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Evidence from euro area countries

This paper investigates how well
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Abstract

This paper investigates how well consumer confidence predicts households future consumption expenditure. Our findings document considerable variety in the degree to which confidence measures accurately forecast consumption across selected euro area countries and periods. First, we explore the leading role of consumer confidence in forecasting consumption growth. We find that the consumer confidence index improves forecasts of household consumption expenditure appreciably during times of financial distress, especially in Italy and Portugal. Further, we show that the financial sub-index of consumer confidence provides more nuanced information than the aggregate index. Indeed, over the past few years, expectations about future personal financial situations proved particularly helpful in forecasting total consumption expenditure in France, Italy and Portugal. For Germany, in contrast, no measures of confidence provide information beyond what is supplied by other economic indicators for forecasting household consumption.

Finally, we advance some evidence to support the idea that changes in consumer confidence are an independent driver of economic fluctuations.

Key words

Expectations; Survey Data; Consumption Forecast; Confidence Shocks; Economic Fluctuations

JEL codes

C32, E24, E32

Disclaimer

1   Introduction

During the financial crisis and the subsequent eurozone debt crisis, most industrialized countries experienced sharp falls in consumer confidence. Figure (1) plots the Euro Area Consumer Confidence Index (CCI) of the European Commission. In the Euro Area, the deterioration in consumer confidence began in the summer of 2007 with the spreading of US subprime mortgage market distress, and worsened in September 2008 when the global financial crisis intensified. Consumer confidence reached a historical trough in March 2009. After recovering to just above its long-term average, consumer confidence started to fall again in 2011 with the sovereign debt crisis in the euro area and only reached again the historical average in 2014.

Due to their timely availability, confidence indicators receive a great deal of attention in the media and are also closely tracked by economic analysts and policy makers, especially when the economy is weak. It is believed that a deterioration in consumer confidence may induce consumers to be more prudent and influence their spending decisions. Thus, the wave of pessimism seen during the global financial crisis and eurozone debt crisis may have further contributed to the decline in consumption spending in the Euro Area.

Several studies aim to assess the information content of consumer confidence in forecasting consumption spending. Some authors (e.g. Carroll, Fuhrer, and Wilcox (1994), Mehra and Martin (2003), Lemmon and Portniaguina (2006)) have argued that consumer confidence can help predict future consumption spending. However, this view is controversial. Out-of-sample forecasting exercises have, in fact, documented that confidence does not provide additional statistically significant information to that included in other macroeconomic and financial variables (e.g. Bram and Ludvigson (1998), Ludvigson (2004)) or that it can even worsen their forecasting performance (e.g. Croushore (2005)). The large majority of these studies use U.S. data.

In this paper, we assess whether current changes in consumer confidence provide independent information about future total households' consumption growth in selected Euro Area countries. In particular, we explore changes in the importance of confidence over time and especially during periods of economic stress, such as the financial and sovereign debt crisis period. To this end, we use the confidence index of the European Commission, which is constructed as an arithmetic average of the balances (in percentage points) of the answers given in each country to the survey questions on the financial situation of households, general economic situation, unemployment expectations and savings, all over the next 12 months. We explore differences in the forecasting power of consumer confidence across components of consumption expenditures, i.e. durable and nondurable consumption, as well as across countries, i.e. France, Germany, Italy and Portugal.

This paper proceeds in two steps. First, we start by testing the forecasting power of the consumer confidence indicator for total consumption spending growth. Our findings suggest significant heterogeneity across countries and periods. The aggregate confidence index provides significantly better forecasts beginning with the onset of the financial crisis in Portugal, and the eurozone debt

crisis in Italy. In contrast, it displays little forecasting power for France and even less for Germany. In addition, the sub-index of consumer confidence which captures expectations of future personal financial conditions has stronger forecasting power for both Italy and Portugal and, unlike the case of the aggregate index, also for France. A distinctive feature of the most recent years is that non-durable consumption expenditures dropped markedly and persistently in both Portugal and Italy. Noticeably, the financial situation sub-index provides information well beyond that summarized by the other economic indicators, not only for durable goods expenditures but also for expenditure in nondurable goods in both countries.[1]

Second, we aim to assess if changes in consumer confidence are an independent driving force of consumption dynamics. To this purpose, we explore the effects of unanticipated changes in households' expectations of future financial conditions by means of a vector autoregression (VAR) model. Confidence shocks are identified using the different time release of the survey and macroeconomic variables. Surprise movements in confidence consumer generate a sizable deterioration in both consumption and unemployment and a reduction in the short-term interest rate. Our findings suggest that changes in confidence are, on their own, independent determinants of consumption spending and not just a reflection of the overall state of the economy in France, Italy and Portugal. In contrast, and in line with the forecasting exercise's results, unanticipated changes in consumer confidence have no significant effect in Germany.

Our paper is also related to the recent work that explores the macroeconomic effects of changes in confidence (e.g. Barsky and Sims (2012)) and expectations (e.g. Leduc and Sill (2013); D'Agostino and Mendicino (2015)) and shows that unanticipated changes in forward-looking U.S. survey variables have relevant macroeconomic effects.

The paper is organized as follows: Section 2 describes the confidence indicator index and Section 3 describes the forecasting exercise and the relative results. Section 4 analyzes the effects of unexpected changes in the confidence index on key macroeconomic variables. Section 5 concludes.

