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In 2009 all ECB publications feature a motif taken from the €200 banknote.

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1 The views expressed in this paper are those of the authors and do not necessarily reflect those of the European Central Bank.

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Abstract

Factor based forecasting has been at the forefront of developments in the macroeconometric forecasting literature in the recent past. Despite the flurry of activity in the area, a number of specification issues such as the choice of the number of factors in the forecasting regression, the benefits of combining factor-based forecasts and the choice of the dataset from which to extract the factors remain partly unaddressed. This paper provides a comprehensive empirical investigation of these issues using data for the euro area, the six largest euro area countries, and the UK.

Keywords: Factors, Large Datasets, Forecast Combinations

JEL: C100,C150,C530

Non-technical summary

In recent years there has been increasing interest in forecasting methods that utilise large data sets. There is an awareness that there is a huge quantity of information available in the economic arena which might be useful for forecasting, but standard econometric techniques are not well suited to extract this information in a useful form. In an effort to assist in this task, econometricians began devising ways of forecasting with them. Broadly speaking, there are two methodologies that can be applied. The first is factor modelling, which involves summarising the information in the large data set in a limited number of factors which are then used to forecast. The second is forecast combination, where forecasts from many forecasting models, typically simple and incomplete, are combined in some manner.

The present paper focuses on the factor modelling, which has been widely used in macroeconomic forecasting in recent years. Within that approach, there are a number of technical issues that require attention. These include (i) the number of factors to include in a factor augmented forecasting equation, (ii) the specification of the dynamics in the aforementioned equation, (iii) the information from which to extract the factors, including the issue of whether and how to select a subset of the available dataset on which factor analysis will be applied, and (iv) the benefits of combining factor-based forecasts. Of course those technical issues are interrelated and cannot be addressed in isolation. Providing answers to those technical issues, which have not been fully addressed in the literature, is the aim of this paper, with a focus on Euro-area data and issues (iii) and (iv).

We use data sets for the six largest euro area economies, as well as the euro area aggregate and, for comparison, the UK. The basic ingredients of each of the data sets are 109 key macroeconomic series. These series include 4 monetary aggregates and loans, 20 financial variables, 24 survey series, 18 components of industrial production, 1 other indicator for real activity, 5 labour market series, 7 components of the HICP, 15 components of producer prices and 15 series capturing the international economy, mostly indicators for the U.S.. Where possible, these data sets have been extended by means of surveys from national sources, and other potentially useful monthly indicators, in order to achieve as broad as possible an information set. Overall, therefore, the data sets we consider range between 133 and 109 series.

Results are remarkable. First, for all countries, we find that selecting a smaller subset of the available large data sets, and using the factors summarising the information in that smaller subset of data in the forecasting equation, substantially improves forecast performance. Second, and most interestingly, we find that a simple average across forecasts, obtained via alternative ways of selecting smaller subsets of data, systematically does better than a simple forecasting model serving as a benchmark, at all horizons and for all countries. An interesting question we can also address is whether there is any pattern in the smaller subsets of data, and we find that in general they contain a common bulk of indicators. In particular, certain real and survey variables, as well as some real and financial variables capturing the international environment, are included in most of the smaller subsets of data selected from the available large data sets.

1 Introduction

In recent years there has been increasing interest in forecasting methods that utilise large datasets. There is an awareness that there is a huge quantity of information available in the economic arena which might be useful for forecasting, but standard econometric techniques are not well suited to extract this in a useful form. This is not an issue of mere academic interest. Lars Svensson described what central bankers do in practice in Svensson (2005): 'Large amounts of data about the state of the economy and the rest of the world ... are collected, processed, and analyzed before each major decision.' In an effort to assist in this task, econometricians began assembling large macroeconomic data sets and devising ways of forecasting with them: James Stock and Mark Watson (*e.g.*, Stock and Watson (1999)) were in the vanguard of this campaign.

Broadly speaking, there are two methodologies that can be applied: factor modelling, which summarises a proportion of the variation in all the data in a limited number of factors which are then used to forecast; and forecast combination, where information in many forecasting models, typically simple and incomplete, are combined in some manner. In the first of these approaches a factor structure is assumed to be underlying the data and then techniques such as principal components (see, *e.g.*, Stock and Watson (1998)) or dynamic principal components (see, *e.g.*, Forni *et al.* (2004)) are used to extract the factors and subsequently carry out forecasting. This approach has been widely used in macroeconomic forecasting in recent years.[1]

A related strand of work concerns the determination of a satisfactory regression model to be used in forecasting. One of the leading approaches in this work is the widely used 'general-to-specific' approach, developed and popularised in a number of papers by David Hendry and his co-authors.[2] Briefly summarised, this approach involves starting from a general dynamic statistical model which captures the characteristics of the data and *via* sequential testing reducing the complexity of this model while retaining the congruence of the resulting model. This method cannot deal, in its original form, with datasets where the number of variables exceeds the number of observations, unlike the factor approach. Both the factor and the general-to-specific approach though aim to construct a model, either

[1]See the survey in Stock and Watson (2006), where they suggest the method has often been successful.

[2]The literature now spans three decades. One summary of the state of the art as it was in 1999 is Krolzig and Hendry (2001).

via model selection or *via* extremely parsimonious representations, that can consider large datasets. This can be viewed as an attempt to account for model uncertainty with respect to the variables entering the final forecasting model.

Within the factor approach, there are a number of specification issues that require attention. These include (i) the number of factors to include in a factor augmented forecasting equation, (ii) the specification of the dynamics in the aforementioned equation, (iii) the information from which to extract the factors, including the issue of whether and how to select a subset of the available dataset on which factor analysis will be applied, and (iv) the benefits of combining factor-based forecasts. Of course the above specification issues are interrelated and cannot be addressed in isolation. Investigating empirically these issues, which have not been fully addressed in the literature, is the aim of this paper, with a focus on Euro-area data and issues (iii) and (iv).

The paper is organised as follows: In Section 2, we give an overview of the issues related to model selection and oversampling for forecast accuracy. In Section 3, we describe the data sets used for the euro area, the six largest euro area countries and the UK. In Section 4, we compare the forecasts obtained using a range of factor-augmented models of output growth to the benchmark AR forecast, as well as a number of combinations of factor-based forecasts. Section 5 concludes.

2 Forecasting with large datasets: Specification issues

Consider the problem of forecasting a target variable, y_t. Let $\widehat{y}_{t+h|t}$ be the $h-$periods ahead forecast of y_t. Let $\mathbf{x}_t = (x_{1t}, \ldots, x_{Nt})$ be a set of N variables observed over $t = 1, \ldots, T$, that may be informative about $y_{t+h|t}$. A general model for forecasting y_t is then given by:

$$\widehat{y}_{t+h|y_t,\ldots,y_1,\mathbf{x}_t} = \widehat{\alpha} + \sum_{i=1}^{N} \widehat{\delta}_i x_{it} + \sum_{j=1}^{p} \widehat{\gamma}_j y_{t-j+1}. \quad (1)$$

However, if the number of potential predictors included in $\mathbf{x}_t$ is large, forecasts based on (1) will be inefficient or even infeasible when $N > T$. A way to make the forecast feasible without discarding relevant information contained in $\mathbf{x}_t$ is to assume that x_{it} admits a factor structure:

$$x_{it} = \lambda_i^{0\prime} \mathbf{f}_t^0 + u_{it}, \quad i = 1, \ldots, N, t = 1, \ldots, T \quad (2)$$

where $\mathbf{f}_t^0$ is a $k \times 1$ vector of common factors, λ_i^0 is the vector of factor loadings for series i, $\lambda_i^{0\prime}\mathbf{f}_t^0$ is the common component of series i, and u_{it} is an idiosyncratic error. Then, subject to the available information set at time t, that is subject to the past history of y_t and to the set of the observed predictors $\mathbf{x}_t$, a general and feasible model for forecasting y_t at horizon h is given by:

$$\widehat{y}_{t+h|y_t,\ldots,y_1,\mathbf{x}_t} = \widehat{\alpha} + \widehat{\beta}_i^{\prime}\widehat{\mathbf{f}}_{t,N} + \sum_{j=1}^{p} \widehat{\gamma}_j y_{t-j+1}. \qquad (3)$$

where $\widehat{\mathbf{f}}_{t,N}$ is a $(r \times 1)$ vector containing the first r factors extracted from $\mathbf{x}_t$.

Use of (3) implies that a number of specification issues must be addressed properly. First, as in standard forecasting analysis, the number of predictors (factors), r, and the number of lags of the target variable, p, to be included must be specified. Second, the predictors used in (3) are not observed variables but are themselves the result of estimation. The extraction of factors from $\mathbf{x}_t$ is based on a given number of variables, N. An issue that must be addressed is therefore how large N should be. The natural choice would be to select a number of variables N as large as possible, that is, to include all the available predictors. However, extracting information from a large dataset of economic variables can be sub-optimal because of oversampling and error correlation. It is likely that a large number of the N predictors will be highly correlated among themselves. Therefore, extracting factors from a dataset composed by, say, $N-1$ variables instead of N may be more efficient if the excluded variable is highly correlated with at least one of the remaining $N-1$.

The two issues of model specification and oversampling have been addressed in the forecasting literature in many ways. The first, the correct specification for forecasting of (3), has a long history in forecasting theory. A standard way to approach it is to use information criteria to determine r and p. Surprisingly, use of information criteria, in the context of (3), seems not to be the preferred method of choosing r. Instead, information criteria are used to determine the appropriate number of factors needed to summarise the available large dataset (see, *e.g.*, Bai and Ng (2002)) without reference to the target variable. This is problematic as not all of the factors needed to model x_t, may be relevant for forecasting y_t. In this paper we focus on the correct specification of the number of factors to include in the forecasting equation (3) and within that equation make use of information criteria to determine r. As pointed out in Lütkepohl (2005), the AIC is designed for minimizing the forecast error variance, and thus models based on AIC may produce superior forecasts, in small as well as large samples (see Lütkepohl (2005), p.151).

Another issue relates to the potential benefits of combining factor-based forecasts. Such combinations may range from simple averaging (see, *e.g.*, Bates and Granger (1969)), to more recent Bayesian and information theoretic model averaging (see Koop and Potter (2003), Stock and Watson (2004), Kapetanios *et al.* (2006), Kapetanios *et al.* (2008), Hansen (2008)). Results show that some more or less simple rules for combining forecasts often work well (see, *e.g.*, Hendry and Clements (2002)).

As stressed by Timmermann (2006), there are three main reasons to expect that forecast combination would be advantageous in the context of equation (3). First, a standard portfolio diversification argument holds. Second, potential misspecification of individual fator-based forecasting models is relevant. Third, the presence of potential structural breaks and their different effects on individual forecasts must be accounted for. This last point is particularly relevant in our set up, given that during the sample at hand the Euro Area countries and the UK have been affected by breaks due to policy changes: in a context where the data window since the break is short, the faster adapting models would perform relatively better than the slowly adapting ones. It is, however, unknown which model adapts quicker than others after the break. Therefore, we consider forecast combining to be of practical relevance in the context of factor forecasts.

Moving on to the question of oversampling and correlated errors during principal component factor extraction, we consider the recent work by Boivin and Ng (2006). They find that pre-selecting the variables on the basis of their cross-correlation and that weighting the data before extracting factors by principal components is at least as efficient as using all available data for forecasting. This is particularly relevant in the presence of idiosyncratic errors that are cross-correlated and when there is a factor that is dominant in a small data set but is dominated in a larger data set. In either case, factor extraction based on a smaller data set yields better forecasting power.

All the above are clearly specification issues related to the production of factor based forecasts but have usually been studied separately. The empirical work carried out in this paper tries to address comprehensively how the combination of these individual modelling issues affects forecasting performance using euro-area data.

3 Data

We use data sets for the euro area, the six largest euro area economies (Germany, France, Italy, Spain, the Netherlands and Belgium), as well as the UK. The data sets have been constructed in analogy to the (euro area aggregate) data set introduced in Angelini *et al.* (2008b), and used also in Banbura and Rünstler (2007) and Angelini *et al.* (2008a).

The basic ingredients of these data sets are 109 key macroeconomic series for each country. These series include 4 monetary aggregates and loans, 20 financial variables (bilateral exchange rates, oil and gold prices, stock price indices and interest rates), 24 survey series, 18 components of industrial production, 1 other indicator for real activity (car registrations), 5 labour market series (employment data and the unemployment rate), 7 components of the HICP, 15 components of producer prices and 15 series capturing the international economy (mostly trade series and key macro-economic indicators for the U.S.).

Where possible, these data sets have been extended by means of surveys from national sources, and other potentially useful monthly indicators, in order to achieve as broad as possible an information set. For Germany, the additional series include the ZEW and IFO surveys, and orders data, giving a total of 133 series. For France, data on household consumption, as well as various purchasing managers indices (PMIs) were added, resulting in 128 series overall. PMIs are also the key addition to the basic data set for Italy and Spain, for which we have 127 and 117 series, respectively. For the Netherlands, apart from PMIs, two monthly trade series have been added, reflecting the importance of the external sector for that country, resulting in a data set with 121 series. Finally, for Belgium, a few surveys from national sources have been added, bringing the number of series for that country to 113. No additions were made for the euro area aggregate (where there are no alternative sources for official data apart from Eurostat and the ECB) as well as the UK.

Overall, therefore, the data sets we consider range between 133 series (in the case of Germany) and 109 series (in the cases of the euro area aggregate and the UK). An overview of the composition of the data sets is provided in Table 1. All series have been transformed to make them stationary. The details of the transformation applied, and all other information about the series we have used to forecast GDP growth rates of the six largest euro area countries, the euro area aggregate and the UK in Section 4 are provided in the appendix. All data sets were downloaded on 14 July 2006, and thus contain a maximum of 198 monthly observations.

4 Empirical analysis

We consider the annualized growth rate of quarterly real GDP:[3]

$$g_t = \frac{y_t - y_{t-4}}{y_{t-4}}. \tag{4}$$

Let $\widehat{g}_{t+h|t}$ be the $h-$periods ahead forecast of g_t. We make use of various specifications of the general model in (3), estimated recursively, to forecast $g_{t+h|t}$ for the seven European countries - Belgium, France, Germany, United Kingdom, Italy, Netherlands, Spain - and for the aggregate Euro Area included in our dataset. We use data from 1991Q2 to 2005Q4 and the evaluation period is 2000Q1-2005Q4.[4] We consider forecasting horizons $h = 1, \ldots, 12$. Our benchmark forecast, the $AR(p)$ forecast, is given by setting $\widehat{\beta}_i = 0, \forall i$ in (3) and selecting the number of lags p using the AIC. The measure of forecasting accuracy we have considered is the Relative (to the AR benchmark) Mean Squared Error. For comparison, we show results also for the random walk (RW) forecast, obtained by setting $\widehat{\beta}_i = 0, \forall i$, $p = 1$ and $\widehat{\gamma}_1 = 1$.

We then employ a number of alternative models nested in the general formulation (3) to investigate empirically the specification issues raised at the beginning of this paper. The Models SW1 and SW4 investigate the issue of the number of factors to include in a factor-augmented forecasting equation. Model SW1 is obtained by setting $p = 1$ and by extracting the factors using the principal components analysis as in Stock and Watson (1999). The number of factors, r, is chosen by AIC. Model SW4 is the same as Model SW1, with $p = 4$. The remaining models are versions of Models SW1 and SW4 which help to investigate the issue of the information set from which to extract the factors.

Models SW1a, SW4a, SW1b and SW4b are models where the factors have been estimated

[3] The empirical analysis in this paper has also been carried out for quarterly growth rates, i.e. $g_t = (y_t - y_{t-1})/y_{t-1}$, with the same findings: the UK apart, a combination of factor model forecasts after pre-selection of variables improves on the forecast performance over a standard $AR(p)$ model.

[4] The number of variables included in the initial dataset are: 78 for Great Britain, 103 for Euro Area, 108 for Italy, 109 for France, Germany and Spain, 111 for Netherlands, 113 for Belgium. These numbers are different from the number of all available variables because we have excluded from the initial set of predictors all those variables whose starting date is later than 1991Q2. In order to get a larger N, the starting date of the estimation sample for Belgium and Spain is 1991Q3.

by using extra information contained in the data. They exploit the idea that in presence of non-spherical errors, a weighted principal component estimator can be more efficient than the standard one, just like GLS is more efficient than OLS in the classical linear regression model in presence of heteroskedastic and/or autocorrelated error terms. Weighted principal components requires, first, to extract r factors from $\mathbf{x}_t$ and use the residuals to get an estimate of the covariance matrix of the errors, $\widehat{\mathbf{\Omega}}_T = \{\omega_{ij}\}$. Then, a new set of factors can be estimated by weighting the data according to some weighting scheme. In our case, we have selected 6 factors in the first step and have used two different schemes to pursue weighted principal components. The first set of weights, given by the inverse of the diagonal elements of $\widehat{\mathbf{\Omega}}_T$ - Rule SWa in Boivin and Ng (2006) - has been used to extract factors in Model SW1a and SW4a, obtained by setting $p = 1$ and $p = 4$ respectively. The second scheme, where the weights are the inverse of $N^{-1} \sum_{j=1}^{N} \left| \widehat{\mathbf{\Omega}}_T (i, j) \right|$ - Rule SWb in Boivin and Ng (2006) - has been adopted to extract factors in Model SW1b and SW4b.

Models SW1s1, SW4s1, SW1s2 and SW4s2 use the idea that a more precise estimate of the factors can be obtained if variables in $\mathbf{x}_t$ are pre-selected according to some rules that eliminate irrelevant information. The use of too many series can be disadvantageous for forecasting accuracy when the idiosyncratic errors are cross-correlated or when the forecasting power is provided by a factor that is dominant in a small dataset but is dominated in a larger one. In Model SW1s1 and SW4s1, we have estimated the factors from a set of variables $\mathbf{x}_t^{(1)}$ obtained by dropping from $\mathbf{x}_t$ all the series whose error is most correlated with some other series - Rule 1 in Boivin and Ng (2006) - and have set $p = 1$ and $p = 4$, respectively. In Model SW1s2 and SW4s2, the dataset from which we have extracted the factors, $\mathbf{x}_t^{(2)}$, have been further reduced by dropping from $\mathbf{x}_t$ all the series whose error is second most correlated with other series - Rule 2 in Boivin and Ng (2006) - and as before we have set $p = 1$ and $p = 4$ respectively.

Finally, to investigate the benefits of combining factor-based forecasts, we have considered various averages of factor forecasts, as well as, for comparison, the average of all forecasts: Model SW, which is the average of Models SW1 and SW4, reflecting the standard Stock-and-Watson procedures, Model SWW, which is the average of the weighted Stock-and-Watson procedures (SWW), and includes Models SW1a, SW4a, SW1b and SW4b, and finally the averages of factor forecasts obtained after preselection of variables (SWsub, including SW1s1 and SW4s1, as well as SWsub2, based on SW1s2 and SW4s2).

This gives us a total of 11 individual models and five combinations of factor-based forecasts, including the overall average. Tables 2-17 report, separately for the individual models and the model averages, the RMSE compared to the benchmark AR model at various forecast horizons for all the countries included in the data set.

Results are remarkable. First, for all countries, we find that pre-selection of variables substantially improves the forecasting performance of the factor-augmented AR model. In particular, we find that the best performance is obtained when factors are extracted from as few as in between 12 (UK) and 22 (Italy) variables: in almost all cases and for all forecast horizons, results improve when Rule 2 in Boivin and Ng (2006) is applied, that is, when from the original dataset the series whose error is first or second most correlated with other series is eliminated. Second, and most interestingly, we find that a simple average of forecasts based on factor models after preselection of variables systematically does better than the benchmark AR model, at all horizons and for all countries. In particular, the largest gains in terms of RMSE are obtained for France, Spain and the Euro Area, whereas Italy represents the case where gains are lowest, although positive. For France, Spain and the EA, there are no extra gains obtained by selecting variables using Rule 2 rather than Rule 1: the gains in the RMSE are large and similar in both cases. However, for countries where gains are not as large (e.g. Italy and Netherlands), dropping not only the first but also the second most correlated variables implies a non-negligible improvement in forecast accuracy. Moreover, as a general pattern, gains are lower when the forecast horizon is equal to 1, implying that AR forecasts are relatively accurate in the short-run, but when one looks at larger horizons, use of a selected number of variables to forecast GDP growth improves substantially the forecast accuracy.

Further comments deserve the low values of the RMSE at large horizons, which are most prominent in the case of Spain. Tables 18 and 19 report the AR RMSEs and the standardized (by the standard deviation of GDP growth rates) RMSEs, and Table 20 reports some descriptive statistics on volatility and persistence of growth rates. Spain is, among the countries included in our dataset, the one with the highest average year-on-year growth rate, which is equal to 3.08%, with the second highest being the UK, with GDP growth rate equal to 2.58%, and with an average of 1.76% for the remaining Euro area countries. The growth rate of Spain has a relatively low level of persistence and is relatively highly volatile compared to the other growth rates in our dataset. Persistence, measured as the Sum of the AutoRegressive Coefficients, is equal to 0.69, compared to an average for all the other countries equal to 0.79, with values ranging from a maximum of 0.85 for the

Euro Area and a minimum of 0.68 in the case of Belgium. Volatility, measured as the standard deviation of GDP growth rate, is equal to 1.77 for Spain, whereas for all the other countries is in between 1.21 (Euro Area) and 1.64 (Belgium). We interpret the results of low RMSEs at large horizon as a signal that, for forecasting series with a relatively low level of persistence and a large volatility, AR models tend to become less precise at large horizons, relative to models that use a richer set of information, like factor models, and in particular a combination of their forecasts. Such gains become the more evident the less persistent and the more volatile the series to forecast.

It is of course important to investigate whether such improvements in the RMSE are statistically significant or not. Inference on the statistical significance of the RMSE of all models compared to the AR benchmark has been done using both the Clark-West (CW) test for nested models and the Diebold-Mariano-West (DMW) test.[5] Given its non-normality for nested models, we have bootstrapped the empirical distribution of the DMW test for equal predictive accuracy. The bootstrap procedure reads as follows: we have fitted an $AR(p)$ model to output growth, calculated as in (4), where p has been selected using the Akaike Information Criterion, and have used the selected model to generate 2000 pseudo-series. For each bootstrapped series, we redid all tests and kept the resulting test statistics for the empirical distribution.

Results on equal predictive accuracy based on both the DMW and the CW test are summarized in Tables 2-17.[6] Overall, we find that a large proportion of the RMSEs of the average of factor models after pre-selection of variables are statistically significant, especially at short horizons, and that inference based on the two tests is not substantially different, which supports our general finding that forecast combination and optimal sampling improve significantly the forecasting performance of factor models. We note, however, that the number of significant values is slightly lower when the DMW test with bootstrapped critical values is used. This may be explained by looking at the empirical distribution of the DMW test. Table 21 reports the bootstrapped critical values at selected horizons for the SWsub2 averages, calculated for all countries. Whereas for a forecast horizon equal to one the critical values approximate well those of a standard normal distribution, at larger horizons the distribution tends first to become flatter and

[5] See Clark and West (2007) for the former, and Diebold and Mariano (1995) and West (1996) for the latter.

[6] $+$ and $*$ denote, respectively, 10% and 5% rejection of Clark-West test that the forecast does not differ from the benchmark, respectively. $\circ$ and $\bullet$ denote 10% and 5% rejection of Diebold–Mariano-West test that the forecast does not differ from the benchmark.

then, at larger values of h, it shrinks, which may explain why the number of significant values tend to increase with h when the DMW test is considered.

