Output: consumer goods /Producer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTI
1843489H	6	B	0	Output: crude petroleum /Producer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATIST
1843569H	6	B	1	PRODUCER PRICES (manufacturing) 1990 = 100 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
1843649H	6	B	1	Output: intermediate goods /Producer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STAT
1843659H	6	B	1	Output: investment goods /Producer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATIS
1843879H	6	B	1	Input: total /Producer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
1843889H	6	B	1	Output: total /Producer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS, PARIS
1844459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
1844479H	6	B	0	Fuel and electricity /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS
1844499H	6	B	1	All goods less food /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS,
1844559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS,
1844589H	6	B	1	Rent /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
1844599H	6	B	1	Services less rent /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS,
1844619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Netherlands /NLDNSO-OECD STATISTICS, PARIS"
1844709H	6	B	1	NLD CPI NON FOOD-NON ENERGY /I/90 Netherlands OECD STATISTICS, PARIS"
1854829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Netherlands /NLDCBA-OECD STATISTICS, PARIS"
1854832D	6	B	0	NLD MONETARY AGGREGATE M3 SA /MN GUILDER Netherlands OECD STATISTICS, PARIS"
1854839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Netherlands /NLDCBA-OECD STATISTICS, PARIS"
1854911A	6	M	1	Savings deposits /Domestic finance - General /DOMESTIC FINANCE f. bln Netherlands /NLDCBA-
1855291A	6	M	1	NLD CRED PRIV SECT (ALL INST) /MN GUILDER Netherlands OECD STATISTICS, PARIS"
1855351A	6	M	1	Bank credit: short-term /Credit to private sector /DOMESTIC FINANCE f. bln Netherlands /NL
1855361A	6	M	1	Bank credit: medium and long-term /Credit to private sector /DOMESTIC FINANCE f. bln Nethe
1855631H	2	B	1	Call money (Amsterdam) /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Netherlands /
185565AH	2	B	0	3-month AIBOR /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Netherlands /NLDCBA-OE
185576AH	2	B	0	Yield of government bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Netherland
1855809H	6	B	0	CBS All Shares Index /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Netherlands /NL
1856009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Netherlands /OECD-OECD STATISTICS, PARIS"
185601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Netherlands /OECD-OECD STATISTICS, PA
185611AS	5	B	0	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Netherlands /IN
1856151A	2	B	1	Net foreign position /Foreign finance /FOREIGN FINANCE f. mln Netherlands /NLDCBA-OECD STA
18765103	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE f. mln Netherlands /NLDNSO-OEC
18765253	2	B	0	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Neth
18765303	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE f. mln Netherlands /NLDNSO-OECD STATISTIC
18765603	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE f. mln Netherlands /NLDNSO-OECD STATISTIC

Portugal

Number of Series in Monthly Balanced Panel 15; additional Series in Monthly Non-Balanced Panel 14
Number of Series in Quarterly Balanced Panel 17; additional Series in Quarterly Non-Balanced Panel 12

OECD Code	TR	FR	SA	OECD Definition
3620349K	5	B	0	Consumer goods, sa /Industrial production /PRODUCTION 1990=100 Portugal /PRTNSO-OECD ST
3620439K	5	B	0	Intermediate goods, sa /Industrial production /PRODUCTION 1990=100 Portugal /PRTNSO-OECD S
3620449K	5	B	0	Investment goods, sa /Industrial production /PRODUCTION 1990=100 Portugal /PRTNSO-OECD ST
3620459K	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Portugal /PRTNSO-OECD STAT
3620519K	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Portugal /PRTNSO-OECD STATISTICS, I
36206780	5	B	1	Crude steel /Commodity output /PRODUCTION tonnes '000 Portugal /INTISI-OECD STATISTICS, P
3642659X	5	B	0	PRT EMPLOYMNT INDEX/TOTAL (ENQ IND) /I/90 Portugal OECD STATISTICS, PARIS"
36428280	5	B	1	Registered unemployed /Unemployment /LABOUR '000 Portugal /PRTEPT-OECD STATISTICS, PA
364286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Portugal /INTEUR-OECD STATISTICS, I
36429980	5	B	1	Unfilled vacancies /Labour - other /LABOUR '000 Portugal /PRTEPT-OECD STATISTICS, PARIS"
3644459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Portugal /PRTNSO-OECD STATISTICS, PARIS"
3644549H	6	B	1	Lisbon: all items less rent /Consumer prices /PRICES 1990=100 Portugal /PRTNSO-OECD STATIS
3644559H	6	B	1	All items less food and rent /Consumer prices /PRICES 1990=100 Portugal /PRTNSO-OECD STATI
3644609H	6	B	1	All items less rent /Consumer prices /PRICES 1990=100 Portugal /PRTNSO-OECD STATISTICS, P

3654829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Portugal /PRTCBA-OECD STATISTICS, PARIS"
3654831D	6	B	0	PRT MONETARY AGGREGATE M2- SA /MN ESCUDO Portugal OECD STATISTICS, PARIS"
3654839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Portugal /PRTCBA-OECD STATISTICS, PARIS"
3654861A	6	B	1	Total liquidity (L-) /Domestic finance /DOMESTIC FINANCE Esc bln Portugal /PRTCBA-OECD STA
3655231A	6	B	0	Bank credit to economy /Domestic finance /DOMESTIC FINANCE Esc bln Portugal /PRTCBA-OECD
365565AH	2	B	0	86-96 day interbank rate /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Portugal /P
365567AH	2	B	0	91-day Treasury bills /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Portugal /PRTC
3655849H	6	B	0	BVL General Share Price Index /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Por
3656009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Portugal /OECD-OECD STATISTICS, PARIS"
365601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Portugal /OECD-OECD STATISTICS, PA
365611AS	5	B	1	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Portugal /INTIM
3656151A	2	B	1	Net foreign position /Foreign finance /FOREIGN FINANCE Esc bln Portugal /PRTCBA-OECD STATI
36765103	2	B	1	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE Esc bln Portugal /PRTNSO-OECD
36765303	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE Esc bln Portugal /PRTNSO-OECD STATISTICS,
36765603	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE Esc bln Portugal /PRTNSO-OECD STATISTICS

