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A DYNAMIC FACTOR MODEL FOR THE COLOMBIAN INFLATION *

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ABSTRACT. We use a dynamic factor model proposed by Stock and Watson [1998, 1999, 2002a,b] to forecast Colombian inflation. The model includes 92 monthly series observed over the period 1999:01-2008:06. The results show that for short-run horizons, factor model forecasts significantly outperformed the auto-regressive benchmark model in terms of the root mean squared forecast error statistic.

Key words and phrases. Dynamic factor models, static factor models, forecast accuracy.

JEL clasification. C13, C33, C53.

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1. Introduction

Colombia has adopted an inflation targeting regime to guide monetary policy decisions since 2001. Therefore, the Colombian central bank has been developing several models in order to count with reliable inflation forecasts. However, none of the existing models consider a large number of predictors which might help to improve forecast performance. One of the methodologies that is useful to obtain forecasts with large data sets is dynamic factor models.

Factor models state that variation of a large number of variables can be explained by a small number of common factors. This idea dates back to Burns and Mitchell [1946], who showed that economies are driven by a few factors. Factor models exploit the co-movement of variables and efficiently reduce the dimension of the data set to just a few underlying factors that can be used to construct forecasting models of smaller dimension.

Commonly used estimation procedures for these models are principal components methods (Stock and Watson [1999]), state space models (Harvey [1989], Stock and Watson [1998]), cointegration frameworks (Gonzalo and Granger [1995], Peña and Poncela [2006]) and frequency domain analysis (Forni and Reichlin [1998] and Forni, Hallin, Lippi, and Reichlin [2000]). During the last years there has been a growing number of applications of dynamic factor models to forecast macroeconomic variables (see Gosselin and Tkacz [2001], Artis, Banerjee, and Marcellino [2005], Boivin and Ng [2005], Matheson [2006], Eickmeier and Ziegler [2006], De Bandt, Michaux, Bruneau, and Flageollet [2007], Zaher [2007] and Kapetanios, Labhard, and Price [2008] among others).

Recently, these dynamic factor models have been improved through advances in estimation techniques proposed by Stock and Watson [2002a,b], Kapetanios and Marcellino [2006] and Forni, Hallin, Lippi, and Reichlin [2005].

Given that the Stock and Watson model, hereafter SW, has several advantages over other factor analysis methodologies, as is explained in Sections 2 and 3, a SW dynamic factor model is estimated for obtaining forecasts of Colombian inflation using 92 monthly variables observed for the sample period 1999:01-2008:06.

The paper is organized as follows. Section 2 introduces the SW dynamic factor model and other estimation techniques; Section 3 reviews some results of studies that use dynamic factor models for forecasting and presents advantages of SW model over other similar models, Section 4 shows an empirical application of this methodology to the Colombian inflation. Finally, some concluding remarks are presented in Section 5.

2. Some methodologies for estimating dynamic factor models

2.1. **Stock and Watson model.**

Stock and Watson [1998, 1999, 2002a,b] use a dynamic factor model that is based in two equations. The first equation describes a factor model while the second one corresponds to a forecasting equation.

Let y_t be the variable to be forecasted and X_t a $N-$dimensional vector of covariance stationary processes with $t = 1, 2, \ldots, T$. Then,

$$X_{it} = \chi_{it} + \xi_{it} = \lambda_i(L) f_t + \xi_{it}, \quad i = 1, \ldots, N \tag{2.1}$$

$$y_{t+h} = \beta(L) f_t + \gamma(L) y_t + \epsilon_{t+h} \tag{2.2}$$

where χ_{it} is the common component which is obtained as a product of factor loadings ($\lambda_i(L)$) and an $m-$dimensional factor vector (f_t), with $m << N$, ξ_{it} are the idiosyncratic components, $\beta(L)$, $\gamma(L)$ and $\lambda_i(L)$ are finite lag polynomials of order q [1], ϵ_t is a white noise error with $E(\epsilon_t | X_{i,t-1}, f_{t-1}, y_{t-1}, X_{i,t-2}, f_{t-2}, y_{t-2} \ldots) = 0$ and h is the forecast horizon.

Equation (2.1) expresses the time series as the sum of two unobserved orthogonal components, a common component driven by a small number of factors, f_t, and an idiosyncratic component, ξ_{it}, which is specific to each variable. The relevance of this method is that is able to extract few factors that explain the comovement of all series.

An static representation of (2.1) and (2.2) can be obtained in the following way,

$$X_t = \Lambda F_t + \xi_t \tag{2.3}$$

$$y_{t+h} = \beta' F_t + \gamma(L) y_t + \epsilon_{t+h} \tag{2.4}$$

where $F_t = (f_t', f_{t-1}', \ldots, f_{t-q}')'$, the i-th row of matrix Λ is $(\lambda_{i0}, \lambda_{i1}, \ldots, \lambda_{iq})$, $i = 1, 2, \ldots, N$, $\beta = (\beta_0, \ \beta_1, \ldots, \beta_q)'$, $X_t = (X_{1t}, \ldots, X_{Nt})'$ and $\xi_t = (\xi_{1t}, \ldots, \xi_{Nt})'$.

SW uses the static principal component approach on X_t. The factor estimates are therefore the first principal components of X_t. Then, $\widehat{f}_t$ is the eigenvector corresponding to the m largest eigenvalues of the $T \times T$ matrix XX' [2] and $\widehat{\Lambda}' = (\widehat{F}'\widehat{F})^{-1}\widehat{F}'X$ is the corresponding loading matrix, with $X = (X_1, \ldots, X_T)'$, $\widehat{F}_t = (\widehat{f}_t', \widehat{f}_{t-1}', \ldots, \widehat{f}_{t-q}')'$ and $\widehat{F} = \left(\widehat{F}_1, \ldots, \widehat{F}_T\right)'$.

The method proposed by SW has several advantages over other factor methodologies since is very simple to implement and has some appealing statistical properties. In particular, Stock and Watson [2002a] show that this methodology provides a consistent estimator of the true latent factors and the resulting forecasts are asymptotically efficient. They also show that these results continue to hold when there is small temporal instability. [3]

2.2. **Other methodologies for estimating dynamic factor models.** Besides the SW methodology there are other commonly used procedures for estimating dynamic factor models described in equation (2.1). Forni, Hallin, Lippi, and Reichlin [2005] use frequency domain analysis, Kapetanios and Marcellino [2006] employ subspace analysis algorithms,

[1] The orders of the three polynomials can be different, though.

[2] In this case, it is assumed the variables in vector X_t are standardized such that they are zero mean.

[3] They analyze specifically the case when there is a small and idiosyncratic shift in the factor loadings.

Otrok and Whiteman [1998] employ a Bayesian dynamic latent factor model, Gonzalo and Granger [1995] and Peña and Poncela [2006] propose a cointegration framework. What follows is a briefly explanation of these methodologies.

2.2.1. *Forni, Hallin, Lippi and Reichlin model.* Forni, Hallin, Lippi, and Reichlin [2005], hereafter FHLR, have proposed a weighted version of Stock and Watson estimator, where the time series weights are determined according to their signal to noise ratio. This procedure is estimated in the frequency domain in two steps. In the first step the covariance matrices of common and idiosyncratic components of X_t, χ_t and ξ_t respectively, are estimated by a dynamic principal components analysis. In the second step, r linear combinations of X_t are found such that maximize the contemporary covariance explained by common factors.

In the first step, the $k-$lag covariance matrices of χ_t and ξ_t are estimated as:

$$\widehat{\Gamma}_k^{\chi} = \int_{-\pi}^{\pi} e^{ik\theta} \widehat{\Sigma}^{\chi}(\theta) d\theta \tag{2.5}$$

$$\widehat{\Gamma}_k^{\xi} = \int_{-\pi}^{\pi} e^{ik\theta} \widehat{\Sigma}^{\xi}(\theta) d\theta \tag{2.6}$$

where $\Sigma^{\chi}(\theta)$ and $\Sigma^{\xi}(\theta)$ are the respective spectral density matrices for frequency θ.

The general idea of FHLR is that the factor space can be consistently estimated by linear combinations of X_t, as $N \to \infty$. Using the contemporaneous covariance matrices of equations (2.5) and (2.6), the linear combinations of the second step are obtained from the solution of the following generalized eigenvalue problem:

$$\widehat{\Gamma}_0^{\chi} \widehat{Z}_j = \widehat{\mu}_j \widehat{\Gamma}_0^{\xi} \widehat{Z}_j$$

where $\widehat{\mu}_j$ denotes the $j-$th generalized eigenvalue and $\widehat{Z}_j$ its $N \times 1$ corresponding eigenvector, $j = 1, \ldots, r$, $r = m \times (q + 1)$. Then, the common factors are given by

$$\widehat{F}_t = \widehat{Z}' X_t$$

with $\widehat{Z} = [\widehat{Z}_1, \ldots, \widehat{Z}_r]$.

The implementation of FHLR method depends on the specification of several parameters (number of factors, number of factors lags, number of frequencies and lags for which the spectral density is calculated). This increases uncertainty, generating more sources of error in the factors estimation.

2.2.2. *Kapetianos and Marcellino model.* Kapetanios and Marcellino [2006], hereafter KM, use the following state-space representation model,

$$X_t = Cf_t + D\epsilon_t \tag{2.7}$$
$$f_t = Af_{t-1} + B\nu_{t-1} \tag{2.8}$$

where ϵ_t and ν_t are multivariate, mutually uncorrelated standard orthogonal white noise sequences of dimension, N and m. C, D, A and B are matrices of orders $N \times m$, $N \times N$, $m \times m$ and $m \times m$, respectively. D is assumed to be nonsingular.

However, a subspace algorithm is implemented for estimating the factors without needing to estimate the full state-space representation. The estimation of the factors is given by,

$$\widehat{f_t} = \widehat{K} X_t^p \tag{2.9}$$

where $\widehat{K} = \widehat{S}_k^{1/2} \widehat{V}_k' \widehat{\Gamma}^{p^{-1/2}}$, $\widehat{\Gamma}^f$ and $\widehat{\Gamma}^p$ are the sample covariance matrices of X_t^f and X_t^p, respectively, with $X_t^p = (X_{t-1}', X_{t-2}', \ldots, X_{t-p}')'$ and $X_t^f = (X_t', X_{t+1}', \ldots, X_{t+s-1}')'$. $\widehat{S}_k$ denotes the heading $k \times k$ sub-matrix of $\widehat{S}$, $\widehat{U}\widehat{S}\widehat{V}'$ corresponds to the singular value decomposition of $\widehat{\Gamma}^{f^{-1/2}} \widehat{\mathcal{F}} \widehat{\Gamma}^{p^{1/2}}$, $\widehat{\mathcal{F}}$ is obtained by regressing X_t^f on X_t^p and V_k represents the matrix containing the first k columns of V.

2.2.3. *Otrok and Whiteman model.* Otrok and Whiteman [1998] use a Bayesian approach to estimate a coincident index of economic conditions, defined as a single common factor that accounts for all comovement among the variables considered in the data set. Using the notation of the previous sections, the factor model is given by:

$$X_{it} = \chi_{it} + \xi_{it} = \alpha_i + \lambda_i f_t + \xi_{it} \tag{2.10}$$

where the common component, χ_{it}, is explained by one dynamic factor, f_t, which is represented as an autoregressive model of order $p\prime$. The idiosyncratic component, ξ_{it}, follows an autoregressive model of order q.

$$f_t = \phi_{01} f_{t-1} + \phi_{02} f_{t-2} + \cdots + \phi_{0p\prime} f_{t-p\prime} + \upsilon_t \tag{2.11}$$
$$\xi_{it} = \phi_{i1} \xi_{i,t-1} + \phi_{i2} \xi_{i,t-2} + \cdots + \phi_{iq} \xi_{i,t-q} + \nu_{it} \tag{2.12}$$

where,

$$E(\upsilon_t \upsilon_{t-s}) = \begin{cases} \sigma_0^2 & \text{if } s = t \\ 0 & \text{otherwise} \end{cases}$$

$$E(\nu_{it} \nu_{j,t-s}) = \begin{cases} \sigma_i^2 & \text{if } i = j, \ s = 0 \\ 0 & \text{otherwise} \end{cases}$$

$$E\left(\upsilon_s \nu_{it}\right) = 0 \ \ \forall \ i, s, t$$

However, there are some identification problems in this model. First, the sign of the dynamic factor and the factor loading are not separately identified. This is solved by requiring one of the factors loading to be positive. Second, the scale of the factor and the factor loadings are not separately identified. To solve this, it is assumed that σ_0^2 is equal to a constant.

The estimation of the model and the unknown factor is made using a Bayesian approach based on missing data setup, known as data augmentation. The idea is to determine posterior distributions for the unknown parameters conditional on the latent factor, then knowing the conditional distribution of the latent factor given the observed data and the other parameters, the join posterior distribution for the parameters and the factor can be sampled by using Markov Chain Monte Carlo procedure.

Let $\varphi = \left(\alpha_i, \lambda_i, \phi_{ij}, \phi_{0j}, \sigma_i^2, \sigma_0^2\right)$ be the vector of parameters, suppose the conditional posterior distributions are given by $p\left(f/\varphi\right)$ and $p\left(\varphi/f\right)$. Thus, starting from an initial latent factor $f^{(0)}$, a drawing of φ can be obtained by sampling from $p\left(\varphi/f\right)$, then $f^{(1)}$ is obtained by sampling from $p\left(f/\varphi\right)$ and so on. The conditional distribution $p\left(\varphi/f\right)$ can be analyzed using the methodology proposed by Chib and Greenberg [1994], which makes use of the Metropolis – Hasting algorithm. The conditional posterior $p\left(f/\varphi\right)$ can be seen as a signal extraction problem, but in this case the entire distribution must be extracted.

2.2.4. *Peña and Poncela model.* Peña and Poncela [2006] assume that the common structure dynamics of a time series vector is explained by factors which may be nonstationary. The factor identification is based on common eigenstructure of the generalized covariance matrices.

The observed series are assumed to follow a two equation model. The first one indicates that the variables can be written as a linear combination of common factors plus a noise. The second equation assumes that the vector of common factors follows a vector autoregressive moving average VARMA(p,q) process.

$$X_t = \lambda f_t + \xi_t \tag{2.13}$$

$$\Phi(L) f_t = \mu + \Theta(L) a_t \tag{2.14}$$

where $\Phi(L) = I - \phi_1 L - \ldots - \phi_p L^p$ and $\Theta(L) = I - \theta_1 L - \ldots - \theta_q L^q$ are polynomial matrices $m \times m$. Since the factors may be nonstationary, the roots of the determinantal equation $|\Phi(Z)| = 0$ can be in or outside the unit circle, μ is a $m \times 1$ vector of constants and $a_t \overset{i.i.d.}{\sim} N_r(0, \Sigma_a)$ with Σ_a a full rank covariance matrix.[4]

[4]Gonzalo and Granger [1995] method also uses a cointegration framework to estimate the common factors. They assume that the factors are linear combinations of the observed variables and propose an estimator of the matrix that defines the linear combinations based on the results of Johansen and Juselius [1990].

The model is written in state space form and the estimation is carried out by maximum likelihood. The estimates are obtained by the implementation of EM algorithm.

The assumptions for this model imposes two strong restrictions in the dynamic behavior of the variables: i) When written in state space form, Peña and Poncela [2006] assume that the error of equation (2.13) is serially uncorrelated. Then, the model dynamics is assumed to be completely captured by the VARMA model of the common factors, meanwhile the idiosyncratic component should behave as white noise and ii) the model assumes that the common factors do not have drifts.

3. FORECASTING USING FACTOR MODELS

There have been several empirical works of factor models, hereafter FM, to forecast inflation, output and other macroeconomic variables. Their forecasting performance compared with other models is promising but in some extent mixed. Table 3.1 presents some recent FM papers with empirical applications that obtain output and inflation forecasts for different countries.

TABLE 3.1. Empirical Evidence of Factor Models Forecast Performance

PAPER	METHODOLOGIES	EXERCISES	RESULTS
Boivin and Ng [2005]	**Factor Models:** SW and FHLR	• Simulation for different number of observations. • Empirical exercises for real activity and inflation in U.S. • Different specifications of the forecasting equation.	• SW forecasts systematically outperform the other factor models forecasts.
Eickmeier and Ziegler [2006]	**Factor Models:** FHLR, KM and SW **Non Factor Models:** ARIMA, Random Walk, VAR, single equation models with indicators and forecast combination models.	• Review of 46 empirical studies for real activity and inflation of several countries.	• FM forecasts are slightly better than other models • The best performance of the forecasts are obtained for output, in U.S. using FM, quarterly data and rolling forecasts. • FHLR and KM forecasts tend to outperform SW approach.
Kapetanios, Labhard, and Price [2008]	**Factor Models:** SW **Non Factor Models:** Unconditional mean, Random Walk, AR, VAR, BVAR, STAR, Markov - switching, forecast combination and other models.	• Exercise for output and inflation in the U.K.	• SW, Markov - Switching, STAR, and forecasts combination models have good performance.

These studies show that factor models forecasts outperform other methodologies and that there are some differences in factors estimates obtained from the static (SW) and the dynamic (FHLR and KM) methodologies.[5] However, both, the static and the dynamic

[5]SW model is often mentioned as a static factor model because of the static representations given in (2.3) despite the fact that this expression comes from a dynamic relationship (2.1). Meanwhile, dynamic factor models often refer to factor models that include an equation that states that the factor vector follows a dynamic model, for example a VAR model.

factors are consistent estimates of the common component of the data set when both $N, T \longrightarrow \infty$. [6] Furthermore, there are no clear differences in forecasting errors when using static or dynamic factors. Some results favor SW model while others favor FHLR and KM.

Another important difference between FHLR and SW methods is the forecasting equation. As mentioned by Boivin and Ng [2005], FHLR methodology assumes a non parametric forecast that imposes a factor structure while SW method works with an unrestricted direct forecasts. The use of direct forecasts is convenient since the forecasting uncertainty is reduced (as the horizon increases) given that the forecasting equation only depends on observed values.

Hence, in terms of factor models, SW model is a convenient methodology for forecasting since is much easier to implement than other methods, future values of the factors are not required, still provides consistent estimators for the common component [7] and its resulting forecasts are asymptotically efficient.

4. Empirical application

The aim of this study is to forecast Colombian inflation using a large set of economic indicators following SW dynamic factor methodology. In this models, a large data set is summarized in a small number of common factors that enter as explanatory variables in the forecasting equation. The dependent variable is inflation, π_t, measured as the annualized monthly variation of the total Colombian consumer price index, CPI, then $\pi_t = 12 * \ln(CPI_t/CPI_{t-1})$.

We use data on 92 monthly macroeconomics Colombian time series from 1999:01 to 2008:06. This sample was chosen given the availability of all series and to avoid a structural change observed in several macroeconomic variables during 1998 as shown in Melo and Núñez [2004] among others. The data are grouped into 4 categories: Real Activity (19 series), Prices (25 series), Credit, Money and Exchange Rate (26 series) and National Accounts (22 series).

First, the series are seasonally adjusted using Tramo-Seats methodology proposed by Caporello and Maravall [2004], then some transformations are applied according to the order of integration of the variables. The corresponding transformations are: (1) no transformation, (2) first differences, (3) second differences, (4) logarithm, (5) first differences of logarithm and (6) second differences of logarithm. [8] Finally, an outlier correction is performed when observations exceed six interquartile deviations from the mean, those

[6] This was proved by Stock and Watson [2002a,b] without imposing any restriction in the relation between N and T. On the other hand, Forni, Hallin, Lippi, and Reichlin [2005] showed that the dynamic factors estimate is consistent when $N, T \longrightarrow \infty$ but requires $N/T \longrightarrow 0$. This result favors SW methodology.

[7] However, special attention must be paid when the interest is just in the estimation of the common component and not in forecasting.

[8] Logarithm was applied for all variables, except for series in growth rates.

observations are interpolated using EM algorithm proposed by Dempster, Laird, and Rubin [1977]. The same algorithm is applied for interpolating missing data when the panel is unbalanced. [9] In this procedure missing values are estimated from model (2.3), where factors are initially extracted from the balanced panel (variables with non missing values).