An interesting set of questions we can address relates to the pattern of variables that are left in the sample after preselection. Tables 22 and 23 summarise the results: they show, for each block, the number of variables included in the derived datasets after dropping variables whose error is first or second most correlated with some other variables is shown, in absolute terms and as a fraction of the total number of variables, respectively. In Tables A.1-A.8 in the appendix, the variables left after preselection are listed for each of the countries.

From those tables, it can be noted that in general there is a common bulk of variables that remain in the dataset after pre-screening: in particular, real variables like retail trade, survey variables like assessment of stocks of finished products, consumers expectations on general economic situation and price expectations, international variables like U.S. consumer expectations index, financial variables like the euro/yen exchange rate and the world price of raw materials (excluding energy) are included in most of the final datasets.

Some interesting conclusions can be drawn in terms of cross-country differences and similarities relative to the pattern of variables which are included in the derived data sets. The ratio of monetary and financial variables which are left in the data set after preselection is rather constant across countries and approximately equal to one third of the initial variables included in the data sets. A similar pattern can be found for survey series: they are important for all countries and there is a retention rate of almost 50% in all cases. A different pattern is instead displayed by real activity indicators. The retention rate is rather volatile, ranging from a minimum of 22% for Germany to a maximum of 61% for Belgium. The importance of prices is relatively constant across countries, with an inverse pattern of HICP and PPI series (countries for which the rate of retention of HICP series is high tend to display a low rate of retention of PPI series, and vice versa). Interestingly, the importance of series capturing the international economy is rather constant across countries, with an average of around one third for all countries.

To get a deeper understanding of the correlation pattern, Tables A.1-A.8 also show, separately for each country, the first and the second most correlated and the least correlated series with all variables included in the estimation sample. They further show, for each series, the frequency of variables whose correlation belongs to the intervals

$[-1, -0.8], [-0.8, -0.6], \ldots, [0.8, 1]$. The series with the highest correlation usually comes from the same group (from a minimum of 54% of the times for the UK to a maximum of 77% for the Netherlands).[7] It can be noticed that the number of series with correlation higher than 0.8 in absolute value is low for all countries (it never exceeds 2% of the total number of variables) and that the number of negatively and positively correlated series is balanced.

Compared with Boivin and Ng (2006), two findings are worth noting. First, we find that the number of series eliminated from the same group is smaller, and that the number of series being the most correlated more than once is also smaller. In particular, we find that, using Rule 1, the retention rate in our dataset ranges from a minimum of 36% to a maximum of 40%, and that use of Rule 2 implies a retention rate in between 15% and 21%, compared to a proportion of 48% and 22% respectively found by Boivin and Ng (2006) for the U.S.. Overall, however, our results for the Euro Area are in line with those obtained by Boivin and Ng (2006), for the U.S.: use of a selected sample principal component factor extraction improves the forecasting performance of factor-augmented models. In addition, the forecasting problems related to model uncertainty can be alleviated by taking a simple average of factor based forecasts.

5 Concluding remarks

Factor-based forecasting has been at the forefront of developments in the macroeconometric forecasting literature in the recent past. Despite the flurry of activity in the area a number of important specification issues remain partly unaddressed, including the choice of the dataset from which to extract the factors, the number of factors in the forecasting regression, the specification of the dynamics of the factor-based forecasting equation, and the use of combinations of factor-based forecasts.

This paper provides a comprehensive empirical investigation of these issues using data for the euro area, the six largest euro area countries, and the UK to forecast GDP growth rates. Our empirical results point towards benefits of combining factor-based forecasts and pre-screening of variables before extracting factors: for all countries and at virtually all horizons a simple average of factor forecasts, with factors estimated after pre-screening,

[7] We consider HICP and PPI series as part of the same group.

improve substantially over the AR benchmark. Remarkably, we find that the use of as few as one fifth of the original variables yields the best results in terms of forecast accuracy. Interestingly, we can discern a pattern of variables that remain after pre-selection which are common to all the individual countries considered: these include real variables like retail trade, survey variables like consumer and price expectations, international variables like U.S. consumer expectations and financial variables like the price of raw materials.

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Tables

Table 1: Composition of data sets

	UK	DE	FR	IT	ES	NL	BE	EA
Money	4	4	4	4	4	4	4	4
Financial variables	17	20	20	20	20	20	20	20
Surveys	24	31	42	42	31	34	28	24
Industrial production	18	18	18	18	18	18	18	18
Other indicators of real activity	0	18	2	1	2	1	1	1
Labour market	4	5	5	5	5	5	5	5
HICP	7	7	7	7	7	7	7	7
PPI	15	15	15	15	15	15	15	15
International	16	15	15	15	15	17	15	15
Total	105	133	128	127	117	121	113	109

Note: UK United Kingdom, DE Germany, FR France, IT Italy, ES Spain, NL the Netherlands, BE Belgium, EA euro area aggregate.

Table 2: RMSE: Belgium - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	1.374	1.570	1.526	0.683∗	0.946+	0.853∗	1.017	1.260	1.472	0.770∗	0.933∗
2	1.053	1.254	1.243	0.721∗	0.955	0.778∗	0.926+	1.475	1.710	0.682∗	0.732+
3	1.081	1.792	1.430	0.853	1.062	1.097	1.113	1.082	1.331	0.746	0.775
4	1.051	2.546	2.093	0.944	0.886	1.228	1.076	1.676	1.955	0.708∗	0.701+○
6	0.617○	2.036	2.107	0.892●	0.815●	1.718	1.521	1.409	1.591	0.564∗	0.591∗
8	0.692○	1.794	1.723	0.695●	0.584●	1.255	1.183	1.783	1.972	0.554●	0.491●
12	0.571+●	2.646	3.171	1.387	0.952	1.716	1.241	1.835	1.733	0.655	0.532

Table 3: RMSE: Belgium - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.860∗	1.524	0.745∗	0.867∗	0.811∗
2	0.661∗	1.218	0.699+	0.890+	0.683∗
3	0.756+	1.577	0.915	0.722	0.756
4	0.889	2.287	0.913	1.030	0.700+
6	0.801	2.002	1.130	0.723	0.575∗
8	0.792	1.724	0.848	0.856	0.521∗○
12	1.018	2.833	1.245	0.870	0.589

Table 4: RMSE: France - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	1.337	0.895	0.785+	0.784	0.862	0.828	0.886	0.728*	0.747+●	0.689+●	0.755+●
2	1.538	0.661	0.921	0.886	1.121	0.904	1.258	0.732	0.825	0.701+○	0.725+●
3	1.497	1.230	1.447	0.841	1.033	1.015	1.352	0.646	0.577●	0.682	0.685
4	1.469	1.229	1.402	1.101	1.322	1.439	2.074	0.752●	0.754	0.709	0.694
6	1.117	0.869	0.977	0.741○	1.002	0.871	1.504	1.179	0.996	0.541	0.525○
8	1.168	0.850	1.179	0.883	1.221	0.940	1.752	0.941	0.809●	0.530●	0.507●
12	0.933	0.470	0.622	0.397●	0.561●	0.525●	1.221	0.448●	0.380●	0.433●	0.414●

Table 5: RMSE: France - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.745*○	0.826	0.811	0.685*●	0.716*●
2	0.753	0.777	1.006	0.700	0.707+
3	0.812	1.323	1.002	0.589	0.679
4	0.951	1.306	1.396	0.650	0.699
6	0.747	0.908	0.973	0.742	0.532
8	0.808	1.001	1.117	0.637●	0.518
12	0.462●	0.532	0.619●	0.406○	0.422

Table 6: RMSE: Germany - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	0.910*●	1.080	0.897	0.941	1.020	0.612*	0.751+	0.877+	0.903	0.841	1.114
2	0.907*●	1.147	0.935	0.811	0.848	0.664+	0.706+	0.852	0.624+●	0.718	0.675○
3	1.034	0.937	0.908	1.039	1.011	0.776	0.832	0.947	0.870	0.740	0.739
4	0.842+●	1.000	1.178	1.157	1.045	0.849	1.051	0.931	1.006	0.832	0.760○
6	0.845+●	1.255	1.388	0.889	0.806○	1.159	1.412	1.101	1.179	0.903	0.806●
8	0.735+●	1.147	1.197	0.794	0.738●	1.145	1.369	1.088	0.940	0.849●	0.718●
12	0.780●	1.027	0.926	0.807●	0.745●	0.930	0.874	1.358	0.920	0.929○	0.818●

Table 7: RMSE: Germany - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.714+	0.928	0.755+	0.878	0.946
2	0.629+○	0.991	0.686+	0.666+○	0.686
3	0.732○	0.842	0.844○	0.779	0.723
4	0.785	1.042	0.947	0.838	0.789
6	0.898	1.268	0.988	0.960	0.851
8	0.818	1.137	0.931	0.863	0.780●
12	0.787●	0.951	0.806	0.974	0.870

Table 8: RMSE: Italy - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	0.920+●	0.637+●	0.859+	0.706∗	1.056	0.574∗	0.840∗	0.554+●	0.801+	0.755∗○	0.931+
2	0.664∗●	0.993	1.074	0.708∗	0.940	0.826+	1.030	0.822	1.063	0.755∗	0.986
3	0.619∗●	0.953	0.954	0.734∗	0.891●	0.939	1.049	0.902	0.926	0.728	0.994
4	0.653∗○	1.362	1.424	0.798	0.832	1.231	1.273	1.188	1.165	0.718	0.993
6	0.788●	1.568	1.143	1.124	1.102	1.390	1.413	1.321	1.391	0.773	0.996
8	0.717●	1.149	1.127	1.159	1.210	1.146	1.185	1.153	1.222	0.838●	1.069
12	0.807●	1.192	1.198	1.047	1.043	1.202	1.250	1.040	1.142	0.902●	1.036

Table 9: RMSE: Italy - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.688∗●	0.730∗	0.758∗	0.704∗●	0.811∗●
2	0.771∗●	1.007	0.809∗	0.834∗●	0.839∗●
3	0.746∗●	0.939	0.825	0.802	0.837
4	0.870	1.375	0.917	0.914	0.827
6	0.987	1.321	1.171	1.022	0.859
8	0.928	1.126	1.127	1.000	0.941
12	0.950	1.166	1.111	0.999	0.960

Table 10: RMSE: Netherlands - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	1.033	0.658∗	0.695∗○	0.686∗	0.817∗	0.668∗	0.764∗	0.760∗	0.836∗	0.862	0.986
2	0.934	0.950	1.194	0.849	0.887	0.760	0.805	1.067	0.972	0.878	0.813
3	0.944	1.054	0.848	0.908	0.913	0.978	0.922	0.949	0.934	0.960	0.841
4	0.915	1.670	1.366	0.962	0.992	0.908	0.954	0.983	1.002	0.924	0.883
6	0.910	1.742	1.610	1.159	1.195	1.305	1.284	1.666	2.044	0.924	0.950
8	0.800	0.897	0.958	0.839	1.077	0.810	0.968	1.346	1.915	0.792●	0.934●
12	1.045	1.493	1.770	0.889	1.203	1.092	1.356	1.568	2.940	0.859○	0.962

Table 11: RMSE: Netherlands - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.648+○	0.633∗○	0.689∗	0.759∗	0.872
2	0.758	1.012	0.783	0.809	0.800
3	0.761	0.885	0.890	0.784	0.860
4	0.859	1.492	0.911	0.824	0.885
6	1.118	1.646	1.210	1.239	0.925
8	0.862	0.912	0.909	1.122	0.859●
12	1.178	1.605	1.120	1.413	0.908

Table 12: RMSE: Spain - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	1.173	0.766*	1.121	0.808*	1.162	0.726*	0.835*	0.627*	1.073*	0.694*	0.744*
2	1.879	1.829	2.716	1.167	2.471	1.060	1.431	0.807+	1.756	0.544+●	1.099
3	0.970*	1.834	2.200	1.045	1.868	0.844+	1.049	0.841	1.795	0.646+○	0.903
4	0.911	1.433	1.501	0.839	1.589	0.615	0.788	0.481●	1.814	0.488+●	0.399+●
6	0.530●	1.283	2.914	0.524	2.362	0.578	1.254	0.557	3.319	0.345●	0.592
8	0.342●	1.021	2.485	0.646	2.857	0.867	1.661	0.732●	4.635	0.249●	0.568●
12	0.272●	1.149	3.110	0.678	3.330	0.480	0.940	0.473●	3.448	0.202●	0.344●

Table 13: RMSE: Spain - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.668*	0.823*	0.788*	0.597*	0.665*
2	1.005	2.048	1.239	0.739+	0.719*
3	0.706	1.779	0.924	0.648	0.661+
4	0.371	1.226	0.585	0.294○	0.360+○
6	0.590	1.814	0.926	0.606	0.387
8	0.972	1.579	1.284	0.931	0.356
12	0.527●	1.777	0.895	0.304●	0.186●

Table 14: RMSE: Euro Area - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	0.965	0.803+	1.109	0.894	1.316	0.798+	0.971	0.818*	0.931*	0.920*	0.960*
2	0.758+●	1.004	1.813	0.662	0.880	0.846	1.049	0.686*●	0.737+○	0.679*○	0.618*●
3	0.680+●	1.213	2.314	1.005	1.347	1.126	1.327	0.616*●	0.645+●	0.569*●	0.504*●
4	0.717+●	2.174	2.802	1.275	1.563	1.750	2.012	0.909	1.003	0.674●	0.520●
6	0.678+●	2.120	2.367	1.737	2.324	1.639	1.932	1.376	1.808	0.593+●	0.453*●
8	0.549+	1.648	1.456	1.418	2.033	1.327	1.695	1.237	1.654	0.571●	0.436●
12	0.692	1.012	0.818	0.760	1.412	1.145	1.556	0.920○	1.464	0.641●	0.491●

Table 15: RMSE: Euro Area - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.694*	0.912	0.929	0.801*	0.917*
2	0.576	1.307	0.671	0.622*●	0.622*●
3	0.752	1.679	1.111	0.544*●	0.515*●
4	0.968	2.363	1.311	0.710	0.583●
6	1.199	2.190	1.740	0.923	0.512*●
8	0.924	1.473	1.468	0.817	0.492●
12	0.752+	0.878	1.142	0.808	0.553

Table 16: RMSE: United Kingdom - Models

h	RW	SW1	SW4	SW1a	SW4a	SW1b	SW4b	SW1s1	SW4s1	SW1s2	SW4s2
1	1.375	0.925+○	0.929	0.986	1.077	0.918*	0.915	0.968	1.034	0.958	1.047
2	1.399	0.856*	0.989	0.944	1.165	0.840*○	1.010	0.874+●	1.079	0.897○	1.093
3	1.155	0.887	1.087	0.999	1.167	0.941	1.165	0.897○	1.066	0.925	1.037
4	1.187	0.857	1.079	0.983	1.173	0.872	1.093	0.880	1.100	0.937	1.075
6	1.165	0.904	1.078	1.034	1.224	0.906	1.147	0.900	1.137	0.967	1.107
8	0.892	0.902	1.214	1.023	1.281	0.883	1.148	0.877	1.100	0.910	1.043
12	1.107	0.947	1.061	1.208	1.333	0.868●	0.972	0.938	1.130	0.993	1.158

Table 17: RMSE: United Kingdom - Averages

h	ALL	SW	SWW	SWsub	SWsub2
1	0.963	0.910+	0.948	0.981	0.982
2	0.909*●	0.905*●	0.960	0.966	0.975
3	0.935	0.974	1.038	0.972	0.975
4	0.917	0.957	1.010	0.992	1.002
6	0.943	0.961	1.045	1.021	1.033
8	0.901	1.047	1.052	0.973	0.970
12	0.958	0.995	1.057	1.044	1.069

Table 18: Root Mean Squared Error of AR(p) model

h	BE	FR	DE	IT	NL	ES	EA	UK
1	0.732	0.629	0.765	0.504	0.659	0.516	0.397	0.371
2	1.108	1.015	1.211	0.928	1.044	0.719	0.757	0.604
3	1.431	1.406	1.455	1.370	1.423	0.791	1.088	0.771
4	1.577	1.778	1.706	1.692	1.811	0.913	1.398	0.911
5	1.594	1.935	1.736	1.750	2.027	0.930	1.579	0.961
6	1.610	2.166	1.724	1.735	2.168	0.874	1.725	0.975
7	1.592	2.387	1.649	1.668	2.394	0.962	1.823	0.948
8	1.494	2.626	1.599	1.650	2.580	1.066	1.846	0.943
9	1.327	2.669	1.606	1.648	2.660	1.140	1.846	0.948
10	1.235	2.750	1.592	1.587	2.766	1.186	1.806	0.907
11	1.142	2.919	1.557	1.531	2.760	1.158	1.787	0.889
12	1.108	3.189	1.552	1.509	2.685	1.073	1.809	0.873

Table 19: Standardized Root Mean Squared Error of AR(p) model

h	BE	FR	DE	IT	NL	ES	EA	UK
1	0.445	0.507	0.492	0.353	0.450	0.291	0.329	0.272
2	0.674	0.820	0.780	0.651	0.713	0.406	0.628	0.444
3	0.871	1.135	0.937	0.960	0.972	0.446	0.903	0.566
4	0.960	1.435	1.099	1.186	1.236	0.515	1.160	0.669
5	0.970	1.562	1.118	1.227	1.384	0.525	1.310	0.705
6	0.979	1.748	1.110	1.216	1.480	0.493	1.431	0.716
7	0.968	1.926	1.062	1.169	1.635	0.543	1.513	0.696
8	0.909	2.119	1.030	1.156	1.762	0.601	1.532	0.693
9	0.807	2.154	1.034	1.155	1.816	0.643	1.532	0.696
10	0.752	2.220	1.025	1.112	1.888	0.669	1.498	0.666
11	0.695	2.356	1.003	1.073	1.884	0.653	1.483	0.653
12	0.674	2.574	1.000	1.058	1.833	0.605	1.501	0.641

Table 20: Persistence and volatility of growth rates

	BE	FR	DE	IT	NL	ES	EA	UK
Average	2.077	1.772	1.397	1.295	2.272	3.080	1.852	2.580
Standard deviation	1.644	1.248	1.437	1.439	1.473	1.773	1.214	1.226
SARC	0.682	0.850	0.749	0.804	0.833	0.694	0.853	0.765

Note: SARC stands for the Sum of the AutoRegressive Coefficients.

Table 21: DMW bootstrapped critical values

	Belgium			France			Germany			Italy		
h	1%	5%	10%	1%	5%	10%	1%	5%	10%	1%	5%	10%
1	-2.55	-1.97	-1.66	-2.68	-2.20	-1.90	-2.65	-2.06	-1.70	-2.46	-1.90	-1.62
4	-6.03	-2.79	-1.94	-5.91	-2.99	-2.17	-5.23	-2.61	-1.88	-5.27	-2.58	-1.97
8	-5.79	-2.54	-1.91	-6.97	-3.16	-2.28	-7.30	-2.93	-1.88	-8.04	-3.39	-2.13
12	-4.56	-2.33	-1.94	-5.13	-2.44	-1.97	-3.57	-2.08	-1.63	-3.95	-2.35	-1.78
	Netherlands			Spain			Euro Area			UK		
h	1%	5%	10%	1%	5%	10%	1%	5%	10%	1%	5%	10%
1	-2.56	-1.96	-1.61	-2.61	-2.02	-1.70	-2.80	-2.34	-1.99	-2.66	-1.83	-1.52
4	-7.34	-2.97	-2.10	-4.83	-2.57	-1.90	-6.49	-3.09	-2.24	-5.86	-2.68	-1.66
8	-7.70	-2.94	-2.03	-4.89	-2.27	-1.68	-7.01	-3.15	-2.23	-6.36	-3.01	-1.95
12	-5.57	-2.76	-2.17	-3.56	-1.90	-1.53	-4.93	-2.54	-1.91	-3.13	-2.67	-1.82

Table 22: Number of selected variables - rule SWa - in absolute and relative terms.

	UK	DE	FR	IT	ES	NL	BE	EA
Money	0	1	1	1	1	2	2	1
	0.00	0.25	0.25	0.25	0.25	0.50	0.50	0.25
Financial variables	4	6	6	6	7	8	6	6
	0.29	0.30	0.30	0.30	0.30	0.35	0.40	0.30
Surveys	9	13	13	12	12	12	8	10
	0.38	0.54	0.54	0.50	0.50	0.50	0.33	0.42
Industrial production	8	4	8	8	6	7	11	6
	0.44	0.22	0.44	0.44	0.33	0.39	0.61	0.33
Other indicators of real activity	0	0	0	1	1	0	0	0
	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00
Labour market	2	2	1	1	2	3	2	0
	0.67	0.40	0.20	0.20	0.40	0.60	0.40	0.00
HICP	0	1	2	4	3	3	2	4
	0.00	0.14	0.29	0.57	0.43	0.43	0.29	0.57
PPI	0	6	5	4	4	5	6	3
	0.00	0.40	0.33	0.26	0.26	0.33	0.40	0.20
International	6	5	3	4	5	5	6	5
	0.40	0.33	0.20	0.26	0.33	0.33	0.40	0.33
Total	29	40	40	41	40	46	45	35
	0.37	0.36	0.37	0.38	0.39	0.40	0.39	0.36

Note: The following country-specific variables also entered the derived dataset: business activity construction and business activity trade (Belgium); household consumption (France), Euro-area 3-month rate, Euro-area M2, Euro-area retail index, Euro-area production expectations in manufactures (UK), consumers' purchase propensity (Netherlands).

Table 23: Number of selected variables - rule SWb - in absolute and relative terms.

	UK	DE	FR	IT	ES	NL	BE	EA
Money	0	0	1	0	0	0	1	1
	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.25
Financial variables	3	4	3	2	2	4	2	2
	0.21	0.20	0.15	0.10	0.10	0.20	0.10	0.10
Surveys	3	7	5	7	6	5	2	4
	0.13	0.29	0.21	0.29	0.25	0.21	0.08	0.17
Industrial production	3	2	4	6	2	3	6	4
	0.27	0.11	0.22	0.33	0.11	0.17	0.33	0.22
Other indicators of real activity	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labour market	1	1	1	1	1	0	1	0
	0.33	0.20	0.20	0.20	0.20	0	0.20	0.00
HICP	0	0	0	1	3	0	2	0
	0.00	0.00	0.00	0.14	0.43	0.00	0.29	0.00
PPI	0	1	4	2	2	2	6	1
	0.00	0.07	0.27	0.15	0.15	0.15	0.40	0.07
International	2	3	2	3	3	1	2	3
	0.13	0.33	0.15	0.33	0.33	0.07	0.15	0.33
Total	12	18	19	22	19	15	22	15
	0.15	0.15	0.18	0.21	0.17	0.16	0.16	0.15

Note: The following country-specific variable entered the derived data set for the UK: Euro-area M2.