Spain

Number of Series in Monthly Balanced Panel 25; additional Series in Monthly Non-Balanced Panel 34
Number of Series in Quarterly Balanced Panel 43; additional Series in Quarterly Non-Balanced Panel 9

OECD Code	TR	FR	SA	OECD Definition
3220349H	5	B	0	Consumer goods /Industrial production /PRODUCTION 1990=100 Spain /ESPNSO-OECD STATISTICS
3220439H	5	B	0	Intermediate goods /Industrial production /PRODUCTION 1990=100 Spain /ESPNSO-OECD STATISTI
3220449H	5	B	1	Investment goods /Industrial production /PRODUCTION 1990=100 Spain /ESPNSO-OECD STATISTIC
3220459K	5	B	0	Manufacturing, sa /Industrial production /PRODUCTION 1990=100 Spain /ESPNSO-OECD STATISTIC
3220519J	5	B	0	Total, sa /Industrial production /PRODUCTION 1990=100 Spain /ESPECO-OECD STATISTICS, PARIS
32206180	5	B	0	Passenger cars /Commodity output /PRODUCTION '000 Spain /ESPCAR-OECD STATISTICS, PARIS"
32206580	5	B	0	Cement /Commodity output /PRODUCTION tonnes '000 Spain /ESPIND-OECD STATISTICS, PARIS"
32206780	5	B	0	Crude steel /Commodity output /PRODUCTION tonnes '000 Spain /INTISI-OECD STATISTICS, PARIS
32321580	5	B	0	Dwellings completed /Construction - General /CONSTRUCTION '000 Spain /ESPTRA-OECD STATISTI
32321780	5	B	0	CONSTRUCTION Thousands; monthly averages Spain /ESPNSO-OECD STATISTICS, PARIS"
3232239H	5	B	1	Building construction /Cost of construction /CONSTRUCTION 1990=100 Spain /ESPTRA-OECD STAT
3232319H	5	B	0	Naval construction /Commodity output /PRODUCTION 1990=100 Spain /ESPNSO-OECD STATISTICS
32325383	5	B	0	New passenger car registrations, sa /Domestic trade - other /DOMESTIC TRADE '000 Spain /ES
32428282	5	B	0	Registered unemployed, sa /Unemployment /LABOUR '000 Spain /ESPNSO-OECD STATISTICS, PAR
324286A3	2	B	0	STANDARDISED UNEMPLOYMENT RATES, sa Per cent Spain /INTEUR-OECD STATISTICS, PARIS
32429780	1	B	1	Labour disputes: time lost /Labour - other /LABOUR '000 Spain /ESPLAB-OECD STATISTICS, PAR
32429983	5	B	0	Unfilled vacancies, sa /Labour - other /LABOUR '000 Spain /ESPEMP-OECD STATISTICS, PARIS"
3243419H	6	B	1	Agricultural products /Producer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PAR
3243479H	6	B	1	Consumer goods /Producer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3243519H	6	B	0	Energy /Producer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3243569H	6	B	1	PRODUCER PRICES (manufacturing) 1990 = 100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3243649H	6	B	1	Intermediate goods /Producer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS'
3243659H	6	B	1	Investment goods /Producer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3244449H	6	B	0	Fuel and electricity /Consumer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARI
3244459H	6	B	1	Food /Consumer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3244559H	6	B	1	All items less food /Consumer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS
3244589H	6	B	1	Rent /Consumer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3244599H	6	B	1	Services less rent /Consumer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3244619H	6	B	1	All items /Consumer prices /PRICES 1990=100 Spain /ESPNSO-OECD STATISTICS, PARIS"
3254829D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Spain /ESPCBA-OECD STATISTICS, PARIS"
3254832A	6	B	1	Monetary aggregate (M3) /Domestic finance - General /DOMESTIC FINANCE Ptas bln Spain /ESPC
3254833D	6	B	0	ESP MONETARY AGGREGATE M3 SA /BN PESETA Spain OECD STATISTICS, PARIS"
3254839D	6	B	0	MONETARY AGGREGATES, sa 1990 = 100 Spain /ESPCBA-OECD STATISTICS, PARIS"
3254861A	6	B	1	Total liquidity (ALP2) /Domestic finance - General /DOMESTIC FINANCE Ptas bln Spain /ESPCB
3255302A	6	B	1	Commercial banks /Credit to private sector /DOMESTIC FINANCE Ptas bln Spain /ESPCBA-OECD S
3255312A	6	B	1	Other credit institutions /Credit to private sector /DOMESTIC FINANCE Ptas bln Spain /ESPC
3255631H	2	B	0	Call money /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Spain /ESPCBA-OECD STATI
325564AH	2	B	0	3-month interbank loans /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Spain /ESPCB
325578AH	2	B	0	Long-term government bonds /Interest rates /INTEREST RATES - SHARE PRICES % p.a. Spain /ES
3255809H	6	B	0	MSE General Index /Share prices /INTEREST RATES - SHARE PRICES 1990=100 Spain /ESPCBA-O
3256009H	6	B	1	EFFECTIVE EXCHANGE RATES 1990 = 100 Spain /OECD-OECD STATISTICS, PARIS"
325601AH	6	B	0	EXCHANGE RATES National currency units per US dollar Spain /OECD-OECD STATISTICS, PARIS"
325611AS	5	B	1	Official reserves excluding gold /Foreign finance /FOREIGN FINANCE SDR mln Spain /INTIMF-O
3256151A	2	B	0	Net foreign position /Foreign finance /FOREIGN FINANCE Ptas bln Spain /ESPCBA-OECD STATIST
32663100	2	M	1	Trade balance /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPCBA-OECD STA
32663200	2	M	1	Current account balance /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPCBA-C
32663250	2	M	1	ESP BOP CURRENT BALANCE US $ /MN US $ Spain OECD STATISTICS, PARIS"