Five forecasting models are estimated and recursive and rolling out of sample forecasts are obtained for horizons $h = 1, 2, \ldots, 12$ months ahead for the sample 2005:01-2008:06. [10]

(1) AR model. $\pi_{t+h} = \phi_0 + \sum_{i=1}^{p} \phi_i \pi_{t-i} + \epsilon_{t+h}$, where the lag order, p, is chosen by BIC criterion.
(2) FAR model. $\pi_{t+h} = \phi_0 + \sum_{j=1}^{m} \beta_j f_{jt} + \sum_{i=1}^{p} \phi_i \pi_{t-i} + \epsilon_{t+h}$, where the number of factors is pre-defined, $m = 1$.[11]
(3) FAR_BIC model. $\pi_{t+h} = \phi_0 + \sum_{j=1}^{m} \beta_j f_{jt} + \sum_{i=1}^{p} \phi_i \pi_{t-i} + \epsilon_{t+h}$, where the number of factors is determined by BIC criterion.[12]
(4) DFAR model. $\pi_{t+h} = \phi_0 + \sum_{j=1}^{m} \sum_{k=0}^{p_j} \beta_{jk} f_{jt-k} + \sum_{i=1}^{p} \phi_i \pi_{t-i} + \epsilon_{t+h}$, where the number of factors is determined by BIC criterion. The number of lags of each factor is fixed as $p_j = 2$, $j = 1, \ldots, m$.
(5) DFAR_BIC model. $\pi_{t+h} = \phi_0 + \sum_{j=1}^{m} \sum_{k=0}^{p_j} \beta_{jk} f_{jt-k} + \sum_{i=1}^{p} \phi_i \pi_{t-i} + \epsilon_{t+h}$, where the number of factors, the lag order of the factors, and the lags of the dependent variable are defined by BIC criterion.

Factors are re-estimated following SW methodology for the sample $t =$ 2000:01$, \ldots, t'$, with $t' =$ 2005:01$, \ldots,$ 2008:06 for each forecast horizon. The forecasts are direct in the sense of Marcellino, Stock, and Watson [2006]. Moreover, forecasts are unrestricted, since no restrictions on the factors structure are imposed in the forecasting equation.

Five different groups of variables are used in the models estimation: 1) real activity *(ra)*; 2) prices *(pr)*; 3) credit, money and exchange rate *(m)*; 4) national accounts indicators *(na)* and 5) all variables.

Following Otrok and Whiteman [1998] an additional forecasting model considered in this study includes one factor of each of the four groups of variables [13],

(6) FAR_Gr. $\pi_{t+h} = \phi_o + \beta_1 f_{1t\_ra} + \beta_2 f_{1t\_pr} + \beta_3 f_{1t\_m} + \beta_4 f_{1t\_na} + \sum_{i=1}^{p} \phi_i \pi_{t-i} + \epsilon_{t+h}$.

4.1. **Empirical results.**

[9] The data used in this paper is balanced. However, the interpolation of missing data is useful when working with real time data, since several series are available with some delay.

[10] For recursive forecasts the estimation sample is 2000:1-t' while for rolling forecast is sixty-month moving window up to time t', where $t' =$ 2005:01$, \ldots,$ 2008:06.

[11] Similar results were obtained when more factors ($m > 1$) were included in the model.

[12] The maximum number of factors considered for these exercises was six.

[13] Factors of different groups were estimated separately.

4.1.1. *Recursive forecasts.* Table A.2 exhibits Bai and Ng and BIC criteria to determine the number of factors to be included in the forecasting equation. This table shows the results for each horizon and different forecasting samples. [14]

The results show that most of the times, both criteria lead to the same number of factors, except for two sets of variables: real activity and national accounts, for which Bai and Ng systematically select one factor and BIC zero factors. On the other hand, for each criterion the results hold through the sample period and for different forecast horizons. This suggest, in terms of this analysis, that the relationship among these variables does not significantly change over time.

Table A.3 shows the proportion of variance explained by each factor for different samples and set of variables. For the group of real activity indicators, the first factor explains in average 18% of the variance. For the set of prices, 25%; for the credit, money and exchange rate group, 31%, for national accounts variables, 15%, and for the overall set of variables, 12%. Although, the first factor does not explain a large proportion of overall variation of the corresponding set of variables, neither BIC nor Bai and Ng criterion select more than one factor for most of the cases. If we were interested in a specific proportion of explained variance, for instance 60%, then, at least five or six factors should be included.[15]

Forecasts evaluation for models $(1)-(5)$ using different set of variables are exhibited in Tables A.4 to A.8. Five evaluation statistics were used: mean absolute forecast error (MAFE), mean absolute percentage forecast error (MAPFE), root mean squared forecast error (RMSFE), root mean squared percentage forecast error (RMSPFE) and U-Theil. [16] For horizons from one to five months ahead, all considered models outperform the random walk model according to the U-Theil statistic, which is less than one, in these cases the results are presented in shadowed areas. For all horizons, except for one and twelve months ahead, there is at least one of the forecasting models which includes factors that has smaller RMSFE than the autoregressive model (AR). For horizons from two to four months, the model which includes one factor of each group of variables, FAR_Gr, has the smallest RMSFE.

When considering the set of price indicators, Table A.6, the results are quite similar. From one to six months ahead all factor models outperform random walk forecasts since U-Theil statistic is less than one. None of the factor models outperform the AR model for one month forecast horizon. For this set of variables, DFAR_BIC and FAR models have the smallest RMSFE for most horizons. Similar results are observed for other sets of variables.

When comparing the forecast ability for different sets of variables, the set of prices indicators, in general, produces more accurate forecasts in terms of smaller RMSFE. However,

[14]BIC (BIC) and Bai and Ng (IC_{p2}) criteria for m factors are defined as follows: $BIC(m) = \ln[V(m)] + m\frac{\ln(T)}{T}$, $IC_{p2}(m) = \ln[V(m)] + m\left(\frac{N+T}{NT}\right)\ln[\min(N,T)]$, where $V(m) = (NT)^{-1}\sum_{t=1}^{T}\hat{\xi}_t'(m)\hat{\xi}_t(m)$.

[15]For all variables group more than six factors are required.

[16]Table A.4 additionally shows the evaluation results for model (6).

for the long run (10-12 months) this is not the case. Each set of variables has some forecasting power to predict inflation, thus, estimating the factors considering the overall set of variables, as well as, models that include factors of each set of variables, seem to be good choices.

Tables A.9 to A.13 present p-values associated with the modified Diebold and Mariano test (Diebold and Mariano [1995]) for equal forecast ability of a pair of forecasting models. The shadowed cells correspond to cases when the null hypothesis is rejected at 10% significance level, which means that RMSFE of model in the column is significantly smaller than RMSFE of model in the row. For models that consider the overall set of variables, only for horizons from 3 to 6 months there is a significant reduction in RMSFE of the factor models forecasts, in comparison to the AR model. For the set of prices indicators similar results are obtained (Table A.11). For the others sets of variables, none of the factor models produce RMSFE significantly smaller than that of the AR model. Even though dynamic factor forecasts significantly outperform AR forecasts for some horizons, there is no conclusive evidence to claim which of the factor models produce more accurate forecasts for inflation. Including more factors or more factor lags in the forecasting equation does not necessarily reduce the forecast error, and is not always significant when a reduction is observed (FAR, FAR_BIC vs. DFAR, DFAR_BIC).

An additional forecasting exercise was performed following Bai and Ng [2002] methodology. These authors propose two forecast exercises. One based on all available data and other using a data set that contains only relevant or highly correlated series with the dependent variable. Thus, a pre-selection of variables was done, such that variables having a contemporaneous correlation higher than 10% with the CPI inflation are included in the data set used to estimate the factors. The evaluation of the forecasts obtained with the estimated factors from the pre-selected data set is shown in Table A.14. However, there is no improvement in the forecasts when comparing to those of the complete data.

4.1.2. *Rolling forecasts.* The results of Bai and Ng and BIC criteria for determining the number of factors for rolling forecasts are almost identical, in more than 90% of the cases, to the ones obtained in recursive exercises. [17] From the forecasts evaluation results in Tables A.15 to A.19 there are some aspects that are worth mentioning. First, comparing to random walk forecasts, factor models produce more accurate forecasts for the short run (from one to five months) for the complete data set and prices indicators. However, for the other data sets (credit, money and exchange rate; real activity; and national accounts) the gain in RMSFE of factor models is observed only until four months horizon. Second, for the complete data set (Table A.15), some factor models produce smaller RMSFE than AR benchmark model for horizons from two to eleven months ahead. In particular, FAR_Gr model performs well compared to the other models. Other model with good performance is FAR_BIC.

[17] These results are not presented in the paper but are available upon request.

For the price indicators group (Table A.17), factor models are more accurate than AR model for horizons from one to eleven months. The models that produce the best forecasts for most horizons are DFAR_BIC and FAR_BIC.

For the money and exchange rate indicators data set (Table A.18), comparing to AR model, there is some reduction in RMSFE of the forecasts obtained from factor models from one to ten months horizon. However, for further horizons AR produces smaller RMSFE.

For the real activity and national accounts groups (Table A.16 and Table A.19), when comparing with the benchmark model there is not a reduction in RMSFE by factor models for most of the considered horizons.

When recursive and rolling forecasts are compared (Tables A.4 to A.8 and A.15 to A.19), the former forecasts produce smaller RMSFE than the latter ones for some horizons and some forecasting models. This result holds for the four groups of indicators that were considered. However, as presented in Tables A.25 to A.29, the reduction in RMSFE is not always significant according to the modified Diebold and Mariano tests.

In general, these results lead to the conclusion that factor models are good at forecasting inflation for short term horizons (two to six months) and some longer horizons. In most of the cases factor models forecasts significantly outperform the benchmark AR model forecasts. Even though, there is no conclusive evidence to establish which factor model produces the best forecasts, for short run horizons the best results are obtained for the model that includes factors from each set of variables.

5. FINAL REMARKS

In this work, factor models were used as alternative methods for forecasting inflation in Colombia for horizons from one to twelve months. In particular, we used a dynamic approach proposed by Stock and Watson [1998, 1999, 2002a,b] and an autoregressive model as a forecasting benchmark.

Factor models state that variation of a large number of variables can be explained by a small number of common factors. The idea of these models is based on the assumption that the dynamics of macroeconomic variables is determined by a few unobservable common factors that can be estimated using broad panel data. Then, information of large number of variables can be used in constructing forecasting models of smaller dimension.

When working with large number of variables an important issue is the availability of data since some variables are released with delay. In this regard, the implemented methodology uses EM algorithm to interpolate missing values. Then, a balanced panel can be used in the forecasting procedure.

Our forecasting analysis includes several exercises for different groups of variables (All variables, Real Activity, Prices, National Accounts and Credit, Money and Exchange Rate), recursive and rolling forecasts, and five different factor models. The five models are variations of the SW model and consider different criteria to select both, the number of factors and the number of lags of those factors. Additionally, a model that includes factors from each group of variables was analyzed.

The results show that, in average, one factor is appropriate to capture the commonality of the economic variables considered in this study and help to explain the behavior of Colombian inflation. On the other hand, models based on price indicators produce smaller RMSFE for most horizons. However, other groups of variables have some predictive power since there is a good forecasting performance for the all-variables group as well as the model that includes factors from each set of variables.

In terms of rolling and recursive factor forecasts, even though the latter forecasts have smaller RMSFE than the former ones in more than 70% of the considered cases, the reduction is not always significant.

In general, factor models outperformed the autoregressive benchmark model in terms of RMSFE for horizons between two and six months, for most of these cases there is a significant improvement. Additionally, factor models outperformed random walk forecasts. For these short-run horizons, the best results are obtained for recursive forecast, all-variables and prices groups as well as the model that includes factors from each set of variables.

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APPENDIX A. TABLES

TABLE A.2. Criteria for Determining the Number of Factors

All Variables Group

Criteria	Horizon (1999:01 to 2005:06)				Horizon (1999:01 to 2006:06)				Horizon (1999:01 to 2007:06)				Horizon (1999:01 to 2008:06)			
	1	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**
Bai and Ng	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1
BIC	1	1	1	0	1	2	1	0	1	2	3	1	1	2	1	1

Real Activity Group

Criteria	Horizon (1999:01 to 2005:06)				Horizon (1999:01 to 2006:06)				Horizon (1999:01 to 2007:06)				Horizon (1999:01 to 2008:06)			
	1	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**
Bai and Ng	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Prices Group

Criteria	Horizon (1999:01 to 2005:06)				Horizon (1999:01 to 2006:06)				Horizon (1999:01 to 2007:06)				Horizon (1999:01 to 2008:06)			
	1	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**
Bai and Ng	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BIC	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1

Credit, Money and Exchange Rate Group

Criteria	Horizon (1999:01 to 2005:06)				Horizon (1999:01 to 2006:06)				Horizon (1999:01 to 2007:06)				Horizon (1999:01 to 2008:06)			
	1	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**
Bai and Ng	2	2	1	1	1	2	2	1	1	2	1	1	1	2	1	1
BIC	3	1	1	0	1	5	1	1	1	1	1	1	0	1	1	1

National Accounts Group

Criteria	Horizon (1999:01 to 2005:06)				Horizon (1999:01 to 2006:06)				Horizon (1999:01 to 2007:06)				Horizon (1999:01 to 2008:06)			
	1	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**	**1**	**3**	**6**	**12**
Bai and Ng	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A.3. Explained Variance by the Factors

All Variables Group								
	1999:01 to 2005:06		1999:01 to 2006:06		1999:01 to 2007:06		1999:01 to 2008:06	
Number Of Factors	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**
1	0.1166	0.1166	0.1178	0.1178	0.1210	0.1210	0.1133	0.1133
2	0.0700	0.1866	0.0691	0.1869	0.0658	0.1868	0.0628	0.1761
3	0.0663	0.2529	0.0625	0.2494	0.0578	0.2446	0.0593	0.2354
4	0.0527	0.3056	0.0499	0.2993	0.0471	0.2917	0.0461	0.2815
5	0.0461	0.3517	0.0446	0.3439	0.0438	0.3355	0.0420	0.3235
6	0.0430	0.3947	0.0397	0.3836	0.0405	0.3760	0.0383	0.3618

Real Activity Group								
	1999:01 to 2005:06		1999:01 to 2006:06		1999:01 to 2007:06		1999:01 to 2008:06	
Number Of Factors	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**
1	0.1760	0.1760	0.1900	0.1900	0.1751	0.1751	0.1631	0.1631
2	0.1607	0.3367	0.1525	0.3425	0.1427	0.3178	0.1468	0.3099
3	0.1159	0.4525	0.1120	0.4545	0.1306	0.4484	0.1238	0.4337
4	0.0776	0.5301	0.0810	0.5355	0.0809	0.5293	0.0789	0.5127
5	0.0711	0.6012	0.0686	0.6041	0.0679	0.5972	0.0681	0.5808
6	0.0605	0.6618	0.0591	0.6632	0.0592	0.6564	0.0577	0.6385

Prices Group								
	1999:01 to 2005:06		1999:01 to 2006:06		1999:01 to 2007:06		1999:01 to 2008:06	
Number Of Factors	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**
1	0.2442	0.2442	0.2483	0.2483	0.2535	0.2535	0.2402	0.2402
2	0.1552	0.3995	0.1546	0.4029	0.1445	0.3979	0.1438	0.3841
3	0.0897	0.4891	0.0889	0.4919	0.0880	0.4859	0.0932	0.4773
4	0.0731	0.5622	0.0713	0.5632	0.0690	0.5549	0.0688	0.5461
5	0.0619	0.6241	0.0605	0.6237	0.0577	0.6126	0.0618	0.6079
6	0.0552	0.6793	0.0540	0.6777	0.0528	0.6654	0.0550	0.6630

Credit, Money and Exchange Rate Group								
	1999:01 to 2005:06		1999:01 to 2006:06		1999:01 to 2007:06		1999:01 to 2008:06	
Number Of Factors	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**
1	0.2198	0.2198	0.3790	0.3790	0.3289	0.3289	0.3023	0.3023
2	0.1656	0.3855	0.1390	0.5180	0.1409	0.4698	0.1465	0.4488
3	0.1330	0.5184	0.0822	0.6002	0.1093	0.5791	0.1134	0.5622
4	0.0850	0.6035	0.0652	0.6653	0.0844	0.6635	0.0837	0.6459
5	0.0661	0.6695	0.0506	0.7159	0.0553	0.7188	0.0623	0.7082
6	0.0479	0.7174	0.0412	0.7571	0.0408	0.7596	0.0416	0.7498

National Accounts Group								
	1999:01 to 2005:06		1999:01 to 2006:06		1999:01 to 2007:06		1999:01 to 2008:06	
Number Of Factors	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**	**Explained Variance**	**Accumulated Explained Variance**
1	0.1564	0.1564	0.1546	0.1546	0.1546	0.1546	0.1442	0.1442
2	0.0998	0.2562	0.1032	0.2578	0.0977	0.2523	0.1126	0.2568
3	0.0856	0.3418	0.0810	0.3388	0.0806	0.3329	0.0766	0.3334
4	0.0769	0.4186	0.0745	0.4132	0.0709	0.4038	0.0719	0.4054
5	0.0701	0.4888	0.0680	0.4813	0.0667	0.4705	0.0667	0.4721
6	0.0612	0.5500	0.0604	0.5416	0.0622	0.5327	0.0569	0.5290

TABLE A.4. Recursive Forecasts Evaluation for All Variables Group

All Variables Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
1	**AR**	0.1599	0.0301	0.1964	0.0370	0.6227
	FAR	0.1681	0.0320	0.2043	0.0393	0.6478
	FAR_BIC	0.1669	0.0317	0.2013	0.0385	0.6385
	DFAR	0.1723	0.0330	0.2082	0.0406	0.6603
	DFAR_BIC	0.1615	0.0308	0.2064	0.0398	0.6547
	FAR_GR	0.1749	0.0335	0.2127	0.0413	0.6744
2	**AR**	0.3285	0.0635	0.3925	0.0772	0.7595
	FAR	0.2962	0.0565	0.3717	0.0706	0.7192
	FAR_BIC	0.2979	0.0571	0.3758	0.0727	0.7273
	DFAR	0.3015	0.0573	0.3805	0.0718	0.7363
	DFAR_BIC	0.2751	0.0523	0.3696	0.0701	0.7153
	FAR_GR	0.3027	0.0579	0.3838	0.0739	0.7426
3	**AR**	0.4500	0.0886	0.5253	0.1074	0.8590
	FAR	0.3585	0.0696	0.4646	0.0904	0.7598
	FAR_BIC	0.3809	0.0742	0.4765	0.0945	0.7793
	DFAR	0.3585	0.0696	0.4646	0.0904	0.7598
	DFAR_BIC	0.3704	0.0719	0.4641	0.0931	0.7589
	FAR_GR	0.3737	0.0722	0.4744	0.0931	0.7758
4	**AR**	0.5934	0.1165	0.6916	0.1407	0.9995
	FAR	0.4273	0.0837	0.5424	0.1093	0.7839
	FAR_BIC	0.4451	0.0874	0.5577	0.1135	0.8060
	DFAR	0.4273	0.0837	0.5424	0.1093	0.7839
	DFAR_BIC	0.4358	0.0860	0.5580	0.1147	0.8064
	FAR_GR	0.4232	0.0831	0.5370	0.1106	0.7760
5	**AR**	0.7115	0.1396	0.8268	0.1681	1.0721
	FAR	0.5350	0.1039	0.6865	0.1369	0.8902
	FAR_BIC	0.6249	0.1214	0.7666	0.1534	0.9939
	DFAR	0.5842	0.1121	0.7310	0.1433	0.9479
	DFAR_BIC	0.5855	0.1132	0.7351	0.1457	0.9532
	FAR_GR	0.5728	0.1110	0.7164	0.1437	0.9289
6	**AR**	0.7521	0.1478	0.9007	0.1827	1.0997
	FAR	0.6793	0.1321	0.8153	0.1616	0.9954
	FAR_BIC	0.7021	0.1385	0.8543	0.1741	1.0431
	DFAR	0.7077	0.1369	0.8514	0.1669	1.0395
	DFAR_BIC	0.7533	0.1478	0.8842	0.1774	1.0796
	FAR_GR	0.6819	0.1334	0.8221	0.1651	1.0038
7	**AR**	0.8204	0.1631	0.9906	0.2047	1.1800
	FAR	0.7596	0.1491	0.8963	0.1793	1.0677
	FAR_BIC	0.8338	0.1647	0.9784	0.1981	1.1654
	DFAR	0.8077	0.1576	0.9601	0.1892	1.1437
	DFAR_BIC	0.8834	0.1729	1.0116	0.2017	1.2050

(continued)

(continued)

All Variables Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
	FAR_GR	0.7936	0.1555	0.9199	0.1847	1.0958
8	**AR**	0.8991	0.1811	1.0852	0.2248	1.2583
	FAR	0.9205	0.1798	1.0835	0.2124	1.2563
	FAR_BIC	0.9381	0.1856	1.1229	0.2238	1.3020
	DFAR	0.9219	0.1805	1.0748	0.2119	1.2462
	DFAR_BIC	0.9333	0.1843	1.0701	0.2152	1.2408
	FAR_GR	0.9397	0.1845	1.1032	0.2196	1.2792
9	**AR**	1.0201	0.2073	1.2103	0.2513	1.3478
	FAR	1.0211	0.2028	1.1713	0.2360	1.3045
	FAR_BIC	1.0115	0.2033	1.1871	0.2427	1.3220
	DFAR	1.1029	0.2187	1.2881	0.2581	1.4345
	DFAR_BIC	1.0234	0.2054	1.2064	0.2459	1.3435
	FAR_GR	1.0418	0.2080	1.2100	0.2451	1.3476
10	**AR**	1.1378	0.2343	1.3466	0.2826	1.4492
	FAR	1.1324	0.2292	1.3127	0.2695	1.4127
	FAR_BIC	1.0864	0.2217	1.2714	0.2644	1.3682
	DFAR	1.2282	0.2478	1.4574	0.2965	1.5685
	DFAR_BIC	1.1468	0.2331	1.3599	0.2794	1.4635
	FAR_GR	1.1587	0.2347	1.3546	0.2773	1.4578
11	**AR**	1.2577	0.2624	1.4854	0.3163	1.5198
	FAR	1.2776	0.2620	1.4926	0.3107	1.5271
	FAR_BIC	1.2508	0.2582	1.4729	0.3099	1.5070
	DFAR	1.3125	0.2685	1.5398	0.3187	1.5754
	DFAR_BIC	1.2720	0.2621	1.5030	0.3148	1.5378
	FAR_GR	1.2944	0.2652	1.5140	0.3151	1.5490
12	**AR**	1.4034	0.2942	1.6463	0.3525	1.5752
	FAR	1.4428	0.2976	1.6757	0.3518	1.6034
	FAR_BIC	1.4427	0.2984	1.6986	0.3573	1.6253
	DFAR	1.4689	0.3027	1.7165	0.3593	1.6423
	DFAR_BIC	1.4533	0.3005	1.7155	0.3604	1.6414
	FAR_GR	1.4409	0.2962	1.6774	0.3513	1.6050

* Forecasting models with U-Theil less than one are presented in shadowed areas.