Appendix[8]

Table A.1

Belgium

Series Number	Description - Group	Transformation Logs	Diffs	MA	Correlations with other series 1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Retained in data set Rule 1	Rule 2
1	M1 - Money	1	1	1	2	89	103	0.00	0.00	0.05	0.12	0.25	0.31	0.16	0.09	0.01	0.01	-	-
2	M2 - Money	1	1	1	1	3	9	0.00	0.00	0.01	0.14	0.23	0.30	0.25	0.04	0.01	0.02	-	-
3	M3 - Money	1	1	1	2	54	70	0.00	0.00	0.02	0.12	0.26	0.27	0.25	0.07	0.01	0.01	Yes	-
4	Loans - Money	1	1	1	107	106	46	0.00	0.00	0.02	0.18	0.28	0.25	0.23	0.04	0.00	0.00	Yes	Yes
5	EER - Intl.	1	1	1	6	7	97	0.00	0.00	0.02	0.14	0.27	0.26	0.19	0.07	0.04	0.02	-	-
6	EER_CPI - Intl.	1	1	1	5	7	88	0.00	0.00	0.03	0.13	0.28	0.23	0.19	0.09	0.04	0.02	-	-
7	EER_PPI - Intl.	1	1	1	5	6	34	0.00	0.00	0.03	0.15	0.27	0.23	0.21	0.07	0.03	0.02	Yes	-
8	USD - FX	1	1	1	5	6	105	0.00	0.00	0.03	0.12	0.27	0.31	0.18	0.06	0.03	0.00	Yes	-
9	GBP - FX	1	1	1	42	62	64	0.00	0.00	0.11	0.15	0.23	0.26	0.21	0.04	0.01	0.00	-	-
10	YEN - FX	1	1	1	6	5	42	0.00	0.01	0.03	0.10	0.31	0.27	0.19	0.06	0.03	0.00	Yes	Yes
11	raw mat prices - FX	1	1	1	13	15	5	0.02	0.02	0.07	0.19	0.25	0.24	0.16	0.04	0.00	0.02	-	-
12	raw_xoil - FX	1	1	1	79	11	107	0.00	0.00	0.03	0.24	0.31	0.24	0.17	0.02	0.00	0.00	Yes	Yes
13	oil - FX	1	1	1	11	15	29	0.00	0.03	0.04	0.19	0.27	0.21	0.20	0.04	0.00	0.02	-	-
14	gold - FX	1	1	1	110	2	91	0.00	0.00	0.03	0.13	0.32	0.28	0.17	0.07	0.00	0.00	Yes	-
15	oil 1m fwd - FX	1	1	1	13	11	75	0.00	0.04	0.07	0.16	0.27	0.27	0.14	0.03	0.00	0.02	Yes	-
16	Trade Intra12 X - Intl.	1	1	1	103	61	31	0.00	0.01	0.04	0.20	0.27	0.31	0.15	0.02	0.00	0.00	Yes	-
17	Trade Extra12 X - Intl.	1	1	1	19	89	85	0.00	0.01	0.08	0.17	0.21	0.32	0.16	0.04	0.01	0.00	Yes	-
18	Trade Intra12 M - Intl.	1	1	1	77	74	49	0.00	0.01	0.09	0.14	0.29	0.26	0.14	0.05	0.02	0.00	Yes	-
19	Trade Extra12 M - Intl.	1	1	1	42	17	67	0.00	0.01	0.04	0.19	0.30	0.29	0.14	0.01	0.02	0.00	-	-
20	total - HICP	1	2	12	24	25	84	0.00	0.02	0.06	0.17	0.27	0.24	0.14	0.07	0.02	0.01	-	-
21	x e&f - HICP	1	2	12	22	92	42	0.00	0.00	0.04	0.14	0.24	0.34	0.21	0.03	0.00	0.01	-	-
22	svc - HICP	1	2	12	21	25	42	0.00	0.01	0.01	0.17	0.23	0.30	0.21	0.06	0.00	0.01	-	-
23	energy - HICP	1	2	12	66	72	82	0.00	0.01	0.06	0.16	0.26	0.25	0.18	0.09	0.00	0.00	-	-
24	goods - HICP	1	2	12	25	20	112	0.00	0.01	0.05	0.21	0.28	0.26	0.11	0.06	0.00	0.02	-	-
25	food - HICP	1	2	12	24	20	80	0.00	0.01	0.04	0.21	0.34	0.27	0.09	0.02	0.01	0.01	-	-
26	bv&tb - HICP	1	2	12	47	49	104	0.00	0.00	0.03	0.12	0.26	0.30	0.19	0.10	0.00	0.00	Yes	Yes
27	retail vol - Ind. Prod.	1	1	1	19	107	50	0.00	0.01	0.05	0.09	0.27	0.39	0.17	0.02	0.00	0.00	Yes	Yes
28	total - Ind. Prod.	1	1	1	31	69	82	0.00	0.00	0.03	0.15	0.33	0.27	0.17	0.05	0.01	0.00	Yes	-
29	xc - Ind. Prod.	1	1	1	43	84	80	0.00	0.01	0.04	0.19	0.26	0.34	0.13	0.04	0.00	0.00	Yes	-
30	manuf - Ind. Prod.	1	1	1	59	61	78	0.00	0.01	0.04	0.18	0.34	0.27	0.16	0.02	0.00	0.00	Yes	-
31	constr - Ind. Prod.	1	1	1	75	28	16	0.00	0.00	0.06	0.23	0.24	0.27	0.13	0.04	0.02	0.00	Yes	-
32	xce - Ind. Prod.	1	1	1	84	18	12	0.00	0.00	0.05	0.19	0.39	0.24	0.11	0.02	0.00	0.00	Yes	-
33	energy - Ind. Prod.	1	1	1	75	14	22	0.00	0.00	0.03	0.13	0.32	0.35	0.13	0.04	0.00	0.00	Yes	Yes
34	capital - Ind. Prod.	1	1	1	31	99	7	0.00	0.00	0.07	0.21	0.23	0.27	0.19	0.04	0.00	0.00	Yes	Yes
35	D cons - Ind. Prod.	1	1	1	109	59	41	0.00	0.00	0.09	0.23	0.23	0.25	0.16	0.04	0.00	0.00	Yes	Yes
36	energy - Ind. Prod.	1	1	1	37	65	41	0.00	0.01	0.07	0.17	0.22	0.27	0.18	0.08	0.00	0.00	Yes	-
37	IM goods - Ind. Prod.	1	1	1	80	36	98	0.00	0.04	0.11	0.20	0.25	0.18	0.13	0.08	0.02	0.00	-	-
38	ND cons - Ind. Prod.	1	1	1	50	40	103	0.00	0.01	0.07	0.13	0.35	0.29	0.11	0.03	0.01	0.00	-	-
39	metals - Ind. Prod.	1	1	1	77	73	52	0.00	0.00	0.08	0.15	0.32	0.25	0.13	0.07	0.00	0.00	Yes	-
40	chemicals - Ind. Prod.	1	1	1	38	67	82	0.00	0.00	0.07	0.15	0.36	0.24	0.12	0.05	0.01	0.00	-	-
41	electric - Ind. Prod.	1	1	1	84	8	35	0.00	0.00	0.03	0.09	0.34	0.35	0.18	0.03	0.00	0.00	Yes	Yes
42	machinery - Ind. Prod.	1	1	1	19	9	21	0.00	0.00	0.05	0.19	0.23	0.38	0.10	0.04	0.02	0.00	-	-
43	paper - Ind. Prod.	1	1	1	29	42	103	0.00	0.01	0.06	0.18	0.29	0.24	0.17	0.05	0.00	0.00	-	-
44	plastic - Ind. Prod.	1	1	1	20	24	84	0.00	0.02	0.03	0.21	0.21	0.32	0.18	0.04	0.00	0.00	Yes	Yes
45	manuf - PPI	1	2	12	46	51	88	0.00	0.00	0.06	0.19	0.20	0.30	0.11	0.10	0.03	0.02	-	-
46	construction - PPI	1	2	12	45	51	107	0.00	0.02	0.05	0.17	0.20	0.24	0.21	0.06	0.03	0.02	-	-
47	xce - PPI	1	2	12	52	49	30	0.00	0.00	0.05	0.19	0.22	0.21	0.17	0.12	0.02	0.02	-	-
48	energy - PPI	1	2	12	51	46	63	0.00	0.00	0.07	0.14	0.21	0.37	0.18	0.00	0.02	0.01	Yes	Yes
49	capital - PPI	1	2	12	47	55	18	0.00	0.01	0.06	0.12	0.27	0.29	0.15	0.05	0.04	0.01	Yes	-
50	D cons - PPI	1	2	12	38	56	90	0.00	0.02	0.04	0.13	0.24	0.29	0.25	0.04	0.00	0.00	-	-
51	energy - PPI	1	2	12	45	46	88	0.00	0.00	0.07	0.15	0.27	0.31	0.12	0.04	0.00	0.03	-	-
52	IM goods - PPI	1	2	12	55	47	39	0.00	0.00	0.07	0.19	0.18	0.27	0.15	0.08	0.05	0.02	-	-
53	ND cons - PPI	1	2	12	47	2	83	0.00	0.00	0.03	0.16	0.20	0.36	0.19	0.04	0.02	0.00	Yes	Yes
54	metals - PPI	1	2	12	52	94	21	0.00	0.01	0.06	0.12	0.20	0.32	0.19	0.07	0.03	0.00	Yes	-
55	chemicals - PPI	1	2	12	52	47	112	0.00	0.00	0.03	0.25	0.25	0.18	0.20	0.06	0.03	0.01	-	-
56	electric - PPI	1	2	12	11	15	112	0.00	0.04	0.02	0.12	0.32	0.27	0.13	0.07	0.02	0.00	Yes	-
57	machinery - PPI	1	2	12	100	37	94	0.00	0.01	0.04	0.18	0.23	0.22	0.24	0.07	0.02	0.00	Yes	-
58	paper - PPI	1	2	12	95	52	41	0.00	0.03	0.07	0.14	0.21	0.26	0.20	0.06	0.03	0.00	-	-
59	plastic - PPI	1	2	12	52	58	75	0.00	0.02	0.08	0.14	0.25	0.23	0.16	0.11	0.02	0.00	-	-
60	confidence - Surveys	0	1	1	65	62	112	0.00	0.01	0.13	0.19	0.22	0.18	0.19	0.04	0.02	0.02	-	-
61	prod rec m - Surveys	0	1	1	62	30	98	0.00	0.00	0.06	0.18	0.34	0.26	0.12	0.04	0.01	0.00	Yes	-
62	Orders - Surveys	0	1	1	63	60	66	0.00	0.00	0.06	0.18	0.32	0.25	0.11	0.05	0.02	0.02	-	-
63	X orders - Surveys	0	1	1	62	60	48	0.00	0.01	0.05	0.23	0.27	0.29	0.09	0.04	0.01	0.01	-	-
64	stocks - Surveys	0	1	1	60	17	9	0.00	0.00	0.06	0.18	0.22	0.33	0.15	0.06	0.00	0.00	Yes	Yes
65	exp prod - Surveys	0	1	1	60	58	5	0.00	0.02	0.12	0.12	0.25	0.29	0.13	0.05	0.00	0.01	-	-
66	exp price - Survey	0	1	1	23	58	62	0.00	0.01	0.08	0.17	0.21	0.31	0.17	0.05	0.00	0.00	-	-
67	exp emp - Surveys	0	1	1	40	109	19	0.00	0.00	0.04	0.12	0.33	0.28	0.19	0.04	0.00	0.00	Yes	-
68	confidence - Surveys	0	1	1	73	70	49	0.01	0.00	0.08	0.22	0.22	0.24	0.16	0.05	0.01	0.01	-	-
69	gen last 12m - Surveys	0	1	1	70	108	61	0.00	0.03	0.08	0.16	0.32	0.22	0.10	0.08	0.02	0.00	Yes	-
70	gen next 12m - Surveys	0	1	1	68	73	104	0.00	0.02	0.04	0.18	0.38	0.22	0.12	0.03	0.01	0.01	-	-
71	price last 12m - Surveys	0	1	1	106	19	103	0.00	0.00	0.04	0.15	0.34	0.26	0.16	0.04	0.01	0.00	Yes	-
72	price next 12m - Surveys	0	1	1	60	62	49	0.00	0.00	0.06	0.15	0.27	0.30	0.18	0.03	0.02	0.00	Yes	-
73	URX next 12m - Surveys	0	1	1	68	70	14	0.01	0.01	0.08	0.15	0.21	0.26	0.19	0.09	0.00	0.00	-	-
74	confidence - Surveys	0	1	1	77	76	47	0.00	0.00	0.04	0.15	0.28	0.31	0.13	0.04	0.03	0.02	-	-
75	prod rec months - Surveys	0	1	1	31	52	15	0.00	0.00	0.06	0.15	0.27	0.28	0.15	0.07	0.01	0.00	-	-
76	orders - Surveys	0	1	1	74	37	56	0.00	0.03	0.05	0.23	0.16	0.31	0.19	0.03	0.00	0.01	-	-
77	exp emp - Surveys	0	1	1	74	18	2	0.00	0.00	0.03	0.16	0.30	0.32	0.08	0.07	0.04	0.01	-	-
78	exp price - Surveys	0	1	1	58	113	30	0.00	0.01	0.04	0.18	0.28	0.28	0.17	0.04	0.00	0.00	Yes	Yes
79	confidence - Surveys	0	1	1	80	81	25	0.01	0.00	0.04	0.17	0.30	0.27	0.17	0.04	0.00	0.01	-	-
80	current - Surveys	0	1	1	79	37	25	0.00	0.00	0.04	0.15	0.31	0.32	0.15	0.02	0.01	0.01	-	-
81	stocks - Surveys	0	1	1	79	23	88	0.01	0.00	0.05	0.18	0.31	0.27	0.18	0.01	0.00	0.00	Yes	-
82	exp busi - Surveys	0	1	1	83	79	23	0.00	0.00	0.01	0.23	0.35	0.27	0.08	0.05	0.01	0.00	-	-
83	exp emp - Surveys	0	1	1	82	89	53	0.00	0.00	0.04	0.21	0.24	0.31	0.16	0.04	0.01	0.00	-	-
84	new cars - Ind. Prod.	1	1	1	29	32	44	0.00	0.00	0.04	0.12	0.30	0.35	0.12	0.07	0.00	0.00	-	-
85	URX - Labour	0	1	1	20	100	31	0.00	0.02	0.07	0.17	0.25	0.29	0.15	0.04	0.01	0.00	Yes	-
86	cnstr - Labour	0	1	1	94	37	55	0.00	0.00	0.02	0.18	0.30	0.30	0.12	0.09	0.00	0.00	Yes	Yes
87	manuf - Labour	0	1	1	88	60	99	0.00	0.00	0.05	0.13	0.27	0.35	0.13	0.05	0.01	0.00	-	-
88	total - Labour	1	1	1	87	37	45	0.00	0.01	0.04	0.19	0.28	0.26	0.15	0.04	0.02	0.00	-	-
89	tot xc - Labour	1	1	1	96	1	46	0.00	0.02	0.07	0.16	0.16	0.23	0.24	0.11	0.02	0.00	-	-
90	Euro500 - FX	1	1	1	91	92	50	0.01	0.02	0.03	0.15	0.20	0.33	0.15	0.08	0.02	0.02	-	-
91	Euro325 - FX	1	1	1	90	92	14	0.01	0.02	0.04	0.15	0.19	0.30	0.18	0.08	0.02	0.02	-	-
92	SP500 - FX	1	1	1	93	90	50	0.00	0.01	0.09	0.13	0.27	0.23	0.13	0.12	0.00	0.03	-	-
93	DowJ - FX	1	1	1	92	90	25	0.00	0.00	0.05	0.17	0.24	0.30	0.15	0.06	0.02	0.01	-	-
94	r3-m - FX	0	1	1	99	54	57	0.00	0.02	0.07	0.21	0.17	0.29	0.19	0.04	0.01	0.00	-	-
95	r10-year - FX	0	1	1	58	15	80	0.00	0.01	0.11	0.19	0.26	0.20	0.18	0.06	0.00	0.00	-	-
96	M2_US - Intl.	1	1	1	89	49	104	0.00	0.00	0.04	0.18	0.26	0.23	0.23	0.05	0.02	0.00	-	-
97	URX_US - Intl.	0	1	1	98	54	102	0.00	0.02	0.04	0.08	0.25	0.32	0.23	0.06	0.01	0.00	-	-
98	IP_US - Intl.	1	1	1	97	54	113	0.00	0.01	0.03	0.17	0.35	0.33	0.08	0.04	0.00	0.00	-	-
99	Empl_US - Intl.	1	1	1	94	97	110	0.00	0.00	0.08	0.20	0.26	0.29	0.12	0.04	0.01	0.00	-	-
100	CPI_US - Intl.	1	1	1	101	57	46	0.00	0.02	0.09	0.14	0.26	0.19	0.21	0.08	0.01	0.01	-	-
101	PPI_US - Intl.	1	1	1	100	85	39	0.00	0.01	0.04	0.21	0.25	0.22	0.19	0.07	0.00	0.01	-	-
102	retail_US - Intl.	0	1	1	63	8	97	0.00	0.01	0.05	0.12	0.23	0.30	0.19	0.11	0.00	0.00	Yes	Yes
103	m exp_US - Intl.	0	1	1	20	16	38	0.00	0.02	0.04	0.19	0.27	0.26	0.19	0.04	0.00	0.00	-	-
104	c exp_US - Intl.	0	1	1	9	39	96	0.00	0.00	0.03	0.19	0.27	0.27	0.17	0.08	0.00	0.00	-	-
105	10-year - FX	0	1	1	109	108	8	0.00	0.01	0.09	0.24	0.21	0.27	0.13	0.03	0.00	0.02	-	-
106	3-mon - FX	0	1	1	107	71	1	0.00	0.00	0.06	0.12	0.31	0.26	0.19	0.04	0.02	0.00	-	-
107	1-year - FX	0	1	1	106	100	12	0.00	0.01	0.04	0.22	0.28	0.23	0.17	0.04	0.01	0.00	-	-
108	2-year - FX	0	1	1	109	105	41	0.00	0.01	0.08	0.20	0.26	0.27	0.11	0.05	0.00	0.02	Yes	-
109	5-year - FX	0	1	1	105	108	87	0.00	0.01	0.06	0.25	0.26	0.23	0.14	0.04	0.00	0.02	-	-
110	bact - Surveys	0	1	1	111	113	99	0.00	0.01	0.02	0.16	0.42	0.23	0.12	0.03	0.00	0.02	-	-
111	bactman - Surveys	0	1	1	110	76	61	0.00	0.01	0.03	0.26	0.30	0.28	0.09	0.03	0.00	0.01	-	-
112	bactcon - Surveys	0	1	1	76	74	56	0.00	0.00	0.02	0.13	0.27	0.38	0.14	0.05	0.00	0.00	Yes	Yes
113	bacttra - Surveys	0	1	1	110	74	98	0.00	0.00	0.05	0.14	0.23	0.39	0.14	0.04	0.00	0.01	Yes	-

8 Each table in this appendix shows the following information for each of the series used: a reference number, a brief description, information on the transformations applied to achieve stationarity (logs, number of differences and order of the moving-average filter), information on the correlation with other series, including the most and last correlated series, and whether a series is retained in the data sets after pre-screening using the Boivin-Ng rule 1and 2.