32663400	2	M	1	Net current transfers /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPCBA-OEC
32663500	2	M	1	Financial account balance /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPCBA
32663700	2	M	1	Net errors and omissions /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPCBA-
32663900	1	B	0	Change in official reserves /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPC
3266390X	2	B	0	ESP BOP OFFICIAL RESERVES /MN PESETA Spain OECD STATISTICS, PARIS"
32664000	2	M	1	Net income /Balance of payments /BALANCE OF PAYMENTS Ptas bln Spain /ESPCBA-OECD STATIS
32765102	2	B	0	Net trade (f.o.b.-c.i.f.), sa /Foreign trade /FOREIGN TRADE Ptas bln Spain /ESPCUS-OECD ST
32765252	2	B	0	FOREIGN TRADE - Ftr Trade Balance (fob-fob), sa Billions US dollars; monthly averages Spai
32765302	5	B	0	Imports c.i.f., sa /Foreign trade /FOREIGN TRADE Ptas bln Spain /ESPCUS-OECD STATISTICS, P
32765552	5	B	0	FOREIGN TRADE - Ftr Imports (fob/cif) Total, sa Billions US dollars; monthly averages Spai
32765602	5	B	0	Exports f.o.b., sa /Foreign trade /FOREIGN TRADE Ptas bln Spain /ESPCUS-OECD STATISTICS, P
32765752	5	B	0	FOREIGN TRADE - Ftr Exports Fob Total, sa Billions US dollars; monthly averages Spain /ESP

Table 1
Results for Quarterly Euro-Wide Aggregates

A. Full Sample Regression Results

Alternative Model	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
P-Values for F-tests of univariate AR models versus alternative models				
AR+US	0.41	0.18	0.01	0.53
VAR	0.04	0.00	0.02	0.00
PC-Euro	0.52	0.01	0.73	0.00
P-Values for tests of equality of country-specific models				
AR+US	0.00	0.00	0.00	0.00
VAR	0.30	0.00	0.00	0.00
PC-Euro	0.00	0.00	0.00	0.00

B. Results for simulated out of sample forecasts

B.1. 1-quarter forecast horizon

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample AR RMSFE	0.0023	0.0785	0.0091	0.0070
Out-Sample AR RMSFE	0.0016	0.0929	0.0083	0.0033
	MSFE relative to AR Model			
AR	1.00	1.00	1.00	1.00
AR + US	1.24	1.15	1.07	1.93
VAR	1.26	0.86	0.92	2.27
PC-Euro	1.95	0.79	1.06	1.38
Agg - AR	0.92	0.81	0.97	0.94
Agg - VAR	1.10	0.55	1.03	2.21
Agg - AR+Eu	1.03	0.97	0.98	1.05
Agg - AR+US	0.96	0.96	1.02	1.99
Agg - PC-CS	1.04	0.52	1.03	1.58
Agg - PC-Eu	1.64	0.53	1.04	1.23
Agg - PC-C&E	1.58	0.48	1.09	2.27

Table 1
Results for Quarterly Euro-Wide Aggregates
(Continued)

B.2. 2-quarter forecast horizon

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample AR RMSFE	0.0047	0.1786	0.0141	0.0102
Out-Sample AR RMSFE	0.0025	0.2185	0.0164	0.0053
	MSFE relative to AR Model			
AR	1.00	1.00	1.00	1.00
AR + US	1.33	1.33	1.00	2.50
VAR	1.99	0.93	0.93	4.25
PC-Euro	2.43	0.94	1.09	1.39
Agg - AR	1.03	0.77	0.85	0.91
Agg - VAR	0.72	0.53	0.80	3.96
Agg - AR+Eu	1.28	1.02	0.96	0.99
Agg - AR+US	1.13	0.92	0.84	2.48
Agg - PC-CS	0.94	0.53	0.89	3.54
Agg - PC-Eu	1.85	0.62	1.02	1.30
Agg - PC-C&E	1.57	0.56	1.00	3.21

B.3. 4-quarter forecast horizon

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample AR RMSFE	0.0098	0.4343	0.0266	0.0153
Out-Sample AR RMSFE	0.0052	0.6016	0.0371	0.0091
	MSFE relative to AR Model			
AR	1.00	1.00	1.00	1.00
AR + US	1.43	1.78	0.97	1.79
VAR	4.26	1.18	1.07	6.16
PC-Euro	1.76	1.11	1.13	2.91
Agg - AR	0.90	0.60	0.70	1.09
Agg - VAR	1.13	0.51	0.62	4.48
Agg - AR+Eu	1.37	0.97	1.06	1.72
Agg - AR+US	0.99	0.76	0.73	1.74
Agg - PC-CS	0.57	0.47	0.82	3.98
Agg - PC-Eu	1.20	0.70	1.01	2.78
Agg - PC-C&E	0.93	0.63	1.19	4.71

Notes to table 1: The models labeled AR, AR+US, VAR and Pc-Euro were constructed with the EU-Aggregates. Models prefaced with "Agg-" are the pooled country-specific models. AR is the univariate autoregression, AR+US includes the U.S. aggregate, VAR is vector autoregression, AR+EU includes the EU aggregate, PC-Euro includes factors estimated from the pooled EU data set, PC-CS includes factors estimated from the country specific datasets, and PC-C&E includes both sets of factors.