TABLE A.5. Recursive Forecasts Evaluation for Real Activity Group

Real Activity Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
1	**AR**	0.1599	0.0301	0.1964	0.0370	0.6227
	FAR	0.1688	0.0320	0.2064	0.0394	0.6545
	FAR_BIC	0.1599	0.0301	0.1964	0.0370	0.6227
	DFAR	0.1688	0.0320	0.2064	0.0394	0.6545
	DFAR_BIC	0.1599	0.0301	0.1964	0.0370	0.6227
2	**AR**	0.3285	0.0635	0.3925	0.0772	0.7595
	FAR	0.3414	0.0661	0.3955	0.0777	0.7654
	FAR_BIC	0.3285	0.0635	0.3925	0.0772	0.7595
	DFAR	0.3414	0.0661	0.3955	0.0777	0.7654
	DFAR_BIC	0.3285	0.0635	0.3925	0.0772	0.7595
3	**AR**	0.4500	0.0886	0.5253	0.1074	0.8590
	FAR	0.4474	0.0875	0.5298	0.1070	0.8665
	FAR_BIC	0.4468	0.0880	0.5218	0.1069	0.8534
	DFAR	0.4474	0.0875	0.5298	0.1070	0.8665
	DFAR_BIC	0.4535	0.0892	0.5308	0.1084	0.8682
4	**AR**	0.5934	0.1165	0.6916	0.1407	0.9995
	FAR	0.5905	0.1154	0.6967	0.1408	1.0068
	FAR_BIC	0.5906	0.1158	0.6849	0.1395	0.9898
	DFAR	0.5790	0.1133	0.6919	0.1400	0.9998
	DFAR_BIC	0.5912	0.1158	0.6916	0.1403	0.9994
5	**AR**	0.7115	0.1396	0.8268	0.1681	1.0721
	FAR	0.7043	0.1380	0.8167	0.1657	1.0589
	FAR_BIC	0.7096	0.1393	0.8235	0.1676	1.0678
	DFAR	0.7043	0.1380	0.8167	0.1657	1.0589
	DFAR_BIC	0.7040	0.1384	0.8140	0.1664	1.0555
6	**AR**	0.7521	0.1478	0.9007	0.1827	1.0997
	FAR	0.7583	0.1494	0.9032	0.1844	1.1028
	FAR_BIC	0.7521	0.1478	0.9007	0.1827	1.0997
	DFAR	0.7336	0.1454	0.8848	0.1820	1.0804
	DFAR_BIC	0.7412	0.1460	0.8832	0.1804	1.0783
7	**AR**	0.8204	0.1631	0.9906	0.2047	1.1800
	FAR	0.8251	0.1646	0.9962	0.2060	1.1866
	FAR_BIC	0.8204	0.1631	0.9906	0.2047	1.1800
	DFAR	0.7872	0.1582	0.9652	0.2018	1.1497
	DFAR_BIC	0.7979	0.1594	0.9751	0.2026	1.1615
8	**AR**	0.8991	0.1811	1.0852	0.2248	1.2583
	FAR	0.9538	0.1915	1.1329	0.2341	1.3136
	FAR_BIC	0.8859	0.1793	1.0883	0.2262	1.2619
	DFAR	0.9300	0.1875	1.1179	0.2320	1.2962
	DFAR_BIC	0.8930	0.1806	1.1003	0.2281	1.2758

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Real Activity Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0201	0.2073	1.2103	0.2513	1.3478
	FAR	1.0678	0.2165	1.2549	0.2594	1.3975
	FAR_BIC	1.0247	0.2085	1.2215	0.2539	1.3603
	DFAR	1.0706	0.2172	1.2646	0.2613	1.4084
	DFAR_BIC	1.0368	0.2109	1.2459	0.2583	1.3875
10	**AR**	1.1378	0.2343	1.3466	0.2826	1.4492
	FAR	1.1658	1.1658	1.1658	1.1658	1.1658
	FAR_BIC	1.1318	0.2334	1.3388	0.2818	1.4408
	DFAR	1.1524	0.2376	1.3561	0.2861	1.4594
	DFAR_BIC	1.1304	0.2334	1.3452	0.2834	1.4477
11	**AR**	1.2577	0.2624	1.4854	0.3163	1.5198
	FAR	1.2756	0.2659	1.5202	0.3232	1.5554
	FAR_BIC	1.2678	0.2645	1.5015	0.3195	1.5362
	DFAR	1.2749	0.2658	1.5262	0.3242	1.5615
	DFAR_BIC	1.2685	0.2646	1.5096	0.3209	1.5446
12	**AR**	1.4034	0.2942	1.6463	0.3525	1.5752
	FAR	1.3713	0.2894	1.6437	0.3540	1.5727
	FAR_BIC	1.3942	0.2924	1.6356	0.3508	1.5650
	DFAR	1.4015	0.2952	1.6857	0.3613	1.6128
	DFAR_BIC	1.4246	0.2983	1.6788	0.3584	1.6063

* Forecasting models with U-Theil less than one are presented in shadowed areas.

TABLE A.6. Recursive Forecasts Evaluation for Prices Group

Prices Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
1	**AR**	0.1599	0.0301	0.1964	0.0370	0.6227
	FAR	0.1711	0.0329	0.2068	0.0403	0.6557
	FAR_BIC	0.1682	0.0323	0.2041	0.0399	0.6471
	DFAR	0.1711	0.0329	0.2068	0.0403	0.6557
	DFAR_BIC	0.1682	0.0323	0.2041	0.0399	0.6471
2	**AR**	0.3285	0.0635	0.3925	0.0772	0.7595
	FAR	0.3093	0.0595	0.3775	0.0728	0.7306
	FAR_BIC	0.3006	0.0577	0.3739	0.0726	0.7235
	DFAR	0.3093	0.0595	0.3775	0.0728	0.7306
	DFAR_BIC	0.3034	0.0582	0.3717	0.0714	0.7193
3	**AR**	0.4500	0.0886	0.5253	0.1074	0.8590
	FAR	0.3727	0.0723	0.4673	0.0928	0.7642
	FAR_BIC	0.3610	0.0700	0.4725	0.0924	0.7727
	DFAR	0.3727	0.0723	0.4673	0.0928	0.7642
	DFAR_BIC	0.3549	0.0690	0.4588	0.0909	0.7504
4	**AR**	0.5934	0.1165	0.6916	0.1407	0.9995
	FAR	0.4336	0.0846	0.5453	0.1112	0.7880
	FAR_BIC	0.4131	0.0808	0.5291	0.1086	0.7647
	DFAR	0.4336	0.0846	0.5453	0.1112	0.7880
	DFAR_BIC	0.4131	0.0808	0.5291	0.1086	0.7647
5	**AR**	0.7115	0.1396	0.8268	0.1681	1.0721
	FAR	0.5387	0.1058	0.6615	0.1364	0.8577
	FAR_BIC	0.5424	0.1057	0.6709	0.1362	0.8699
	DFAR	0.5414	0.1062	0.6651	0.1369	0.8623
	DFAR_BIC	0.5755	0.1122	0.6932	0.1401	0.8989
6	**AR**	0.7521	0.1478	0.9007	0.1827	1.0997
	FAR	0.6867	0.1341	0.8118	0.1631	0.9912
	FAR_BIC	0.6662	0.1303	0.7918	0.1591	0.9667
	DFAR	0.7031	0.1368	0.8386	0.1669	1.0239
	DFAR_BIC	0.7209	0.1400	0.8451	0.1671	1.0318
7	**AR**	0.8204	0.1631	0.9906	0.2047	1.1800
	FAR	0.7820	0.1530	0.9009	0.1800	1.0731
	FAR_BIC	0.7611	0.1492	0.8746	0.1756	1.0418
	DFAR	0.8085	0.1579	0.9246	0.1839	1.1014
	DFAR_BIC	0.8085	0.1578	0.9203	0.1830	1.0962
8	**AR**	0.8991	0.1811	1.0852	0.2248	1.2583
	FAR	0.8984	0.1766	1.0441	0.2078	1.2106
	FAR_BIC	0.8582	0.1688	1.0035	0.2006	1.1636
	DFAR	0.9161	0.1798	1.0648	0.2112	1.2347
	DFAR_BIC	0.8812	0.1731	1.0328	0.2056	1.1975

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Prices Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0201	0.2073	1.2103	0.2513	1.3478
	FAR	1.0074	0.2015	1.1769	0.2389	1.3107
	FAR_BIC	0.9797	0.1956	1.1474	0.2320	1.2778
	DFAR	1.0118	0.2023	1.1822	0.2397	1.3166
	DFAR_BIC	0.9697	0.1938	1.1303	0.2292	1.2588
10	**AR**	1.1378	0.2343	1.3466	0.2826	1.4492
	FAR	1.1074	0.2244	1.3073	0.2678	1.4069
	FAR_BIC	1.0782	0.2187	1.2721	0.2608	1.3691
	DFAR	1.1079	0.2244	1.3135	0.2685	1.4136
	DFAR_BIC	1.0723	0.2174	1.2709	0.2600	1.3677
11	**AR**	1.2577	0.2624	1.4854	0.3163	1.5198
	FAR	1.2640	0.2603	1.4996	0.3137	1.5343
	FAR_BIC	1.2265	0.2523	1.4448	0.3024	1.4782
	DFAR	1.2983	0.2665	1.5757	0.3259	1.6122
	DFAR_BIC	1.2512	0.2567	1.5144	0.3136	1.5495
12	**AR**	1.4034	0.2942	1.6463	0.3525	1.5752
	FAR	1.4198	0.2947	1.6824	0.3552	1.6097
	FAR_BIC	1.4132	0.2932	1.6674	0.3520	1.5954
	DFAR	1.4371	0.2978	1.7209	0.3615	1.6466
	DFAR_BIC	1.4001	0.2902	1.6639	0.3502	1.5920

* Forecasting models with U-Theil less than one are presented in shadowed areas.

TABLE A.7. Recursive Forecasts Evaluation for Credit, Money and Exchange Rate Group

Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
1	**AR**	0.1599	0.0301	0.1964	0.0370	0.6227
	FAR	0.1807	0.0343	0.2252	0.0435	0.7141
	FAR_BIC	0.1736	0.0328	0.2249	0.0429	0.7131
	DFAR	0.1807	0.0343	0.2252	0.0435	0.7141
	DFAR_BIC	0.1752	0.0333	0.2147	0.0410	0.6809
2	**AR**	0.3285	0.0635	0.3925	0.0772	0.7595
	FAR	0.3391	0.0653	0.4262	0.0831	0.8248
	FAR_BIC	0.3161	0.0609	0.4059	0.0798	0.7854
	DFAR	0.3322	0.0640	0.4210	0.0822	0.8147
	DFAR_BIC	0.2975	0.0568	0.3935	0.0749	0.7614
3	**AR**	0.4500	0.0886	0.5253	0.1074	0.8590
	FAR	0.4237	0.0824	0.5364	0.1064	0.8773
	FAR_BIC	0.4064	0.0789	0.5109	0.1016	0.8355
	DFAR	0.4244	0.0825	0.5367	0.1064	0.8778
	DFAR_BIC	0.3951	0.0761	0.5071	0.1001	0.8294
4	**AR**	0.5934	0.1165	0.6916	0.1407	0.9995
	FAR	0.5249	0.1021	0.6557	0.1288	0.9475
	FAR_BIC	0.4843	0.0947	0.6307	0.1280	0.9114
	DFAR	0.5249	0.1021	0.6557	0.1288	0.9475
	DFAR_BIC	0.4594	0.0900	0.6190	0.1254	0.8946
5	**AR**	0.7115	0.1396	0.8268	0.1681	1.0721
	FAR	0.6262	0.1209	0.7710	0.1525	0.9997
	FAR_BIC	0.6324	0.1229	0.7836	0.1568	1.0160
	DFAR	0.6262	0.1209	0.7710	0.1525	0.9997
	DFAR_BIC	0.6284	0.1224	0.7816	0.1575	1.0135
6	**AR**	0.7521	0.1478	0.9007	0.1827	1.0997
	FAR	0.7096	0.1385	0.8665	0.1732	1.0580
	FAR_BIC	0.7137	0.1407	0.8645	0.1756	1.0555
	DFAR	0.7096	0.1385	0.8665	0.1732	1.0580
	DFAR_BIC	0.7151	0.1415	0.8737	0.1788	1.0667
7	**AR**	0.8204	0.1631	0.9906	0.2047	1.1800
	FAR	0.8044	0.1599	0.9455	0.1940	1.1263
	FAR_BIC	0.8074	0.1614	0.9430	0.1953	1.1232
	DFAR	0.7917	0.1570	0.9407	0.1927	1.1205
	DFAR_BIC	0.8167	0.1631	0.9477	0.1965	1.1289
8	**AR**	0.8991	0.1811	1.0852	0.2248	1.2583
	FAR	0.9833	0.1943	1.1483	0.2302	1.3314
	FAR_BIC	0.9626	0.1917	1.1222	0.2274	1.3012
	DFAR	0.9705	0.1914	1.1408	0.2283	1.3227
	DFAR_BIC	0.9472	0.1877	1.0979	0.2214	1.2730

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Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0201	0.2073	1.2103	0.2513	1.3478
	FAR	1.0944	0.2191	1.2539	0.2562	1.3964
	FAR_BIC	1.0087	0.2030	1.1639	0.2407	1.2962
	DFAR	1.0805	0.2161	1.2452	0.2543	1.3868
	DFAR_BIC	1.0233	0.2061	1.1783	0.2438	1.3122
10	**AR**	1.1378	0.2343	1.3466	0.2826	1.4492
	FAR	1.1983	0.2433	1.3593	0.2823	1.4628
	FAR_BIC	1.1034	0.2262	1.2986	0.2724	1.3976
	DFAR	1.2322	0.2494	1.4074	0.2899	1.5147
	DFAR_BIC	1.1530	0.2357	1.3646	0.2838	1.4686
11	**AR**	1.2577	0.2624	1.4854	0.3163	1.5198
	FAR	1.3585	0.2773	1.5432	0.3215	1.5789
	FAR_BIC	1.2727	0.2636	1.5022	0.3164	1.5370
	DFAR	1.3756	0.2806	1.5827	0.3287	1.6193
	DFAR_BIC	1.2706	0.2628	1.5094	0.3172	1.5443
12	**AR**	1.4034	0.2942	1.6463	0.3525	1.5752
	FAR	1.5088	0.3083	1.7247	0.3568	1.6502
	FAR_BIC	1.4244	0.2950	1.6614	0.3503	1.5896
	DFAR	1.5013	0.3067	1.7240	0.3565	1.6496
	DFAR_BIC	1.4166	0.2932	1.6545	0.3490	1.5831

* Forecasting models with U-Theil less than one are presented in shadowed areas.

TABLE A.8. Recursive Gorecasts Evaluation for National Accounts Group

National Accounts Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
1	**AR**	0.1599	0.0301	0.1964	0.0370	0.6227
	FAR	0.1620	0.0305	0.2079	0.0389	0.6592
	FAR_BIC	0.1599	0.0301	0.1964	0.0370	0.6227
	DFAR	0.1620	0.0305	0.2079	0.0389	0.6592
	DFAR_BIC	0.1635	0.0309	0.2107	0.0407	0.6681
2	**AR**	0.3285	0.0635	0.3925	0.0772	0.7595
	FAR	0.3312	0.0639	0.4028	0.0790	0.7795
	FAR_BIC	0.3285	0.0635	0.3925	0.0772	0.7595
	DFAR	0.3312	0.0639	0.4028	0.0790	0.7795
	DFAR_BIC	0.3285	0.0637	0.4082	0.0815	0.7899
3	**AR**	0.4500	0.0886	0.5253	0.1074	0.8590
	FAR	0.4478	0.0880	0.5256	0.1077	0.8596
	FAR_BIC	0.4481	0.0881	0.5217	0.1064	0.8532
	DFAR	0.4478	0.0880	0.5256	0.1077	0.8596
	DFAR_BIC	0.4535	0.0892	0.5301	0.1085	0.8669
4	**AR**	0.5934	0.1165	0.6916	0.1407	0.9995
	FAR	0.5946	0.1165	0.6973	0.1414	1.0077
	FAR_BIC	0.5934	0.1165	0.6916	0.1407	0.9995
	DFAR	0.6173	0.1211	0.7116	0.1443	1.0284
	DFAR_BIC	0.5992	0.1175	0.6941	0.1410	1.0031
5	**AR**	0.7115	0.1396	0.8268	0.1681	1.0721
	FAR	0.7031	0.1375	0.8268	0.1673	1.0721
	FAR_BIC	0.7115	0.1396	0.8268	0.1681	1.0721
	DFAR	0.6910	0.1355	0.8440	0.1720	1.0943
	DFAR_BIC	0.7377	0.1448	0.8615	0.1751	1.1170
6	**AR**	0.7521	0.1478	0.9007	0.1827	1.0997
	FAR	0.7649	0.1502	0.9252	0.1888	1.1297
	FAR_BIC	0.7521	0.1478	0.9007	0.1827	1.0997
	DFAR	0.7546	0.1511	0.9774	0.2083	1.1933
	DFAR_BIC	0.7750	0.1549	0.9538	0.2011	1.1646
7	**AR**	0.8204	0.1631	0.9906	0.2047	1.1800
	FAR	0.8238	0.1645	0.9956	0.2071	1.1859
	FAR_BIC	0.8204	0.1631	0.9906	0.2047	1.1800
	DFAR	0.8286	0.1675	1.0855	0.2331	1.2931
	DFAR_BIC	0.8394	0.1688	1.0546	0.2240	1.2562
8	**AR**	0.8991	0.1811	1.0852	0.2248	1.2583
	FAR	0.9053	0.1834	1.1048	0.2310	1.2810
	FAR_BIC	0.8991	0.1811	1.0852	0.2248	1.2583
	DFAR	0.9077	0.1850	1.1886	0.2555	1.3781
	DFAR_BIC	0.9182	0.1872	1.1563	0.2465	1.3407

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National Accounts Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0201	0.2073	1.2103	0.2513	1.3478
	FAR	1.0544	0.2146	1.2521	0.2612	1.3944
	FAR_BIC	1.0210	0.2075	1.2116	0.2515	1.3494
	DFAR	1.0373	0.2129	1.2884	0.2751	1.4349
	DFAR_BIC	0.9941	0.2022	1.1999	0.2494	1.3363
10	**AR**	1.1378	0.2343	1.3466	0.2826	1.4492
	FAR	1.1345	0.2348	1.3583	0.2876	1.4618
	FAR_BIC	1.1334	0.2335	1.3430	0.2820	1.4454
	DFAR	1.1036	0.2289	1.3702	0.2901	1.4746
	DFAR_BIC	1.1300	0.2329	1.3656	0.2865	1.4696
11	**AR**	1.2577	0.2624	1.4854	0.3163	1.5198
	FAR	1.2835	0.2684	1.5175	0.3250	1.5526
	FAR_BIC	1.2577	0.2624	1.4854	0.3163	1.5198
	DFAR	1.2888	0.2695	1.5385	0.3290	1.5741
	DFAR_BIC	1.2354	0.2581	1.4812	0.3158	1.5154
12	**AR**	1.4034	0.2942	1.6463	0.3525	1.5752
	FAR	1.4000	0.2943	1.6496	0.3557	1.5784
	FAR_BIC	1.4034	0.2942	1.6463	0.3525	1.5752
	DFAR	1.3584	0.2863	1.6225	0.3512	1.5524
	DFAR_BIC	1.3690	0.2875	1.6089	0.3459	1.5394

* Forecasting models with U-Theil less than one are presented in shadowed areas.