Table A.2

France

Series		Transformation			Correlations with other series													Retained in data set	
Number	Description - Group	Logs	Diffs	MA	1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Rule 1	Rule 2
1	M1 - Money	1	1	1	2	3	4	0.00	0.00	0.04	0.11	0.31	0.33	0.15	0.05	0.01	0.01	-	-
2	M2 - Money	1	1	1	1	3	68	0.00	0.00	0.04	0.17	0.24	0.28	0.20	0.06	0.00	0.02	-	-
3	M3 - Money	1	1	1	2	1	52	0.00	0.00	0.01	0.17	0.18	0.43	0.12	0.06	0.01	0.01	-	-
4	Loans - Money	1	1	1	3	63	52	0.00	0.00	0.01	0.19	0.35	0.28	0.15	0.03	0.00	0.00	Yes	Yes
5	EER - Intl.	1	1	1	6	7	68	0.00	0.02	0.05	0.21	0.17	0.21	0.17	0.08	0.06	0.03	-	-
6	EER_CPI - Intl.	1	1	1	5	7	94	0.00	0.02	0.06	0.19	0.20	0.21	0.15	0.09	0.06	0.03	-	-
7	EER_PPI - Intl.	1	1	1	6	5	41	0.00	0.01	0.06	0.22	0.22	0.16	0.21	0.06	0.05	0.03	-	-
8	USD - FX	1	1	1	5	6	70	0.00	0.01	0.05	0.18	0.21	0.25	0.19	0.06	0.02	0.03	Yes	-
9	GBP - FX	1	1	1	60	45	86	0.00	0.01	0.07	0.17	0.28	0.22	0.18	0.06	0.00	0.00	-	-
10	YEN - FX	1	1	1	7	6	40	0.00	0.00	0.09	0.12	0.20	0.37	0.14	0.04	0.05	0.00	Yes	Yes
11	raw mat prices - FX	1	1	1	13	15	74	0.00	0.06	0.04	0.20	0.31	0.17	0.14	0.05	0.03	0.02	-	-
12	raw_xoil - FX	1	1	1	91	23	103	0.00	0.02	0.08	0.19	0.28	0.28	0.12	0.02	0.01	0.00	Yes	Yes
13	oil - FX	1	1	1	15	11	82	0.00	0.00	0.05	0.21	0.26	0.25	0.17	0.05	0.00	0.02	-	-
14	gold - FX	1	1	1	38	33	76	0.00	0.01	0.05	0.11	0.31	0.33	0.09	0.10	0.00	0.00	Yes	-
15	oil 1m fwd - FX	1	1	1	13	11	48	0.00	0.01	0.07	0.18	0.27	0.18	0.18	0.08	0.00	0.02	-	-
16	Trade Intra12 X - Intl.	1	1	1	18	56	13	0.00	0.00	0.03	0.07	0.38	0.23	0.26	0.03	0.01	0.00	-	-
17	Trade Extra12 X - Intl.	1	1	1	19	74	55	0.00	0.00	0.05	0.15	0.30	0.37	0.12	0.02	0.00	0.00	-	-
18	Trade Intra12 M - Intl.	1	1	1	16	14	98	0.00	0.00	0.04	0.12	0.26	0.33	0.21	0.04	0.01	0.00	-	-
19	Trade Extra12 M - Intl.	1	1	1	17	69	24	0.00	0.00	0.01	0.12	0.33	0.31	0.17	0.06	0.00	0.00	-	-
20	total - HICP	1	2	12	24	23	34	0.00	0.02	0.07	0.20	0.17	0.25	0.17	0.08	0.03	0.02	-	-
21	x e&f - HICP	1	2	12	26	22	105	0.00	0.02	0.07	0.27	0.18	0.22	0.15	0.06	0.02	0.01	-	-
22	svc - HICP	1	2	12	21	67	93	0.00	0.00	0.07	0.17	0.27	0.28	0.13	0.07	0.01	0.00	Yes	-
23	energy - HICP	1	2	12	48	20	14	0.00	0.04	0.07	0.14	0.23	0.19	0.21	0.07	0.03	0.02	-	-
24	goods - HICP	1	2	12	20	23	19	0.00	0.02	0.07	0.19	0.22	0.18	0.18	0.08	0.04	0.01	-	-
25	food - HICP	1	2	12	24	26	86	0.00	0.01	0.08	0.17	0.31	0.22	0.13	0.06	0.02	0.00	Yes	-
26	bv&tb - HICP	1	2	12	21	47	85	0.00	0.02	0.05	0.12	0.32	0.32	0.11	0.05	0.01	0.01	-	-
27	retail vol - Ind. Prod.	1	1	1	84	36	16	0.00	0.00	0.10	0.22	0.17	0.26	0.19	0.06	0.00	0.00	-	-
28	total - Ind. Prod.	1	1	1	86	88	76	0.00	0.01	0.07	0.23	0.18	0.28	0.18	0.04	0.00	0.00	Yes	Yes
29	xc - Ind. Prod.	1	1	1	30	36	101	0.00	0.01	0.07	0.23	0.27	0.17	0.17	0.06	0.01	0.02	-	-
30	manuf - Ind. Prod.	1	1	1	29	34	56	0.00	0.01	0.10	0.18	0.27	0.17	0.14	0.08	0.05	0.01	-	-
31	constr - Ind. Prod.	1	1	1	46	62	34	0.00	0.00	0.01	0.18	0.37	0.27	0.16	0.02	0.00	0.00	Yes	Yes
32	xce - Ind. Prod.	1	1	1	30	38	69	0.00	0.00	0.05	0.17	0.28	0.30	0.11	0.06	0.03	0.00	Yes	-
33	energy - Ind. Prod.	1	1	1	36	14	101	0.00	0.00	0.06	0.15	0.30	0.27	0.16	0.06	0.01	0.00	Yes	Yes
34	capital - Ind. Prod.	1	1	1	40	30	31	0.00	0.02	0.06	0.14	0.31	0.31	0.12	0.03	0.02	0.00	-	-
35	D cons - Ind. Prod.	1	1	1	80	68	92	0.00	0.01	0.06	0.15	0.30	0.31	0.12	0.04	0.01	0.00	-	-
36	energy - Ind. Prod.	1	1	1	29	46	72	0.00	0.01	0.08	0.17	0.30	0.27	0.08	0.06	0.01	0.01	-	-
37	IM goods - Ind. Prod.	1	1	1	39	44	105	0.00	0.00	0.05	0.18	0.28	0.28	0.13	0.06	0.02	0.00	-	-
38	ND cons - Ind. Prod.	1	1	1	30	41	64	0.00	0.02	0.06	0.15	0.30	0.29	0.11	0.05	0.02	0.00	-	-
39	metals - Ind. Prod.	1	1	1	37	36	2	0.00	0.00	0.02	0.21	0.34	0.22	0.16	0.05	0.01	0.00	Yes	-
40	chemicals - Ind. Prod.	1	1	1	34	21	80	0.00	0.01	0.01	0.17	0.30	0.30	0.15	0.06	0.00	0.00	-	-
41	electric - Ind. Prod.	1	1	1	38	32	7	0.00	0.01	0.04	0.14	0.28	0.39	0.10	0.05	0.00	0.00	Yes	-
42	machinery - Ind. Prod.	1	1	1	44	96	28	0.00	0.00	0.03	0.15	0.38	0.33	0.10	0.02	0.00	0.00	Yes	Yes
43	paper - Ind. Prod.	1	1	1	58	37	94	0.00	0.00	0.10	0.14	0.27	0.31	0.13	0.05	0.01	0.00	Yes	-
44	plastic - Ind. Prod.	1	1	1	37	30	53	0.00	0.00	0.05	0.16	0.28	0.30	0.16	0.04	0.02	0.00	-	-
45	manuf - PPI	1	2	12	46	106	75	0.00	0.01	0.05	0.16	0.26	0.28	0.17	0.08	0.01	0.00	-	-
46	construction - PPI	1	2	12	45	36	66	0.00	0.02	0.04	0.25	0.25	0.29	0.08	0.06	0.02	0.00	-	-
47	xce - PPI	1	2	12	52	54	105	0.00	0.04	0.10	0.18	0.22	0.24	0.11	0.07	0.03	0.01	-	-
48	energy - PPI	1	2	12	23	51	92	0.00	0.00	0.07	0.15	0.23	0.32	0.17	0.04	0.01	0.01	-	-
49	capital - PPI	1	2	12	55	52	32	0.00	0.01	0.04	0.12	0.32	0.24	0.25	0.03	0.00	0.00	Yes	Yes
50	D cons - PPI	1	2	12	99	95	77	0.00	0.00	0.04	0.17	0.23	0.39	0.16	0.02	0.00	0.00	Yes	Yes
51	energy - PPI	1	2	12	47	71	77	0.00	0.02	0.05	0.22	0.21	0.28	0.16	0.06	0.01	0.00	Yes	-
52	IM goods - PPI	1	2	12	55	54	4	0.00	0.03	0.11	0.17	0.28	0.22	0.11	0.05	0.01	0.03	-	-
53	ND cons - PPI	1	2	12	25	48	86	0.00	0.00	0.02	0.19	0.31	0.34	0.13	0.01	0.00	0.00	Yes	Yes
54	metals - PPI	1	2	12	52	47	71	0.00	0.00	0.08	0.17	0.36	0.19	0.12	0.06	0.01	0.01	Yes	-
55	chemicals - PPI	1	2	12	52	83	17	0.00	0.02	0.05	0.17	0.34	0.24	0.11	0.06	0.01	0.01	-	-
56	electric - PPI	1	2	12	16	1	70	0.00	0.00	0.04	0.22	0.35	0.24	0.13	0.03	0.00	0.00	Yes	-
57	paper - PPI	1	2	12	52	95	16	0.00	0.00	0.02	0.25	0.30	0.31	0.11	0.01	0.00	0.00	Yes	Yes
58	plastic - PPI	1	2	12	55	43	31	0.00	0.00	0.04	0.21	0.30	0.29	0.08	0.06	0.02	0.00	-	-
59	confidence - Surveys	0	1	1	61	64	101	0.00	0.01	0.04	0.27	0.27	0.18	0.14	0.08	0.00	0.02	-	-
60	prod rec m - Surveys	0	1	1	9	61	74	0.00	0.01	0.04	0.20	0.28	0.28	0.15	0.03	0.01	0.00	-	-
61	Orders - Surveys	0	1	1	59	62	104	0.00	0.00	0.06	0.14	0.35	0.28	0.10	0.04	0.01	0.02	-	-
62	X orders - Surveys	0	1	1	61	93	82	0.00	0.01	0.06	0.11	0.28	0.34	0.15	0.05	0.00	0.01	Yes	-
63	stocks - Surveys	0	1	1	106	59	77	0.00	0.01	0.06	0.22	0.18	0.30	0.14	0.08	0.01	0.00	Yes	Yes
64	exp prod - Surveys	0	1	1	59	54	81	0.00	0.00	0.06	0.17	0.33	0.26	0.14	0.05	0.00	0.01	Yes	-
65	exp price - Survey	0	1	1	35	51	36	0.00	0.00	0.04	0.12	0.39	0.26	0.19	0.00	0.00	0.00	Yes	Yes
66	exp emp - Surveys	0	1	1	97	96	46	0.00	0.00	0.06	0.18	0.33	0.28	0.10	0.05	0.00	0.00	Yes	-
67	confidence - Surveys	0	1	1	69	72	105	0.01	0.01	0.02	0.17	0.24	0.30	0.17	0.06	0.00	0.02	-	-
68	gen last 12m - Surveys	0	1	1	67	69	2	0.00	0.00	0.07	0.20	0.21	0.28	0.17	0.05	0.01	0.02	Yes	-
69	gen next 12m - Surveys	0	1	1	67	68	32	0.00	0.02	0.03	0.18	0.26	0.27	0.15	0.08	0.00	0.02	-	-
70	price last 12m - Surveys	0	1	1	21	99	56	0.00	0.00	0.05	0.25	0.29	0.24	0.12	0.06	0.00	0.00	Yes	Yes
71	price next 12m - Surveys	0	1	1	69	87	91	0.00	0.05	0.05	0.14	0.30	0.28	0.16	0.04	0.00	0.00	-	-
72	URX next 12m - Surveys	0	1	1	67	69	36	0.01	0.01	0.06	0.13	0.31	0.29	0.16	0.03	0.00	0.00	Yes	-
73	confidence - Surveys	0	1	1	76	75	94	0.00	0.00	0.03	0.26	0.27	0.27	0.09	0.06	0.02	0.02	-	-
74	prod rec months - Surveys	0	1	1	106	107	60	0.00	0.00	0.05	0.21	0.31	0.27	0.13	0.04	0.00	0.00	Yes	-
75	orders - Surveys	0	1	1	73	76	45	0.00	0.00	0.04	0.17	0.30	0.29	0.11	0.06	0.01	0.01	Yes	-
76	exp emp - Surveys	0	1	1	73	75	28	0.00	0.00	0.04	0.26	0.24	0.24	0.15	0.06	0.01	0.01	-	-
77	exp price - Surveys	0	1	1	106	107	51	0.00	0.00	0.03	0.16	0.34	0.26	0.17	0.06	0.00	0.00	Yes	Yes
78	confidence - Surveys	0	1	1	79	80	4	0.00	0.01	0.05	0.27	0.29	0.26	0.06	0.05	0.01	0.01	-	-
79	current - Surveys	0	1	1	78	100	69	0.00	0.01	0.06	0.18	0.39	0.17	0.11	0.06	0.00	0.01	-	-
80	stocks - Surveys	0	1	1	35	78	40	0.00	0.02	0.02	0.11	0.24	0.35	0.21	0.06	0.00	0.00	-	-
81	exp busi - Surveys	0	1	1	30	34	64	0.00	0.00	0.05	0.21	0.30	0.24	0.15	0.05	0.01	0.00	Yes	-
82	exp emp - Surveys	0	1	1	21	40	13	0.00	0.00	0.03	0.16	0.28	0.35	0.16	0.03	0.00	0.00	Yes	Yes
83	new cars - Ind. Prod.	1	1	1	107	104	41	0.00	0.01	0.07	0.20	0.20	0.16	0.21	0.12	0.03	0.00	-	-
84	URX - Labour	0	1	1	27	100	19	0.00	0.00	0.03	0.12	0.31	0.31	0.19	0.04	0.00	0.00	-	-
85	cnstr - Labour	0	1	1	87	2	26	0.00	0.00	0.03	0.12	0.36	0.28	0.15	0.06	0.01	0.00	Yes	-
86	manuf - Labour	0	1	1	88	87	53	0.00	0.01	0.05	0.18	0.29	0.26	0.18	0.01	0.00	0.02	-	-
87	total - Labour	1	1	1	88	86	93	0.00	0.01	0.06	0.21	0.21	0.25	0.17	0.06	0.01	0.02	-	-
88	tot xc - Labour	1	1	1	86	87	9	0.00	0.01	0.05	0.19	0.28	0.27	0.18	0.01	0.00	0.02	-	-
89	Euro500 - FX	1	1	1	90	91	81	0.00	0.02	0.06	0.18	0.14	0.26	0.20	0.03	0.09	0.02	-	-
90	Euro325 - FX	1	1	1	89	91	48	0.00	0.02	0.06	0.18	0.13	0.30	0.17	0.04	0.09	0.01	-	-
91	SP500 - FX	1	1	1	92	89	71	0.00	0.01	0.05	0.16	0.27	0.25	0.15	0.06	0.05	0.02	-	-
92	DowJ - FX	1	1	1	91	8	35	0.00	0.00	0.05	0.15	0.34	0.20	0.14	0.07	0.05	0.01	-	-
93	r3-m - FX	0	1	1	98	62	87	0.00	0.02	0.05	0.24	0.19	0.29	0.11	0.09	0.01	0.00	-	-
94	r10-year - FX	0	1	1	26	21	43	0.00	0.02	0.02	0.26	0.25	0.28	0.14	0.04	0.00	0.00	Yes	Yes
95	M2_US - Intl.	1	1	1	105	99	81	0.00	0.00	0.06	0.15	0.28	0.31	0.14	0.06	0.00	0.00	Yes	-
96	URX_US - Intl.	0	1	1	93	97	74	0.00	0.01	0.07	0.10	0.26	0.28	0.21	0.07	0.00	0.00	-	-
97	IP_US - Intl.	1	1	1	66	96	4	0.00	0.00	0.06	0.12	0.42	0.23	0.13	0.05	0.00	0.00	-	-
98	Empl_US - Intl.	1	1	1	93	38	18	0.00	0.00	0.08	0.18	0.20	0.36	0.15	0.02	0.01	0.00	-	-
99	CPI_US - Intl.	1	1	1	100	90	74	0.00	0.01	0.11	0.16	0.14	0.28	0.19	0.08	0.02	0.01	-	-
100	PPI_US - Intl.	1	1	1	99	79	40	0.00	0.01	0.08	0.12	0.28	0.21	0.21	0.06	0.02	0.01	-	-
101	retail_US - Intl.	0	1	1	2	14	4	0.00	0.00	0.01	0.14	0.32	0.34	0.14	0.06	0.00	0.00	Yes	Yes
102	m exp_US - Intl.	0	1	1	11	15	103	0.00	0.00	0.05	0.17	0.33	0.28	0.13	0.04	0.01	0.00	Yes	-
103	c exp_US - Intl.	0	1	1	83	36	102	0.00	0.00	0.03	0.16	0.30	0.31	0.19	0.00	0.01	0.00	Yes	Yes
104	10-year - FX	0	1	1	108	107	61	0.00	0.05	0.05	0.24	0.34	0.19	0.06	0.04	0.03	0.02	-	-
105	3-mon - FX	0	1	1	78	81	47	0.00	0.00	0.06	0.13	0.32	0.33	0.13	0.04	0.00	0.00	-	-
106	1-year - FX	0	1	1	107	104	51	0.00	0.01	0.11	0.25	0.17	0.29	0.08	0.05	0.03	0.01	-	-
107	2-year - FX	0	1	1	106	104	52	0.00	0.01	0.10	0.25	0.26	0.19	0.12	0.04	0.02	0.02	-	-
108	5-year - FX	0	1	1	104	107	101	0.00	0.00	0.12	0.23	0.26	0.23	0.11	0.03	0.02	0.01	-	-
109	HHC MAN - Surveys	0	1	1	71	108	74	0.00	0.00	0.01	0.27	0.22	0.26	0.20	0.05	0.00	0.00	Yes	Yes

Table A.3

Germany

Series		Transformation			Correlations with other series													Retained in data set	
Number	Description - Group	Logs	Diffs	MA	1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Rule 1	Rule 2
1	M1 - Money	1	1	1	2	3	27	0.00	0.00	0.03	0.22	0.27	0.25	0.17	0.05	0.02	0.01	Yes	-
2	M2 - Money	1	1	1	3	1	33	0.00	0.00	0.03	0.19	0.29	0.25	0.16	0.06	0.01	0.02	-	-
3	M3 - Money	1	1	1	2	1	104	0.00	0.00	0.00	0.15	0.34	0.35	0.10	0.05	0.01	0.01	-	-
4	Loans - Money	1	1	1	106	62	86	0.00	0.02	0.07	0.19	0.24	0.29	0.13	0.05	0.01	0.00	-	-
5	EER - Intl.	1	1	1	6	7	69	0.00	0.00	0.06	0.12	0.21	0.31	0.14	0.06	0.06	0.04	-	-
6	EER_CPI - Intl.	1	1	1	5	7	69	0.00	0.00	0.06	0.14	0.20	0.28	0.17	0.05	0.06	0.03	-	-
7	EER_PPI - Intl.	1	1	1	5	6	32	0.00	0.01	0.06	0.12	0.20	0.31	0.13	0.07	0.06	0.04	-	-
8	USD - FX	1	1	1	7	6	105	0.00	0.00	0.05	0.11	0.28	0.28	0.17	0.07	0.02	0.03	-	-
9	GBP - FX	1	1	1	86	96	25	0.00	0.01	0.03	0.13	0.25	0.24	0.27	0.07	0.01	0.00	-	-
10	YEN - FX	1	1	1	5	7	3	0.00	0.01	0.03	0.13	0.28	0.30	0.17	0.06	0.02	0.01	Yes	Yes
11	raw mat prices - FX	1	1	1	13	15	97	0.00	0.03	0.07	0.19	0.30	0.21	0.10	0.06	0.02	0.02	Yes	-
12	raw_xoil - FX	1	1	1	98	92	20	0.00	0.01	0.04	0.18	0.34	0.29	0.11	0.03	0.00	0.00	Yes	-
13	oil - FX	1	1	1	15	11	70	0.00	0.03	0.07	0.22	0.17	0.28	0.12	0.07	0.03	0.02	-	-
14	gold - FX	1	1	1	8	50	109	0.00	0.00	0.02	0.17	0.28	0.32	0.20	0.02	0.00	0.00	Yes	Yes
15	oil 1m fwd - FX	1	1	1	13	11	44	0.01	0.02	0.06	0.26	0.25	0.22	0.10	0.06	0.01	0.02	-	-
16	Trade Intra12 X - Intl.	1	1	1	18	78	69	0.00	0.02	0.08	0.17	0.28	0.28	0.11	0.06	0.01	0.00	-	-
17	Trade Extra12 X - Intl.	1	1	1	15	107	66	0.00	0.00	0.12	0.18	0.29	0.25	0.11	0.04	0.01	0.00	Yes	Yes
18	Trade Intra12 M - Intl.	1	1	1	16	26	88	0.00	0.01	0.04	0.19	0.35	0.24	0.17	0.00	0.01	0.00	-	-
19	Trade Extra12 M - Intl.	1	1	1	105	109	86	0.00	0.03	0.03	0.20	0.28	0.27	0.14	0.04	0.02	0.00	Yes	Yes
20	total - HICP	1	2	12	21	24	41	0.01	0.06	0.06	0.11	0.24	0.23	0.16	0.10	0.02	0.03	-	-
21	x e&f - HICP	1	2	12	22	20	31	0.01	0.06	0.06	0.14	0.22	0.21	0.20	0.08	0.01	0.02	-	-
22	svc - HICP	1	2	12	21	20	37	0.00	0.06	0.06	0.09	0.28	0.22	0.18	0.09	0.00	0.02	-	-
23	energy - HICP	1	2	12	48	46	29	0.00	0.01	0.13	0.17	0.23	0.11	0.17	0.11	0.06	0.02	-	-
24	goods - HICP	1	2	12	20	23	67	0.00	0.02	0.06	0.17	0.23	0.23	0.12	0.14	0.02	0.01	-	-
25	food - HICP	1	2	12	53	24	92	0.00	0.00	0.07	0.20	0.20	0.34	0.11	0.07	0.00	0.00	Yes	-
26	bv&tb - HICP	1	2	12	40	53	101	0.00	0.04	0.15	0.13	0.20	0.24	0.14	0.08	0.03	0.00	-	-
27	retail vol - Ind. Prod.	1	1	1	80	33	1	0.00	0.00	0.01	0.22	0.29	0.27	0.17	0.04	0.01	0.00	Yes	-
28	total - Ind. Prod.	1	1	1	37	32	77	0.00	0.03	0.09	0.15	0.15	0.28	0.18	0.09	0.04	0.00	-	-
29	xc - Ind. Prod.	1	1	1	32	30	56	0.00	0.02	0.09	0.19	0.23	0.22	0.15	0.06	0.01	0.03	-	-
30	manuf - Ind. Prod.	1	1	1	32	29	5	0.00	0.03	0.08	0.20	0.24	0.22	0.15	0.05	0.01	0.03	-	-
31	constr - Ind. Prod.	1	1	1	37	28	106	0.00	0.01	0.06	0.13	0.21	0.35	0.17	0.05	0.02	0.00	-	-
32	xce - Ind. Prod.	1	1	1	30	29	7	0.01	0.02	0.12	0.20	0.20	0.21	0.14	0.06	0.02	0.03	-	-
33	energy - Ind. Prod.	1	1	1	36	59	47	0.00	0.00	0.06	0.17	0.28	0.27	0.17	0.06	0.01	0.00	-	-
34	capital - Ind. Prod.	1	1	1	29	32	95	0.00	0.02	0.07	0.17	0.26	0.28	0.14	0.03	0.00	0.03	Yes	Yes
35	D cons - Ind. Prod.	1	1	1	66	21	107	0.00	0.00	0.09	0.13	0.32	0.25	0.17	0.05	0.00	0.00	-	-
36	energy - Ind. Prod.	1	1	1	33	83	3	0.00	0.00	0.04	0.17	0.25	0.38	0.14	0.03	0.01	0.00	-	-
37	IM goods - Ind. Prod.	1	1	1	28	34	80	0.00	0.01	0.08	0.13	0.28	0.24	0.17	0.06	0.04	0.00	-	-
38	ND cons - Ind. Prod.	1	1	1	40	91	89	0.00	0.01	0.08	0.22	0.30	0.28	0.08	0.02	0.01	0.00	-	-
39	metals - Ind. Prod.	1	1	1	37	26	73	0.00	0.01	0.04	0.14	0.28	0.29	0.20	0.03	0.01	0.00	Yes	Yes
40	chemicals - Ind. Prod.	1	1	1	38	26	103	0.00	0.00	0.02	0.25	0.29	0.30	0.10	0.02	0.02	0.00	-	-
41	electric - Ind. Prod.	1	1	1	103	35	20	0.00	0.00	0.04	0.15	0.28	0.30	0.22	0.01	0.00	0.00	-	-
42	machinery - Ind. Prod.	1	1	1	84	35	96	0.00	0.00	0.06	0.17	0.30	0.24	0.21	0.02	0.00	0.00	-	-
43	paper - Ind. Prod.	1	1	1	44	17	51	0.00	0.00	0.05	0.16	0.27	0.34	0.15	0.04	0.01	0.00	Yes	-
44	plastic - Ind. Prod.	1	1	1	37	67	81	0.00	0.02	0.05	0.15	0.32	0.32	0.10	0.03	0.02	0.00	-	-
45	manuf - PPI	1	2	12	51	56	38	0.00	0.01	0.10	0.13	0.27	0.24	0.16	0.09	0.00	0.01	-	-
46	construction - PPI	1	2	12	48	23	75	0.00	0.00	0.09	0.17	0.24	0.19	0.14	0.11	0.04	0.02	Yes	-
47	xce - PPI	1	2	12	52	54	33	0.00	0.00	0.06	0.13	0.23	0.31	0.17	0.07	0.02	0.01	Yes	-
48	energy - PPI	1	2	12	23	46	77	0.00	0.00	0.06	0.25	0.18	0.26	0.10	0.12	0.01	0.02	-	-
49	capital - PPI	1	2	12	57	52	62	0.00	0.02	0.08	0.10	0.26	0.25	0.20	0.08	0.01	0.00	Yes	-
50	D cons - PPI	1	2	12	57	107	16	0.00	0.00	0.06	0.21	0.28	0.25	0.09	0.09	0.03	0.00	-	-
51	energy - PPI	1	2	12	45	48	104	0.00	0.01	0.07	0.17	0.26	0.27	0.18	0.02	0.02	0.01	-	-
52	IM goods - PPI	1	2	12	54	47	93	0.00	0.02	0.08	0.15	0.23	0.24	0.17	0.07	0.02	0.02	-	-
53	ND cons - PPI	1	2	12	26	47	77	0.00	0.00	0.08	0.17	0.28	0.23	0.18	0.03	0.02	0.00	Yes	-
54	metals - PPI	1	2	12	52	46	22	0.00	0.00	0.06	0.24	0.19	0.33	0.09	0.06	0.02	0.01	-	-
55	chemicals - PPI	1	2	12	52	56	82	0.00	0.02	0.06	0.14	0.28	0.23	0.16	0.11	0.01	0.00	Yes	Yes
56	electric - PPI	1	2	12	51	45	29	0.00	0.03	0.01	0.17	0.25	0.36	0.17	0.03	0.00	0.00	-	-
57	machinery - PPI	1	2	12	50	49	75	0.00	0.00	0.08	0.14	0.25	0.28	0.18	0.05	0.03	0.00	-	-
58	paper - PPI	1	2	12	59	10	88	0.00	0.01	0.10	0.15	0.28	0.27	0.13	0.06	0.01	0.00	Yes	-
59	plastic - PPI	1	2	12	84	58	90	0.00	0.00	0.06	0.16	0.36	0.20	0.14	0.07	0.02	0.00	-	-
60	confidence - Surveys	0	1	1	65	62	23	0.01	0.01	0.08	0.16	0.29	0.24	0.16	0.03	0.01	0.02	-	-
61	prod rec m - Surveys	0	1	1	66	22	79	0.00	0.00	0.02	0.21	0.24	0.35	0.16	0.03	0.00	0.00	Yes	Yes
62	Orders - Surveys	0	1	1	60	4	83	0.00	0.02	0.06	0.22	0.24	0.23	0.17	0.04	0.02	0.01	Yes	-
63	Surv X orders - Surveys	0	1	1	62	9	12	0.00	0.00	0.10	0.15	0.37	0.24	0.11	0.03	0.01	0.00	Yes	Yes
64	Surv ret stocks - Surveys	0	1	1	60	62	80	0.01	0.01	0.04	0.18	0.26	0.22	0.18	0.10	0.00	0.00	Yes	-
65	Surv exp prod - Surveys	0	1	1	60	28	77	0.00	0.00	0.06	0.17	0.29	0.26	0.17	0.04	0.00	0.01	-	-
66	Surv exp price - Surveys	0	1	1	22	21	17	0.00	0.00	0.07	0.13	0.27	0.28	0.18	0.06	0.00	0.00	-	-
67	Surv Bus exp emp - Surveys	0	1	1	60	44	24	0.00	0.02	0.05	0.17	0.38	0.25	0.11	0.02	0.02	0.00	Yes	Yes
68	Surv Con conf - Surveys	0	1	1	70	73	74	0.01	0.00	0.09	0.17	0.27	0.28	0.13	0.05	0.00	0.02	-	-
69	Surv gen last 12m - Surveys	0	1	1	68	73	6	0.00	0.01	0.07	0.18	0.28	0.29	0.09	0.05	0.02	0.01	Yes	Yes
70	Surv gen next 12m - Surveys	0	1	1	68	73	13	0.01	0.01	0.05	0.20	0.25	0.32	0.10	0.05	0.01	0.01	-	-
71	Surv price last 12m - Surveys	0	1	1	87	69	103	0.00	0.00	0.06	0.20	0.22	0.27	0.16	0.08	0.01	0.00	-	-
72	Surv price next 12m - Surveys	0	1	1	70	88	83	0.00	0.01	0.03	0.17	0.29	0.34	0.10	0.06	0.00	0.00	Yes	Yes
73	Surv URX next 12m - Surveys	0	1	1	68	70	2	0.02	0.01	0.04	0.14	0.28	0.28	0.17	0.08	0.00	0.00	Yes	-
74	Surv Buil conf - Surveys	0	1	1	77	76	68	0.00	0.00	0.07	0.20	0.20	0.33	0.10	0.06	0.02	0.01	-	-
75	urv prod rec months - Surveys	0	1	1	76	28	46	0.00	0.00	0.02	0.19	0.27	0.31	0.14	0.07	0.00	0.00	Yes	Yes
76	Surv orders - Surveys	0	1	1	74	78	58	0.00	0.00	0.03	0.16	0.32	0.26	0.17	0.06	0.01	0.00	Yes	-
77	Surv exp emp - Surveys	0	1	1	74	78	53	0.00	0.00	0.09	0.17	0.26	0.28	0.13	0.05	0.01	0.01	-	-
78	Surv exp price - Surveys	0	1	1	24	20	8	0.00	0.01	0.06	0.24	0.22	0.21	0.14	0.09	0.04	0.00	Yes	-
79	Surv Ret conf - Surveys	0	1	1	80	81	61	0.00	0.02	0.07	0.16	0.39	0.21	0.10	0.04	0.01	0.01	-	-
80	Surv ret current - Surveys	0	1	1	79	27	64	0.00	0.00	0.09	0.12	0.34	0.28	0.11	0.04	0.01	0.01	-	-
81	Surv ret stocks - Surveys	0	1	1	79	13	44	0.00	0.02	0.03	0.07	0.24	0.38	0.18	0.07	0.01	0.00	-	-
82	Surv ret exp busi - Surveys	0	1	1	79	36	84	0.00	0.00	0.03	0.14	0.33	0.38	0.11	0.01	0.01	0.00	Yes	Yes
83	Surv ret exp emp - Surveys	0	1	1	57	33	105	0.00	0.00	0.02	0.17	0.27	0.34	0.17	0.02	0.01	0.00	Yes	-
84	IP new cars - Ind. Prod.	1	1	1	59	23	82	0.00	0.00	0.06	0.15	0.27	0.19	0.22	0.10	0.02	0.00	-	-
85	URX Labour	0	1	1	98	56	92	0.00	0.00	0.06	0.12	0.30	0.29	0.20	0.03	0.00	0.00	Yes	Yes
86	Empl cnstr - Labour	0	1	1	89	9	4	0.00	0.02	0.05	0.17	0.23	0.32	0.15	0.06	0.01	0.00	-	-
87	Empl manuf - Labour	0	1	1	89	88	17	0.00	0.03	0.17	0.17	0.22	0.16	0.16	0.06	0.02	0.02	-	-
88	Empl total - Labour	1	1	1	87	89	18	0.00	0.00	0.16	0.21	0.18	0.28	0.09	0.06	0.00	0.02	Yes	-
89	Empl tot xc - Labour	1	1	1	87	88	38	0.00	0.04	0.16	0.22	0.17	0.16	0.17	0.06	0.02	0.02	-	-
90	Euro500 - FX	1	1	1	91	92	59	0.00	0.00	0.03	0.18	0.27	0.25	0.15	0.07	0.03	0.03	-	-
91	Euro325 - FX	1	1	1	90	92	109	0.00	0.01	0.03	0.17	0.28	0.23	0.17	0.06	0.03	0.03	-	-
92	SP500 - FX	1	1	1	93	90	85	0.00	0.01	0.04	0.13	0.30	0.31	0.13	0.01	0.05	0.03	-	-
93	DowJ - FX	1	1	1	92	90	98	0.00	0.00	0.02	0.14	0.30	0.36	0.10	0.01	0.04	0.04	-	-
94	r3-m - FX	0	1	1	96	97	16	0.00	0.01	0.06	0.17	0.31	0.29	0.13	0.04	0.00	0.00	Yes	Yes
95	r10-year - FX	0	1	1	105	109	77	0.00	0.01	0.04	0.16	0.25	0.27	0.19	0.06	0.02	0.01	Yes	-
96	M2_US - Intl.	1	1	1	94	92	3	0.00	0.03	0.13	0.13	0.27	0.26	0.16	0.03	0.01	0.00	-	-
97	URX_US - Intl.	0	1	1	98	105	85	0.00	0.01	0.04	0.16	0.20	0.33	0.19	0.07	0.00	0.00	-	-
98	IP_US - Intl.	1	1	1	12	97	93	0.00	0.02	0.06	0.17	0.25	0.31	0.17	0.03	0.00	0.00	-	-
99	Empl_US - Intl.	1	1	1	31	51	68	0.00	0.00	0.04	0.15	0.42	0.21	0.14	0.05	0.00	0.00	Yes	Yes
100	CPI_US - Intl.	1	1	1	101	108	40	0.00	0.02	0.05	0.15	0.26	0.31	0.17	0.04	0.00	0.01	-	-
101	PPI_US - Intl.	1	1	1	100	25	85	0.00	0.00	0.06	0.18	0.22	0.22	0.24	0.06	0.00	0.01	-	-
102	retail_US - Intl.	0	1	1	71	60	5	0.00	0.00	0.06	0.11	0.35	0.22	0.19	0.06	0.00	0.00	Yes	Yes
103	m exp_US - Intl.	0	1	1	41	31	40	0.00	0.00	0.01	0.15	0.30	0.37	0.17	0.00	0.00	0.00	-	-
104	c exp_US - Intl.	0	1	1	6	5	3	0.00	0.00	0.04	0.14	0.21	0.29	0.20	0.09	0.03	0.00	Yes	-
105	10-year - FX	0	1	1	109	108	8	0.00	0.01	0.07	0.14	0.26	0.28	0.15	0.06	0.00	0.04	-	-
106	3-mon - FX	0	1	1	4	64	37	0.00	0.00	0.03	0.19	0.32	0.27	0.11	0.07	0.01	0.00	-	-
107	1-year - FX	0	1	1	108	109	37	0.00	0.01	0.10	0.13	0.26	0.27	0.12	0.08	0.01	0.03	-	-
108	2-year - FX	0	1	1	107	109	7	0.00	0.01	0.13	0.15	0.20	0.25	0.14	0.08	0.02	0.03	-	-
109	5-year - FX	0	1	1	105	108	91	0.00	0.02	0.09	0.09	0.27	0.30	0.11	0.08	0.01	0.03	-	-