Table 2
Comparison of Simulated Out-Of-Sample Forecasting Results
Quarterly Data, I(2) Prices

A. Euro Aggregate Forecasts
Fraction of series/horizons in which row-method beat column-method

	AR	AR+ US	VAR	PC- EU	Agg- AR	Agg- VAR	Agg- AR+ EU	Agg- AR+ US	Agg- PC- CS	Agg- PC- Eu	Agg- PC- C&E
AR	--	0.83	0.67	0.83	0.17	0.50	0.58	0.42	0.42	0.75	0.58
AR+ US	0.17	--	0.58	0.50	0.00	0.25	0.08	0.08	0.17	0.42	0.67
VAR	0.33	0.42	--	0.50	0.08	0.08	0.33	0.17	0.08	0.25	0.42
PC- Euro	0.17	0.50	0.50	--	0.08	0.25	0.17	0.25	0.25	0.00	0.42
Agg- AR	0.83	1.00	0.92	0.92	--	0.50	1.00	0.92	0.58	0.83	0.83
Agg - VAR	0.50	0.75	0.92	0.75	0.50	--	0.58	0.50	0.33	0.67	0.75
Agg - AR+Eu	0.42	0.92	0.67	0.83	0.00	0.42	--	0.33	0.42	0.58	0.67
Agg - AR+US	0.58	0.92	0.83	0.75	0.08	0.50	0.67	--	0.50	0.58	0.67
Agg- PC-CS	0.58	0.83	0.92	0.75	0.42	0.67	0.58	0.50	--	0.75	0.83
Agg - PC- Eu	0.25	0.58	0.75	1.00	0.17	0.33	0.42	0.42	0.25	--	0.42
Agg - PC- C&E	0.42	0.33	0.58	0.58	0.17	0.25	0.33	0.33	0.17	0.58	--

B. Country Forecasts
Fraction of series/horizons/countries in which row-method beat column-method

	AR	AR+ EU	AR+ US	VAR	PC- CS	PC- EU	PC- EU&CS
AR	--	0.63	0.61	0.68	0.61	0.61	0.61
AR+ Eu	0.38	--	0.47	0.60	0.46	0.52	0.50
AR+ US	0.39	0.53	--	0.68	0.46	0.57	0.58
VAR	0.33	0.40	0.32	--	0.33	0.41	0.40
PC- CS	0.39	0.54	0.54	0.68	--	0.63	0.70
PC- EU	0.39	0.48	0.42	0.59	0.38	--	0.63
PC- EU&CS	0.39	0.50	0.42	0.60	0.30	0.37	--

Notes to table 2: Each entry shows the fraction of times that the forecast corresponding to the rows of the table had a lower MSFE than the forecast corresponding to the column in the simulated out-of-sample period. See the notes to table 1 for a definition of the models.

Table 3
Comparison of Simulated Out-Of-Sample Forecasting Results
Quarterly Data, I(1) Prices

A. Euro Aggregate Forecasts
Fraction of series/horizons in which row-method beat column-method

	AR	AR+ US	VAR	PC- EU	Agg- AR	Agg- VAR	Agg- AR+ EU	Agg- AR+ US	Agg- PC- CS	Agg- PC- Eu	Agg- PC- C&E
AR	--	0.75	0.58	0.67	0.08	0.42	0.58	0.33	0.50	0.50	0.58
AR+ US	0.25	--	0.58	0.50	0.00	0.25	0.25	0.08	0.42	0.33	0.58
VAR	0.42	0.42	--	0.50	0.08	0.00	0.50	0.17	0.25	0.25	0.33
PC- Euro	0.33	0.50	0.50	--	0.17	0.42	0.33	0.42	0.25	0.25	0.58
Agg- AR	0.92	1.00	0.92	0.83	--	0.67	1.00	0.75	0.58	0.67	0.67
Agg - VAR	0.58	0.75	1.00	0.58	0.33	--	0.67	0.33	0.42	0.50	0.58
Agg - AR+Eu	0.42	0.75	0.50	0.67	0.00	0.33	--	0.33	0.50	0.50	0.58
Agg - AR+US	0.67	0.92	0.83	0.58	0.25	0.67	0.67	--	0.42	0.58	0.67
Agg- PC-CS	0.50	0.58	0.75	0.75	0.42	0.58	0.50	0.58	--	0.83	0.83
Agg - PC- Eu	0.50	0.67	0.75	0.75	0.33	0.50	0.50	0.42	0.17	--	0.67
Agg - PC- C&E	0.42	0.42	0.67	0.42	0.33	0.42	0.42	0.33	0.17	0.33	--

B. Country Forecasts
Fraction of series/horizons/countries in which row-method beat column-method

	AR	AR+ EU	AR+ US	VAR	PC- CS	PC- EU	PC- EU&CS
AR	--	0.57	0.52	0.71	0.62	0.64	0.71
AR+ Eu	0.43	--	0.49	0.63	0.57	0.57	0.66
AR+ US	0.48	0.51	--	0.72	0.57	0.59	0.70
VAR	0.29	0.38	0.28	--	0.38	0.46	0.63
PC- CS	0.38	0.42	0.42	0.63	--	0.58	0.81
PC- EU	0.36	0.43	0.41	0.54	0.42	--	0.71
PC- EU&CS	0.29	0.34	0.30	0.38	0.19	0.29	--

Notes: See Notes the Table 2

Table 4
Comparison of Simulated Out-Of-Sample Forecasting Results
Monthly Data, I(2) Prices

A. Euro Aggregate Forecasts
Fraction of series/horizons in which row-method beat column-method

	AR	AR+ US	VAR	PC-EU	Agg-AR	Agg-VAR	Agg-AR+ EU	Agg-AR+ US	Agg-PC-CS	Agg-PC-Eu	Agg-PC-C&E
AR	--	0.56	0.56	0.56	0.11	0.33	0.33	0.22	0.44	0.56	0.56
AR+ US	0.44	--	0.56	0.56	0.33	0.33	0.33	0.00	0.56	0.56	0.56
VAR	0.44	0.44	--	0.56	0.33	0.11	0.44	0.33	0.22	0.33	0.33
PC-Euro	0.44	0.44	0.44	--	0.22	0.33	0.00	0.22	0.33	0.56	0.56
Agg-AR	0.89	0.67	0.67	0.78	--	0.33	0.56	0.56	0.67	0.67	0.67
Agg - VAR	0.67	0.67	0.89	0.67	0.67	--	0.67	0.67	0.67	0.67	0.78
Agg - AR+Eu	0.67	0.67	0.56	1.00	0.44	0.33	--	0.33	0.44	0.56	0.67
Agg - AR+US	0.78	1.00	0.67	0.78	0.44	0.33	0.67	--	0.67	0.56	0.78
Agg-PC-CS	0.56	0.44	0.78	0.67	0.33	0.33	0.56	0.33	--	0.33	0.67
Agg - PC-Eu	0.44	0.44	0.67	0.44	0.33	0.33	0.44	0.44	0.67	--	0.67
Agg - PC-C&E	0.44	0.44	0.67	0.44	0.33	0.22	0.33	0.22	0.33	0.33	--