TABLE A.9. Modified Diebold and Mariano Test for All Variables Group and Recursive Forecasts

All Variables Group - Sample 2005:01 to 2008:06*

Horizon = 1						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.734	0.729	0.808	0.791	0.913
FAR	0.266		0.374	0.774	0.569	0.832
FAR_BIC	0.271	0.626		0.751	0.700	0.927
DFAR	0.192	0.226	0.249		0.445	0.672
DFAR_BIC	0.209	0.431	0.300	0.555		0.722
FAR_GR	0.087	0.168	0.073	0.328	0.278	
Horizon = 2						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.235	0.231	0.355	0.188	0.357
FAR	0.765		0.634	0.718	0.454	0.803
FAR_BIC	0.769	0.366		0.590	0.357	0.771
DFAR	0.645	0.282	0.410		0.295	0.560
DFAR_BIC	0.812	0.546	0.643	0.705		0.752
FAR_GR	0.643	0.197	0.229	0.440	0.248	
Horizon = 3						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.081	0.071	0.081	0.012	0.083
FAR	0.919		0.750	.**	0.491	0.673
FAR_BIC	0.929	0.250		0.250	0.215	0.461
DFAR	0.919	.**	0.750		0.491	0.673
DFAR_BIC	0.988	0.509	0.785	0.509		0.682
FAR_GR	0.917	0.327	0.539	0.327	0.318	
Horizon = 4						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.014	0.014	0.014	0.009	0.001
FAR	0.986		0.857	.**	0.725	0.432
FAR_BIC	0.986	0.143		0.143	0.507	0.209
DFAR	0.986	.**	0.857		0.725	0.432
DFAR_BIC	0.991	0.275	0.493	0.275		0.201
FAR_GR	0.999	0.568	0.791	0.568	0.799	
Horizon = 5						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.009	0.019	0.040	0.010	0.001
FAR	0.991		0.957	0.823	0.885	0.709
FAR_BIC	0.981	0.043		0.145	0.017	0.016
DFAR	0.960	0.177	0.855		0.587	0.296
DFAR_BIC	0.990	0.115	0.983	0.413		0.200

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All Variables Group - Sample 2005:01 to 2008:06*

FAR_GR	0.999	0.291	0.984	0.704	0.800	
Horizon = 6						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.037	0.099	0.222	0.412	0.032
FAR	0.963		0.805	0.823	0.952	0.574
FAR_BIC	0.901	0.195		0.482	0.729	0.181
DFAR	0.778	0.177	0.518		0.755	0.226
DFAR_BIC	0.588	0.048	0.271	0.245		0.033
FAR_GR	0.968	0.426	0.819	0.774	0.967	
Horizon = 7						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.096	0.414	0.381	0.582	0.175
FAR	0.904		0.935	0.820	0.967	0.802
FAR_BIC	0.586	0.065		0.379	0.771	0.006
DFAR	0.619	0.180	0.621		0.873	0.222
DFAR_BIC	0.418	0.033	0.229	0.127		0.011
FAR_GR	0.825	0.198	0.994	0.778	0.989	
Horizon = 8						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.494	0.673	0.463	0.432	0.567
FAR	0.506		0.757	0.052	0.414	0.671
FAR_BIC	0.327	0.243		0.215	0.201	0.134
DFAR	0.537	0.948	0.785		0.467	0.694
DFAR_BIC	0.568	0.586	0.799	0.533		0.683
FAR_GR	0.433	0.329	0.866	0.306	0.317	
Horizon = 9						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.357	0.361	0.706	0.475	0.499
FAR	0.643		0.619	0.827	0.726	0.917
FAR_BIC	0.639	0.381		0.787	0.808	0.999
DFAR	0.294	0.173	0.213		0.217	0.224
DFAR_BIC	0.525	0.274	0.192	0.783		0.564
FAR_GR	0.501	0.083	0.001	0.776	0.436	

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All Variables Group - Sample 2005:01 to 2008:06*

Horizon = 10						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.357	0.222	0.746	0.560	0.546
FAR	0.643		0.249	0.811	0.755	0.903
FAR_BIC	0.778	0.751		0.806	0.797	0.853
DFAR	0.254	0.189	0.194		0.184	0.226
DFAR_BIC	0.440	0.245	0.203	0.816		0.445
FAR_GR	0.454	0.097	0.147	0.774	0.555	
Horizon = 11						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.528	0.419	0.679	0.592	0.628
FAR	0.472		0.278	0.790	0.579	0.801
FAR_BIC	0.581	0.722		0.831	0.786	0.906
DFAR	0.321	0.210	0.169		0.206	0.278
DFAR_BIC	0.408	0.421	0.214	0.794		0.629
FAR_GR	0.372	0.199	0.094	0.722	0.371	
Horizon = 12						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.626	0.764	0.757	0.797	0.626
FAR	0.374		0.677	0.795	0.727	0.523
FAR_BIC	0.236	0.323		0.686	0.797	0.370
DFAR	0.243	0.205	0.314		0.488	0.269
DFAR_BIC	0.203	0.273	0.203	0.512		0.324
FAR_GR	0.374	0.477	0.630	0.731	0.676	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.10. Modified Diebold and Mariano Test for Real Activity Group and Recursive Forecasts

Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.882	.**	0.882	.**
FAR	0.118		0.118	.**	0.118
FAR_BIC	.**	0.882		0.882	.**
DFAR	0.118	.**	0.118		0.118
DFAR_BIC	.**	0.882	.**	0.882	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.606	.**	0.606	.**
FAR	0.394		0.394	.**	0.394
FAR_BIC	.**	0.606		0.606	.**
DFAR	0.394	.**	0.394		0.394
DFAR_BIC	.**	0.606	.**	0.606	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.577	0.160	0.577	0.709
FAR	0.423		0.375	.**	0.521
FAR_BIC	0.840	0.625		0.625	0.835
DFAR	0.423	.**	0.375		0.521
DFAR_BIC	0.291	0.479	0.165	0.479	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.596	0.296	0.504	0.497
FAR	0.404		0.303	0.175	0.398
FAR_BIC	0.704	0.697		0.635	0.840
DFAR	0.496	0.825	0.365		0.494
DFAR_BIC	0.503	0.602	0.160	0.506	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.196	0.175	0.196	0.179
FAR	0.804		0.735	.**	0.421
FAR_BIC	0.825	0.265		0.265	0.180
DFAR	0.804	.**	0.735		0.421
DFAR_BIC	0.821	0.579	0.820	0.579	

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Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.584	.**	0.302	0.186
FAR	0.416		0.416	0.185	0.075
FAR_BIC	.**	0.584		0.302	0.186
DFAR	0.698	0.815	0.698		0.448
DFAR_BIC	0.814	0.925	0.814	0.552	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.572	.**	0.236	0.177
FAR	0.428		0.428	0.189	0.309
FAR_BIC	.**	0.572		0.236	0.177
DFAR	0.764	0.811	0.764		0.637
DFAR_BIC	0.823	0.691	0.823	0.363	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.892	0.574	0.843	0.861
FAR	0.108		0.025	0.196	0.008
FAR_BIC	0.426	0.975		0.987	0.820
DFAR	0.157	0.804	0.013		0.000
DFAR_BIC	0.139	0.992	0.180	1.000	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.987	0.956	0.972	0.872
FAR	0.013		0.002	0.881	0.321
FAR_BIC	0.044	0.998		0.983	0.836
DFAR	0.028	0.119	0.017		0.209
DFAR_BIC	0.128	0.679	0.164	0.791	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.835	0.182	0.646	0.454
FAR	0.165		0.004	0.204	0.019
FAR_BIC	0.818	0.996		0.926	0.980
DFAR	0.354	0.796	0.074		0.285
DFAR_BIC	0.546	0.981	0.020	0.715	

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Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.875	0.875	0.930	0.852
FAR	0.125		0.206	0.921	0.366
FAR_BIC	0.125	0.794		0.974	0.861
DFAR	0.070	0.079	0.026		0.235
DFAR_BIC	0.148	0.634	0.139	0.765	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.466	0.221	0.893	0.793
FAR	0.534		0.246	0.787	0.705
FAR_BIC	0.779	0.754		0.888	0.788
DFAR	0.107	0.213	0.112		0.270
DFAR_BIC	0.207	0.295	0.212	0.730	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.11. Modified Diebold and Mariano Test for Prices Group and Recursive Forecasts

Prices Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.780	0.747	0.780	0.747
FAR	0.220		0.340	.**	0.340
FAR_BIC	0.253	0.660		0.660	.**
DFAR	0.220	.**	0.340		0.340
DFAR_BIC	0.253	0.660	.**	0.660	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.275	0.226	0.275	0.198
FAR	0.725		0.241	.**	0.199
FAR_BIC	0.774	0.759		0.759	0.378
DFAR	0.725	.**	0.241		0.199
DFAR_BIC	0.802	0.801	0.622	0.801	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.046	0.097	0.046	0.041
FAR	0.954		0.621	.**	0.194
FAR_BIC	0.903	0.379		0.379	0.220
DFAR	0.954	.**	0.621		0.194
DFAR_BIC	0.959	0.806	0.780	0.806	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.002	0.001	0.002	0.001
FAR	0.998		0.165	.**	0.165
FAR_BIC	0.999	0.835		0.835	.**
DFAR	0.998	.**	0.165		0.165
DFAR_BIC	0.999	0.835	.**	0.835	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.004	0.001	0.003	0.010
FAR	0.996		0.612	0.843	0.812
FAR_BIC	0.999	0.388		0.420	0.881
DFAR	0.997	0.157	0.580		0.804
DFAR_BIC	0.990	0.188	0.119	0.196	

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Prices Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.006	0.003	0.053	0.181
FAR	0.994		0.154	0.825	0.726
FAR_BIC	0.997	0.846		0.978	0.907
DFAR	0.947	0.175	0.022		0.580
DFAR_BIC	0.819	0.274	0.093	0.420	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.105	0.057	0.186	0.195
FAR	0.895		0.105	0.831	0.662
FAR_BIC	0.943	0.895		0.933	0.866
DFAR	0.814	0.169	0.067		0.438
DFAR_BIC	0.805	0.338	0.134	0.562	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.351	0.234	0.423	0.309
FAR	0.649		0.014	0.825	0.360
FAR_BIC	0.766	0.986		0.966	0.821
DFAR	0.577	0.175	0.034		0.035
DFAR_BIC	0.691	0.640	0.179	0.965	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.359	0.259	0.378	0.209
FAR	0.641		0.243	0.798	0.097
FAR_BIC	0.741	0.757		0.821	0.171
DFAR	0.622	0.202	0.179		0.058
DFAR_BIC	0.791	0.903	0.829	0.942	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.335	0.219	0.356	0.215
FAR	0.665		0.032	0.877	0.071
FAR_BIC	0.781	0.968		1.000	0.451
DFAR	0.644	0.123	0.000		0.027
DFAR_BIC	0.785	0.929	0.549	0.973	

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Prices Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.581	0.318	0.800	0.621
FAR	0.419		0.033	0.785	0.587
FAR_BIC	0.682	0.967		0.862	0.785
DFAR	0.200	0.215	0.138		0.036
DFAR_BIC	0.379	0.413	0.215	0.964	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.705	0.628	0.998	0.613
FAR	0.295		0.310	0.786	0.360
FAR_BIC	0.372	0.690		0.832	0.436
DFAR	0.002	0.214	0.168		0.036
DFAR_BIC	0.387	0.640	0.564	0.964	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.12. Modified Diebold and Mariano Test for Credit, Money and Exchange Rate Group and Recursive Forecasts

Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.968	0.903	0.968	0.932
FAR	0.032		0.491	.**	0.193
FAR_BIC	0.097	0.509		0.509	0.306
DFAR	0.032	.**	0.491		0.193
DFAR_BIC	0.068	0.807	0.694	0.807	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.892	0.728	0.843	0.513
FAR	0.108		0.080	0.012	0.152
FAR_BIC	0.272	0.920		0.847	0.312
DFAR	0.157	0.988	0.153		0.202
DFAR_BIC	0.487	0.848	0.688	0.798	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.632	0.294	0.636	0.328
FAR	0.368		0.039	0.840	0.157
FAR_BIC	0.706	0.961		0.964	0.448
DFAR	0.364	0.160	0.036		0.155
DFAR_BIC	0.672	0.843	0.552	0.845	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.267	0.102	0.267	0.109
FAR	0.733		0.252	.**	0.163
FAR_BIC	0.898	0.748		0.748	0.193
DFAR	0.733	.**	0.252		0.163
DFAR_BIC	0.891	0.837	0.807	0.837	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.119	0.040	0.119	0.046
FAR	0.881		0.640	.**	0.611
FAR_BIC	0.960	0.360		0.360	0.420
DFAR	0.881	.**	0.640		0.611
DFAR_BIC	0.954	0.389	0.580	0.389	

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Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Models	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
Horizon = 6					
AR		0.153	0.038	0.153	0.217
FAR	0.847		0.470	.**	0.577
FAR_BIC	0.962	0.530		0.530	0.712
DFAR	0.847	.**	0.470		0.577
DFAR_BIC	0.783	0.423	0.288	0.423	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.141	0.076	0.119	0.253
FAR	0.859		0.451	0.151	0.521
FAR_BIC	0.924	0.549		0.464	0.563
DFAR	0.881	0.849	0.536		0.558
DFAR_BIC	0.747	0.479	0.437	0.442	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.804	0.705	0.782	0.550
FAR	0.196		0.017	0.146	0.001
FAR_BIC	0.295	0.983		0.930	0.188
DFAR	0.218	0.854	0.070		0.047
DFAR_BIC	0.450	0.999	0.812	0.953	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.742	0.266	0.707	0.332
FAR	0.258		0.000	0.138	0.004
FAR_BIC	0.734	1.000		0.997	0.952
DFAR	0.293	0.862	0.003		0.027
DFAR_BIC	0.668	0.996	0.048	0.973	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.548	0.155	0.792	0.633
FAR	0.452		0.108	0.793	0.520
FAR_BIC	0.845	0.892		1.000	0.848
DFAR	0.208	0.207	0.000		0.191
DFAR_BIC	0.367	0.480	0.152	0.809	

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Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.672	0.616	0.796	0.636
FAR	0.328		0.313	0.799	0.355
FAR_BIC	0.384	0.687		0.900	0.736
DFAR	0.204	0.201	0.100		0.117
DFAR_BIC	0.364	0.645	0.264	0.883	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.660	0.601	0.658	0.554
FAR	0.340		0.310	0.463	0.283
FAR_BIC	0.399	0.690		0.687	0.165
DFAR	0.342	0.537	0.313		0.287
DFAR_BIC	0.446	0.717	0.835	0.713	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.13. Modified Diebold and Mariano Test for National Accounts Group and Recursive Forecasts

National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.909	.**	0.909	0.834
FAR	0.091		0.091	.**	0.566
FAR_BIC	.**	0.909		0.909	0.834
DFAR	0.091	.**	0.091		0.566
DFAR_BIC	0.166	0.434	0.166	0.434	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.832	.**	0.832	0.769
FAR	0.168		0.168	.**	0.586
FAR_BIC	.**	0.832		0.832	0.769
DFAR	0.168	.**	0.168		0.586
DFAR_BIC	0.231	0.414	0.231	0.414	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.521	0.160	0.521	0.616
FAR	0.479		0.318	.**	0.648
FAR_BIC	0.840	0.682		0.682	0.676
DFAR	0.479	.**	0.318		0.648
DFAR_BIC	0.384	0.352	0.324	0.352	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.679	.**	0.863	0.841
FAR	0.321		0.321	0.840	0.399
FAR_BIC	.**	0.679		0.863	0.841
DFAR	0.137	0.160	0.137		0.174
DFAR_BIC	0.159	0.601	0.159	0.826	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.501	.**	0.650	0.924
FAR	0.499		0.499	0.658	0.958
FAR_BIC	.**	0.501		0.650	0.924
DFAR	0.350	0.342	0.350		0.802
DFAR_BIC	0.076	0.042	0.076	0.198	

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National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.988	.**	0.706	0.710
FAR	0.012		0.012	0.657	0.635
FAR_BIC	.**	0.988		0.706	0.710
DFAR	0.294	0.343	0.294		0.286
DFAR_BIC	0.290	0.365	0.290	0.714	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.590	.**	0.706	0.716
FAR	0.410		0.410	0.716	0.739
FAR_BIC	.**	0.590		0.706	0.716
DFAR	0.294	0.284	0.294		0.314
DFAR_BIC	0.284	0.261	0.284	0.686	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.628	.**	0.792	0.741
FAR	0.372		0.372	0.820	0.762
FAR_BIC	.**	0.628		0.792	0.741
DFAR	0.208	0.180	0.208		0.231
DFAR_BIC	0.259	0.238	0.259	0.769	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.871	0.823	0.815	0.369
FAR	0.129		0.143	0.761	0.021
FAR_BIC	0.177	0.857		0.807	0.348
DFAR	0.185	0.239	0.193		0.162
DFAR_BIC	0.631	0.979	0.652	0.838	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.587	0.146	0.683	0.743
FAR	0.413		0.378	0.648	0.540
FAR_BIC	0.854	0.622		0.689	0.778
DFAR	0.317	0.352	0.311		0.462
DFAR_BIC	0.257	0.460	0.222	0.538	

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National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.837	.**	0.973	0.412
FAR	0.163		0.163	0.898	0.247
FAR_BIC	.**	0.837		0.973	0.412
DFAR	0.027	0.102	0.027		0.073
DFAR_BIC	0.588	0.753	0.588	0.927	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.530	.**	0.387	0.214
FAR	0.470		0.470	0.203	0.166
FAR_BIC	.**	0.530		0.387	0.214
DFAR	0.613	0.797	0.613		0.026
DFAR_BIC	0.786	0.834	0.786	0.974	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.14. Recursive Forecasts Evaluation for Pre-Selected Variables

Pre-Selected Variables - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMSPFE**	**U-Theil**
1	AR	0.160	0.030	0.196	0.037	0.623
	FAR	0.165	0.031	0.203	0.039	0.645
	FAR_BIC	0.175	0.033	0.216	0.042	0.686
	DFAR	0.165	0.031	0.203	0.039	0.645
	DFAR_BIC	0.163	0.031	0.204	0.039	0.646
2	AR	0.329	0.063	0.392	0.077	0.760
	FAR	0.302	0.057	0.382	0.072	0.739
	FAR_BIC	0.329	0.063	0.410	0.079	0.793
	DFAR	0.302	0.057	0.382	0.072	0.739
	DFAR_BIC	0.304	0.058	0.393	0.074	0.760
3	AR	0.450	0.089	0.525	0.107	0.859
	FAR	0.361	0.069	0.469	0.091	0.767
	FAR_BIC	0.369	0.071	0.485	0.094	0.793
	DFAR	0.361	0.069	0.469	0.091	0.767
	DFAR_BIC	0.370	0.071	0.469	0.091	0.766
4	AR	0.593	0.116	0.692	0.141	1.000
	FAR	0.411	0.080	0.531	0.107	0.768
	FAR_BIC	0.419	0.082	0.551	0.111	0.796
	DFAR	0.462	0.089	0.622	0.120	0.899
	DFAR_BIC	0.424	0.082	0.560	0.112	0.809
5	AR	0.711	0.140	0.827	0.168	1.072
	FAR	0.581	0.111	0.746	0.145	0.968
	FAR_BIC	0.555	0.109	0.695	0.141	0.901
	DFAR	0.639	0.121	0.832	0.158	1.079
	DFAR_BIC	0.635	0.121	0.796	0.154	1.031
6	AR	0.752	0.148	0.901	0.183	1.100
	FAR	0.704	0.136	0.859	0.168	1.049
	FAR_BIC	0.779	0.150	0.910	0.178	1.111
	DFAR	0.755	0.145	0.929	0.179	1.134
	DFAR_BIC	0.755	0.145	0.907	0.175	1.108
7	AR	0.820	0.163	0.991	0.205	1.180
	FAR	0.818	0.158	0.960	0.188	1.143
	FAR_BIC	0.872	0.168	1.006	0.196	1.199
	DFAR	0.888	0.171	1.058	0.204	1.261
	DFAR_BIC	0.847	0.164	0.982	0.193	1.170
8	AR	0.899	0.181	1.085	0.225	1.258
	FAR	0.962	0.187	1.133	0.221	1.314
	FAR_BIC	1.090	0.210	1.233	0.236	1.430
	DFAR	0.998	0.194	1.187	0.229	1.376
	DFAR_BIC	0.989	0.192	1.165	0.226	1.350

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Pre-Selected Variables - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.020	0.207	1.210	0.251	1.348
	FAR	1.065	0.211	1.241	0.247	1.382
	FAR_BIC	1.231	0.240	1.343	0.262	1.496
	DFAR	1.065	0.211	1.241	0.247	1.382
	DFAR_BIC	1.058	0.209	1.219	0.243	1.358
10	**AR**	1.138	0.234	1.347	0.283	1.449
	FAR	1.168	0.235	1.358	0.276	1.461
	FAR_BIC	1.388	0.273	1.487	0.294	1.600
	DFAR	1.180	0.237	1.375	0.279	1.480
	DFAR_BIC	1.162	0.233	1.353	0.274	1.456
11	**AR**	1.258	0.262	1.485	0.316	1.520
	FAR	1.329	0.271	1.554	0.319	1.590
	FAR_BIC	1.629	0.323	1.777	0.352	1.818
	DFAR	1.305	0.266	1.545	0.317	1.580
	DFAR_BIC	1.286	0.262	1.510	0.311	1.545
12	**AR**	1.403	0.294	1.646	0.353	1.575
	FAR	1.481	0.303	1.720	0.355	1.646
	FAR_BIC	1.803	0.359	2.007	0.397	1.920
	DFAR	1.470	0.301	1.711	0.354	1.637
	DFAR_BIC	1.444	0.297	1.691	0.352	1.618

* Forecasting model with U-Theil less than one are presented in shadowed areas.