Table A.4

Italy

Series		Transformation			Correlations with other series													Retained in data set	
Number	Description - Group	Logs	Diffs	MA	1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Rule 1	Rule 2
1	M1 - Money	1	1	1	2	101	92	0.00	0.00	0.00	0.14	0.29	0.29	0.19	0.08	0.00	0.01	-	-
2	M2 - Money	1	1	1	1	3	21	0.00	0.00	0.06	0.18	0.18	0.23	0.23	0.07	0.04	0.02	-	-
3	M3 - Money	1	1	1	2	59	103	0.00	0.01	0.02	0.13	0.29	0.32	0.14	0.06	0.02	0.01	Yes	-
4	Loans - Money	1	1	1	105	42	63	0.00	0.00	0.03	0.19	0.29	0.37	0.10	0.01	0.01	0.00	-	-
5	EER - Intl.	1	1	1	6	7	96	0.00	0.04	0.00	0.13	0.20	0.27	0.19	0.09	0.05	0.03	-	-
6	EER_CPI - Intl.	1	1	1	7	5	9	0.00	0.03	0.02	0.12	0.21	0.27	0.21	0.06	0.05	0.03	-	-
7	EER_PPI - Intl.	1	1	1	6	5	94	0.00	0.02	0.02	0.10	0.25	0.27	0.22	0.06	0.03	0.03	-	-
8	USD - FX	1	1	1	5	7	46	0.00	0.00	0.06	0.12	0.19	0.32	0.16	0.10	0.02	0.03	Yes	-
9	GBP - FX	1	1	1	76	53	6	0.01	0.02	0.05	0.20	0.25	0.28	0.14	0.05	0.01	0.00	Yes	-
10	YEN - FX	1	1	1	6	7	33	0.00	0.00	0.03	0.10	0.26	0.32	0.21	0.05	0.03	0.00	Yes	Yes
11	raw mat prices - FX	1	1	1	13	15	9	0.00	0.04	0.07	0.23	0.31	0.18	0.11	0.03	0.01	0.02	-	-
12	raw_xoil - FX	1	1	1	87	86	25	0.01	0.02	0.04	0.22	0.33	0.26	0.06	0.04	0.02	0.00	Yes	-
13	oil - FX	1	1	1	15	11	52	0.00	0.01	0.04	0.22	0.31	0.23	0.13	0.03	0.01	0.02	-	-
14	gold - FX	1	1	1	2	87	13	0.00	0.00	0.03	0.12	0.31	0.32	0.19	0.02	0.01	0.00	Yes	Yes
15	oil 1m fwd - FX	1	1	1	13	11	10	0.00	0.01	0.04	0.21	0.31	0.29	0.09	0.03	0.00	0.02	-	-
16	Trade Intra12 X - Intl.	1	1	1	18	83	69	0.00	0.05	0.09	0.14	0.23	0.21	0.19	0.03	0.05	0.01	-	-
17	Trade Extra12 X - Intl.	1	1	1	75	101	47	0.00	0.00	0.06	0.19	0.22	0.33	0.16	0.01	0.03	0.00	-	-
18	Trade Intra12 M - Intl.	1	1	1	16	101	1	0.00	0.01	0.10	0.16	0.26	0.19	0.19	0.07	0.00	0.01	-	-
19	Trade Extra12 M - Intl.	1	1	1	17	16	61	0.00	0.00	0.05	0.20	0.23	0.21	0.21	0.06	0.04	0.00	-	-
20	total - HICP	1	2	12	47	24	84	0.01	0.00	0.07	0.20	0.26	0.25	0.13	0.05	0.02	0.01	-	-
21	x e&f - HICP	1	2	12	79	20	2	0.00	0.01	0.10	0.19	0.26	0.25	0.14	0.04	0.01	0.00	Yes	-
22	svc - HICP	1	2	12	27	73	66	0.00	0.00	0.06	0.22	0.29	0.24	0.16	0.04	0.00	0.00	Yes	Yes
23	energy - HICP	1	2	12	51	67	43	0.00	0.02	0.12	0.13	0.19	0.24	0.15	0.09	0.06	0.00	Yes	-
24	goods - HICP	1	2	12	47	20	27	0.01	0.00	0.09	0.20	0.20	0.29	0.10	0.07	0.02	0.01	Yes	-
25	food - HICP	1	2	12	53	16	105	0.00	0.01	0.08	0.23	0.22	0.28	0.12	0.05	0.01	0.00	-	-
26	bv&tb - HICP	1	2	12	65	50	83	0.00	0.01	0.08	0.12	0.25	0.30	0.18	0.06	0.01	0.00	-	-
27	retail vol - Ind. Prod.	1	1	1	30	38	24	0.00	0.02	0.06	0.18	0.23	0.23	0.17	0.10	0.01	0.00	-	-
28	total - Ind. Prod.	1	1	1	88	36	47	0.00	0.00	0.06	0.21	0.20	0.31	0.18	0.03	0.01	0.00	-	-
29	xc - Ind. Prod.	1	1	1	30	9	10	0.00	0.00	0.09	0.12	0.28	0.27	0.16	0.06	0.03	0.00	Yes	Yes
30	manuf - Ind. Prod.	1	1	1	32	29	105	0.00	0.01	0.06	0.19	0.30	0.20	0.12	0.10	0.01	0.01	-	-
31	constr - Ind. Prod.	1	1	1	50	32	24	0.00	0.02	0.10	0.09	0.22	0.31	0.18	0.07	0.00	0.00	-	-
32	xce - Ind. Prod.	1	1	1	30	31	82	0.00	0.01	0.05	0.15	0.35	0.22	0.13	0.08	0.00	0.01	-	-
33	energy - Ind. Prod.	1	1	1	87	88	48	0.00	0.00	0.07	0.24	0.21	0.26	0.18	0.04	0.00	0.00	Yes	Yes
34	capital - Ind. Prod.	1	1	1	42	103	86	0.00	0.00	0.05	0.17	0.30	0.27	0.16	0.06	0.00	0.01	-	-
35	D cons - Ind. Prod.	1	1	1	84	27	23	0.00	0.00	0.06	0.19	0.30	0.28	0.14	0.03	0.00	0.00	-	-
36	energy - Ind. Prod.	1	1	1	29	100	77	0.00	0.00	0.06	0.19	0.26	0.22	0.20	0.06	0.01	0.00	-	-
37	IM goods - Ind. Prod.	1	1	1	27	83	14	0.00	0.00	0.06	0.14	0.32	0.31	0.08	0.09	0.00	0.00	Yes	Yes
38	ND cons - Ind. Prod.	1	1	1	27	106	61	0.00	0.01	0.07	0.12	0.26	0.35	0.13	0.06	0.00	0.00	Yes	-
39	metals - Ind. Prod.	1	1	1	94	77	24	0.00	0.02	0.08	0.15	0.23	0.23	0.22	0.05	0.02	0.00	-	-
40	chemicals - Ind. Prod.	1	1	1	42	20	100	0.00	0.00	0.07	0.18	0.32	0.22	0.15	0.06	0.00	0.00	Yes	Yes
41	electric - Ind. Prod.	1	1	1	77	69	1	0.00	0.00	0.04	0.26	0.26	0.23	0.17	0.04	0.01	0.00	Yes	Yes
42	machinery - Ind. Prod.	1	1	1	34	4	52	0.00	0.00	0.08	0.17	0.24	0.31	0.16	0.03	0.00	0.01	-	-
43	paper - Ind. Prod.	1	1	1	27	87	23	0.00	0.00	0.01	0.17	0.30	0.34	0.15	0.04	0.00	0.00	Yes	Yes
44	plastic - Ind. Prod.	1	1	1	11	15	81	0.00	0.03	0.07	0.09	0.28	0.32	0.13	0.06	0.01	0.00	Yes	-
45	manuf - PPI	1	2	12	51	59	55	0.00	0.01	0.08	0.15	0.22	0.23	0.18	0.11	0.01	0.01	-	-
46	construction - PPI	1	2	12	47	101	8	0.00	0.02	0.12	0.18	0.17	0.31	0.13	0.06	0.02	0.01	-	-
47	xce - PPI	1	2	12	20	53	17	0.03	0.03	0.08	0.18	0.19	0.25	0.14	0.07	0.02	0.02	-	-
48	energy - PPI	1	2	12	46	69	35	0.00	0.00	0.10	0.11	0.27	0.30	0.18	0.03	0.02	0.00	Yes	-
49	capital - PPI	1	2	12	54	101	17	0.00	0.03	0.06	0.14	0.29	0.31	0.16	0.02	0.01	0.00	-	-
50	D cons - PPI	1	2	12	31	26	47	0.00	0.02	0.05	0.25	0.27	0.20	0.16	0.06	0.00	0.00	-	-
51	energy - PPI	1	2	12	45	23	9	0.00	0.02	0.06	0.16	0.25	0.20	0.16	0.10	0.04	0.01	-	-
52	ND cons - PPI	1	2	12	101	53	42	0.00	0.01	0.05	0.19	0.31	0.33	0.09	0.02	0.00	0.00	Yes	Yes
53	metals - PPI	1	2	12	47	25	48	0.00	0.02	0.10	0.18	0.19	0.21	0.21	0.06	0.01	0.01	-	-
54	chemicals - PPI	1	2	12	58	47	84	0.00	0.01	0.10	0.18	0.23	0.21	0.19	0.04	0.03	0.01	Yes	-
55	electric - PPI	1	2	12	59	20	45	0.00	0.00	0.08	0.19	0.25	0.31	0.13	0.03	0.00	0.00	Yes	Yes
56	machinery - PPI	1	2	12	49	101	103	0.00	0.00	0.06	0.19	0.23	0.35	0.14	0.03	0.01	0.00	-	-
57	paper - PPI	1	2	12	58	99	7	0.00	0.02	0.07	0.15	0.26	0.24	0.17	0.07	0.01	0.01	-	-
58	plastic - PPI	1	2	12	57	54	84	0.00	0.00	0.06	0.19	0.20	0.34	0.12	0.06	0.00	0.02	-	-
59	confidence - Surveys	0	1	1	64	61	83	0.00	0.02	0.07	0.17	0.27	0.21	0.15	0.06	0.04	0.02	-	-
60	prod rec m - Surveys	0	1	1	61	45	95	0.00	0.00	0.05	0.16	0.22	0.36	0.17	0.04	0.00	0.01	Yes	-
61	Orders - Surveys	0	1	1	59	60	38	0.00	0.01	0.06	0.11	0.31	0.26	0.13	0.07	0.02	0.03	-	-
62	X orders - Surveys	0	1	1	61	59	72	0.00	0.00	0.04	0.21	0.29	0.27	0.12	0.05	0.02	0.01	Yes	Yes
63	stocks - Surveys	0	1	1	59	20	83	0.00	0.01	0.06	0.14	0.21	0.34	0.19	0.06	0.00	0.00	Yes	Yes
64	exp prod - Surveys	0	1	1	59	2	70	0.00	0.00	0.05	0.19	0.27	0.23	0.17	0.08	0.00	0.01	-	-
65	exp price - Surveys	0	1	1	26	62	92	0.00	0.00	0.09	0.17	0.24	0.31	0.10	0.07	0.01	0.00	-	-
66	exp emp - Surveys	0	1	1	36	97	22	0.00	0.00	0.04	0.18	0.25	0.33	0.15	0.06	0.00	0.00	Yes	-
67	confidence - Surveys	0	1	1	72	69	62	0.01	0.04	0.10	0.12	0.24	0.27	0.11	0.09	0.01	0.01	-	-
68	gen last 12m - Surveys	0	1	1	27	95	102	0.00	0.00	0.13	0.11	0.23	0.23	0.18	0.12	0.00	0.00	Yes	Yes
69	gen next 12m - Surveys	0	1	1	67	72	16	0.01	0.06	0.10	0.12	0.21	0.24	0.16	0.07	0.02	0.01	-	-
70	price last 12m - Surveys	0	1	1	87	86	64	0.00	0.01	0.05	0.15	0.27	0.34	0.17	0.02	0.00	0.00	Yes	Yes
71	price next 12m - Surveys	0	1	1	69	100	75	0.00	0.02	0.03	0.21	0.29	0.28	0.11	0.06	0.00	0.00	Yes	Yes
72	URX next 12m - Surveys	0	1	1	67	69	62	0.02	0.01	0.10	0.13	0.23	0.25	0.15	0.08	0.03	0.00	-	-
73	confidence - Surveys	0	1	1	76	75	24	0.00	0.01	0.06	0.19	0.21	0.28	0.16	0.08	0.00	0.02	-	-
74	prod rec months - Surveys	0	1	1	39	9	69	0.00	0.00	0.08	0.13	0.28	0.29	0.16	0.06	0.01	0.00	Yes	Yes
75	Orders - Surveys	0	1	1	73	17	71	0.00	0.00	0.09	0.15	0.19	0.30	0.19	0.06	0.01	0.01	Yes	-
76	exp emp - Surveys	0	1	1	73	9	89	0.01	0.00	0.05	0.16	0.34	0.21	0.18	0.05	0.00	0.01	-	-
77	exp price - Surveys	0	1	1	39	41	97	0.00	0.01	0.09	0.12	0.27	0.34	0.11	0.05	0.01	0.00	-	-
78	confidence - Surveys	0	1	1	79	81	5	0.00	0.02	0.05	0.09	0.32	0.30	0.19	0.02	0.01	0.01	-	-
79	current - Surveys	0	1	1	78	21	108	0.00	0.01	0.06	0.13	0.29	0.35	0.11	0.05	0.00	0.01	-	-
80	stocks - Surveys	0	1	1	49	78	42	0.00	0.02	0.04	0.24	0.18	0.29	0.18	0.06	0.00	0.00	Yes	Yes
81	exp busi - Surveys	0	1	1	78	93	44	0.00	0.00	0.02	0.18	0.29	0.31	0.16	0.05	0.01	0.00	Yes	-
82	exp emp - Surveys	0	1	1	101	54	32	0.00	0.00	0.01	0.23	0.33	0.26	0.12	0.03	0.02	0.00	Yes	-
83	new cars - Ind. Prod.	1	1	1	16	34	63	0.00	0.01	0.04	0.21	0.20	0.31	0.19	0.04	0.00	0.00	Yes	-
84	URX - Labour	0	1	1	35	88	20	0.00	0.00	0.06	0.14	0.23	0.39	0.14	0.05	0.00	0.00	-	-
85	cnstr - Labour	0	1	1	101	17	57	0.00	0.00	0.07	0.17	0.22	0.27	0.19	0.08	0.00	0.00	Yes	Yes
86	manuf - Labour	0	1	1	87	95	34	0.00	0.01	0.09	0.18	0.21	0.27	0.17	0.06	0.01	0.01	-	-
87	total - Labour	1	1	1	86	12	16	0.01	0.04	0.10	0.18	0.18	0.16	0.20	0.12	0.01	0.01	-	-
88	tot xc - Labour	1	1	1	28	16	38	0.00	0.02	0.12	0.19	0.19	0.19	0.19	0.09	0.02	0.00	-	-
89	Euro500 - FX	1	1	1	90	91	76	0.00	0.01	0.05	0.12	0.24	0.28	0.15	0.10	0.04	0.02	-	-
90	Euro325 - FX	1	1	1	89	91	47	0.00	0.01	0.04	0.18	0.19	0.24	0.19	0.09	0.05	0.02	-	-
91	SP500 - FX	0	1	1	92	89	88	0.00	0.02	0.06	0.08	0.28	0.28	0.17	0.06	0.04	0.03	-	-
92	DowJ - FX	0	1	1	91	69	65	0.00	0.01	0.06	0.16	0.29	0.25	0.12	0.08	0.03	0.01	-	-
93	r3-m - FX	0	1	1	98	51	54	0.00	0.01	0.06	0.16	0.25	0.26	0.16	0.08	0.02	0.00	-	-
94	r10-year - FX	0	1	1	39	105	7	0.00	0.00	0.06	0.17	0.27	0.34	0.09	0.06	0.01	0.00	-	-
95	M2_US - Intl.	1	1	1	86	87	60	0.00	0.00	0.03	0.21	0.32	0.18	0.21	0.03	0.02	0.00	Yes	-
96	URX_US - Intl.	0	1	1	93	59	5	0.00	0.02	0.05	0.17	0.22	0.27	0.18	0.09	0.01	0.00	Yes	-
97	IP_US - Intl.	1	1	1	105	59	106	0.00	0.00	0.06	0.19	0.22	0.33	0.15	0.05	0.00	0.00	Yes	Yes
98	Empl_US - Intl.	1	1	1	93	96	34	0.00	0.00	0.03	0.24	0.30	0.21	0.15	0.06	0.01	0.00	-	-
99	CPI_US - Intl.	1	1	1	100	57	40	0.00	0.03	0.11	0.11	0.22	0.24	0.21	0.06	0.01	0.01	-	-
100	PPI_US - Intl.	1	1	1	99	57	74	0.00	0.04	0.08	0.16	0.17	0.23	0.19	0.10	0.02	0.01	-	-
101	retail_US - Intl.	0	1	1	47	82	86	0.01	0.05	0.16	0.12	0.19	0.08	0.20	0.13	0.06	0.00	-	-
102	m exp_US - Intl.	0	1	1	101	13	68	0.00	0.01	0.06	0.15	0.18	0.35	0.21	0.03	0.01	0.00	Yes	Yes
103	c exp_US - Intl.	0	1	1	78	72	56	0.00	0.01	0.07	0.11	0.27	0.31	0.14	0.07	0.01	0.00	Yes	Yes
104	10-year - FX	0	1	1	108	107	55	0.00	0.04	0.15	0.10	0.30	0.24	0.13	0.02	0.00	0.03	-	-
105	3-mon - FX	0	1	1	4	39	25	0.00	0.01	0.10	0.19	0.24	0.27	0.11	0.07	0.01	0.00	-	-
106	1-year - FX	0	1	1	107	108	97	0.00	0.07	0.08	0.19	0.24	0.16	0.14	0.07	0.01	0.03	-	-
107	2-year - FX	0	1	1	106	108	28	0.00	0.06	0.15	0.14	0.19	0.23	0.14	0.06	0.01	0.03	-	-
108	5-year - FX	0	1	1	104	107	79	0.00	0.06	0.13	0.13	0.25	0.25	0.09	0.06	0.00	0.03	-	-