B. Country Forecasts
Fraction of series/horizons/countries in which row-method beat column-method

	AR	AR+ EU	AR+ US	VAR	PC-CS	PC-EU	PC-EU&CS
AR	--	0.60	0.41	0.66	0.66	0.59	0.62
AR+ Eu	0.40	--	0.43	0.68	0.59	0.69	0.73
AR+ US	0.59	0.57	--	0.67	0.72	0.72	0.77
VAR	0.34	0.32	0.33	--	0.40	0.46	0.52
PC-CS	0.34	0.41	0.28	0.60	--	0.57	0.62
PC-EU	0.41	0.31	0.28	0.54	0.43	--	0.69
PC-EU&CS	0.38	0.27	0.23	0.48	0.38	0.31	--

Notes: See Notes the Table 2

Table C1. Results for Austria

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.26	0.05	0.00	0.15
AR+US	0.15	0.30	0.19	0.16
VAR	0.41	0.00	0.07	0.01
PC-CS	0.06	0.56	0.07	0.73
PC-EU	0.50	0.18	0.01	0.70
PC-EU&CS	0.01	0.70	0.96	0.65
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0041	0.1625	0.0149	0.0064
Out-Smpl RMSFE	0.0031	0.1803	0.0146	0.0034
AR	1.00	1.00	1.00	1.00
AR+Eu	1.13	0.93	1.20	1.24
AR+US	1.01	1.10	0.97	1.25
VAR	0.79	0.98	1.09	1.44
PC-CS	1.69	1.04	0.91	1.09
PC-EU	1.01	0.94	0.80	1.25
PC-EU&CS	2.06	0.98	0.80	1.29
2 –quarter horizon				
In-Smpl RMSFE	0.0066	0.2677	0.0212	0.0094
Out-Smpl RMSFE	0.0040	0.2906	0.0219	0.0037
AR	1.00	1.00	1.00	1.00
AR+Eu	1.28	0.93	1.45	1.15
AR+US	0.92	1.04	1.00	1.78
VAR	0.83	1.07	1.19	1.66
PC-CS	1.53	1.15	0.91	1.12
PC-EU	1.07	1.11	0.98	1.78
PC-EU&CS	1.94	1.24	1.07	2.80
4-quarter horizon				
In-Smpl RMSFE	0.0109	0.3997	0.0329	0.0131
Out-Smpl RMSFE	0.0059	0.3822	0.0324	0.0063
AR	1.00	1.00	1.00	1.00
AR+Eu	1.83	1.22	2.46	1.28
AR+US	0.93	0.93	1.03	1.14
VAR	0.91	0.95	1.23	1.66
PC-CS	1.34	1.09	1.07	1.15
PC-EU	1.33	1.10	1.43	3.28
PC-EU&CS	1.94	1.20	1.45	3.94

Notes: The first set of results in the table show p-values for exclusion of Z_t in (3.1) for each of the models listed in the first column. The next set of results summarize the performance in the simulated out-of-sample forecasting experiment for three different forecast horizons. The first two rows present the root mean square forecast error (RMSFE) computed using the in-sample and out-of-sample AR model. Each remaining row shows the mean square forecast error (MSFE) for the method listed in the first column relative the MSFE for the AR model. See the notes to table 1 for a definition of the models.

Table C2. Results for Belgium

	CPI Inflation	Unemployment Rate	Industrial Production
In-Sample Regression Results			
	P-Values for F-tests of univariate AR models versus alternative models		
AR+Eu	0.59	0.00	0.01
AR+US	0.06	0.06	0.02
VAR	0.01	0.78	0.14
PC-CS	0.01	0.05	0.20
PC-EU	0.44	0.00	0.02
PC-EU&CS	0.01	0.58	0.83
Simulated Out of Sample Relative MSFE *1-quarter horizon*			
In-Smpl RMSFE	0.0032	0.1486	0.0219
Out-Smpl RMSFE	0.0024	0.1376	0.0317
AR	1.00	1.00	1.00
AR+Eu	1.22	0.89	0.92
AR+US	1.09	1.25	0.91
VAR	1.26	1.50	0.99
PC-CS	0.96	1.03	1.05
PC-EU	1.25	0.77	0.87
PC-EU&CS	0.84	0.87	1.00
2 –quarter horizon			
In-Smpl RMSFE	0.0136	0.3623	0.0258
Out-Smpl RMSFE	0.0063	0.2885	0.0254
AR	0.0041	0.3005	0.0347
AR+Eu	1.00	1.00	1.00
AR+US	1.12	0.80	0.92
VAR	1.12	1.24	0.98
PC-CS	1.27	1.48	1.06
PC-EU	1.12	0.98	0.78
PC-EU&CS	1.20	0.80	0.91
4-quarter horizon			
In-Smpl RMSFE	0.0128	0.6276	0.0343
Out-Smpl RMSFE	0.0072	0.7346	0.0392
AR	1.00	1.00	1.00
AR+Eu	1.27	0.85	0.61
AR+US	1.05	1.14	0.84
VAR	1.35	1.21	1.55
PC-CS	1.02	1.00	0.80
PC-EU	1.11	0.86	0.63
PC-EU&CS	1.05	0.86	0.63

Notes: See notes to table C1.