TABLE A.15. Rolling Forecasts Evaluation for All variables Group

Rolling - All Variables Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMSPFE**	**U-Theil**
1	**AR**	0.1747	0.0332	0.2095	0.0401	0.6642
	FAR	0.1747	0.0332	0.2095	0.0401	0.6642
	FAR_BIC	0.1762	0.0333	0.2084	0.0395	0.6610
	DFAR	0.1803	0.0346	0.2161	0.0420	0.6852
	DFAR_BIC	0.1744	0.0331	0.2136	0.0409	0.6773
	FAR_GR	0.1855	0.0351	0.2234	0.0426	0.708
2	**AR**	0.3384	0.0649	0.4069	0.0787	0.7873
	FAR	0.3069	0.0584	0.3798	0.0718	0.7349
	FAR_BIC	0.3093	0.0590	0.3917	0.0747	0.7579
	DFAR	0.3166	0.0603	0.3902	0.0735	0.7550
	DFAR_BIC	0.2800	0.0533	0.3714	0.0700	0.7188
	FAR_GR	0.3160	0.0602	0.3974	0.0758	0.7690
3	**AR**	0.4594	0.0897	0.5409	0.1089	0.8846
	FAR	0.3786	0.0731	0.4763	0.0922	0.7790
	FAR_BIC	0.3969	0.0764	0.4941	0.0964	0.8081
	DFAR	0.3786	0.0731	0.4763	0.0922	0.7790
	DFAR_BIC	0.3814	0.0734	0.4860	0.0953	0.7948
	FAR_GR	0.3935	0.0757	0.4904	0.0956	0.8020
4	**AR**	0.6000	0.1172	0.7015	0.1413	1.0137
	FAR	0.4506	0.0877	0.5660	0.1124	0.8179
	FAR_BIC	0.4609	0.0892	0.5843	0.1157	0.8444
	DFAR	0.4506	0.0877	0.5660	0.1124	0.8179
	DFAR_BIC	0.4614	0.0898	0.5901	0.1180	0.8528
	FAR_GR	0.4488	0.0872	0.5653	0.1142	0.8169
5	**AR**	0.7019	0.1373	0.8266	0.1667	1.0718
	FAR	0.5540	0.1071	0.7063	0.1394	0.9159
	FAR_BIC	0.6211	0.1201	0.7715	0.1533	1.0003
	DFAR	0.6032	0.1153	0.7497	0.1457	0.9720
	DFAR_BIC	0.6156	0.1190	0.7618	0.1504	0.9877
	FAR_GR	0.5876	0.1132	0.7385	0.1463	0.9576
6	**AR**	0.7412	0.1456	0.8957	0.1811	1.0936
	FAR	0.6855	0.1330	0.8277	0.1630	1.0106
	FAR_BIC	0.6849	0.1353	0.8516	0.1733	1.0398
	DFAR	0.7139	0.1379	0.8633	0.1683	1.0540
	DFAR_BIC	0.7445	0.1460	0.8875	0.1773	1.0836
	FAR_GR	0.6919	0.1349	0.8382	0.1669	1.0234
7	**AR**	0.7980	0.1589	0.9795	0.2024	1.1667
	FAR	0.7634	0.1498	0.9013	0.1799	1.0736
	FAR_BIC	0.8021	0.1592	0.9625	0.1957	1.1465
	DFAR	0.8116	0.1583	0.9648	0.1898	1.1493
	DFAR_BIC	0.8511	0.1671	1.0030	0.1997	1.1948

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Rolling - All Variables Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
	FAR_GR	0.8014	0.1567	0.9295	0.1857	1.1072
8	**AR**	0.8972	0.1806	1.0899	0.2251	1.2638
	FAR	0.9164	0.1790	1.0875	0.2126	1.2610
	FAR_BIC	0.9333	0.1845	1.1255	0.2239	1.3050
	DFAR	0.9178	0.1797	1.0789	0.2121	1.2509
	DFAR_BIC	0.9274	0.1831	1.0763	0.2153	1.2479
	FAR_GR	0.9458	0.1854	1.1132	0.2206	1.2907
9	**AR**	1.0181	0.2067	1.2135	0.2515	1.3514
	FAR	1.0154	0.2018	1.1692	0.2356	1.3021
	FAR_BIC	1.0100	0.2029	1.1863	0.2425	1.3211
	DFAR	1.0972	0.2177	1.2862	0.2578	1.4324
	DFAR_BIC	1.0228	0.2052	1.2058	0.2458	1.3429
	FAR_GR	1.0419	0.2079	1.2134	0.2455	1.3513
10	**AR**	1.1406	0.2347	1.3498	0.2829	1.4526
	FAR	1.1321	0.2291	1.3135	0.2697	1.4135
	FAR_BIC	1.0725	0.2194	1.2580	0.2627	1.3538
	DFAR	1.2278	0.2478	1.4582	0.2967	1.5693
	DFAR_BIC	1.1329	0.2308	1.3474	0.2778	1.4500
	FAR_GR	1.1653	0.2358	1.3592	0.2779	1.4628
11	**AR**	1.2651	0.2634	1.4889	0.3167	1.5233
	FAR	1.2794	0.2623	1.4949	0.3111	1.5295
	FAR_BIC	1.2561	0.2590	1.4773	0.3104	1.5115
	DFAR	1.3142	0.2688	1.5420	0.3191	1.5777
	DFAR_BIC	1.2773	0.2629	1.5073	0.3152	1.5422
	FAR_GR	1.3002	0.2661	1.5190	0.3157	1.5542
12	**AR**	1.4101	0.2952	1.6489	0.3528	1.5776
	FAR	1.4455	0.2980	1.6797	0.3522	1.6072
	FAR_BIC	1.4436	0.2985	1.6993	0.3573	1.6259
	DFAR	1.4716	0.3031	1.7204	0.3597	1.6461
	DFAR_BIC	1.4543	0.3006	1.7161	0.3604	1.6420
	FAR_GR	1.4428	0.2965	1.6785	0.3515	1.6060

* Forecasting model with U-Theil less than one are presented in shadowed areas.

TABLE A.16. Rolling Forecasts Evaluation for Real Activity Group

Rolling - Real Activity Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMSPFE**	**U-Theil**
1	**AR**	0.1675	0.0313	0.2041	0.0381	0.6471
	FAR	0.1777	0.0334	0.2141	0.0404	0.6791
	FAR_BIC	0.1675	0.0313	0.2041	0.0381	0.6471
	DFAR	0.1777	0.0334	0.2141	0.0404	0.6791
	DFAR_BIC	0.1675	0.0313	0.2041	0.0381	0.6471
2	**AR**	0.3384	0.0649	0.4069	0.0787	0.7873
	FAR	0.3434	0.0661	0.4046	0.0782	0.7830
	FAR_BIC	0.3384	0.0649	0.4069	0.0787	0.7873
	DFAR	0.3434	0.0661	0.4046	0.0782	0.7830
	DFAR_BIC	0.3384	0.0649	0.4069	0.0787	0.7873
3	**AR**	0.4594	0.0897	0.5409	0.1089	0.8846
	FAR	0.4562	0.0887	0.5419	0.1079	0.8863
	FAR_BIC	0.4594	0.0897	0.5409	0.1089	0.8846
	DFAR	0.4562	0.0887	0.5419	0.1079	0.8863
	DFAR_BIC	0.4661	0.0910	0.5496	0.1104	0.8989
4	**AR**	0.6000	0.1172	0.7015	0.1413	1.0137
	FAR	0.6038	0.1173	0.7144	0.1429	1.0324
	FAR_BIC	0.5973	0.1165	0.6948	0.1401	1.0041
	DFAR	0.5923	0.1152	0.7097	0.1421	1.0257
	DFAR_BIC	0.5979	0.1165	0.7014	0.1409	1.0136
5	**AR**	0.7019	0.1373	0.8266	0.1667	1.0718
	FAR	0.7030	0.1375	0.8199	0.1655	1.0631
	FAR_BIC	0.7000	0.1369	0.8233	0.1663	1.0675
	DFAR	0.7030	0.1375	0.8199	0.1655	1.0631
	DFAR_BIC	0.6944	0.1360	0.8137	0.1650	1.0551
6	**AR**	0.7412	0.1456	0.8957	0.1811	1.0936
	FAR	0.7472	0.1471	0.9013	0.1833	1.1005
	FAR_BIC	0.7412	0.1456	0.8957	0.1811	1.0936
	DFAR	0.7225	0.1431	0.8829	0.1810	1.0780
	DFAR_BIC	0.7303	0.1438	0.8781	0.1788	1.0721
7	**AR**	0.7980	0.1589	0.9795	0.2024	1.1667
	FAR	0.8175	0.1631	0.9994	0.2060	1.1904
	FAR_BIC	0.7980	0.1589	0.9795	0.2024	1.1667
	DFAR	0.7796	0.1567	0.9685	0.2017	1.1537
	DFAR_BIC	0.7756	0.1552	0.9637	0.2003	1.1479
8	**AR**	0.8972	0.1806	1.0899	0.2251	1.2638
	FAR	0.9308	0.1871	1.1319	0.2334	1.3124
	FAR_BIC	0.8840	0.1787	1.0931	0.2265	1.2674
	DFAR	0.9070	0.1831	1.1168	0.2313	1.2949
	DFAR_BIC	0.8911	0.1800	1.1050	0.2285	1.2812

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Rolling - Real Activity Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0181	0.2067	1.2135	0.2515	1.3514
	FAR	1.0566	0.2141	1.2507	0.2584	1.3929
	FAR_BIC	1.0227	0.2079	1.2247	0.2541	1.3639
	DFAR	1.0593	0.2148	1.2605	0.2604	1.4038
	DFAR_BIC	1.0348	0.2104	1.2490	0.2586	1.3910
10	**AR**	1.1406	0.2347	1.3498	0.2829	1.4526
	FAR	1.1490	0.2365	1.3656	0.2868	1.4697
	FAR_BIC	1.1346	0.2338	1.3420	0.2822	1.4443
	DFAR	1.1355	0.2342	1.3561	0.2856	1.4594
	DFAR_BIC	1.1332	0.2338	1.3484	0.2837	1.4511
11	**AR**	1.2651	0.2634	1.4889	0.3167	1.5233
	FAR	1.2766	0.2660	1.5228	0.3234	1.5580
	FAR_BIC	1.2752	0.2655	1.5049	0.3198	1.5397
	DFAR	1.2759	0.2659	1.5287	0.3244	1.5641
	DFAR_BIC	1.2759	0.2656	1.5131	0.3212	1.5481
12	**AR**	1.4101	0.2952	1.6489	0.3528	1.5776
	FAR	1.4045	0.2948	1.6565	0.3554	1.5850
	FAR_BIC	1.4008	0.2935	1.6382	0.3510	1.5675
	DFAR	1.4348	0.3006	1.6982	0.3627	1.6248
	DFAR_BIC	1.4313	0.2994	1.6814	0.3586	1.6087

* Forecasting model with U-Theil less than one are presented in shadowed areas.

TABLE A.17. Rolling Forecasts Evaluation for Prices Group

Rolling - Prices Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMSPFE**	**U-Theil**
1	**AR**	0.1675	0.0313	0.2041	0.0381	0.6471
	FAR	0.1742	0.0334	0.2098	0.0410	0.6654
	FAR_BIC	0.1718	0.0327	0.2099	0.0406	0.6658
	DFAR	0.1742	0.0334	0.2098	0.0410	0.6654
	DFAR_BIC	0.1769	0.0338	0.2140	0.0415	0.6787
2	**AR**	0.3384	0.0649	0.4069	0.0787	0.7873
	FAR	0.3092	0.0593	0.3800	0.0728	0.7354
	FAR_BIC	0.3064	0.0585	0.3818	0.0731	0.7389
	DFAR	0.3136	0.0604	0.3798	0.0732	0.7349
	DFAR_BIC	0.2965	0.0564	0.3679	0.0699	0.7119
3	**AR**	0.4594	0.0897	0.5409	0.1089	0.8846
	FAR	0.3924	0.0756	0.4844	0.0954	0.7922
	FAR_BIC	0.3761	0.0725	0.4833	0.0939	0.7904
	DFAR	0.3979	0.0767	0.4871	0.0958	0.7966
	DFAR_BIC	0.3679	0.0712	0.4646	0.0921	0.7599
4	**AR**	0.6000	0.1172	0.7015	0.1413	1.0137
	FAR	0.4603	0.0886	0.5888	0.1160	0.8509
	FAR_BIC	0.4333	0.0840	0.5513	0.1113	0.7967
	DFAR	0.4603	0.0886	0.5888	0.1160	0.8509
	DFAR_BIC	0.4386	0.0851	0.5535	0.1118	0.7999
5	**AR**	0.7019	0.1373	0.8266	0.1667	1.0718
	FAR	0.5540	0.1080	0.6839	0.1388	0.8867
	FAR_BIC	0.5585	0.1082	0.6911	0.1385	0.8961
	DFAR	0.5567	0.1085	0.6874	0.1393	0.8913
	DFAR_BIC	0.5822	0.1132	0.7047	0.1413	0.9137
6	**AR**	0.7412	0.1456	0.8957	0.1811	1.0936
	FAR	0.6951	0.1353	0.8263	0.1648	1.0090
	FAR_BIC	0.6767	0.1319	0.8059	0.1607	0.9840
	DFAR	0.7115	0.1381	0.8527	0.1686	1.0411
	DFAR_BIC	0.7348	0.1423	0.8661	0.1698	1.0575
7	**AR**	0.7980	0.1589	0.9795	0.2024	1.1667
	FAR	0.7847	0.1533	0.9094	0.1810	1.0832
	FAR_BIC	0.7660	0.1499	0.8840	0.1766	1.0530
	DFAR	0.8112	0.1582	0.9329	0.1849	1.1113
	DFAR_BIC	0.8139	0.1584	0.9376	0.1847	1.1168
8	**AR**	0.8972	0.1806	1.0899	0.2251	1.2638
	FAR	0.9032	0.1772	1.0589	0.2093	1.2277
	FAR_BIC	0.8592	0.1689	1.0083	0.2010	1.1691
	DFAR	0.9209	0.1804	1.0793	0.2127	1.2515
	DFAR_BIC	0.8822	0.1732	1.0375	0.2061	1.2029

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Rolling - Prices Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0181	0.2067	1.2135	0.2515	1.3514
	FAR	1.0096	0.2018	1.1795	0.2392	1.3136
	FAR_BIC	0.9787	0.1953	1.1482	0.2320	1.2788
	DFAR	1.0139	0.2026	1.1848	0.2400	1.3195
	DFAR_BIC	0.9687	0.1935	1.1312	0.2292	1.2598
10	**AR**	1.1406	0.2347	1.3498	0.2829	1.4526
	FAR	1.1166	0.2260	1.3131	0.2686	1.4132
	FAR_BIC	1.0790	0.2188	1.2738	0.2609	1.3708
	DFAR	1.1171	0.2260	1.3193	0.2693	1.4198
	DFAR_BIC	1.0731	0.2175	1.2725	0.2601	1.3695
11	**AR**	1.2651	0.2634	1.4889	0.3167	1.5233
	FAR	1.2711	0.2614	1.5073	0.3147	1.5422
	FAR_BIC	1.2277	0.2525	1.4468	0.3026	1.4803
	DFAR	1.3054	0.2676	1.5830	0.3268	1.6196
	DFAR_BIC	1.2524	0.2569	1.5164	0.3138	1.5515
12	**AR**	1.4101	0.2952	1.6489	0.3528	1.5776
	FAR	1.4250	0.2955	1.6884	0.3558	1.6154
	FAR_BIC	1.4121	0.2930	1.6667	0.3519	1.5947
	DFAR	1.4424	0.2986	1.7267	0.3621	1.6521
	DFAR_BIC	1.3990	0.2900	1.6632	0.3501	1.5914

* Forecasting model with U-Theil less than one are presented in shadowed areas.