Table A.5

Netherlands

Series Number	Description - Group	Transformation Logs	Diffs	MA	Correlations with other series 1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Retained in data set Rule 1	Rule 2
1	M1 - Money	1	1	1	2	34	85	0.00	0.00	0.00	0.14	0.30	0.26	0.21	0.09	0.00	0.01	-	-
2	M2 - Money	1	1	1	1	3	25	0.00	0.00	0.01	0.16	0.28	0.17	0.22	0.14	0.01	0.01	-	-
3	M3 - Money	1	1	1	2	43	105	0.00	0.00	0.03	0.14	0.26	0.29	0.19	0.09	0.01	0.00	Yes	-
4	Loans - Money	1	1	1	106	105	94	0.00	0.00	0.02	0.16	0.32	0.34	0.10	0.03	0.03	0.00	Yes	-
5	EER - Intl.	1	1	1	6	7	4	0.00	0.00	0.02	0.17	0.18	0.22	0.30	0.07	0.01	0.04	-	-
6	EER_CPI - Intl.	1	1	1	5	7	104	0.00	0.00	0.03	0.14	0.20	0.24	0.25	0.10	0.01	0.04	-	-
7	EER_PPI - Intl.	1	1	1	6	5	102	0.00	0.00	0.05	0.11	0.22	0.23	0.28	0.06	0.01	0.04	Yes	-
8	USD - FX	1	1	1	5	7	17	0.00	0.00	0.03	0.14	0.16	0.29	0.26	0.08	0.01	0.03	Yes	-
9	GBP - FX	1	1	1	103	60	54	0.00	0.00	0.03	0.13	0.27	0.36	0.21	0.01	0.00	0.00	Yes	Yes
10	YEN - FX	1	1	1	6	5	69	0.00	0.00	0.02	0.16	0.28	0.26	0.19	0.06	0.00	0.03	Yes	Yes
11	raw mat prices - FX	1	1	1	13	15	73	0.00	0.02	0.07	0.34	0.23	0.19	0.12	0.01	0.01	0.02	-	-
12	raw_xoil - FX	1	1	1	11	8	87	0.00	0.00	0.09	0.25	0.32	0.25	0.06	0.01	0.01	0.00	Yes	Yes
13	oil - FX	1	1	1	15	11	92	0.00	0.00	0.06	0.21	0.31	0.22	0.14	0.05	0.00	0.02	-	-
14	gold - FX	1	1	1	30	2	83	0.00	0.00	0.00	0.12	0.27	0.41	0.14	0.06	0.00	0.00	Yes	-
15	oil 1m fwd - FX	1	1	1	13	11	82	0.00	0.00	0.06	0.23	0.23	0.28	0.17	0.01	0.00	0.02	-	-
16	Trade Intra12 X - Intl.	1	1	1	18	96	72	0.00	0.01	0.07	0.11	0.27	0.21	0.23	0.09	0.00	0.01	-	-
17	Trade Extra12 X - Intl.	1	1	1	101	19	71	0.00	0.00	0.03	0.24	0.33	0.26	0.08	0.05	0.00	0.00	Yes	-
18	Trade Intra12 M - Intl.	1	1	1	16	33	67	0.00	0.04	0.02	0.20	0.18	0.27	0.18	0.11	0.00	0.01	-	-
19	Trade Extra12 M - Intl.	1	1	1	17	12	105	0.00	0.00	0.05	0.13	0.33	0.24	0.15	0.10	0.00	0.00	-	-
20	total - HICP	1	2	12	24	23	79	0.00	0.01	0.10	0.15	0.19	0.25	0.18	0.08	0.02	0.02	-	-
21	x e&f - HICP	1	2	12	22	40	68	0.00	0.02	0.08	0.21	0.24	0.24	0.14	0.05	0.01	0.00	-	-
22	svc - HICP	1	2	12	21	40	19	0.00	0.01	0.06	0.18	0.34	0.18	0.15	0.06	0.01	0.00	Yes	-
23	energy - HICP	1	2	12	24	20	98	0.00	0.02	0.05	0.19	0.14	0.30	0.15	0.11	0.03	0.02	Yes	-
24	goods - HICP	1	2	12	20	23	47	0.00	0.01	0.07	0.17	0.22	0.26	0.14	0.09	0.02	0.02	-	-
25	retail vol - Ind. Prod.	1	1	1	38	91	2	0.00	0.00	0.06	0.19	0.24	0.30	0.18	0.02	0.01	0.00	Yes	Yes
26	total - Ind. Prod.	1	1	1	27	31	47	0.00	0.00	0.05	0.18	0.22	0.26	0.16	0.09	0.05	0.00	-	-
27	xc - Ind. Prod.	1	1	1	34	31	37	0.00	0.01	0.03	0.23	0.14	0.24	0.24	0.08	0.03	0.00	-	-
28	manuf - Ind. Prod.	1	1	1	35	30	67	0.00	0.01	0.06	0.16	0.22	0.21	0.29	0.03	0.02	0.01	-	-
29	constr - Ind. Prod.	1	1	1	63	33	72	0.00	0.01	0.06	0.13	0.24	0.28	0.24	0.04	0.00	0.00	-	-
30	xce - Ind. Prod.	1	1	1	35	41	93	0.00	0.02	0.06	0.15	0.22	0.28	0.17	0.05	0.04	0.01	-	-
31	energy - Ind. Prod.	1	1	1	34	67	82	0.00	0.00	0.01	0.18	0.32	0.25	0.16	0.05	0.03	0.01	-	-
32	capital - Ind. Prod.	1	1	1	40	22	97	0.00	0.00	0.07	0.17	0.28	0.23	0.20	0.05	0.01	0.00	-	-
33	D cons - Ind. Prod.	1	1	1	36	18	31	0.00	0.02	0.07	0.17	0.20	0.23	0.20	0.10	0.02	0.00	-	-
34	energy - Ind. Prod.	1	1	1	31	27	56	0.00	0.00	0.02	0.19	0.32	0.23	0.15	0.06	0.03	0.01	-	-
35	IM goods - Ind. Prod.	1	1	1	30	28	99	0.00	0.02	0.09	0.12	0.25	0.23	0.21	0.05	0.03	0.02	-	-
36	ND cons - Ind. Prod.	1	1	1	33	18	57	0.00	0.02	0.01	0.15	0.27	0.27	0.23	0.04	0.01	0.00	Yes	-
37	metals - Ind. Prod.	1	1	1	74	82	80	0.00	0.00	0.03	0.14	0.32	0.31	0.18	0.02	0.00	0.00	Yes	Yes
38	chemicals - Ind. Prod.	1	1	1	35	41	101	0.00	0.00	0.03	0.21	0.34	0.25	0.12	0.01	0.05	0.00	-	-
39	electric - Ind. Prod.	1	1	1	78	77	45	0.00	0.01	0.05	0.14	0.23	0.29	0.25	0.05	0.00	0.00	Yes	-
40	machinery - Ind. Prod.	1	1	1	32	21	79	0.00	0.02	0.05	0.22	0.21	0.29	0.14	0.07	0.01	0.00	-	-
41	paper - Ind. Prod.	1	1	1	30	38	71	0.00	0.01	0.05	0.17	0.23	0.33	0.18	0.00	0.03	0.00	Yes	-
42	plastic - Ind. Prod.	1	1	1	28	20	103	0.00	0.02	0.05	0.17	0.32	0.26	0.14	0.03	0.02	0.00	Yes	Yes
43	manuf - PPI	1	2	12	49	98	84	0.00	0.01	0.08	0.17	0.21	0.21	0.20	0.11	0.01	0.01	-	-
44	construction - PPI	1	2	12	53	45	98	0.00	0.00	0.05	0.24	0.30	0.20	0.11	0.08	0.02	0.00	Yes	-
45	xce - PPI	1	2	12	50	51	39	0.00	0.03	0.14	0.19	0.15	0.28	0.14	0.03	0.01	0.03	-	-
46	energy - PPI	1	2	12	49	43	99	0.00	0.00	0.06	0.12	0.26	0.32	0.14	0.08	0.01	0.01	Yes	-
47	capital - PPI	1	2	12	55	85	58	0.00	0.00	0.04	0.21	0.34	0.28	0.12	0.01	0.01	0.00	-	-
48	D cons - PPI	1	2	12	33	64	41	0.00	0.00	0.05	0.12	0.35	0.32	0.14	0.03	0.00	0.00	-	-
49	energy - PPI	1	2	12	43	46	39	0.00	0.02	0.08	0.17	0.22	0.17	0.22	0.11	0.00	0.02	-	-
50	IM goods - PPI	1	2	12	53	45	61	0.00	0.01	0.11	0.30	0.20	0.19	0.13	0.05	0.01	0.02	-	-
51	ND cons - PPI	1	2	12	45	49	69	0.00	0.02	0.05	0.12	0.25	0.33	0.20	0.02	0.00	0.01	Yes	-
52	metals - PPI	1	2	12	29	99	111	0.00	0.00	0.07	0.20	0.31	0.31	0.11	0.01	0.00	0.00	Yes	Yes
53	chemicals - PPI	1	2	12	50	45	77	0.00	0.01	0.09	0.29	0.18	0.24	0.10	0.05	0.02	0.02	-	-
54	electric - PPI	1	2	12	18	53	9	0.00	0.00	0.04	0.13	0.41	0.25	0.13	0.05	0.00	0.00	Yes	Yes
55	machinery - PPI	1	2	12	47	96	67	0.00	0.00	0.04	0.17	0.32	0.28	0.10	0.08	0.01	0.00	-	-
56	paper - PPI	1	2	12	57	84	34	0.00	0.00	0.05	0.24	0.28	0.29	0.13	0.01	0.01	0.00	-	-
57	plastic - PPI	1	2	12	56	92	36	0.00	0.00	0.05	0.26	0.32	0.17	0.15	0.02	0.03	0.00	-	-
58	confidence - Surveys	0	1	1	63	60	66	0.00	0.04	0.07	0.20	0.23	0.30	0.09	0.05	0.03	0.01	-	-
59	prod rec m - Surveys	0	1	1	81	102	29	0.00	0.01	0.06	0.18	0.27	0.24	0.19	0.05	0.00	0.00	-	-
60	Orders - Surveys	0	1	1	61	58	71	0.00	0.00	0.09	0.16	0.29	0.18	0.17	0.08	0.02	0.01	-	-
61	Surv X orders - Surveys	0	1	1	60	58	50	0.00	0.00	0.05	0.20	0.30	0.26	0.10	0.07	0.01	0.01	-	-
62	Surv ret stocks - Surveys	0	1	1	26	58	40	0.00	0.01	0.02	0.15	0.24	0.35	0.16	0.05	0.01	0.00	Yes	Yes
63	Surv exp prod - Surveys	0	1	1	58	29	70	0.00	0.01	0.04	0.23	0.32	0.19	0.16	0.04	0.00	0.01	-	-
64	Surv exp price - Surveys	0	1	1	48	39	90	0.00	0.00	0.05	0.23	0.25	0.29	0.17	0.02	0.00	0.00	Yes	-
65	Surv Bus exp emp - Surveys	0	1	1	55	108	111	0.00	0.00	0.02	0.21	0.23	0.34	0.18	0.03	0.00	0.00	Yes	Yes
66	Surv Con conf - Surveys	0	1	1	68	71	58	0.01	0.02	0.07	0.19	0.24	0.24	0.14	0.07	0.01	0.01	-	-
67	Surv gen last 12m - Surveys	0	1	1	31	66	55	0.00	0.01	0.05	0.13	0.26	0.32	0.13	0.06	0.04	0.00	Yes	-
68	Surv gen next 12m - Surveys	0	1	1	66	67	108	0.00	0.00	0.05	0.18	0.31	0.30	0.12	0.03	0.01	0.01	-	-
69	Surv price last 12m - Surveys	0	1	1	26	58	10	0.00	0.00	0.06	0.22	0.28	0.27	0.14	0.03	0.00	0.00	Yes	Yes
70	Surv price next 12m - Surveys	0	1	1	33	38	71	0.00	0.00	0.05	0.13	0.31	0.22	0.18	0.13	0.00	0.00	Yes	Yes
71	Surv URX next 12m - Surveys	0	1	1	66	67	41	0.01	0.01	0.04	0.23	0.30	0.19	0.18	0.05	0.00	0.00	Yes	-
72	Surv Buil conf - Surveys	0	1	1	74	75	29	0.00	0.00	0.02	0.13	0.32	0.28	0.17	0.06	0.00	0.02	-	-
73	urv prod rec months - Surveys	0	1	1	18	33	12	0.00	0.01	0.05	0.23	0.37	0.17	0.13	0.05	0.00	0.00	Yes	Yes
74	Surv orders - Surveys	0	1	1	72	83	89	0.00	0.00	0.01	0.21	0.29	0.29	0.13	0.07	0.00	0.01	-	-
75	Surv exp emp - Surveys	0	1	1	72	95	40	0.00	0.00	0.04	0.16	0.22	0.32	0.20	0.06	0.00	0.01	-	-
76	Surv exp price - Surveys	0	1	1	96	27	12	0.00	0.02	0.02	0.08	0.38	0.29	0.21	0.01	0.00	0.00	-	-
77	Surv Ret conf - Surveys	0	1	1	78	80	53	0.01	0.01	0.05	0.16	0.35	0.31	0.07	0.03	0.00	0.02	-	-
78	Surv ret current - Surveys	0	1	1	77	80	75	0.00	0.04	0.05	0.13	0.42	0.21	0.12	0.03	0.01	0.01	-	-
79	Surv ret stocks - Surveys	0	1	1	77	80	40	0.02	0.01	0.05	0.18	0.22	0.31	0.19	0.04	0.00	0.00	Yes	-
80	Surv ret exp busi - Surveys	0	1	1	77	79	87	0.01	0.00	0.04	0.15	0.36	0.23	0.14	0.05	0.01	0.01	Yes	-
81	Surv ret exp emp - Surveys	0	1	1	59	100	98	0.00	0.01	0.04	0.20	0.26	0.32	0.16	0.01	0.00	0.00	Yes	-
82	IP new cars - Ind. Prod.	1	1	1	33	50	15	0.00	0.01	0.09	0.14	0.23	0.23	0.23	0.06	0.00	0.00	-	-
83	URX Labour	0	1	1	74	55	14	0.00	0.00	0.09	0.14	0.23	0.32	0.16	0.05	0.00	0.00	Yes	-
84	Empl cnstr - Labour	0	1	1	86	87	110	0.00	0.00	0.06	0.16	0.30	0.23	0.15	0.07	0.02	0.00	Yes	-
85	Empl manuf - Labour	0	1	1	86	45	106	0.00	0.01	0.07	0.14	0.33	0.20	0.16	0.07	0.00	0.01	Yes	-
86	Empl total - Labour	1	1	1	85	87	71	0.00	0.01	0.07	0.18	0.31	0.23	0.16	0.01	0.02	0.01	-	-
87	Empl tot xc - Labour	1	1	1	86	84	12	0.00	0.00	0.08	0.15	0.28	0.31	0.12	0.05	0.02	0.00	-	-
88	Euro500 - FX	1	1	1	89	90	40	0.00	0.03	0.03	0.15	0.23	0.25	0.25	0.03	0.02	0.01	-	-
89	Euro325 - FX	1	1	1	88	78	74	0.00	0.01	0.05	0.14	0.27	0.25	0.22	0.04	0.02	0.01	-	-
90	SP500 - FX	0	1	1	91	88	64	0.00	0.00	0.07	0.09	0.22	0.33	0.23	0.02	0.03	0.01	-	-
91	DowJ - FX	0	1	1	90	88	104	0.00	0.00	0.07	0.13	0.28	0.25	0.20	0.05	0.01	0.01	-	-
92	r3-m - FX	0	1	1	57	97	13	0.00	0.00	0.05	0.16	0.30	0.26	0.20	0.03	0.01	0.00	Yes	Yes
93	r10-year - FX	0	1	1	103	66	30	0.00	0.01	0.05	0.12	0.32	0.25	0.21	0.04	0.01	0.00	-	-
94	M2_US - Intl.	1	1	1	98	84	4	0.00	0.00	0.01	0.17	0.32	0.26	0.19	0.05	0.00	0.00	Yes	Yes
95	URX_US - Intl.	0	1	1	75	16	91	0.00	0.00	0.01	0.11	0.37	0.32	0.17	0.03	0.00	0.00	Yes	Yes
96	IP_US - Intl.	1	1	1	16	76	104	0.00	0.03	0.05	0.14	0.31	0.30	0.14	0.03	0.01	0.00	-	-
97	Empl_US - Intl.	1	1	1	92	107	32	0.00	0.00	0.05	0.18	0.26	0.30	0.16	0.05	0.00	0.00	Yes	Yes
98	CPI_US - Intl.	0	1	1	99	43	81	0.00	0.01	0.06	0.07	0.27	0.25	0.26	0.06	0.00	0.01	-	-
99	PPI_US - Intl.	0	1	1	98	50	35	0.00	0.00	0.05	0.11	0.22	0.33	0.26	0.03	0.00	0.01	-	-
100	retail_US - Intl.	0	1	1	101	27	56	0.00	0.00	0.02	0.10	0.28	0.32	0.24	0.05	0.00	0.00	Yes	Yes
101	m exp_US - Intl.	0	1	1	36	49	38	0.00	0.02	0.11	0.12	0.33	0.24	0.14	0.04	0.00	0.00	-	-
102	c exp_US - Intl.	0	1	1	59	27	7	0.00	0.00	0.07	0.16	0.31	0.21	0.20	0.05	0.00	0.00	-	-
103	10-year - FX	0	1	1	93	60	47	0.00	0.00	0.06	0.22	0.25	0.25	0.17	0.04	0.01	0.00	-	-
104	3-mon - FX	0	1	1	105	106	91	0.00	0.00	0.04	0.22	0.27	0.30	0.11	0.05	0.03	0.00	-	-
105	1-year - FX	0	1	1	106	107	19	0.00	0.00	0.07	0.24	0.24	0.28	0.12	0.01	0.02	0.02	-	-
106	2-year - FX	0	1	1	105	107	85	0.00	0.02	0.07	0.23	0.22	0.27	0.14	0.01	0.02	0.02	-	-
107	5-year - FX	0	1	1	106	105	88	0.00	0.01	0.13	0.23	0.21	0.23	0.15	0.03	0.00	0.02	Yes	-
108	C conf sa CBS - Surveys	0	1	1	109	110	68	0.00	0.01	0.06	0.16	0.24	0.29	0.14	0.06	0.01	0.02	-	-
109	C curr sa CBS - Surveys	0	1	1	108	20	25	0.00	0.00	0.04	0.19	0.28	0.25	0.18	0.04	0.02	0.01	-	-
110	C prop sa CBS - Surveys	0	1	1	108	11	84	0.00	0.01	0.07	0.12	0.30	0.27	0.21	0.02	0.00	0.01	Yes	-
111	I conf sa CBS - Surveys	0	1	1	30	41	77	0.00	0.01	0.07	0.12	0.34	0.27	0.16	0.03	0.00	0.00	-	-