Table C3. Results for Finland

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.38	0.01	0.00	0.23
AR+US	0.53	0.13	0.04	0.15
VAR	0.44	0.02	0.03	0.03
PC-CS	0.12	0.00	0.16	0.00
PC-EU	0.24	0.01	0.40	0.73
PC-EU&CS	0.04	0.00	0.12	0.00
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0039	0.2295	0.0168	0.0131
Out-Smpl RMSFE	0.0043	0.2462	0.0168	0.0129
AR	1.00	1.00	1.00	1.00
AR+Eu	0.97	0.78	0.81	0.94
AR+US	0.97	0.99	0.96	0.92
VAR	0.97	0.99	1.19	0.95
PC-CS	1.01	0.77	0.94	0.68
PC-EU	1.12	0.89	1.02	1.03
PC-EU&CS	1.21	0.66	0.88	0.68
2 –quarter horizon				
In-Smpl RMSFE	0.0074	0.5223	0.0278	0.0175
Out-Smpl RMSFE	0.0078	0.6277	0.0328	0.0162
AR	1.00	1.00	1.00	1.00
AR+Eu	0.95	0.64	0.91	0.76
AR+US	1.01	0.92	0.99	0.94
VAR	1.06	0.96	0.92	0.75
PC-CS	1.04	0.80	0.99	0.79
PC-EU	1.09	0.91	0.95	1.01
PC-EU&CS	1.19	0.59	0.85	0.67
4-quarter horizon				
In-Smpl RMSFE	0.0145	1.3201	0.0501	0.0316
Out-Smpl RMSFE	0.0139	1.8238	0.0656	0.0304
AR	1.00	1.00	1.00	1.00
AR+Eu	0.96	0.44	0.80	0.57
AR+US	1.03	0.82	1.01	0.98
VAR	0.97	0.82	0.76	0.99
PC-CS	1.07	0.70	1.15	0.91
PC-EU	1.11	0.88	0.72	0.73
PC-EU&CS	1.21	0.45	0.70	0.50

Notes: See notes to table C1.

Table C4. Results for France

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.71	0.15	0.17	0.54
AR+US	0.22	0.20	0.45	0.63
VAR	0.14	0.00	0.44	0.34
PC-CS	0.73	0.00	0.08	0.10
PC-EU	0.30	0.00	0.12	0.01
PC-EU&CS	0.01	0.08	0.71	0.95
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0025	0.1203	0.0104	0.0058
Out-Smpl RMSFE	0.0020	0.1321	0.0119	0.0053
AR	1.00	1.00	1.00	1.00
AR+Eu	1.01	1.02	0.97	0.98
AR+US	1.07	0.98	0.98	1.07
VAR	1.04	0.80	1.07	1.13
PC-CS	1.00	0.63	0.95	0.91
PC-EU	1.30	0.69	1.02	1.08
PC-EU&CS	1.25	0.60	1.13	1.17
2 –quarter horizon				
In-Smpl RMSFE	0.0051	0.2641	0.0148	0.0087
Out-Smpl RMSFE	0.0034	0.3085	0.0184	0.0071
AR	1.00	1.00	1.00	1.00
AR+Eu	1.01	1.06	1.06	1.03
AR+US	0.93	1.12	0.99	1.05
VAR	0.97	0.68	1.15	1.55
PC-CS	1.03	0.69	1.03	1.03
PC-EU	1.35	0.72	1.09	1.24
PC-EU&CS	1.52	0.69	1.14	1.36
4-quarter horizon				
In-Smpl RMSFE	0.0109	0.5544	0.0263	0.0155
Out-Smpl RMSFE	0.0069	0.7062	0.0347	0.0138
AR	1.00	1.00	1.00	1.00
AR+Eu	1.02	1.14	1.08	0.99
AR+US	1.02	1.21	0.97	1.05
VAR	1.33	0.82	1.12	1.48
PC-CS	1.02	0.80	0.97	1.09
PC-EU	1.07	0.92	1.08	1.24
PC-EU&CS	1.11	0.88	1.06	1.21

Notes: See notes to table C1.

Table C5. Results for Germany

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.54	0.38	0.13	0.21
AR+US	0.38	0.88	0.02	0.32
VAR	0.35	0.00	0.02	0.17
PC-CS	0.87	0.01	0.34	0.01
PC-EU	0.76	0.03	0.18	0.02
PC-EU&CS	0.43	0.53	0.50	0.00
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0040	0.1281	0.0129	0.0162
Out-Smpl RMSFE	0.0033	0.1463	0.0120	0.0065
AR	1.00	1.00	1.00	1.00
AR+Eu	0.99	1.20	1.03	1.73
AR+US	1.05	1.07	1.16	2.82
VAR	1.75	0.97	1.27	2.59
PC-CS	1.37	1.07	1.07	1.74
PC-EU	1.65	0.98	1.09	1.05
PC-EU&CS	1.56	1.02	1.17	2.05
2 –quarter horizon				
In-Smpl RMSFE	0.0076	0.2595	0.0208	0.0230
Out-Smpl RMSFE	0.0056	0.3209	0.0214	0.0096
AR	1.00	1.00	1.00	1.00
AR+Eu	1.13	1.37	1.28	1.14
AR+US	1.17	1.07	1.20	3.57
VAR	1.16	1.12	1.14	5.08
PC-CS	1.31	1.01	1.13	5.53
PC-EU	1.74	1.04	1.16	1.26
PC-EU&CS	1.51	1.06	1.20	3.70
4-quarter horizon				
In-Smpl RMSFE	0.0137	0.5575	0.0362	0.0326
Out-Smpl RMSFE	0.0119	0.7460	0.0365	0.0167
AR	1.00	1.00	1.00	1.00
AR+Eu	1.38	1.47	1.69	1.71
AR+US	1.05	1.14	1.34	1.86
VAR	0.68	0.88	1.13	5.32
PC-CS	0.82	0.91	1.28	4.85
PC-EU	1.46	1.15	1.97	2.60
PC-EU&CS	0.76	1.15	2.55	5.53

Notes: See notes to table C1.