TABLE A.18. Rolling Forecasts Evaluation for Credit, Money and Exchange Rate Group

Rolling - Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMSPFE**	**U-Theil**
1	**AR**	0.1675	0.0313	0.2041	0.0381	0.6471
	FAR	0.1856	0.0350	0.2279	0.0433	0.7228
	FAR_BIC	0.1835	0.0346	0.2282	0.0434	0.7237
	DFAR	0.1856	0.0350	0.2279	0.0433	0.7228
	DFAR_BIC	0.1793	0.0340	0.2140	0.0409	0.6786
2	**AR**	0.3384	0.0649	0.4069	0.0787	0.7873
	FAR	0.3445	0.0657	0.4249	0.0813	0.8222
	FAR_BIC	0.3125	0.0592	0.4034	0.0775	0.7807
	DFAR	0.3408	0.0649	0.4219	0.0806	0.8164
	DFAR_BIC	0.2881	0.0549	0.3804	0.0728	0.7361
3	**AR**	0.4594	0.0897	0.5409	0.1089	0.8846
	FAR	0.4262	0.0820	0.5379	0.1051	0.8797
	FAR_BIC	0.4104	0.0788	0.5179	0.1013	0.8470
	DFAR	0.4269	0.0821	0.5382	0.1052	0.8801
	DFAR_BIC	0.3980	0.0767	0.5110	0.1006	0.8358
4	**AR**	0.6000	0.1172	0.7015	0.1413	1.0137
	FAR	0.5284	0.1022	0.6596	0.1287	0.9532
	FAR_BIC	0.5084	0.0986	0.6574	0.1311	0.9501
	DFAR	0.5284	0.1022	0.6596	0.1287	0.9532
	DFAR_BIC	0.4794	0.0933	0.6385	0.1278	0.9227
5	**AR**	0.7019	0.1373	0.8266	0.1667	1.0718
	FAR	0.6171	0.1188	0.7723	0.1520	1.0014
	FAR_BIC	0.6344	0.1225	0.7954	0.1575	1.0314
	DFAR	0.6171	0.1188	0.7723	0.1520	1.0014
	DFAR_BIC	0.6303	0.1220	0.7935	0.1581	1.0289
6	**AR**	0.7412	0.1456	0.8957	0.1811	1.0936
	FAR	0.6689	0.1314	0.8358	0.1693	1.0204
	FAR_BIC	0.6934	0.1369	0.8599	0.1743	1.0499
	DFAR	0.6689	0.1314	0.8358	0.1693	1.0204
	DFAR_BIC	0.6949	0.1377	0.8691	0.1775	1.0612
7	**AR**	0.7980	0.1589	0.9795	0.2024	1.1667
	FAR	0.7792	0.1551	0.9315	0.1915	1.1095
	FAR_BIC	0.7753	0.1555	0.9288	0.1925	1.1064
	DFAR	0.7665	0.1521	0.9266	0.1902	1.1037
	DFAR_BIC	0.7752	0.1557	0.9292	0.1933	1.1069
8	**AR**	0.8972	0.1806	1.0899	0.2251	1.2638
	FAR	0.9642	0.1911	1.1276	0.2276	1.3075
	FAR_BIC	0.9330	0.1865	1.1046	0.2248	1.2807
	DFAR	0.9515	0.1882	1.1199	0.2256	1.2986
	DFAR_BIC	0.9011	0.1797	1.0741	0.2180	1.2454

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Rolling - Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0181	0.2067	1.2135	0.2515	1.3514
	FAR	1.0718	0.2152	1.2398	0.2544	1.3807
	FAR_BIC	0.9737	0.1972	1.1420	0.2380	1.2718
	DFAR	1.0580	0.2122	1.2310	0.2524	1.3710
	DFAR_BIC	0.9882	0.2002	1.1567	0.2411	1.2881
10	**AR**	1.1406	0.2347	1.3498	0.2829	1.4526
	FAR	1.1882	0.2415	1.3477	0.2807	1.4504
	FAR_BIC	1.0870	0.2235	1.2839	0.2706	1.3817
	DFAR	1.2222	0.2477	1.3963	0.2883	1.5027
	DFAR_BIC	1.1367	0.2330	1.3507	0.2821	1.4536
11	**AR**	1.2651	0.2634	1.4889	0.3167	1.5233
	FAR	1.3662	0.2783	1.5504	0.3222	1.5863
	FAR_BIC	1.2830	0.2652	1.4956	0.3156	1.5302
	DFAR	1.3833	0.2816	1.5897	0.3294	1.6265
	DFAR_BIC	1.2808	0.2644	1.5028	0.3163	1.5376
12	**AR**	1.4101	0.2952	1.6489	0.3528	1.5776
	FAR	1.5109	0.3086	1.7273	0.3571	1.6526
	FAR_BIC	1.4309	0.2960	1.6667	0.3509	1.5947
	DFAR	1.5033	0.3071	1.7266	0.3569	1.6520
	DFAR_BIC	1.4231	0.2942	1.6599	0.3495	1.5882

* Forecasting model with U-Theil less than one are presented in shadowed areas.

TABLE A.19. Rolling Forecasts for Evaluation National Accounts Group

Rolling - National Accounts Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMSPFE**	**U-Theil**
1	**AR**	0.1675	0.0313	0.2041	0.0381	0.6471
	FAR	0.1673	0.0314	0.2120	0.0395	0.6722
	FAR_BIC	0.1675	0.0313	0.2041	0.0381	0.6471
	DFAR	0.1673	0.0314	0.2120	0.0395	0.6722
	DFAR_BIC	0.1710	0.0322	0.2179	0.0417	0.6909
2	**AR**	0.3384	0.0649	0.4069	0.0787	0.7873
	FAR	0.3324	0.0638	0.4147	0.0801	0.8024
	FAR_BIC	0.3384	0.0649	0.4069	0.0787	0.7873
	DFAR	0.3324	0.0638	0.4147	0.0801	0.8024
	DFAR_BIC	0.3384	0.0651	0.4221	0.0829	0.8167
3	**AR**	0.4594	0.0897	0.5409	0.1089	0.8846
	FAR	0.4546	0.0886	0.5370	0.1088	0.8783
	FAR_BIC	0.4575	0.0893	0.5374	0.1079	0.8789
	DFAR	0.4546	0.0886	0.5370	0.1088	0.8783
	DFAR_BIC	0.4629	0.0904	0.5456	0.1100	0.8923
4	**AR**	0.6000	0.1172	0.7015	0.1413	1.0137
	FAR	0.5886	0.1152	0.6973	0.1409	1.0077
	FAR_BIC	0.6000	0.1172	0.7015	0.1413	1.0137
	DFAR	0.6113	0.1197	0.7116	0.1438	1.0284
	DFAR_BIC	0.6059	0.1181	0.7039	0.1416	1.0173
5	**AR**	0.7019	0.1373	0.8266	0.1667	1.0718
	FAR	0.6955	0.1356	0.8243	0.1658	1.0689
	FAR_BIC	0.7019	0.1373	0.8266	0.1667	1.0718
	DFAR	0.6834	0.1335	0.8415	0.1705	1.0912
	DFAR_BIC	0.7281	0.1424	0.8612	0.1739	1.1167
6	**AR**	0.7412	0.1456	0.8957	0.1811	1.0936
	FAR	0.7632	0.1499	0.9267	0.1888	1.1315
	FAR_BIC	0.7412	0.1456	0.8957	0.1811	1.0936
	DFAR	0.7529	0.1508	0.9788	0.2083	1.1951
	DFAR_BIC	0.7641	0.1526	0.9491	0.1997	1.1588
7	**AR**	0.7980	0.1589	0.9795	0.2024	1.1667
	FAR	0.7898	0.1584	0.9706	0.2029	1.1562
	FAR_BIC	0.7980	0.1589	0.9795	0.2024	1.1667
	DFAR	0.7946	0.1613	1.0627	0.2294	1.2659
	DFAR_BIC	0.8170	0.1645	1.0441	0.2219	1.2437
8	**AR**	0.8972	0.1806	1.0899	0.2251	1.2638
	FAR	0.8886	0.1806	1.0934	0.2295	1.2678
	FAR_BIC	0.8972	0.1806	1.0899	0.2251	1.2638
	DFAR	0.8910	0.1822	1.1780	0.2542	1.3659
	DFAR_BIC	0.9163	0.1866	1.1607	0.2468	1.3459

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Rolling - National Accounts Group - Sample 2005:01 to 2008:06*						
Horizon	**Model**	**MAFE**	**MAPFE**	**RMSFE**	**RMPSFE**	**U-Theil**
9	**AR**	1.0181	0.2067	1.2135	0.2515	1.3514
	FAR	1.0533	0.2143	1.2486	0.2609	1.3905
	FAR_BIC	1.0191	0.2069	1.2149	0.2517	1.3530
	DFAR	1.0363	0.2127	1.2851	0.2748	1.4311
	DFAR_BIC	0.9922	0.2016	1.2031	0.2496	1.3399
10	**AR**	1.1406	0.2347	1.3498	0.2829	1.4526
	FAR	1.1331	0.2346	1.3546	0.2873	1.4579
	FAR_BIC	1.1362	0.2338	1.3463	0.2823	1.4488
	DFAR	1.1023	0.2287	1.3666	0.2898	1.4707
	DFAR_BIC	1.1328	0.2333	1.3687	0.2868	1.4730
11	**AR**	1.2651	0.2634	1.4889	0.3167	1.5233
	FAR	1.2883	0.2692	1.5187	0.3252	1.5539
	FAR_BIC	1.2651	0.2634	1.4889	0.3167	1.5233
	DFAR	1.2935	0.2703	1.5397	0.3292	1.5754
	DFAR_BIC	1.2428	0.2591	1.4846	0.3162	1.5190
12	**AR**	1.4101	0.2952	1.6489	0.3528	1.5776
	FAR	1.4071	0.2954	1.6526	0.3561	1.5812
	FAR_BIC	1.4101	0.2952	1.6489	0.3528	1.5776
	DFAR	1.3654	0.2874	1.6255	0.3515	1.5552
	DFAR_BIC	1.3756	0.2886	1.6115	0.3462	1.5419

* Forecasting model with U-Theil less than one are presented in shadowed areas.

TABLE A.20. Modified Diebold and Mariano Test for All Variables Group and Rolling Forecasts

Rolling All Variables Group - Sample 2005:01 to 2008:06*

Horizon = 1						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.671	0.723	0.805	0.811	0.949
FAR	0.329		0.450	0.839	0.660	0.929
FAR_BIC	0.277	0.550		0.774	0.740	0.975
DFAR	0.195	0.161	0.227		0.412	0.743
DFAR_BIC	0.189	0.340	0.260	0.588		0.855
FAR_GR	0.051	0.071	0.025	0.257	0.145	
Horizon = 2						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.139	0.220	0.282	0.083	0.321
FAR	0.861		0.866	0.753	0.311	0.923
FAR_BIC	0.780	0.134		0.470	0.146	0.742
DFAR	0.718	0.247	0.530		0.175	0.638
DFAR_BIC	0.917	0.689	0.854	0.825		0.906
FAR_GR	0.679	0.077	0.258	0.362	0.095	
Horizon = 3						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.049	0.065	0.049	0.042	0.066
FAR	0.951		0.880	.**	0.676	0.771
FAR_BIC	0.935	0.120		0.120	0.296	0.422
DFAR	0.951	.**	0.880		0.676	0.771
DFAR_BIC	0.958	0.324	0.704	0.324		0.578
FAR_GR	0.934	0.229	0.578	0.229	0.422	
Horizon = 4						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.024	0.018	0.024	0.017	0.005
FAR	0.976		0.736	.**	0.754	0.490
FAR_BIC	0.982	0.264		0.264	0.677	0.294
DFAR	0.976	.**	0.736		0.754	0.490
DFAR_BIC	0.983	0.246	0.323	0.246		0.246
FAR_GR	0.995	0.510	0.706	0.510	0.754	
Horizon = 5						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.034	0.026	0.098	0.105	0.019
FAR	0.966		0.901	0.823	0.929	0.736
FAR_BIC	0.975	0.099		0.278	0.356	0.070
DFAR	0.902	0.177	0.722		0.744	0.324
DFAR_BIC	0.895	0.071	0.644	0.256		0.155

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Rolling All Variables Group - Sample 2005:01 to 2008:06*

FAR_GR	0.981	0.265	0.930	0.676	0.845	
			Horizon = 6			
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.107	0.094	0.315	0.457	0.108
FAR	0.893		0.679	0.823	0.923	0.622
FAR_BIC	0.906	0.321		0.568	0.752	0.359
DFAR	0.685	0.177	0.432		0.700	0.245
DFAR_BIC	0.544	0.077	0.248	0.300		0.055
FAR_GR	0.892	0.378	0.641	0.755	0.945	
			Horizon = 7			
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.180	0.386	0.445	0.594	0.278
FAR	0.820		0.813	0.820	0.935	0.868
FAR_BIC	0.614	0.188		0.514	0.828	0.218
DFAR	0.555	0.180	0.486		0.820	0.249
DFAR_BIC	0.406	0.065	0.173	0.180		0.037
FAR_GR	0.722	0.133	0.782	0.751	0.963	
			Horizon = 8			
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.492	0.666	0.460	0.438	0.585
FAR	0.508		0.739	0.052	0.425	0.737
FAR_BIC	0.334	0.261		0.232	0.210	0.316
DFAR	0.540	0.948	0.769		0.481	0.742
DFAR_BIC	0.562	0.575	0.790	0.519		0.707
FAR_GR	0.416	0.264	0.685	0.258	0.293	
			Horizon = 9			
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.334	0.336	0.695	0.451	0.500
FAR	0.666		0.629	0.827	0.737	0.980
FAR_BIC	0.664	0.371		0.784	0.812	0.982
DFAR	0.305	0.173	0.216		0.220	0.242
DFAR_BIC	0.549	0.263	0.188	0.780		0.606
FAR_GR	0.500	0.020	0.018	0.758	0.394	

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Rolling All Variables Group - Sample 2005:01 to 2008:06*

Horizon = 10						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.343	0.140	0.743	0.488	0.553
FAR	0.657		0.203	0.811	0.669	0.939
FAR_BIC	0.860	0.797		0.824	0.797	0.899
DFAR	0.257	0.189	0.176		0.152	0.236
DFAR_BIC	0.512	0.331	0.203	0.848		0.598
FAR_GR	0.447	0.061	0.101	0.764	0.402	
Horizon = 11						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.524	0.426	0.677	0.595	0.632
FAR	0.476		0.281	0.790	0.598	0.858
FAR_BIC	0.574	0.719		0.827	0.786	0.908
DFAR	0.323	0.210	0.173		0.209	0.297
DFAR_BIC	0.405	0.402	0.214	0.791		0.635
FAR_GR	0.368	0.142	0.092	0.703	0.365	
Horizon = 12						
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR		0.629	0.761	0.758	0.795	0.623
FAR	0.371		0.645	0.795	0.704	0.482
FAR_BIC	0.239	0.355		0.704	0.797	0.373
DFAR	0.242	0.205	0.296		0.455	0.253
DFAR_BIC	0.205	0.297	0.204	0.545		0.326
FAR_GR	0.377	0.518	0.627	0.747	0.674	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.21. Modified Diebold and Mariano Test for Real Activity Group and Rolling Forecasts

Rolling Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.895	.**	0.895	.**
FAR	0.105		0.105	.**	0.105
FAR_BIC	.**	0.895		0.895	.**
DFAR	0.105	.**	0.105		0.105
DFAR_BIC	.**	0.895	.**	0.895	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.415	.**	0.415	.**
FAR	0.585		0.585	.**	0.585
FAR_BIC	.**	0.415		0.415	.**
DFAR	0.585	.**	0.585		0.585
DFAR_BIC	.**	0.415	.**	0.415	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.518	.**	0.518	0.835
FAR	0.482		0.482	.**	0.692
FAR_BIC	.**	0.518		0.518	0.835
DFAR	0.482	.**	0.482		0.692
DFAR_BIC	0.165	0.308	0.165	0.308	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.765	0.296	0.675	0.497
FAR	0.235		0.165	0.176	0.221
FAR_BIC	0.704	0.835		0.804	0.840
DFAR	0.325	0.825	0.196		0.307
DFAR_BIC	0.503	0.779	0.160	0.693	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.277	0.175	0.277	0.179
FAR	0.724		0.632	.**	0.307
FAR_BIC	0.825	0.368		0.368	0.180
DFAR	0.724	.**	0.632		0.307
DFAR_BIC	0.821	0.693	0.820	0.693	

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Rolling Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.857	.**	0.328	0.186
FAR	0.144		0.144	0.185	0.002
FAR_BIC	.**	0.857		0.328	0.186
DFAR	0.672	0.815	0.672		0.231
DFAR_BIC	0.814	0.998	0.814	0.769	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.832	.**	0.355	0.177
FAR	0.168		0.168	0.189	0.157
FAR_BIC	.**	0.832		0.355	0.177
DFAR	0.645	0.811	0.645		0.401
DFAR_BIC	0.823	0.843	0.823	0.599	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.847	0.574	0.784	0.861
FAR	0.153		0.062	0.196	0.008
FAR_BIC	0.426	0.938		0.945	0.820
DFAR	0.216	0.804	0.055		0.041
DFAR_BIC	0.139	0.992	0.180	0.959	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.927	0.956	0.918	0.872
FAR	0.073		0.050	0.881	0.468
FAR_BIC	0.044	0.950		0.926	0.836
DFAR	0.083	0.119	0.074		0.308
DFAR_BIC	0.128	0.532	0.164	0.692	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.752	0.182	0.591	0.454
FAR	0.248		0.082	0.204	0.132
FAR_BIC	0.818	0.918		0.798	0.980
DFAR	0.409	0.797	0.202		0.360
DFAR_BIC	0.546	0.868	0.020	0.640	

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Rolling Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.867	0.875	0.923	0.852
FAR	0.133		0.216	0.921	0.376
FAR_BIC	0.125	0.784		0.969	0.862
DFAR	0.077	0.079	0.031		0.245
DFAR_BIC	0.148	0.625	0.139	0.755	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.606	0.221	0.985	0.793
FAR	0.394		0.023	0.787	0.646
FAR_BIC	0.779	0.977		0.964	0.788
DFAR	0.015	0.213	0.036		0.024
DFAR_BIC	0.207	0.354	0.212	0.976	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i $=$ RMSFE of model of column j. Vs. H_a : RMSFE of model of row i $>$ RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.22. Modified Diebold and Mariano Test for Prices Group and Rolling Forecasts

Rolling Prices Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.679	0.708	0.679	0.813
FAR	0.321		0.505	.**	0.659
FAR_BIC	0.292	0.495		0.495	0.923
DFAR	0.321	.**	0.505		0.659
DFAR_BIC	0.187	0.341	0.077	0.341	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.106	0.121	0.095	0.053
FAR	0.894		0.565	0.480	0.089
FAR_BIC	0.879	0.435		0.430	0.165
DFAR	0.905	0.520	0.570		0.144
DFAR_BIC	0.947	0.911	0.835	0.856	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.049	0.061	0.059	0.034
FAR	0.952		0.471	0.840	0.129
FAR_BIC	0.939	0.529		0.605	0.226
DFAR	0.941	0.160	0.395		0.081
DFAR_BIC	0.966	0.871	0.774	0.919	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.012	0.003	0.012	0.003
FAR	0.988		0.155	.**	0.172
FAR_BIC	0.997	0.845		0.845	0.840
DFAR	0.988	.**	0.155		0.172
DFAR_BIC	0.997	0.828	0.160	0.828	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.017	0.005	0.016	0.023
FAR	0.983		0.589	0.843	0.732
FAR_BIC	0.995	0.411		0.447	0.848
DFAR	0.984	0.157	0.553		0.716
DFAR_BIC	0.977	0.268	0.153	0.284	

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Rolling Prices Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.052	0.024	0.156	0.323
FAR	0.948		0.149	0.825	0.772
FAR_BIC	0.976	0.851		0.978	0.937
DFAR	0.844	0.175	0.022		0.667
DFAR_BIC	0.677	0.228	0.063	0.333	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.208	0.132	0.294	0.324
FAR	0.792		0.089	0.831	0.748
FAR_BIC	0.868	0.910		0.939	0.905
DFAR	0.706	0.169	0.061		0.583
DFAR_BIC	0.676	0.252	0.095	0.417	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.394	0.233	0.462	0.308
FAR	0.606		0.029	0.825	0.290
FAR_BIC	0.767	0.971		0.972	0.821
DFAR	0.538	0.175	0.028		0.060
DFAR_BIC	0.692	0.710	0.179	0.941	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.356	0.248	0.375	0.198
FAR	0.644		0.228	0.798	0.083
FAR_BIC	0.753	0.772		0.837	0.171
DFAR	0.625	0.202	0.163		0.046
DFAR_BIC	0.802	0.917	0.829	0.954	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.350	0.210	0.371	0.205
FAR	0.650		0.025	0.877	0.052
FAR_BIC	0.790	0.975		1.000	0.451
DFAR	0.629	0.123	0.000		0.018
DFAR_BIC	0.795	0.948	0.549	0.982	

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Rolling Prices Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.597	0.308	0.804	0.617
FAR	0.403		0.009	0.785	0.554
FAR_BIC	0.693	0.990		0.875	0.785
DFAR	0.196	0.215	0.125		0.0146
DFAR_BIC	0.383	0.446	0.215	0.985	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.709	0.617	0.987	0.602
FAR	0.291		0.217	0.786	0.316
FAR_BIC	0.383	0.783		0.858	0.436
DFAR	0.013	0.214	0.142		0.016
DFAR_BIC	0.399	0.684	0.564	0.984	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.23. Modified Diebold and Mariano Test for Credit, Money and Exchange Rate Group and Rolling Forecasts

Rolling - Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.956	0.871	0.956	0.835
FAR	0.044		0.509	.**	0.105
FAR_BIC	0.129	0.492		0.492	0.232
DFAR	0.044	.**	0.509		0.105
DFAR_BIC	0.165	0.895	0.768	0.895	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.768	0.435	0.724	0.107
FAR	0.232		0.044	0.002	0.044
FAR_BIC	0.565	0.957		0.930	0.156
DFAR	0.276	0.998	0.070		0.060
DFAR_BIC	0.893	0.956	0.844	0.940	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.455	0.208	0.460	0.173
FAR	0.545		0.023	0.840	0.027
FAR_BIC	0.792	0.977		0.981	0.374
DFAR	0.540	0.160	0.019		0.028
DFAR_BIC	0.827	0.973	0.626	0.972	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.222	0.186	0.222	0.147
FAR	0.779		0.472	.**	0.268
FAR_BIC	0.814	0.528		0.528	0.016
DFAR	0.779	.**	0.472		0.268
DFAR_BIC	0.853	0.732	0.984	0.732	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.126	0.134	0.126	0.136
FAR	0.874		0.765	.**	0.728
FAR_BIC	0.866	0.236		0.236	0.420
DFAR	0.874	.**	0.765		0.728
DFAR_BIC	0.864	0.272	0.580	0.272	