Table A.6

Spain

Series Number	Description - Group	Transformation Logs	Diffs	MA	Correlations with other series 1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Retained in data set Rule 1	Rule 2
1	M1 - Money	1	1	1	2	3	4	0.00	0.00	0.01	0.10	0.26	0.33	0.25	0.05	0.00	0.01	-	-
2	M2 - Money	1	1	1	1	3	78	0.00	0.00	0.03	0.07	0.28	0.29	0.22	0.05	0.04	0.02	-	-
3	M3 - Money	1	1	1	2	107	41	0.00	0.00	0.01	0.12	0.28	0.33	0.16	0.08	0.02	0.01	Yes	-
4	Loans - Money	1	1	1	106	37	53	0.00	0.01	0.06	0.16	0.26	0.26	0.19	0.06	0.01	0.00	-	-
5	EER - Intl.	1	1	1	6	7	54	0.00	0.00	0.04	0.17	0.18	0.29	0.16	0.06	0.07	0.03	Yes	-
6	EER_CPI - Intl.	1	1	1	7	5	54	0.00	0.00	0.06	0.14	0.21	0.26	0.17	0.07	0.06	0.03	-	-
7	EER_PPI - Intl.	1	1	1	6	5	95	0.00	0.00	0.04	0.16	0.21	0.28	0.17	0.05	0.06	0.03	-	-
8	USD - FX	1	1	1	6	5	24	0.00	0.00	0.05	0.15	0.22	0.26	0.21	0.06	0.03	0.04	Yes	-
9	GBP - FX	1	1	1	101	94	68	0.00	0.00	0.06	0.17	0.27	0.25	0.19	0.06	0.01	0.00	Yes	-
10	YEN - FX	1	1	1	6	7	72	0.00	0.00	0.01	0.15	0.30	0.28	0.20	0.00	0.06	0.00	-	-
11	raw mat prices - FX	1	1	1	13	15	97	0.00	0.03	0.07	0.25	0.17	0.24	0.17	0.03	0.03	0.02	Yes	-
12	raw_xoil - FX	1	1	1	92	11	47	0.00	0.01	0.07	0.18	0.28	0.27	0.14	0.04	0.01	0.00	Yes	-
13	oil - FX	1	1	1	15	11	82	0.00	0.02	0.08	0.12	0.21	0.29	0.21	0.05	0.00	0.02	-	-
14	gold - FX	1	1	1	2	107	65	0.00	0.00	0.02	0.15	0.29	0.25	0.24	0.05	0.01	0.00	Yes	Yes
15	oil 1m fwd - FX	1	1	1	13	11	25	0.00	0.02	0.08	0.11	0.17	0.41	0.15	0.03	0.01	0.02	-	-
16	Trade Intra12 X - Intl.	1	1	1	18	80	105	0.00	0.00	0.07	0.19	0.28	0.28	0.11	0.05	0.03	0.00	Yes	-
17	Trade Extra12 X - Intl.	1	1	1	80	16	83	0.00	0.00	0.04	0.20	0.27	0.36	0.09	0.05	0.00	0.00	Yes	Yes
18	Trade Intra12 M - Intl.	1	1	1	32	16	62	0.00	0.01	0.06	0.16	0.24	0.26	0.24	0.04	0.01	0.00	-	-
19	Trade Extra12 M - Intl.	1	1	1	20	40	54	0.00	0.01	0.08	0.17	0.18	0.28	0.17	0.09	0.02	0.00	-	-
20	total - HICP	1	2	12	19	25	91	0.00	0.02	0.06	0.17	0.24	0.23	0.18	0.07	0.03	0.00	-	-
21	x e&f - HICP	1	2	12	22	70	25	0.00	0.01	0.02	0.07	0.40	0.29	0.12	0.06	0.02	0.00	-	-
22	svc - HICP	1	2	12	21	81	101	0.00	0.00	0.05	0.12	0.29	0.29	0.17	0.06	0.01	0.00	-	-
23	energy - HICP	1	2	12	7	6	17	0.00	0.00	0.05	0.10	0.37	0.25	0.14	0.05	0.06	0.00	Yes	Yes
24	goods - HICP	1	2	12	20	25	67	0.00	0.01	0.06	0.16	0.22	0.32	0.16	0.06	0.02	0.00	Yes	Yes
25	food - HICP	1	2	12	53	20	59	0.00	0.00	0.06	0.22	0.27	0.28	0.13	0.02	0.03	0.00	-	-
26	bv&tb - HICP	1	2	12	41	91	85	0.00	0.00	0.04	0.18	0.32	0.28	0.18	0.00	0.00	0.00	Yes	Yes
27	retail vol - Ind. Prod.	1	1	1	107	108	31	0.00	0.00	0.05	0.07	0.31	0.29	0.24	0.04	0.00	0.00	Yes	Yes
28	total - Ind. Prod.	1	1	1	37	64	62	0.00	0.01	0.09	0.17	0.28	0.30	0.10	0.05	0.00	0.00	-	-
29	xc - Ind. Prod.	1	1	1	36	35	21	0.00	0.00	0.04	0.14	0.38	0.24	0.13	0.06	0.03	0.00	-	-
30	manuf - Ind. Prod.	1	1	1	32	37	95	0.00	0.01	0.09	0.23	0.23	0.28	0.07	0.06	0.02	0.01	-	-
31	constr - Ind. Prod.	1	1	1	103	105	27	0.00	0.00	0.03	0.14	0.38	0.34	0.03	0.09	0.00	0.00	-	-
32	xce - Ind. Prod.	1	1	1	30	89	51	0.00	0.03	0.10	0.18	0.16	0.32	0.14	0.06	0.01	0.01	-	-
33	energy - Ind. Prod.	1	1	1	42	34	90	0.00	0.01	0.03	0.15	0.27	0.27	0.24	0.05	0.00	0.00	-	-
34	capital - Ind. Prod.	1	1	1	32	35	56	0.00	0.02	0.13	0.19	0.16	0.25	0.12	0.11	0.03	0.00	Yes	-
35	D cons - Ind. Prod.	1	1	1	29	34	45	0.00	0.00	0.06	0.17	0.24	0.25	0.21	0.06	0.02	0.00	-	-
36	energy - Ind. Prod.	1	1	1	29	11	56	0.00	0.00	0.02	0.12	0.26	0.28	0.23	0.08	0.02	0.00	-	-
37	IM goods - Ind. Prod.	1	1	1	88	89	76	0.01	0.04	0.05	0.22	0.25	0.28	0.08	0.04	0.04	0.00	-	-
38	ND cons - Ind. Prod.	1	1	1	69	59	102	0.00	0.01	0.07	0.15	0.28	0.28	0.12	0.08	0.01	0.00	Yes	-
39	metals - Ind. Prod.	1	1	1	42	80	74	0.00	0.00	0.06	0.23	0.36	0.20	0.13	0.02	0.00	0.00	-	-
40	chemicals - Ind. Prod.	1	1	1	79	19	59	0.00	0.03	0.05	0.19	0.34	0.24	0.12	0.03	0.01	0.00	-	-
41	electric - Ind. Prod.	1	1	1	68	87	3	0.00	0.00	0.06	0.17	0.33	0.29	0.13	0.02	0.00	0.00	-	-
42	machinery - Ind. Prod.	1	1	1	33	34	49	0.00	0.01	0.02	0.18	0.34	0.28	0.13	0.05	0.00	0.00	-	-
43	paper - Ind. Prod.	1	1	1	37	45	42	0.00	0.02	0.10	0.15	0.28	0.21	0.19	0.05	0.01	0.00	Yes	-
44	plastic - Ind. Prod.	1	1	1	40	7	51	0.00	0.00	0.03	0.17	0.36	0.30	0.08	0.05	0.01	0.00	Yes	Yes
45	manuf - PPI	1	2	12	46	47	68	0.00	0.06	0.06	0.16	0.17	0.23	0.25	0.05	0.03	0.01	-	-
46	construction - PPI	1	2	12	45	107	93	0.00	0.05	0.07	0.14	0.21	0.28	0.17	0.06	0.02	0.01	-	-
47	xce - PPI	1	2	12	52	53	12	0.00	0.03	0.15	0.17	0.20	0.22	0.13	0.05	0.06	0.01	Yes	-
48	energy - PPI	1	2	12	51	7	62	0.00	0.01	0.06	0.13	0.24	0.31	0.14	0.06	0.04	0.01	-	-
49	capital - PPI	1	2	12	57	60	42	0.00	0.00	0.06	0.21	0.32	0.21	0.16	0.04	0.01	0.00	-	-
50	D cons - PPI	1	2	12	93	8	41	0.00	0.00	0.03	0.20	0.29	0.25	0.17	0.06	0.00	0.00	Yes	Yes
51	energy - PPI	1	2	12	48	7	44	0.00	0.02	0.04	0.15	0.21	0.29	0.17	0.09	0.03	0.01	-	-
52	IM goods - PPI	1	2	12	54	47	80	0.00	0.02	0.10	0.28	0.21	0.16	0.11	0.05	0.06	0.02	-	-
53	ND cons - PPI	1	2	12	25	47	76	0.00	0.01	0.03	0.17	0.31	0.33	0.08	0.05	0.02	0.00	-	-
54	metals - PPI	1	2	12	52	97	6	0.00	0.00	0.06	0.21	0.28	0.30	0.06	0.06	0.00	0.01	-	-
55	chemicals - PPI	1	2	12	52	47	36	0.00	0.00	0.06	0.23	0.24	0.27	0.16	0.05	0.01	0.00	Yes	Yes
56	electric - PPI	1	2	12	59	43	93	0.00	0.00	0.02	0.17	0.39	0.24	0.11	0.06	0.01	0.00	-	-
57	machinery - PPI	1	2	12	11	15	80	0.00	0.00	0.06	0.26	0.26	0.17	0.17	0.06	0.03	0.00	-	-
58	paper - PPI	1	2	12	52	47	39	0.00	0.01	0.08	0.20	0.31	0.20	0.14	0.04	0.02	0.00	Yes	-
59	plastic - PPI	1	2	12	56	47	40	0.00	0.00	0.09	0.20	0.26	0.23	0.13	0.06	0.03	0.00	-	-
60	confidence - Surveys	0	1	1	62	65	69	0.00	0.03	0.09	0.22	0.25	0.19	0.16	0.04	0.02	0.01	-	-
61	prod rec m - Surveys	0	1	1	62	60	90	0.00	0.00	0.04	0.17	0.37	0.28	0.11	0.02	0.02	0.00	Yes	-
62	Orders - Surveys	0	1	1	60	61	18	0.00	0.00	0.06	0.23	0.34	0.22	0.11	0.02	0.02	0.01	-	-
63	Surv X orders - Surveys	0	1	1	62	102	66	0.00	0.00	0.06	0.21	0.33	0.32	0.06	0.02	0.01	0.00	Yes	-
64	ret stocks - Surveys	0	1	1	28	97	82	0.00	0.00	0.06	0.13	0.22	0.38	0.17	0.05	0.00	0.00	Yes	-
65	exp prod - Surveys	0	1	1	60	78	14	0.00	0.00	0.06	0.20	0.26	0.28	0.13	0.06	0.01	0.00	Yes	Yes
66	exp price - Surveys	0	1	1	54	21	63	0.00	0.00	0.03	0.26	0.38	0.22	0.10	0.02	0.00	0.00	Yes	Yes
67	Bus exp emp - Surveys	0	1	1	10	89	107	0.00	0.00	0.04	0.18	0.27	0.27	0.17	0.06	0.02	0.00	Yes	Yes
68	Con conf - Surveys	0	1	1	70	73	97	0.01	0.00	0.06	0.11	0.22	0.26	0.28	0.05	0.00	0.02	-	-
69	gen last 12m - Surveys	0	1	1	68	70	104	0.00	0.03	0.04	0.14	0.20	0.28	0.24	0.06	0.00	0.02	-	-
70	gen next 12m - Surveys	0	1	1	68	69	84	0.00	0.01	0.04	0.11	0.22	0.35	0.20	0.05	0.01	0.02	-	-
71	price last 12m - Surveys	0	1	1	45	72	90	0.00	0.01	0.10	0.13	0.21	0.34	0.14	0.07	0.00	0.00	-	-
72	price next 12m - Surveys	0	1	1	71	29	10	0.00	0.00	0.05	0.21	0.30	0.34	0.07	0.03	0.00	0.00	Yes	-
73	URX next 12m - Surveys	0	1	1	68	70	43	0.01	0.03	0.11	0.24	0.22	0.20	0.11	0.07	0.01	0.00	Yes	-
74	Buil conf - Surveys	0	1	1	77	76	39	0.00	0.01	0.05	0.17	0.29	0.28	0.12	0.06	0.01	0.01	-	-
75	prod rec months - Surveys	0	1	1	25	106	94	0.00	0.00	0.00	0.20	0.27	0.37	0.16	0.01	0.00	0.00	Yes	Yes
76	orders - Surveys	0	1	1	74	69	53	0.00	0.00	0.07	0.09	0.37	0.30	0.13	0.03	0.01	0.00	Yes	-
77	exp emp - Surveys	0	1	1	74	15	80	0.00	0.00	0.05	0.12	0.32	0.35	0.14	0.02	0.00	0.01	-	-
78	exp price - Surveys	0	1	1	45	65	102	0.00	0.00	0.06	0.13	0.24	0.36	0.17	0.03	0.01	0.00	Yes	Yes
79	Ret conf - Surveys	0	1	1	82	81	9	0.00	0.02	0.04	0.21	0.24	0.27	0.16	0.03	0.04	0.01	-	-
80	ret current - Surveys	0	1	1	79	16	77	0.00	0.01	0.04	0.18	0.34	0.25	0.13	0.04	0.02	0.00	-	-
81	ret stocks - Surveys	0	1	1	79	22	24	0.00	0.01	0.04	0.21	0.27	0.26	0.17	0.05	0.00	0.00	Yes	-
82	ret exp busi - Surveys	0	1	1	79	40	3	0.00	0.00	0.03	0.23	0.24	0.31	0.12	0.06	0.00	0.01	-	-
83	ret exp emp - Surveys	0	1	1	79	80	17	0.00	0.00	0.06	0.19	0.25	0.26	0.16	0.08	0.01	0.00	Yes	Yes
84	new cars - Ind. Prod.	1	1	1	35	39	70	0.00	0.00	0.02	0.19	0.25	0.27	0.20	0.07	0.00	0.00	Yes	-
85	URX Labour	0	1	1	102	2	38	0.00	0.00	0.05	0.21	0.28	0.31	0.12	0.04	0.00	0.00	Yes	Yes
86	Empl cnstr - Labour	0	1	1	88	34	40	0.00	0.01	0.06	0.11	0.22	0.32	0.17	0.10	0.01	0.00	Yes	-
87	Empl manuf - Labour	0	1	1	89	96	53	0.00	0.03	0.06	0.14	0.17	0.30	0.19	0.07	0.02	0.01	-	-
88	Empl total - Labour	1	1	1	37	86	106	0.01	0.00	0.06	0.13	0.29	0.24	0.17	0.06	0.04	0.00	-	-
89	Empl tot xc - Labour	1	1	1	87	96	61	0.00	0.04	0.06	0.12	0.19	0.32	0.16	0.08	0.03	0.01	-	-
90	Euro500 - FX	1	1	1	91	92	61	0.00	0.00	0.03	0.10	0.27	0.28	0.16	0.12	0.04	0.02	-	-
91	Euro325 - FX	1	1	1	90	92	20	0.00	0.00	0.03	0.11	0.27	0.25	0.18	0.08	0.06	0.02	-	-
92	SP500 - FX	1	1	1	93	90	103	0.00	0.01	0.01	0.13	0.20	0.36	0.17	0.03	0.06	0.03	-	-
93	DowJ - FX	1	1	1	92	8	56	0.00	0.00	0.04	0.11	0.23	0.36	0.17	0.02	0.06	0.02	-	-
94	r3-m - FX	0	1	1	99	9	75	0.00	0.00	0.04	0.15	0.34	0.28	0.17	0.02	0.01	0.00	-	-
95	r10-year - FX	0	1	1	105	58	30	0.00	0.01	0.06	0.12	0.28	0.30	0.17	0.05	0.01	0.00	Yes	Yes
96	M2_US - Intl.	1	1	1	89	87	57	0.00	0.00	0.04	0.19	0.23	0.23	0.18	0.08	0.05	0.00	Yes	-
97	URX_US - Intl.	0	1	1	52	94	68	0.00	0.00	0.06	0.10	0.24	0.34	0.23	0.02	0.01	0.00	-	-
98	IP_US - Intl.	1	1	1	97	100	102	0.00	0.00	0.05	0.17	0.35	0.29	0.11	0.03	0.00	0.00	Yes	Yes
99	Empl_US - Intl.	1	1	1	94	38	77	0.00	0.00	0.05	0.14	0.39	0.24	0.15	0.03	0.01	0.00	-	-
100	CPI_US - Intl.	1	1	1	101	15	75	0.00	0.04	0.03	0.17	0.22	0.20	0.23	0.08	0.02	0.01	-	-
101	PPI_US - Intl.	1	1	1	100	9	77	0.00	0.03	0.06	0.12	0.26	0.16	0.25	0.08	0.05	0.01	-	-
102	retail_US - Intl.	0	1	1	2	63	98	0.00	0.00	0.04	0.12	0.31	0.30	0.18	0.05	0.00	0.00	-	-
103	m exp_US - Intl.	0	1	1	31	16	42	0.00	0.00	0.04	0.15	0.27	0.32	0.16	0.07	0.00	0.00	-	-
104	c exp_US - Intl.	0	1	1	30	84	69	0.00	0.00	0.01	0.14	0.30	0.33	0.15	0.07	0.00	0.00	Yes	Yes
105	10-year - FX	0	1	1	108	109	44	0.00	0.02	0.06	0.23	0.23	0.17	0.17	0.07	0.01	0.03	-	-
106	3-mon - FX	0	1	1	4	21	88	0.00	0.01	0.04	0.16	0.28	0.32	0.14	0.05	0.01	0.00	-	-
107	1-year - FX	0	1	1	109	108	67	0.00	0.02	0.06	0.17	0.24	0.20	0.21	0.05	0.02	0.03	-	-
108	2-year - FX	0	1	1	109	105	44	0.00	0.02	0.06	0.21	0.21	0.23	0.17	0.06	0.01	0.03	-	-
109	5-year - FX	0	1	1	108	105	61	0.00	0.01	0.10	0.19	0.17	0.24	0.19	0.06	0.02	0.03	-	-