Table C6. Results for Ireland

	CPI Inflation	Unemployment Rate	Industrial Production
In-Sample Regression Results			
	P-Values for F-tests of univariate AR models versus alternative models		
AR+Eu	0.48	0.34	0.23
AR+US	0.71	0.22	0.05
VAR	0.90	0.78	0.00
PC-CS	0.02	0.61	0.35
PC-EU	0.53	0.56	0.10
PC-EU&CS	0.05	0.71	0.76
Simulated Out of Sample Relative MSFE *1-quarter horizon*			
In-Smpl RMSFE	0.0106	0.1941	0.0248
Out-Smpl RMSFE	0.0095	0.1967	0.0293
AR	1.00	1.00	1.00
AR+Eu	0.96	1.05	0.95
AR+US	1.00	0.89	0.97
VAR	1.09	1.27	0.99
PC-CS	0.84	1.23	1.37
PC-EU	1.51	1.13	1.04
PC-EU&CS	1.27	1.50	1.32
2 –quarter horizon			
In-Smpl RMSFE	0.0206	0.4090	0.0351
Out-Smpl RMSFE	0.0185	0.4651	0.0472
AR	1.00	1.00	1.00
AR+Eu	0.99	1.28	0.98
AR+US	0.99	0.91	0.84
VAR	1.26	1.12	0.81
PC-CS	1.03	1.04	1.02
PC-EU	1.49	1.08	0.96
PC-EU&CS	1.52	1.11	1.05
4-quarter horizon			
In-Smpl RMSFE	0.0449	0.9071	0.0501
Out-Smpl RMSFE	0.0357	1.1337	0.0739
AR	1.00	1.00	1.00
AR+Eu	1.06	1.92	1.01
AR+US	1.01	0.98	0.86
VAR	1.41	1.06	0.85
PC-CS	1.41	0.91	1.03
PC-EU	1.89	1.11	0.99
PC-EU&CS	2.09	0.97	1.00

Notes: See notes to table C1.

Table C7. Results for Italy

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.09	0.00	0.00	0.32
AR+US	0.20	0.30	0.13	0.72
VAR	0.23	0.00	0.95	0.61
PC-CS	0.15	0.89	0.22	0.65
PC-EU	0.19	0.01	0.29	0.49
PC-EU&CS	0.53	0.11	0.50	0.56
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0028	0.1830	0.0203	0.0058
Out-Smpl RMSFE	0.0025	0.1776	0.0219	0.0073
AR	1.00	1.00	1.00	1.00
AR+Eu	1.07	0.95	0.78	1.07
AR+US	1.19	1.12	1.02	1.02
VAR	0.94	1.18	1.19	0.96
PC-CS	0.89	1.17	0.93	0.96
PC-EU	0.99	0.72	0.95	0.99
PC-EU&CS	0.93	0.82	0.96	0.98
2 –quarter horizon				
In-Smpl RMSFE	0.0060	0.3081	0.0284	0.0085
Out-Smpl RMSFE	0.0055	0.2412	0.0369	0.0087
AR	1.00	1.00	1.00	1.00
AR+Eu	1.19	1.24	0.76	1.04
AR+US	1.08	1.15	0.98	1.13
VAR	0.96	1.34	1.09	1.03
PC-CS	0.83	1.08	0.87	0.76
PC-EU	0.95	0.93	0.82	0.94
PC-EU&CS	0.89	1.03	0.98	0.80
4-quarter horizon				
In-Smpl RMSFE	0.0133	0.5552	0.0383	0.0146
Out-Smpl RMSFE	0.0136	0.3761	0.0520	0.0146
AR	1.00	1.00	1.00	1.00
AR+Eu	1.12	1.16	0.97	1.10
AR+US	1.01	1.18	0.94	1.10
VAR	1.15	1.33	0.68	0.85
PC-CS	0.90	1.15	1.05	0.96
PC-EU	0.96	0.84	1.00	0.96
PC-EU&CS	1.00	0.88	1.10	0.97

Notes: See notes to table C1.

Table C8. Results for Luxembourg

	CPI Inflation	Unemployment Rate	Industrial Production
In-Sample Regression Results			
	P-Values for F-tests of univariate AR models versus alternative models		
AR+Eu	0.14	0.00	0.04
AR+US	0.26	0.03	0.07
VAR	0.13	0.70	0.00
PC-CS	0.39	0.60	0.26
PC-EU	0.01	0.00	0.50
PC-EU&CS	0.69	0.62	0.46
Simulated Out of Sample Relative MSFE *1-quarter horizon*			
In-Smpl RMSFE	0.0043	0.1383	0.0221
Out-Smpl RMSFE	0.0018	0.1468	0.0230
AR	1.00	1.00	1.00
AR+Eu	2.22	0.76	1.61
AR+US	1.17	1.17	0.97
VAR	1.17	0.85	0.95
PC-CS	2.24	1.12	1.14
PC-EU	2.22	0.69	1.27
PC-EU&CS	2.49	0.84	1.36
2 –quarter horizon			
In-Smpl RMSFE	0.0081	0.2290	0.0308
Out-Smpl RMSFE	0.0038	0.2957	0.0309
AR	1.00	1.00	1.00
AR+Eu	1.46	0.91	1.40
AR+US	1.09	1.28	0.96
VAR	1.82	0.72	1.43
PC-CS	1.84	0.87	1.04
PC-EU	1.90	0.51	1.19
PC-EU&CS	2.16	0.56	1.15
4-quarter horizon			
In-Smpl RMSFE	0.0171	0.3936	0.0461
Out-Smpl RMSFE	0.0071	0.5362	0.0446
AR	1.00	1.00	1.00
AR+Eu	2.08	0.84	1.52
AR+US	1.17	1.17	0.95
VAR	2.60	0.66	1.51
PC-CS	2.65	0.95	0.83
PC-EU	2.19	0.53	1.30
PC-EU&CS	2.89	0.56	1.13

Notes: See notes to table C1.