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Rolling - Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.011	0.042	0.011	0.221
FAR	0.989		0.890	.**	0.863
FAR_BIC	0.958	0.110		0.110	0.713
DFAR	0.989	.**	0.890		0.863
DFAR_BIC	0.779	0.138	0.288	0.138	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.127	0.052	0.107	0.195
FAR	0.874		0.441	0.151	0.477
FAR_BIC	0.948	0.559		0.462	0.506
DFAR	0.893	0.849	0.538		0.524
DFAR_BIC	0.805	0.523	0.494	0.476	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.749	0.609	0.719	0.426
FAR	0.251		0.037	0.146	0.000
FAR_BIC	0.391	0.964		0.847	0.089
DFAR	0.281	0.854	0.153		0.026
DFAR_BIC	0.574	1.000	0.911	0.973	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.674	0.142	0.628	0.203
FAR	0.326		0.002	0.138	0.015
FAR_BIC	0.858	0.998		0.989	0.952
DFAR	0.372	0.862	0.011		0.046
DFAR_BIC	0.797	0.985	0.048	0.954	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.491	0.024	0.771	0.507
FAR	0.509		0.112	0.793	0.511
FAR_BIC	0.976	0.888		1.000	0.848
DFAR	0.229	0.207	0.000		0.192
DFAR_BIC	0.493	0.490	0.152	0.808	

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Rolling - Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.677	0.558	0.796	0.591
FAR	0.323		0.291	0.799	0.325
FAR_BIC	0.442	0.709		0.882	0.736
DFAR	0.204	0.201	0.118		0.134
DFAR_BIC	0.409	0.675	0.264	0.867	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.660	0.613	0.658	0.569
FAR	0.340		0.312	0.463	0.283
FAR_BIC	0.387	0.688		0.685	0.165
DFAR	0.342	0.537	0.315		0.288
DFAR_BIC	0.431	0.717	0.835	0.712	

* P-values associated with the null hypothesis H_o : RMSFE of model of row i $=$ RMSFE of model of column j. Vs. H_a : RMSFE of model of row i $>$ RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.24. Modified Diebold and Mariano Test for National Accounts Group and Rolling Forecasts

Rolling - National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.844	.**	0.844	0.834
FAR	0.156		0.156	.**	0.644
FAR_BIC	.**	0.844		0.844	0.834
DFAR	0.156	.**	0.156		0.644
DFAR_BIC	0.166	0.356	0.166	0.356	
Horizon = 2					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.778	.**	0.778	0.769
FAR	0.222		0.222	.**	0.622
FAR_BIC	.**	0.778		0.778	0.769
DFAR	0.222	.**	0.222		0.622
DFAR_BIC	0.231	0.378	0.231	0.378	
Horizon = 3					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.077	0.160	0.077	0.617
FAR	0.923		0.516	.**	0.752
FAR_BIC	0.840	0.484		0.484	0.676
DFAR	0.923	.**	0.516		0.752
DFAR_BIC	0.384	0.248	0.324	0.248	
Horizon = 4					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.391	.**	0.684	0.841
FAR	0.609		0.609	0.840	0.672
FAR_BIC	.**	0.391		0.684	0.841
DFAR	0.316	0.160	0.316		0.359
DFAR_BIC	0.159	0.328	0.159	0.641	
Horizon = 5					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.433	.**	0.629	0.924
FAR	0.567		0.567	0.658	0.963
FAR_BIC	.**	0.433		0.629	0.924
DFAR	0.371	0.342	0.371		0.819
DFAR_BIC	0.076	0.037	0.076	0.181	

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Rolling - National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.947	.**	0.722	0.710
FAR	0.053		0.053	0.657	0.603
FAR_BIC	.**	0.947		0.722	0.710
DFAR	0.278	0.343	0.278		0.252
DFAR_BIC	0.290	0.398	0.290	0.748	
Horizon = 7					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.366	.**	0.677	0.716
FAR	0.634		0.634	0.716	0.791
FAR_BIC	.**	0.366		0.677	0.716
DFAR	0.323	0.284	0.323		0.391
DFAR_BIC	0.284	0.209	0.284	0.609	
Horizon = 8					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.523	.**	0.750	0.741
FAR	0.477		0.477	0.820	0.842
FAR_BIC	.**	0.523		0.750	0.741
DFAR	0.250	0.180	0.250		0.348
DFAR_BIC	0.259	0.158	0.259	0.652	
Horizon = 9					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.819	0.823	0.789	0.369
FAR	0.182		0.196	0.761	0.058
FAR_BIC	0.177	0.804		0.781	0.348
DFAR	0.211	0.239	0.219		0.187
DFAR_BIC	0.631	0.942	0.652	0.813	
Horizon = 10					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.536	0.146	0.635	0.743
FAR	0.464		0.434	0.648	0.577
FAR_BIC	0.854	0.567		0.646	0.778
DFAR	0.365	0.352	0.354		0.518
DFAR_BIC	0.257	0.423	0.222	0.482	

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Rolling - National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.812	.**	0.978	0.412
FAR	0.188		0.188	0.898	0.264
FAR_BIC	.**	0.812		0.978	0.412
DFAR	0.022	0.102	0.022		0.090
DFAR_BIC	0.588	0.736	0.588	0.910	
Horizon = 12					
Models	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR		0.533	.**	0.389	0.214
FAR	0.467		0.467	0.203	0.164
FAR_BIC	.**	0.533		0.389	0.214
DFAR	0.611	0.797	0.611		0.026
DFAR_BIC	0.786	0.836	0.786	0.974	

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* P-values associated with the null hypothesis H_o : RMSFE of model of row i $=$ RMSFE of model of column j. Vs. H_a : RMSFE of model of row i $>$ RMSFE of model of column j. Shadowed cells in light gray indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.25. Modified Diebold and Mariano Tests for Recursive and Rolling Forecasts - All Variables Group

All Variables Group - Sample 2005:01 to 2008:06*

Rolling \ Recursive	AR	FAR	FAR_BIC	DFAR	DFAR_BIC	FAR_GR
Horizon = 1						
AR	0.0610	0.5066	0.3780	0.6193	0.5726	0.7476
FAR	0.1531	0.1321	0.1728	0.4243	0.4037	0.6344
FAR_BIC	0.0950	0.3295	0.0544	0.4916	0.4288	0.6800
DFAR	0.0868	0.0758	0.0833	0.0400	0.2309	0.3821
DFAR_BIC	0.0775	0.1984	0.0925	0.3172	0.1964	0.4624
FAR_GR	0.0122	0.0209	0.0021	0.0747	0.0599	0.0104
Horizon = 2						
AR	0.1338	0.1029	0.0917	0.2016	0.0568	0.1757
FAR	0.6753	0.1545	0.3757	0.5162	0.2319	0.5919
FAR_BIC	0.5135	0.0982	0.0692	0.3103	0.0795	0.3131
DFAR	0.5296	0.1367	0.2437	0.1117	0.1182	0.3919
DFAR_BIC	0.7588	0.5052	0.5819	0.6642	0.4467	0.6943
FAR_GR	0.4167	0.0373	0.0172	0.2176	0.0420	0.0858
Horizon = 3						
AR	0.2011	0.0279	0.0175	0.0279	0.0017	0.0321
FAR	0.8586	0.0812	0.5034	0.0812	0.3107	0.4705
FAR_BIC	0.7723	0.0658	0.1871	0.0658	0.0789	0.2323
DFAR	0.8586	0.0812	0.5034	0.0812	0.3107	0.4705
DFAR_BIC	0.8338	0.1737	0.3574	0.1737	0.1246	0.3407
FAR_GR	0.8175	0.0680	0.2180	0.0680	0.0925	0.0623
Horizon = 4						
AR	0.2948	0.0114	0.0119	0.0114	0.0083	0.0015
FAR	0.9644	0.0810	0.3585	0.0810	0.4014	0.2521
FAR_BIC	0.9560	0.1543	0.2389	0.1543	0.2552	0.1830
DFAR	0.9644	0.0810	0.3585	0.0810	0.4014	0.2521
DFAR_BIC	0.9549	0.1462	0.2034	0.1462	0.1930	0.1558
FAR_GR	0.9934	0.1637	0.3309	0.1637	0.3584	0.0750
Horizon = 5						
AR	0.5047	0.0148	0.0380	0.0526	0.0171	0.0108
FAR	0.9659	0.1292	0.8777	0.6824	0.7391	0.5627
FAR_BIC	0.9421	0.0473	0.3840	0.1498	0.0414	0.0682
DFAR	0.8990	0.0971	0.6694	0.1292	0.2719	0.2075

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All Variables Group - Sample 2005:01 to 2008:06*

DFAR_BIC	0.8875	0.0279	0.5697	0.1025	0.1074	0.1243
FAR_GR	0.9855	0.1352	0.9454	0.3439	0.3205	0.1385
Horizon = 6						
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.5928	0.0660	0.1765	0.2548	0.4441	0.0775
FAR	0.9135	0.1809	0.6912	0.7133	0.8609	0.4538
FAR_BIC	0.9091	0.2244	0.5534	0.4988	0.7056	0.2444
DFAR	0.7094	0.1126	0.4495	0.1809	0.6460	0.1946
DFAR_BIC	0.5717	0.0204	0.2463	0.1932	0.4336	0.0333
FAR_GR	0.9297	0.1867	0.6713	0.6635	0.8925	0.1629
Horizon = 7						
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.7170	0.1614	0.4930	0.4278	0.6184	0.2383
FAR	0.8863	0.2324	0.9104	0.7978	0.9521	0.7188
FAR_BIC	0.6908	0.1574	0.8578	0.4854	0.8324	0.1217
DFAR	0.6011	0.1606	0.5875	0.2324	0.8321	0.2019
DFAR_BIC	0.4498	0.0504	0.2751	0.1409	0.6374	0.0187
FAR_GR	0.7854	0.0752	0.9490	0.7211	0.9680	0.1911
Horizon = 8						
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.2420	0.4778	0.6560	0.4440	0.4102	0.5506
FAR	0.4924	0.2528	0.7197	0.0136	0.3965	0.6265
FAR_BIC	0.3174	0.2247	0.2141	0.2000	0.1939	0.1173
DFAR	0.5221	0.9046	0.7516	0.2528	0.4431	0.6597
DFAR_BIC	0.5397	0.5513	0.7804	0.4881	0.1052	0.6565
FAR_GR	0.4008	0.2134	0.6443	0.2244	0.2738	0.1673
Horizon = 9						
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.2387	0.3436	0.3424	0.6991	0.4547	0.4837
FAR	0.6523	0.8512	0.6393	0.8327	0.7448	0.9446
FAR_BIC	0.6452	0.3903	0.7558	0.7889	0.8269	1.0000
DFAR	0.2982	0.1788	0.2181	0.8512	0.2224	0.2308
DFAR_BIC	0.5283	0.2818	0.2062	0.7851	0.8364	0.5680
FAR_GR	0.4857	0.0396	0.0059	0.7650	0.3955	0.1737

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All Variables Group - Sample 2005:01 to 2008:06*

Horizon = 10						
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.2067	0.3380	0.2052	0.7414	0.5464	0.5286
FAR	0.6388	0.2257	0.2460	0.8091	0.7494	0.8899
FAR_BIC	0.8443	0.7945	0.7954	0.8230	0.8331	0.8886
DFAR	0.2524	0.1871	0.1931	0.2257	0.1819	0.2238
DFAR_BIC	0.4961	0.3259	0.2469	0.8457	0.7954	0.5643
FAR_GR	0.4329	0.0503	0.1315	0.7622	0.5065	0.1995
Horizon = 11						
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.2127	0.5151	0.3892	0.6723	0.5771	0.6175
FAR	0.4639	0.1848	0.2729	0.7767	0.5595	0.7541
FAR_BIC	0.5487	0.7122	0.2128	0.8212	0.7447	0.8974
DFAR	0.3173	0.1968	0.1645	0.1848	0.2012	0.2646
DFAR_BIC	0.3917	0.3797	0.1801	0.7849	0.2128	0.5872
FAR_GR	0.3588	0.0941	0.0910	0.6869	0.3352	0.2069
Horizon = 12						
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**	**FAR_GR**
AR	0.2193	0.6193	0.7605	0.7547	0.7940	0.6205
FAR	0.3650	0.2220	0.6387	0.7656	0.6989	0.4679
FAR_BIC	0.2356	0.3167	0.1920	0.6819	0.7851	0.3648
DFAR	0.2394	0.1794	0.2929	0.2220	0.4489	0.2463
DFAR_BIC	0.2022	0.2681	0.1925	0.5041	0.1920	0.3202
FAR_GR	0.3713	0.4623	0.6223	0.7240	0.6700	0.2094

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j.
Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.26. Modified Diebold and Mariano Tests for Recursive and Rolling Forecasts - Real Activity Group

Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 1					
Recursive / Rolling	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
AR	0.0610	0.5797	0.0610	0.5797	0.0610
FAR	0.0324	0.0667	0.0324	0.0667	0.0324
FAR_BIC	0.0610	0.5979	0.0610	0.5979	0.0610
DFAR	0.0324	0.0667	0.0324	0.0667	0.0324
DFAR_BIC	0.0610	0.5979	0.0610	0.5979	0.0610
Horizon = 2					
Recursive / Rolling	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
AR	0.1338	0.2507	0.1338	0.2507	0.1338
FAR	0.2193	0.2140	0.2193	0.2140	0.2193
FAR_BIC	0.1338	0.2507	0.1338	0.2507	0.1338
DFAR	0.2193	0.2140	0.2193	0.2140	0.2193
DFAR_BIC	0.1338	0.2507	0.1338	0.2507	0.1338
Horizon = 3					
Recursive / Rolling	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
AR	0.2011	0.3565	0.1502	0.3565	0.3157
FAR	0.2635	0.2097	0.2292	0.2097	0.3055
FAR_BIC	0.2011	0.3565	0.1502	0.3565	0.3157
DFAR	0.2635	0.2097	0.2292	0.2097	0.3055
DFAR_BIC	0.1138	0.2113	0.0807	0.2113	0.1502
Horizon = 4					
Recursive / Rolling	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
AR	0.2948	0.4372	0.2294	0.3763	0.3107
FAR	0.1477	0.1702	0.1082	0.1189	0.1410
FAR_BIC	0.4425	0.5234	0.2948	0.4607	0.4344
DFAR	0.2069	0.2527	0.1258	0.1702	0.1935
DFAR_BIC	0.3073	0.4359	0.1973	0.3712	0.2948
Horizon = 5					
Recursive / Rolling	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
AR	0.5047	0.3449	0.4488	0.3449	0.3251
FAR	0.6238	0.4304	0.5666	0.4304	0.3996
FAR_BIC	0.5612	0.3929	0.5047	0.3929	0.3608
DFAR	0.6238	0.4304	0.5666	0.4304	0.3996
DFAR_BIC	0.6890	0.5470	0.6520	0.5470	0.5047

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Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.5928	0.6057	0.5928	0.3957	0.3406
FAR	0.4870	0.5298	0.4870	0.3144	0.2167
FAR_BIC	0.5928	0.6057	0.5928	0.3957	0.3406
DFAR	0.7022	0.7390	0.7022	0.5298	0.5050
DFAR_BIC	0.7936	0.8177	0.7936	0.5921	0.5928
Horizon = 7					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.7170	0.7100	0.7170	0.3545	0.4361
FAR	0.3854	0.4340	0.3854	0.2037	0.2834
FAR_BIC	0.7170	0.7100	0.7170	0.3545	0.4361
DFAR	0.7462	0.7609	0.7462	0.4340	0.5970
DFAR_BIC	0.8668	0.7852	0.8668	0.5199	0.7170
Horizon = 8					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2420	0.8532	0.4549	0.7858	0.8621
FAR	0.1256	0.5341	0.0441	0.2759	0.0012
FAR_BIC	0.3211	0.9394	0.2420	0.9152	0.6843
DFAR	0.1749	0.7901	0.0317	0.5341	0.0007
DFAR_BIC	0.0846	1.0000	0.1222	0.8789	0.2420
Horizon = 9					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2387	0.9716	0.9968	0.9567	0.8411
FAR	0.0473	0.8279	0.0218	0.9997	0.4122
FAR_BIC	0.0235	0.9886	0.2387	0.9678	0.7954
DFAR	0.0623	0.3273	0.0504	0.8279	0.2684
DFAR_BIC	0.1051	0.6229	0.1346	0.7574	0.2387
Horizon = 10					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2067	0.7792	0.1286	0.5951	0.3292
FAR	0.1962	0.4977	0.0448	0.2113	0.0826
FAR_BIC	0.6912	0.9791	0.2067	0.8562	0.7367
DFAR	0.3606	0.9041	0.1360	0.4977	0.3023
DFAR_BIC	0.4422	0.9470	0.0049	0.6526	0.2067

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Real Activity Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2127	0.8489	0.7760	0.9088	0.7942
FAR	0.1132	0.2045	0.1921	0.7157	0.3419
FAR_BIC	0.0564	0.7606	0.2127	0.9727	0.6860
DFAR	0.0616	0.0237	0.0362	0.2045	0.2184
DFAR_BIC	0.1023	0.5956	0.0589	0.7291	0.2127
Horizon = 12					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2193	0.4363	0.1659	0.8586	0.7696
FAR	0.3606	0.2146	0.0135	0.6900	0.6306
FAR_BIC	0.7069	0.6353	0.2193	0.8632	0.7707
DFAR	0.0077	0.1423	0.0262	0.2146	0.0126
DFAR_BIC	0.1850	0.2827	0.1957	0.6121	0.2193

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.27. Modified Diebold and Mariano Tests for Recursive and Rolling Forecasts - Prices Group

Prices Group - Sample 2005:01 to 2008:06*

Rolling \ Recursive	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
Horizon = 1					
AR	0.0610	0.5741	0.4993	0.5741	0.4993
FAR	0.1482	0.3729	0.2607	0.3729	0.2607
FAR_BIC	0.1323	0.3801	0.1794	0.3801	0.1794
DFAR	0.1482	0.3729	0.2607	0.3729	0.2607
DFAR_BIC	0.0820	0.2589	0.0911	0.2589	0.0911
Horizon = 2					
AR	0.1338	0.1297	0.0984	0.1297	0.0794
FAR	0.7062	0.4285	0.3398	0.4285	0.2279
FAR_BIC	0.6684	0.3320	0.1795	0.3320	0.0597
DFAR	0.7197	0.4366	0.3465	0.4366	0.2559
DFAR_BIC	0.8394	0.7224	0.6317	0.7224	0.6278
Horizon = 3					
AR	0.2011	0.0265	0.0407	0.0265	0.0242
FAR	0.8646	0.1283	0.2744	0.1283	0.0704
FAR_BIC	0.8422	0.2073	0.1208	0.2073	0.0996
DFAR	0.8485	0.0945	0.2263	0.0945	0.0393
DFAR_BIC	0.9332	0.5535	0.6096	0.5535	0.3352
Horizon = 4					
AR	0.2948	0.0029	0.0020	0.0029	0.0020
FAR	0.9656	0.1362	0.1282	0.1362	0.1282
FAR_BIC	0.9971	0.3502	0.1077	0.3502	0.1077
DFAR	0.9656	0.1362	0.1282	0.1362	0.1282
DFAR_BIC	0.9966	0.3039	0.0860	0.3039	0.0860
Horizon = 5					
AR	0.5047	0.0116	0.0046	0.0108	0.0311
FAR	0.9879	0.1636	0.3741	0.2129	0.5846
FAR_BIC	0.9976	0.2155	0.1629	0.2258	0.5291
DFAR	0.9893	0.1251	0.3281	0.1636	0.5568
DFAR_BIC	0.9863	0.1276	0.0692	0.1312	0.3050