Table A.7

Euro area

Series		Transformation			Correlations with other series													Retained in data set	
Number	Description - Group	Logs	Diffs	MA	1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Rule 1	Rule 2
1	M1 - Money	1	1	1	2	20	92	0.01	0.00	0.06	0.17	0.24	0.33	0.11	0.08	0.00	0.01	-	-
2	M2 - Money	1	1	1	3	1	69	0.00	0.00	0.06	0.13	0.28	0.31	0.17	0.04	0.00	0.02	-	-
3	M3 - Money	1	1	1	2	25	11	0.00	0.00	0.04	0.10	0.33	0.30	0.16	0.07	0.00	0.01	-	-
4	Loans - Money	1	1	1	100	46	59	0.00	0.00	0.02	0.22	0.29	0.29	0.15	0.03	0.00	0.00	Yes	Yes
5	EER - Intl.	1	1	1	6	7	39	0.00	0.00	0.05	0.13	0.29	0.20	0.14	0.11	0.07	0.02	-	-
6	EER_CPI - Intl.	1	1	1	5	7	34	0.00	0.00	0.06	0.12	0.24	0.27	0.11	0.13	0.06	0.02	-	-
7	EER_PPI - Intl.	1	1	1	6	5	43	0.00	0.00	0.04	0.14	0.27	0.27	0.12	0.09	0.06	0.02	-	-
8	USD - FX	1	1	1	88	7	42	0.00	0.00	0.01	0.20	0.22	0.28	0.17	0.06	0.05	0.00	Yes	-
9	GBP - FX	1	1	1	96	51	100	0.00	0.01	0.04	0.20	0.21	0.30	0.17	0.06	0.01	0.00	Yes	-
10	YEN - FX	1	1	1	7	6	43	0.00	0.00	0.00	0.17	0.26	0.33	0.17	0.01	0.05	0.00	Yes	Yes
11	raw mat prices - FX	1	1	1	13	15	47	0.00	0.01	0.15	0.21	0.17	0.25	0.11	0.04	0.04	0.02	-	-
12	raw_xoil - FX	1	1	1	11	21	6	0.00	0.00	0.05	0.22	0.34	0.24	0.11	0.03	0.01	0.00	Yes	Yes
13	oil - FX	1	1	1	11	15	87	0.00	0.00	0.11	0.17	0.20	0.30	0.15	0.04	0.02	0.02	-	-
14	gold - FX	1	1	1	47	43	92	0.00	0.00	0.00	0.17	0.36	0.27	0.19	0.01	0.00	0.00	Yes	-
15	oil 1m fwd - FX	1	1	1	13	11	57	0.00	0.00	0.08	0.20	0.21	0.31	0.15	0.01	0.02	0.02	Yes	-
16	Trade Intra12 X - Intl.	1	1	1	18	19	79	0.00	0.03	0.09	0.17	0.26	0.16	0.20	0.07	0.02	0.01	-	-
17	Trade Extra12 X - Intl.	1	1	1	19	90	86	0.00	0.00	0.06	0.17	0.30	0.29	0.17	0.01	0.01	0.00	Yes	Yes
18	Trade Intra12 M - Intl.	1	1	1	16	19	91	0.00	0.01	0.04	0.23	0.29	0.27	0.10	0.04	0.01	0.01	-	-
19	Trade Extra12 M - Intl.	1	1	1	18	16	93	0.00	0.00	0.05	0.17	0.30	0.26	0.13	0.06	0.03	0.00	-	-
20	total - HICP	1	2	12	1	22	70	0.01	0.01	0.12	0.10	0.17	0.30	0.24	0.05	0.01	0.00	-	-
21	energy - HICP	1	2	12	45	48	70	0.00	0.00	0.07	0.21	0.21	0.23	0.15	0.10	0.03	0.00	Yes	-
22	food - HICP	1	2	12	50	20	47	0.00	0.00	0.07	0.17	0.32	0.26	0.14	0.02	0.02	0.00	Yes	Yes
23	bv&tb - HICP	1	2	12	89	85	74	0.00	0.01	0.02	0.18	0.28	0.20	0.20	0.09	0.01	0.00	-	-
24	retail vol - Ind. Prod.	1	1	1	45	79	13	0.00	0.00	0.06	0.17	0.28	0.28	0.20	0.01	0.00	0.00	-	-
25	total - Ind. Prod.	1	1	1	26	29	68	0.00	0.02	0.08	0.23	0.16	0.26	0.14	0.08	0.02	0.02	-	-
26	xc - Ind. Prod.	1	1	1	29	25	87	0.00	0.04	0.10	0.13	0.24	0.19	0.17	0.08	0.02	0.04	Yes	-
27	manuf - Ind. Prod.	1	1	1	29	26	97	0.00	0.00	0.05	0.21	0.18	0.20	0.19	0.13	0.01	0.02	-	-
28	constr - Ind. Prod.	1	1	1	82	72	47	0.00	0.00	0.04	0.13	0.31	0.37	0.13	0.02	0.01	0.00	-	-
29	xce - Ind. Prod.	1	1	1	26	27	14	0.00	0.03	0.08	0.17	0.20	0.21	0.19	0.06	0.02	0.03	-	-
30	energy - Ind. Prod.	1	1	1	33	25	2	0.00	0.00	0.08	0.15	0.31	0.30	0.12	0.01	0.03	0.01	-	-
31	capital - Ind. Prod.	1	1	1	39	29	23	0.00	0.01	0.05	0.22	0.19	0.25	0.19	0.04	0.04	0.00	Yes	Yes
32	D cons - Ind. Prod.	1	1	1	78	68	98	0.00	0.00	0.06	0.12	0.29	0.37	0.16	0.01	0.00	0.00	-	-
33	energy - Ind. Prod.	1	1	1	30	26	16	0.00	0.00	0.07	0.14	0.32	0.30	0.12	0.03	0.01	0.02	-	-
34	IM goods - Ind. Prod.	1	1	1	37	40	6	0.00	0.00	0.08	0.21	0.19	0.24	0.12	0.14	0.02	0.00	Yes	Yes
35	ND cons - Ind. Prod.	1	1	1	18	23	65	0.00	0.01	0.06	0.18	0.25	0.21	0.21	0.07	0.00	0.00	Yes	-
36	metals - Ind. Prod.	1	1	1	76	77	85	0.00	0.00	0.05	0.13	0.41	0.26	0.11	0.03	0.02	0.00	-	-
37	chemicals - Ind. Prod.	1	1	1	34	20	74	0.00	0.00	0.05	0.18	0.20	0.33	0.13	0.10	0.01	0.00	-	-
38	electric - Ind. Prod.	1	1	1	53	96	94	0.00	0.01	0.02	0.19	0.23	0.29	0.14	0.12	0.00	0.00	-	-
39	machinery - Ind. Prod.	1	1	1	31	58	96	0.00	0.00	0.03	0.16	0.37	0.26	0.13	0.05	0.01	0.00	Yes	-
40	paper - Ind. Prod.	1	1	1	31	34	70	0.00	0.01	0.08	0.15	0.29	0.28	0.15	0.04	0.01	0.00	Yes	Yes
41	plastic - Ind. Prod.	1	1	1	25	30	64	0.00	0.00	0.05	0.15	0.24	0.34	0.18	0.04	0.00	0.00	-	-
42	manuf - PPI	1	2	12	48	99	76	0.00	0.03	0.08	0.15	0.21	0.30	0.14	0.05	0.04	0.01	-	-
43	construction - PPI	1	2	12	49	51	7	0.00	0.03	0.08	0.16	0.26	0.20	0.15	0.08	0.04	0.01	-	-
44	xce - PPI	1	2	12	49	51	97	0.00	0.05	0.11	0.14	0.22	0.23	0.13	0.07	0.04	0.02	-	-
45	energy - PPI	1	2	12	48	21	102	0.00	0.02	0.05	0.17	0.20	0.31	0.17	0.05	0.02	0.01	-	-
46	capital - PPI	1	2	12	54	52	51	0.00	0.00	0.03	0.14	0.28	0.35	0.14	0.06	0.01	0.00	-	-
47	D cons - PPI	1	2	12	69	14	22	0.00	0.01	0.05	0.11	0.32	0.28	0.15	0.09	0.00	0.00	-	-
48	energy - PPI	1	2	12	42	45	70	0.00	0.01	0.07	0.17	0.21	0.24	0.21	0.05	0.01	0.02	-	-
49	IM goods - PPI	1	2	12	44	51	62	0.02	0.02	0.15	0.17	0.19	0.21	0.12	0.05	0.04	0.04	-	-
50	ND cons - PPI	1	2	12	44	45	97	0.00	0.01	0.03	0.19	0.36	0.22	0.16	0.01	0.02	0.00	-	-
51	metals - PPI	1	2	12	49	44	46	0.00	0.02	0.12	0.15	0.24	0.24	0.13	0.05	0.04	0.02	Yes	-
52	chemicals - PPI	1	2	12	49	56	98	0.01	0.05	0.06	0.24	0.22	0.20	0.11	0.05	0.04	0.02	-	-
53	electric - PPI	1	2	12	38	31	97	0.00	0.01	0.01	0.19	0.36	0.28	0.13	0.02	0.00	0.00	-	-
54	machinery - PPI	1	2	12	46	7	43	0.00	0.00	0.03	0.12	0.33	0.24	0.20	0.07	0.01	0.00	Yes	Yes
55	paper - PPI	1	2	12	49	56	69	0.00	0.00	0.06	0.23	0.23	0.30	0.13	0.03	0.02	0.00	Yes	-
56	plastic - PPI	1	2	12	52	49	75	0.00	0.04	0.07	0.21	0.22	0.21	0.17	0.05	0.02	0.01	-	-
57	Bus conf - Surveys	0	1	1	59	62	15	0.01	0.00	0.05	0.19	0.29	0.30	0.09	0.03	0.01	0.03	Yes	-
58	prod rec m - Surveys	0	1	1	60	59	101	0.00	0.00	0.07	0.15	0.25	0.28	0.17	0.06	0.02	0.00	-	-
59	Orders - Surveys	0	1	1	60	57	4	0.00	0.01	0.04	0.15	0.38	0.26	0.08	0.06	0.01	0.02	-	-
60	X orders - Surveys	0	1	1	59	57	102	0.00	0.01	0.06	0.10	0.35	0.32	0.11	0.03	0.01	0.02	-	-
61	ret stocks - Surveys	0	1	1	57	59	69	0.01	0.03	0.04	0.14	0.28	0.32	0.13	0.04	0.02	0.00	-	-
62	exp prod - Surveys	0	1	1	57	72	49	0.00	0.00	0.04	0.23	0.22	0.35	0.11	0.04	0.00	0.01	Yes	Yes
63	exp price - Surveys	0	1	1	48	42	97	0.00	0.00	0.07	0.24	0.22	0.22	0.21	0.03	0.00	0.00	Yes	Yes
64	Bus exp emp - Surveys	0	1	1	20	1	90	0.00	0.00	0.06	0.19	0.35	0.25	0.10	0.05	0.00	0.00	-	-
65	Con conf - Surveys	0	1	1	67	70	35	0.01	0.00	0.05	0.29	0.18	0.32	0.07	0.03	0.04	0.01	Yes	Yes
66	gen last 12m - Surveys	0	1	1	70	61	101	0.00	0.01	0.09	0.18	0.30	0.23	0.13	0.04	0.02	0.00	-	-
67	gen next 12m - Surveys	0	1	1	65	70	32	0.01	0.01	0.04	0.26	0.25	0.24	0.11	0.04	0.03	0.01	Yes	-
68	price last 12m - Surveys	0	1	1	69	48	80	0.00	0.00	0.10	0.09	0.21	0.36	0.21	0.03	0.00	0.00	-	-
69	price next 12m - Surveys	0	1	1	47	67	55	0.00	0.02	0.13	0.16	0.26	0.25	0.15	0.04	0.00	0.00	-	-
70	URX next 12m - Surveys	0	1	1	65	67	48	0.02	0.02	0.06	0.13	0.20	0.30	0.17	0.09	0.01	0.00	-	-
71	Buil conf - Surveys	0	1	1	74	73	93	0.00	0.03	0.08	0.24	0.25	0.20	0.16	0.02	0.01	0.01	Yes	-
72	prod rec months - Surveys	0	1	1	62	28	23	0.00	0.00	0.05	0.14	0.24	0.44	0.13	0.01	0.00	0.00	Yes	-
73	orders - Surveys	0	1	1	71	23	81	0.00	0.00	0.09	0.11	0.31	0.38	0.11	0.00	0.01	0.00	-	-
74	exp emp - Surveys	0	1	1	71	25	37	0.00	0.00	0.12	0.24	0.20	0.27	0.10	0.06	0.00	0.01	Yes	Yes
75	exp price - Surveys	0	1	1	19	30	56	0.00	0.00	0.04	0.14	0.39	0.31	0.12	0.01	0.00	0.00	-	-
76	Ret conf - Surveys	0	1	1	77	36	42	0.00	0.01	0.12	0.24	0.24	0.17	0.16	0.04	0.01	0.01	-	-
77	ret current - Surveys	0	1	1	76	36	69	0.00	0.01	0.04	0.31	0.23	0.19	0.15	0.05	0.01	0.01	-	-
78	ret stocks - Surveys	0	1	1	76	8	40	0.00	0.01	0.02	0.15	0.24	0.29	0.28	0.01	0.00	0.00	Yes	-
79	ret exp busi - Surveys	0	1	1	43	70	16	0.00	0.00	0.06	0.16	0.38	0.22	0.17	0.02	0.00	0.00	Yes	-
80	ret exp emp - Surveys	0	1	1	16	82	68	0.00	0.00	0.03	0.17	0.42	0.31	0.07	0.00	0.01	0.00	-	-
81	new cars - Ind. Prod.	1	1	1	98	76	73	0.00	0.00	0.08	0.15	0.30	0.18	0.17	0.11	0.01	0.00	-	-
82	Empl cnstr - Labour	0	1	1	28	80	55	0.00	0.00	0.05	0.17	0.31	0.27	0.17	0.03	0.01	0.00	-	-
83	Empl manuf - Labour	0	1	1	84	91	62	0.00	0.01	0.03	0.20	0.24	0.37	0.08	0.03	0.03	0.01	-	-
84	Empl tot xc - Labour	0	1	1	83	91	62	0.00	0.01	0.05	0.18	0.21	0.39	0.09	0.03	0.03	0.01	-	-
85	Euro500 - FX	1	1	1	86	87	36	0.00	0.00	0.02	0.17	0.24	0.30	0.17	0.02	0.08	0.01	-	-
86	Euro325 - FX	1	1	1	85	7	17	0.00	0.00	0.02	0.14	0.26	0.31	0.17	0.04	0.05	0.01	-	-
87	SP500 - FX	1	1	1	88	85	13	0.00	0.00	0.02	0.17	0.28	0.27	0.13	0.06	0.06	0.01	-	-
88	DowJ - FX	1	1	1	87	8	73	0.00	0.00	0.02	0.16	0.29	0.25	0.16	0.07	0.05	0.01	-	-
89	r3-m - FX	0	1	1	60	94	80	0.00	0.04	0.07	0.16	0.27	0.28	0.10	0.08	0.01	0.00	Yes	-
90	r10-year - FX	0	1	1	99	103	64	0.00	0.01	0.11	0.20	0.18	0.25	0.17	0.04	0.02	0.01	Yes	-
91	M2_US - Intl.	1	1	1	84	83	18	0.00	0.00	0.05	0.26	0.26	0.24	0.09	0.06	0.04	0.00	Yes	-
92	URX_US - Intl.	0	1	1	57	89	1	0.00	0.03	0.03	0.09	0.31	0.25	0.20	0.07	0.02	0.00	Yes	Yes
93	IP_US - Intl.	1	1	1	61	92	19	0.00	0.00	0.03	0.18	0.30	0.35	0.10	0.03	0.01	0.00	Yes	-
94	Empl_US - Intl.	1	1	1	89	92	13	0.00	0.01	0.08	0.18	0.31	0.27	0.12	0.02	0.01	0.00	-	-
95	CPI_US - Intl.	1	1	1	96	77	31	0.00	0.01	0.09	0.19	0.28	0.22	0.15	0.05	0.00	0.01	-	-
96	PPI_US - Intl.	1	1	1	95	9	39	0.00	0.00	0.13	0.17	0.22	0.20	0.17	0.10	0.01	0.01	Yes	Yes
97	m exp_US - Intl.	0	1	1	48	11	53	0.00	0.01	0.04	0.10	0.31	0.33	0.17	0.04	0.01	0.00	-	-
98	c exp_US - Intl.	0	1	1	81	84	53	0.00	0.00	0.03	0.18	0.28	0.22	0.19	0.06	0.03	0.00	-	-
99	10-year - FX	0	1	1	103	102	86	0.00	0.07	0.09	0.13	0.26	0.25	0.15	0.02	0.01	0.03	-	-
100	3-mon - FX	0	1	1	101	102	9	0.00	0.00	0.05	0.16	0.32	0.25	0.14	0.06	0.01	0.02	-	-
101	1-year - FX	0	1	1	102	100	66	0.00	0.05	0.06	0.16	0.24	0.30	0.10	0.06	0.01	0.03	-	-
102	2-year - FX	0	1	1	103	101	45	0.01	0.05	0.07	0.11	0.29	0.25	0.15	0.03	0.01	0.04	-	-
103	5-year - FX	0	1	1	99	102	75	0.02	0.06	0.05	0.14	0.20	0.34	0.13	0.03	0.01	0.03	-	-

Table A.8

UK

Series Number	Description - Group	Transformation Logs	Diffs	MA	Correlations with other series 1st	2nd	least	[-1,-.8]	[-.8,-.6]	[-.6,-.4]	[-.4,-.2]	[-.2,0]	[0,.2]	[.2,.4]	[.4,.6]	[.6,.8]	[.8,1]	Retained in data set Rule 1	Rule 2
1	M1 - Money	1	1	1	2	26	57	0.00	0.01	0.03	0.10	0.19	0.36	0.24	0.05	0.00	0.01	-	-
2	M2 - Money	1	1	1	1	64	32	0.00	0.00	0.09	0.13	0.22	0.21	0.18	0.15	0.01	0.01	-	-
3	M3 - Money	1	2	12	64	2	17	0.00	0.00	0.01	0.14	0.27	0.28	0.22	0.08	0.00	0.00	-	-
4	Loans - Money	1	2	12	71	42	72	0.00	0.03	0.10	0.19	0.23	0.15	0.22	0.06	0.01	0.00	-	-
5	EER - Intl.	1	1	1	6	7	18	0.01	0.03	0.09	0.22	0.18	0.21	0.14	0.09	0.01	0.03	-	-
6	EER_CPI - Intl.	1	1	1	5	7	17	0.01	0.03	0.13	0.17	0.21	0.19	0.15	0.08	0.01	0.03	-	-
7	EER_PPI - Intl.	1	1	1	5	6	74	0.01	0.03	0.04	0.28	0.21	0.19	0.12	0.09	0.01	0.03	-	-
8	USD - FX	1	1	1	69	13	65	0.01	0.00	0.04	0.15	0.19	0.33	0.18	0.06	0.03	0.00	-	-
9	GBP - FX	1	1	1	6	5	48	0.04	0.00	0.13	0.05	0.18	0.27	0.22	0.05	0.06	0.00	-	-
10	YEN - FX	1	1	1	9	54	26	0.00	0.00	0.00	0.18	0.26	0.29	0.19	0.06	0.01	0.00	Yes	Yes
11	raw mat prices - FX	1	1	1	15	13	33	0.00	0.01	0.09	0.22	0.28	0.23	0.09	0.05	0.00	0.03	Yes	-
12	raw_xoil - FX	1	1	1	13	15	55	0.00	0.03	0.05	0.12	0.31	0.35	0.14	0.01	0.00	0.00	Yes	Yes
13	oil - FX	1	1	1	15	11	76	0.00	0.01	0.04	0.26	0.32	0.18	0.09	0.05	0.03	0.03	-	-
14	gold - FX	1	1	1	8	24	29	0.00	0.00	0.03	0.13	0.33	0.24	0.23	0.03	0.01	0.00	Yes	Yes
15	oil 1m fwd - FX	1	1	1	13	11	43	0.00	0.03	0.08	0.22	0.33	0.15	0.13	0.04	0.00	0.03	-	-
16	Trade Intra12 X - Intl.	1	1	1	33	60	41	0.00	0.01	0.03	0.13	0.36	0.26	0.19	0.03	0.00	0.00	-	-
17	Trade Extra12 X - Intl.	1	1	1	29	19	6	0.00	0.00	0.03	0.22	0.33	0.26	0.12	0.05	0.00	0.00	Yes	-
18	Trade Intra12 M - Intl.	1	1	1	22	76	29	0.00	0.00	0.05	0.10	0.28	0.29	0.21	0.06	0.00	0.00	-	-
19	Trade Extra12 M - Intl.	1	1	1	37	60	46	0.00	0.00	0.06	0.17	0.18	0.37	0.15	0.06	0.00	0.00	Yes	-
20	retail vol - Ind. Prod.	1	1	1	27	2	51	0.00	0.00	0.01	0.21	0.24	0.26	0.24	0.04	0.00	0.00	Yes	-
21	total - Ind. Prod.	1	1	1	24	23	61	0.00	0.03	0.01	0.18	0.22	0.38	0.13	0.04	0.01	0.00	-	-
22	xc - Ind. Prod.	1	1	1	28	25	31	0.00	0.00	0.01	0.10	0.32	0.27	0.22	0.04	0.03	0.01	-	-
23	manuf - Ind. Prod.	1	1	1	21	29	40	0.00	0.01	0.14	0.09	0.17	0.29	0.22	0.05	0.03	0.00	-	-
24	xce - Ind. Prod.	1	1	1	21	36	26	0.00	0.01	0.03	0.19	0.35	0.24	0.15	0.01	0.01	0.00	-	-
25	energy - Ind. Prod.	1	1	1	28	22	73	0.00	0.00	0.06	0.13	0.19	0.33	0.21	0.05	0.01	0.01	-	-
26	capital - Ind. Prod.	1	1	1	23	1	10	0.00	0.01	0.05	0.22	0.21	0.32	0.12	0.06	0.01	0.00	Yes	-
27	D cons - Ind. Prod.	1	1	1	36	20	64	0.00	0.00	0.08	0.24	0.18	0.27	0.22	0.01	0.00	0.00	-	-
28	energy - Ind. Prod.	1	1	1	25	22	48	0.00	0.03	0.05	0.12	0.18	0.36	0.17	0.08	0.00	0.03	-	-
29	IM cons - Ind. Prod.	1	1	1	23	17	14	0.00	0.00	0.08	0.18	0.24	0.18	0.27	0.04	0.01	0.00	-	-
30	ND cons - Ind. Prod.	1	1	1	43	2	44	0.00	0.00	0.03	0.06	0.45	0.31	0.09	0.06	0.00	0.00	Yes	Yes
31	metals - Ind. Prod.	1	1	1	43	60	15	0.00	0.00	0.03	0.21	0.32	0.29	0.15	0.00	0.00	0.00	Yes	Yes
32	chemicals - Ind. Prod.	1	1	1	77	62	75	0.00	0.01	0.04	0.24	0.21	0.27	0.19	0.04	0.00	0.00	Yes	-
33	electric - Ind. Prod.	1	1	1	16	21	42	0.00	0.03	0.06	0.23	0.27	0.28	0.12	0.01	0.00	0.00	-	-
34	machinery - Ind. Prod.	1	1	1	6	2	30	0.00	0.00	0.03	0.14	0.32	0.24	0.21	0.06	0.00	0.00	Yes	Yes
35	paper - Ind. Prod.	1	1	1	59	41	69	0.00	0.00	0.04	0.21	0.29	0.27	0.18	0.01	0.00	0.00	Yes	-
36	plastic - Ind. Prod.	1	1	1	24	27	55	0.00	0.01	0.05	0.14	0.27	0.32	0.15	0.05	0.00	0.00	-	-
37	confidence - Surveys	0	1	1	39	41	50	0.00	0.01	0.09	0.14	0.22	0.26	0.14	0.13	0.00	0.01	-	-
38	prod rec m - Surveys	0	1	1	45	6	74	0.00	0.01	0.09	0.14	0.28	0.23	0.14	0.08	0.03	0.00	-	-
39	Orders - Surveys	0	1	1	37	51	46	0.00	0.00	0.05	0.14	0.31	0.27	0.12	0.10	0.00	0.01	-	-
40	X orders - Surveys	0	1	1	7	5	16	0.00	0.00	0.06	0.09	0.28	0.32	0.15	0.08	0.01	0.00	Yes	-
41	stocks - Surveys	0	1	1	37	35	16	0.00	0.01	0.00	0.14	0.29	0.37	0.17	0.01	0.00	0.00	Yes	-
42	exp prod - Surveys	0	1	1	4	37	33	0.00	0.01	0.00	0.13	0.35	0.27	0.19	0.05	0.00	0.00	Yes	-
43	exp price - Survey	0	1	1	9	22	15	0.00	0.00	0.09	0.14	0.17	0.29	0.22	0.06	0.03	0.00	-	-
44	exp emp - Surveys	0	1	1	52	13	30	0.00	0.00	0.05	0.06	0.27	0.28	0.26	0.08	0.00	0.00	-	-
45	confidence - Surveys	0	1	1	47	50	75	0.00	0.03	0.12	0.15	0.22	0.24	0.12	0.10	0.01	0.01	-	-
46	gen last 12m - Surveys	0	1	1	78	5	19	0.00	0.00	0.05	0.17	0.31	0.24	0.21	0.01	0.01	0.00	Yes	-
47	gen next 12m - Surveys	0	1	1	45	73	35	0.00	0.00	0.09	0.22	0.21	0.22	0.17	0.08	0.01	0.01	-	-
48	price last 12m - Surveys	0	1	1	74	68	51	0.00	0.00	0.03	0.14	0.33	0.28	0.17	0.05	0.00	0.00	-	-
49	price next 12m - Surveys	0	1	1	4	23	66	0.00	0.00	0.04	0.23	0.26	0.27	0.15	0.04	0.01	0.00	Yes	Yes
50	URX next 12m - Surveys	0	1	1	45	77	39	0.00	0.04	0.04	0.10	0.26	0.32	0.18	0.06	0.00	0.00	Yes	-
51	confidence - Surveys	0	1	1	54	53	48	0.00	0.04	0.09	0.13	0.17	0.33	0.15	0.05	0.01	0.03	-	-
52	prod rec months - Surveys	0	1	1	44	26	74	0.00	0.00	0.12	0.15	0.28	0.29	0.15	0.00	0.00	0.00	-	-
53	orders - Surveys	0	1	1	51	7	65	0.00	0.01	0.04	0.19	0.24	0.28	0.18	0.04	0.00	0.01	-	-
54	exp emp - Surveys	0	1	1	51	9	68	0.00	0.03	0.09	0.14	0.19	0.27	0.23	0.03	0.01	0.01	-	-
55	exp price - Surveys	0	1	1	53	5	31	0.00	0.00	0.09	0.12	0.23	0.29	0.23	0.04	0.00	0.00	Yes	Yes
56	confidence - Surveys	0	1	1	57	59	16	0.00	0.00	0.10	0.14	0.33	0.29	0.08	0.03	0.00	0.03	-	-
57	current - Surveys	0	1	1	56	11	1	0.00	0.00	0.06	0.17	0.29	0.28	0.15	0.03	0.00	0.01	-	-
58	stocks - Surveys	0	1	1	74	43	67	0.00	0.00	0.01	0.09	0.32	0.27	0.28	0.03	0.00	0.00	Yes	Yes
59	exp busi - Surveys	0	1	1	56	35	60	0.00	0.00	0.04	0.15	0.24	0.40	0.15	0.00	0.00	0.01	-	-
60	exp emp - Surveys	0	1	1	38	40	77	0.00	0.00	0.04	0.27	0.26	0.24	0.14	0.05	0.00	0.00	Yes	-
61	new cars - Ind. Prod.	1	1	1	69	7	21	0.00	0.00	0.04	0.10	0.36	0.26	0.22	0.03	0.00	0.00	Yes	-
62	URX - Labour	0	1	1	7	6	8	0.00	0.00	0.09	0.15	0.31	0.27	0.06	0.12	0.00	0.00	Yes	-
63	manuf - Labour	1	1	1	1	78	75	0.00	0.00	0.04	0.13	0.32	0.29	0.19	0.03	0.00	0.00	Yes	Yes
64	tot xc - Labour	1	2	12	2	40	33	0.00	0.00	0.03	0.14	0.19	0.33	0.22	0.08	0.01	0.00	-	-
65	FTSEALL - FX	1	1	1	66	7	77	0.00	0.00	0.00	0.22	0.29	0.38	0.05	0.04	0.00	0.01	-	-
66	DowJ - Intl.	1	1	1	65	2	49	0.00	0.00	0.01	0.17	0.32	0.31	0.13	0.05	0.00	0.01	-	-
67	r3-m_US - Intl.	0	1	1	3	69	58	0.00	0.00	0.06	0.14	0.26	0.33	0.15	0.05	0.00	0.00	-	-
68	r10-year_US - Intl.	0	1	1	48	64	54	0.00	0.00	0.05	0.19	0.27	0.31	0.15	0.03	0.00	0.00	-	-
69	M2_US - Intl.	1	1	1	8	61	44	0.01	0.00	0.06	0.17	0.33	0.29	0.13	0.00	0.00	0.00	-	-
70	URX_US - Intl.	0	1	1	45	78	73	0.00	0.00	0.10	0.19	0.19	0.23	0.22	0.05	0.01	0.00	Yes	Yes
71	IP_US - Intl.	1	1	1	4	78	48	0.00	0.03	0.08	0.09	0.31	0.31	0.15	0.04	0.00	0.00	-	-
72	Empl_US - Intl.	1	1	1	67	45	4	0.00	0.00	0.05	0.14	0.29	0.28	0.21	0.03	0.00	0.00	Yes	-
73	CPI_US - Intl.	1	1	1	74	77	70	0.00	0.00	0.03	0.14	0.24	0.36	0.14	0.05	0.04	0.00	-	-
74	PPI_US - Intl.	1	1	1	73	48	52	0.00	0.00	0.04	0.13	0.28	0.27	0.17	0.10	0.01	0.00	-	-
75	m exp_US - Intl.	0	1	1	68	72	14	0.00	0.00	0.04	0.12	0.37	0.35	0.12	0.01	0.00	0.00	Yes	Yes
76	c exp_US - Intl.	0	1	1	18	19	70	0.00	0.00	0.06	0.23	0.26	0.29	0.12	0.04	0.00	0.00	Yes	-
77	3-mon - FX	0	1	1	78	32	60	0.00	0.03	0.03	0.15	0.26	0.24	0.24	0.03	0.01	0.01	-	-
78	1-year - FX	0	1	1	77	46	21	0.00	0.03	0.03	0.15	0.27	0.31	0.13	0.06	0.01	0.01	-	-

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