Table C9. Results for the Netherlands

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.00	0.39	0.01	0.53
AR+US	0.00	0.07	0.14	0.54
VAR	0.44	0.58	0.01	0.00
PC-CS	0.15	0.82	0.03	0.90
PC-EU	0.03	0.19	0.36	0.00
PC-EU&CS	0.75	0.75	0.00	0.72
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0028	0.1539	0.0208	0.0065
Out-Smpl RMSFE	0.0019	0.1990	0.0149	0.0051
AR	1.00	1.00	1.00	1.00
AR+Eu	1.88	1.05	1.11	0.98
AR+US	1.00	0.95	1.16	1.06
VAR	1.20	1.22	1.21	1.45
PC-CS	1.08	0.96	1.10	1.12
PC-EU	1.45	0.91	1.10	1.34
PC-EU&CS	1.46	0.99	1.01	1.40
2 –quarter horizon				
In-Smpl RMSFE	0.0049	0.2734	0.0231	0.0084
Out-Smpl RMSFE	0.0031	0.3151	0.0175	0.0070
AR	1.00	1.00	1.00	1.00
AR+Eu	1.51	0.96	1.52	0.98
AR+US	0.94	0.88	1.11	1.00
VAR	1.33	1.27	1.05	1.55
PC-CS	1.09	0.84	1.12	1.02
PC-EU	1.17	0.82	1.44	1.36
PC-EU&CS	1.41	0.98	1.44	1.51
4-quarter horizon				
In-Smpl RMSFE	0.0102	0.5150	0.0276	0.0114
Out-Smpl RMSFE	0.0060	0.6577	0.0202	0.0071
AR	1.00	1.00	1.00	1.00
AR+Eu	1.43	0.97	3.97	1.57
AR+US	1.04	0.90	0.92	1.09
VAR	1.22	0.96	1.40	2.70
PC-CS	1.25	0.91	1.40	1.31
PC-EU	1.68	0.76	1.78	2.73
PC-EU&CS	1.88	0.94	2.44	2.55

Notes: See notes to table C1.

Table C10. Results for Portugal

	CPI Inflation	Unemployment Rate	Industrial Production
In-Sample Regression Results			
	P-Values for F-tests of univariate AR models versus alternative models		
AR+Eu	0.52	0.00	0.11
AR+US	0.01	0.79	0.87
VAR	0.07	0.00	0.07
PC-CS	0.07	0.13	0.79
PC-EU	0.37	0.05	0.12
PC-EU&CS	0.05	0.06	0.94
Simulated Out of Sample Relative MSFE *1-quarter horizon*			
In-Smpl RMSFE	0.0081	0.2227	0.0191
Out-Smpl RMSFE	0.0048	0.1647	0.0178
AR	1.00	1.00	1.00
AR+Eu	1.27	1.15	0.83
AR+US	0.97	0.97	1.08
VAR	1.00	1.54	0.99
PC-CS	0.91	1.27	1.02
PC-EU	1.14	0.99	0.92
PC-EU&CS	0.94	1.11	0.94
2 –quarter horizon			
In-Smpl RMSFE	0.0136	0.3623	0.0258
Out-Smpl RMSFE	0.0090	0.2513	0.0191
AR	1.00	1.00	1.00
AR+Eu	1.08	0.71	0.59
AR+US	1.00	1.01	1.01
VAR	1.67	1.43	1.08
PC-CS	0.93	1.07	1.06
PC-EU	1.26	0.73	0.89
PC-EU&CS	1.12	0.91	0.85
4-quarter horizon			
In-Smpl RMSFE	0.0290	0.6655	0.0409
Out-Smpl RMSFE	0.0149	0.5030	0.0291
AR	1.00	1.00	1.00
AR+Eu	1.01	0.51	0.88
AR+US	1.04	0.89	1.01
VAR	3.91	1.15	0.99
PC-CS	0.73	1.07	1.07
PC-EU	1.29	0.65	0.62
PC-EU&CS	0.92	0.87	0.59

Notes: See notes to table C1.

Table C11. Results for Spain

	CPI Inflation	Unemployment Rate	Industrial Production	Real GDP
In-Sample Regression Results				
	P-Values for F-tests of univariate AR models versus alternative models			
AR+Eu	0.08	0.10	0.88	0.17
AR+US	0.80	0.76	0.46	0.95
VAR	0.09	0.00	0.25	0.02
PC-CS	0.70	0.74	0.26	0.85
PC-EU	0.45	0.03	0.94	0.91
PC-EU&CS	0.85	0.37	0.36	0.77
Simulated Out of Sample Relative MSFE *1-quarter horizon*				
In-Smpl RMSFE	0.0046	0.3421	0.0118	0.0021
Out-Smpl RMSFE	0.0034	0.2822	0.0108	0.0014
AR	1.00	1.00	1.00	1.00
AR+Eu	1.13	1.41	1.04	1.10
AR+US	0.99	1.14	0.97	1.02
VAR	1.24	1.24	0.99	1.19
PC-CS	1.00	1.02	1.10	0.98
PC-EU	0.99	0.97	1.09	1.03
PC-EU&CS	1.03	1.20	1.17	0.95
2 –quarter horizon				
In-Smpl RMSFE	0.0078	0.6430	0.0210	0.0051
Out-Smpl RMSFE	0.0061	0.6270	0.0230	0.0047
AR	1.00	1.00	1.00	1.00
AR+Eu	1.07	1.58	1.19	1.05
AR+US	0.98	1.14	1.01	1.00
VAR	1.40	1.13	1.23	1.03
PC-CS	1.08	0.94	0.98	0.97
PC-EU	1.09	1.13	1.03	1.06
PC-EU&CS	1.08	1.07	1.03	1.00
4-quarter horizon				
In-Smpl RMSFE	0.0141	1.4002	0.0398	0.0118
Out-Smpl RMSFE	0.0084	1.5076	0.0476	0.0124
AR	1.00	1.00	1.00	1.00
AR+Eu	1.09	1.63	1.45	0.90
AR+US	1.00	1.18	0.98	1.17
VAR	2.76	1.06	1.42	1.01
PC-CS	1.27	0.97	1.01	1.00
PC-EU	1.73	1.20	1.11	1.07
PC-EU&CS	1.67	1.23	1.10	1.04

Notes: See notes to table C1.