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Prices Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.5928	0.0379	0.0211	0.1161	0.2327
FAR	0.9730	0.2252	0.1267	0.6359	0.6200
FAR_BIC	0.9917	0.6017	0.2122	0.8811	0.8011
DFAR	0.8830	0.1074	0.0253	0.2252	0.4265
DFAR_BIC	0.7114	0.1636	0.0433	0.2160	0.1930
Horizon = 7					
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.7170	0.1741	0.1061	0.2572	0.25444
FAR	0.8610	0.2207	0.1149	0.7032	0.5835
FAR_BIC	0.9207	0.8546	0.2359	0.9005	0.7894
DFAR	0.7749	0.1019	0.0594	0.2207	0.3585
DFAR_BIC	0.7309	0.1930	0.0780	0.2972	0.2360
Horizon = 8					
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2420	0.3290	0.2155	0.4020	0.2890
FAR	0.5872	0.2102	0.0499	0.5778	0.2771
FAR_BIC	0.7481	0.9962	0.2586	0.9643	0.7706
DFAR	0.5201	0.0924	0.0361	0.2102	0.0839
DFAR_BIC	0.6709	0.5927	0.1450	0.9885	0.2586
Horizon = 9					
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2387	0.3422	0.2466	0.3612	0.1953
FAR	0.6278	0.1599	0.2250	0.6445	0.0835
FAR_BIC	0.7375	0.7529	0.3678	0.8186	0.1644
DFAR	0.6085	0.1057	0.1619	0.1599	0.0476
DFAR_BIC	0.7881	0.9029	0.8169	0.9430	0.3678
Horizon = 10					
Recursive / Rolling	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2067	0.3145	0.2004	0.3350	0.1955
FAR	0.6323	0.1952	0.0282	0.5178	0.0518
FAR_BIC	0.7717	0.9672	0.2083	1.0000	0.3922
DFAR	0.6113	0.0832	0.0006	0.1952	0.0199
DFAR_BIC	0.7761	0.9234	0.4842	0.9706	0.2083

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Prices Group - Sample 2005:01 to 2008:06*

Rolling \ Recursive	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
Horizon = 11					
AR	0.2127	0.5655	0.2932	0.7964	0.6114
FAR	0.3921	0.2092	0.0068	0.7576	0.5424
FAR_BIC	0.6687	0.9553	0.2145	0.8570	0.7777
DFAR	0.1929	0.1915	0.1211	0.2092	0.0112
DFAR_BIC	0.3737	0.4027	0.2081	0.9544	0.2145
Horizon = 12					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2193	0.7013	0.6194	1.000	0.6041
FAR	0.2887	0.2210	0.2268	0.7394	0.3197
FAR_BIC	0.3742	0.6986	0.8214	0.8345	0.4475
DFAR	0.0245	0.1743	0.1446	0.2210	0.0172
DFAR_BIC	0.3889	0.6445	0.5752	0.9674	0.8214

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.28. Modified Diebold and Mariano Rests for Recursive and Rolling Forecasts - Credit, Money and Exchange Rate Group

Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Rolling \ Recursive	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
Horizon = 1					
AR	0.0610	0.9062	0.8286	0.9062	0.8080
FAR	0.0166	0.3125	0.4094	0.3125	0.1151
FAR_BIC	0.0758	0.4191	0.2608	0.4191	0.2560
DFAR	0.0166	0.3125	0.4094	0.3125	0.1151
DFAR_BIC	0.0636	0.8056	0.7026	0.8056	0.5333
Horizon = 2					
AR	0.1338	0.7653	0.4826	0.6966	0.2993
FAR	0.1247	0.5495	0.1079	0.3638	0.1100
FAR_BIC	0.3304	0.9117	0.5691	0.8515	0.3526
DFAR	0.1535	0.6552	0.1479	0.4685	0.1389
DFAR_BIC	0.6738	0.9277	0.8480	0.8953	0.8428
Horizon = 3					
AR	0.2011	0.4354	0.0992	0.4369	0.1236
FAR	0.3788	0.4708	0.1276	0.4767	0.0110
FAR_BIC	0.5718	0.8250	0.3627	0.8300	0.3056
DFAR	0.3759	0.4648	0.1242	0.4708	0.0116
DFAR_BIC	0.6250	0.7881	0.4982	0.7901	0.2906
Horizon = 4					
AR	0.2948	0.1774	0.0526	0.1774	0.0582
FAR	0.6877	0.3779	0.2568	0.3779	0.1644
FAR_BIC	0.7146	0.4779	0.1402	0.4779	0.0121
DFAR	0.6877	0.3779	0.2568	0.3779	0.1644
DFAR_BIC	0.7765	0.6886	0.3927	0.6886	0.1338
Horizon = 5					
AR	0.5047	0.1201	0.0589	0.1201	0.0635
FAR	0.8539	0.4497	0.6170	0.4497	0.5915
FAR_BIC	0.7799	0.2454	0.3047	0.2454	0.2911
DFAR	0.8539	0.4497	0.6170	0.4497	0.5915
DFAR_BIC	0.7861	0.2771	0.3469	0.2771	0.3047

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Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Rolling \ Recursive	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
Horizon = 6					
AR	0.5928	0.2093	0.1570	0.2093	0.2947
FAR	0.9988	0.9557	0.9604	0.9557	0.9093
FAR_BIC	0.9346	0.5967	0.5937	0.5967	0.7081
DFAR	0.9988	0.9557	0.9604	0.9557	0.9093
DFAR_BIC	0.7912	0.4720	0.4277	0.4720	0.5937
Horizon = 7					
AR	0.7170	0.2658	0.2215	0.2400	0.3331
FAR	0.9546	0.8068	0.6879	0.7010	0.6374
FAR_BIC	0.9920	0.7098	0.7408	0.6361	0.6815
DFAR	0.9657	0.8763	0.7240	0.8068	0.6589
DFAR_BIC	0.8676	0.6465	0.6611	0.5920	0.7841
Horizon = 8					
AR	0.2420	0.7961	0.6910	0.7729	0.5320
FAR	0.2318	0.8257	0.3837	0.6995	0.1832
FAR_BIC	0.3629	0.9345	0.8267	0.8744	0.4350
DFAR	0.2591	0.9089	0.5564	0.8257	0.2761
DFAR_BIC	0.5510	1.0000	0.9910	0.9908	0.8566
Horizon = 9					
AR	0.2387	0.7291	0.2509	0.6933	0.3157
FAR	0.3071	0.8215	0.0034	0.6092	0.0166
FAR_BIC	0.8506	0.9967	0.8112	0.9872	0.9667
DFAR	0.3505	0.9420	0.0141	0.8215	0.0574
DFAR_BIC	0.7875	0.9812	0.5914	0.9539	0.8112
Horizon = 10					
AR	0.2067	0.5367	0.1250	0.7888	0.6136
FAR	0.4954	0.8021	0.1234	0.8465	0.5641
FAR_BIC	0.9630	0.8880	0.7964	0.9995	0.9002
DFAR	0.2233	0.2778	0.0000	0.8021	0.2201
DFAR_BIC	0.4667	0.5291	0.2306	0.8182	0.7964

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Credit, Money and Exchange Rate Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2127	0.6676	0.5986	0.7954	0.6222
FAR	0.3188	0.2123	0.3004	0.7404	0.3380
FAR_BIC	0.4188	0.6991	0.7932	0.8918	0.8372
DFAR	0.2037	0.1528	0.1108	0.2123	0.1275
DFAR_BIC	0.3914	0.6609	0.4823	0.8753	0.7932
Horizon = 12					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2193	0.6573	0.5892	0.6553	0.5397
FAR	0.3378	0.1678	0.3068	0.3069	0.2804
FAR_BIC	0.3782	0.6846	0.2214	0.6812	0.0893
DFAR	0.3397	0.3847	0.3099	0.1678	0.2842
DFAR_BIC	0.4198	0.7138	0.5544	0.7094	0.2214

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.29. Modified Diebold and Mariano Tests for Recursive and Rolling Forecasts - National Accounts Group

National Accounts Group - Sample 2005:01 to 2008:06*

Rolling \ Recursive	AR	FAR	FAR_BIC	DFAR	DFAR_BIC
Horizon = 1					
AR	0.0610	0.6763	0.0610	0.6367	0.6667
FAR	0.0673	0.2112	0.0673	0.2112	0.4707
FAR_BIC	0.0610	0.6763	0.0610	0.6763	0.6667
DFAR	0.0673	0.2112	0.0673	0.2112	0.4707
DFAR_BIC	0.0785	0.2710	0.0785	0.2710	0.0610
Horizon = 2					
AR	0.1338	0.3992	0.1338	0.3992	0.5214
FAR	0.0943	0.1880	0.0943	0.1880	0.4089
FAR_BIC	0.1338	0.3992	0.1338	0.3992	0.5214
DFAR	0.0943	0.1880	0.0943	0.1880	0.4089
DFAR_BIC	0.1101	0.2352	0.1101	0.2352	0.1338
Horizon = 3					
AR	0.2011	0.1551	0.1533	0.1551	0.3308
FAR	0.2503	0.2408	0.2221	0.2408	0.3761
FAR_BIC	0.2648	0.2613	0.2011	0.2613	0.3907
DFAR	0.2503	0.2408	0.2221	0.2408	0.3761
DFAR_BIC	0.2014	0.1543	0.1754	0.1543	0.2011
Horizon = 4					
AR	0.2948	0.4235	0.2948	0.6520	0.3458
FAR	0.3550	0.4994	0.3550	0.7886	0.4177
FAR_BIC	0.2948	0.4235	0.2948	0.6520	0.3458
DFAR	0.1668	0.2199	0.1668	0.4994	0.2017
DFAR_BIC	0.2499	0.3792	0.2499	0.6159	0.2948
Horizon = 5					
AR	0.5047	0.5047	0.5047	0.6385	0.8631
FAR	0.5467	0.5620	0.5467	0.6710	0.9333
FAR_BIC	0.5047	0.5047	0.5047	0.6385	0.8631
DFAR	0.3814	0.3738	0.3814	0.5620	0.7769
DFAR_BIC	0.1584	0.1323	0.1584	0.2852	0.5047

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National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 6					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.5928	0.8972	0.5928	0.7175	0.7265
FAR	0.0196	0.3775	0.0196	0.6529	0.6284
FAR_BIC	0.5928	0.8972	0.5928	0.7175	0.7265
DFAR	0.2905	0.3389	0.2905	0.3775	0.2764
DFAR_BIC	0.3144	0.3922	0.3144	0.7302	0.5928
Horizon = 7					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.7170	0.6845	0.7170	0.7278	0.7515
FAR	0.7357	0.8219	0.7357	0.7701	0.8305
FAR_BIC	0.7170	0.6845	0.7170	0.7278	0.7515
DFAR	0.3476	0.3440	0.3476	0.8219	0.4547
DFAR_BIC	0.3244	0.3134	0.3244	0.7339	0.7170
Horizon = 8					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2420	0.5988	0.2420	0.7815	0.7257
FAR	0.4458	0.8232	0.4458	0.8571	0.8228
FAR_BIC	0.2420	0.5988	0.2420	0.7815	0.7257
DFAR	0.2376	0.2226	0.2376	0.8232	0.3099
DFAR_BIC	0.2442	0.2143	0.2442	0.7419	0.2420
Horizon = 9					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2387	0.8503	0.3523	0.8033	0.3298
FAR	0.1553	0.8194	0.1699	0.7863	0.0382
FAR_BIC	0.1623	0.8354	0.2387	0.7957	0.3090
DFAR	0.1991	0.2660	0.2067	0.8194	0.1754
DFAR_BIC	0.5928	0.9678	0.6137	0.8271	0.2387
Horizon = 10					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2067	0.5631	0.0716	0.6601	0.7106
FAR	0.4403	0.7940	0.4073	0.6925	0.5597
FAR_BIC	0.5230	0.5965	0.2067	0.6691	0.7504
DFAR	0.3424	0.3949	0.3332	0.7940	0.4915
DFAR_BIC	0.2242	0.4425	0.1926	0.5121	0.2067

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National Accounts Group - Sample 2005:01 to 2008:06*

Horizon = 11					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2127	0.7970	0.2127	0.9813	0.3480
FAR	0.1495	0.2007	0.1495	0.8730	0.2372
FAR_BIC	0.2127	0.7970	0.2127	0.9813	0.3480
DFAR	0.0290	0.0807	0.0290	0.2007	0.0638
DFAR_BIC	0.5172	0.7263	0.5172	0.8989	0.2127
Horizon = 12					
Rolling \ Recursive	**AR**	**FAR**	**FAR_BIC**	**DFAR**	**DFAR_BIC**
AR	0.2193	0.5067	0.2193	0.3748	0.1949
FAR	0.4442	0.2200	0.4442	0.1700	0.1550
FAR_BIC	0.2193	0.5067	0.2193	0.3748	0.1949
DFAR	0.5985	0.7608	0.5985	0.2200	0.0124
DFAR_BIC	0.7648	0.8258	0.7648	0.9930	0.2193

* P-values associated with the null hypothesis H_o : RMSFE of model of row i = RMSFE of model of column j. Vs. H_a : RMSFE of model of row i > RMSFE of model of column j. Shadowed cells indicate that the null hyphotesis is rejected at 10% significance level.

TABLE A.30. Variables Description

	Description	Acronym	Source	Transforma-tion Code*
I.	**Real Activity**			
1	Real wage index (ISR) of manufacturing Industry including coffee threshing	ISRTRILL	Banco de la República (BANREP)	5
2	ISR of manufacturing industry excluding coffee threshing	ISRSINT	BANREP	5
3	Nominal wage index (ISN) by economic activity - retails	ISNCOMIN	BANREP	5
4	ISN by economic activity - Manufacturing industry - white collar workers	ISNIMAEM	BANREP	5
5	ISN by economic activity - Manufacturing industry - blue collar workers	ISNIMAOB	BANREP	6
6	Building permits for housing of social interest (VIS)	PCVIS	Cámara colombiana	4
			de la construcción (CAMACOL)	4
7	Building permits for housing - No VIS	PCNOVIS	CAMACOL	5
8	Building permits for housing - Others	PCOTROS	CAMACOL	6
9	Gross mortgage portfolio	CHBRUTA	CAMACOL	6
10	Cost index for housing construction	ICCV	CAMACOL	5
11	Current economic condition for the industrial sector	SECONOM	Fundación para la educación Superior y el desarrollo (FEDESARROLLO)	2
12	Industrial production activity	ACTPROD	FEDESARROLLO	2
13	Industrial inventory stock	EXISTEN	FEDESARROLLO	2
14	Number of merchandise orders for industrial sector (NMOIS)	VOLACTPE	FEDESARROLLO	2
15	Installed capacity, given the NMOIS for the current month	CAPINVOP	FEDESARROLLO	5
16	Expected industrial production for the next 3 months	EXPPRO	FEDESARROLLO	2
17	Expected economic situation for the next 6 months	EXPSITEC	FEDESARROLLO	2
18	Installed capacity, given the expected NMOIS for the next 12 months	CAPINDE	FEDESARROLLO	5
19	Industrial production index	IPI	BANREP	5
II	**Prices**			
20	Consumer price index (IPC)	IPC	BANREP	5
21	IPC by groups (IPCG): for Food	GALIM	BANREP	5
22	IPCG for housing	GAVIV	BANREP	5
23	IPCG for clothing	GAVES	BANREP	6
24	IPCG for health	GASAL	BANREP	6
25	IPCG for education	GAEDU	BANREP	5
26	IPCG for recreation	GACUL	BANREP	5
27	IPCG for transportation	GATRAN	BANREP	6
28	IPCG for other expenses	GAOTGA	BANREP	6
29	IPCG for new classification (IPCNC) of non-tradable goods and services	NCNOTRAN	BANREP	6
30	IPCNC of tradable goods and services	NCTRAN	BANREP	6
31	IPCNC of regulated goods and services	NCREGUL	BANREP	6
32	Producer price index (IPP)	IPP	BANREP	5
33	IPP by economic activity (IPPAE): for Agriculture and others	AEA	BANREP	5
34	IPPAE for mining	AEMIN	BANREP	5

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	Description	Acronym	Source	Transforma-tion Code*
35	IPPAE for manufacturing industries	AEIMAN	BANREP	5
36	IPP by origin of goods (IPPPB): Produced and consumed	PBPRODCO	BANREP	5
37	IPPPB for imports	PBM	BANREP	5
38	IPPPB for exports	PBX	BANREP	5
39	IPPPB for exports excluding coffee	PBXSINCA	BANREP	5
40	IPP by use or economic destiny (IPPUE): for intermediate consumption	UECINTER	BANREP	5
41	IPPUE for final consumption	UECFINAL	BANREP	5
42	IPPUE for capital formation	UEFORK	BANREP	6
43	IPPUE for building materials	UEMATCO	BANREP	5
44	Price expectations for the next 3 months	EXPAUMPR	FEDESARROLLO	1
III	**Credit, Money and Exchange Rate**			
45	Monetary base	BASEMON	BANREP	5
46	Net international reserves	RESNETAS	BANREP	5
47	M1	M1	BANREP	5
48	M2	M2	BANREP	5
49	M3	M3	BANREP	6
50	Total gross credit	CREDBR	BANREP	5
51	Currency in circulation	EFECTIV	BANREP	5
52	Total deposits	TOTALDEP	BANREP	5
53	Deposits in saving accounts	DEPCTAHO	BANREP	5
54	Deposits in current accounts	DEPCTCOR	BANREP	5
55	Interest rate of 90-day certificate of deposits for banks and financial corporations	CDT90DBA	BANREP	3
56	Interbank interest rate - monthly average	TIBPROME	BANREP	3
57	Nominal interest rate of 90-day fixed term deposit (DTF)	DTFNO90D	BANREP	2
58	Active interest rate	TASACTIV	BANREP	3
59	Real interest rate of 90-day DTF	DTFR90	BANREP	2
60	Gross domestic credit to treasury	CRBTES	BANREP	5
61	Gross domestic credit to commercial banks	CRBBAN	BANREP	5
62	Gross domestic credit to financial corporations	CRBCORP	BANREP	4
63	Gross domestic credit to financial sector	CRDOBPRI	BANREP	6
64	Net domestic credit to private sector	CRDONEPR	BANREP	2
65	Nominal exchange rate - average	TCNMPROM	BANREP	5
66	Terms of trade	TERMINTE	BANREP	5
67	Real exchange rate index for non-traditional commerce deflated by IPP	ITCRIPPN	BANREP	5
68	Real exchange rate index for non-traditional commerce deflated by IPC	ITCRIPCN	BANREP	5
69	Real exchange rate index for total commerce deflated by IPP	ITCRIPPT	BANREP	
70	Real exchange rate index for total commerce deflated by IPC	ITCRIPCT	BANREP	5
IV	**National Accounts**			
71	Consumption goods imports - non-durables	MBCNODU	Departamento Administrativo Nacional de Estadstica (DANE)	5
72	Consumption goods imports - durables	MBCDUR	DANE	5
73	Intermediate and raw goods imports - Fuel and others	MBICOMLU	DANE	5

(continued)

(continued)

	Description	**Acronym**	**Source**	**Transformation Code***
74	Intermediate and raw goods imports - Agriculture sector	MBISA	DANE	5
75	Intermediate and raw goods imports - Industrial sector	MBISI	DANE	5
76	Capital goods imports - Building materials	MBKMATCO	DANE	5
77	Capital goods imports - Agriculture sector	MBKSA	DANE	5
78	Capital goods imports - Industrial sector	MBKSI	DANE	5
79	Capital goods imports - Apparel materials	MBKEQTRA	DANE	5
80	Traditional goods exports - Coffee	XBTCAFE	DANE	5
81	Traditional goods exports - Coal	XBTCARBO	DANE	5
82	Traditional goods exports - Oil	XBTPETR	DANE	5
83	Traditional goods exports - Iron-nickel	XBTFERR	DANE	5
84	Non traditional goods exports - Agriculture sector	XBNTSA	DANE	5
85	Non traditional goods exports - Mining sector	XBNTSMIN	DANE	5
86	Non traditional goods exports - Industrial sector	XBNTSI	DANE	5
87	Income Central national government	INGRES	Consejo Superior de Política Fiscal (CONFIS), Min. Hacienda y Crédito Público.	5
88	Expenses (with interest payments) Central national government	GAST	CONFIS, Min. Hacienda Crédito Público.	5
89	Interest payments Central national government	INTERGC	CONFIS, Min. Hacienda Crédito Público.	2
90	Deficit or surplus Central national government	SUPERAVI	CONFIS, Min. Hacienda Crédito Público.	1
91	Internal financing Central national government	FININTER	CONFIS, Min. Hacienda Crédito Público.	1
92	External financing Central national government	FINEXTER	CONFIS, Min. Hacienda Crédito Público.	1

*(1) no transformation, (2) first difference, (3) second difference, (4) logarithm, (5) first difference of logarithm, (6) second difference of logarithm.