2 Confidence Indicators and Household Consumption

The consumer survey of the European Commission collects monthly information on household spending and savings intentions and also assesses perceptions of own future financial conditions and of the general economic situation in European countries. The survey questions are designed around four topics: the household's financial situation, the general economic situation, savings intentions and major purchases. The survey is largely qualitative and the results are aggregated in the form of "balances" of the difference between the percentage of respondents giving positive and negative replies. The balance series are seasonally adjusted and then used to build the consumer confidence indicator (CCI), i.e. a composite indicator that reflects overall perceptions and expectations for the

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[1]Petev, Pistaferri, and Saporta-Eksten (2012) highlighted that during the most recent recession in the U.S. all components of consumption, not solely durables, dropped substantially in comparison with previous recessions.

consumers sector. The CCI is the arithmetic average of the balances (in percentage points) of the answers to the following questions:

- How do you expect the financial position of your household to change over the next 12 months?

- How do you expect the general economic situation in this country to develop over the next 12 months?

- How do you expect the number of people unemployed in this country to change over the next 12 months?

- Over the next 12 months, how likely is it that you save any money?

Unlike U.S. confidence indicators, the confidence measure of the European Commission only includes consumer answers to forward-looking survey questions.[2] Our data sample covers the period 1985:Q1-2013:Q4 for Italy, Germany and France. Due to limitations in the availability of survey variables, the sample for Portugal starts in 1986:Q2.[3]

In Figure (2), we plot the CCI against the annualized quarterly growth rate of household consumption for the four countries analyzed in this paper. The development of the consumer confidence indicators display substantial heterogeneity across Euro Area countries. Regarding the most recent period, the CCI dropped steeply in all countries between 2008 and 2009. In Italy, the deterioration in confidence was not as marked as during the recession of the early 1990s. However, the index reached a historical low in both Germany and France. By 2010, confidence strongly recovered in Germany and remained close to the historical average, thereafter. In contrast, starting in 2010, consumer confidence dropped more markedly in both Italy and Portugal, and, in 2012, reached a historical low in both countries. Over the same period, CCI developments in France moved closely with the euro area aggregate CCI reported in Figure(1).[4] The correlation between the CCI and consumption is pronounced for Portugal (0.66) and Italy (0.52). The two series move particularly closely over the most recent years. In contrast, the correlation in the index of consumer confidence and consumption spending growth correspond less closely in France (0.30) and, especially, in Germany (0.13).

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[2]The Confidence indices of the University of Michigan and the Conference Board, i.e. the most followed U.S. confidence indicators, include both consumer perceptions of current conditions (present situation component) and consumer expectations (expectation component) with, respectively, a 40 and 60 per cent weight in each overall index. Regarding the expectation component, both surveys ask about consumer expectations in business conditions, job availability and personal income over the next 6 months. For a comparison of confidence indicators in the US and in the Euro Area as a whole, see also Brinca and Dees (2013).

[3]The survey sample size for the different countries is 3.300 for France, 2.000 for Italy and Germany and 1.020 for Portugal.

[4]Over our sample period, and according to the Euro Area Business Cycle Dating Committee, the Euro Area business cycle featured a peak in 1992:Q1 and a trough in 1993:Q3, a peak in 2008:Q1 and trough 2009:Q2 and a more recent peak in 2011:Q3.

3   The Forecasting Exercise

To test whether the consumer confidence survey variables have predictive power for future changes in household consumption expenditure we set up a standard out-of-sample forecasting exercise. As a benchmark, we define a simple forecasting model for consumption expenditure growth and test if additional regressors improve upon the predicting accuracy of such a model. In particular, we use the following models:

$$c_t = \alpha + \sum_{i=1}^{q_1} \beta_i c_{t-i} + \epsilon_t \tag{1}$$

$$c_t = \gamma + \sum_{i=1}^{q_1} \beta_i c_{t-i} + \sum_{j=1}^{q_2} \delta_j x_{t-j}^z + e_t \tag{2}$$

$$c_t = \mu + \sum_{i=1}^{q_1} \beta_i c_{t-i} + \sum_{j=1}^{q_2} \delta_j x_{t-j}^r + \sum_{s=1}^{q_3} \varphi_s x_{t-s}^{CCI} + v_t \tag{3}$$

where c_t is the annualized growth rate of household consumption expenditure, i.e. $log(\frac{C_t}{C_{t-1}}) \times 400$. We consider various categories of household consumption expenditure: total expenditure, expenditure in durable goods and expenditure in nondurable goods. The consumer confidence survey variable is denoted as x_t^{CCI}. In the analysis, we include either the CCI or one of the sub-index components listed in Section 2. The economic indicators are denoted by x_t^r, where $r \in R$ is the set of potential regressors $R = \{GDP, UR, INFL, IP, SP, 3M, 10Y, 10Y - 3M, FACT\}$ which includes the macro and financial variables used in the analysis: the growth rate of GDP (GDP), the unemployment rate (UR), the inflation rate (INFL), the index of industrial production (IP), stock prices (SP), the short-term interest rate (3M), long-term interest rate (10Y), the spread between the two (10Y-3M) and an unobserved factor (FACT) computed as the first principal component of the economic indicators included in the set R.[5]

The forecasting exercise is run on a quarterly basis. We use data available in the last month of each quarter (e.g. December 2002) to forecast consumption in the following quarter (e.g. 2003:Q1). In our dataset, we include the survey variables reported in the last month of the quarter (March, June, September and December). Monthly variables are used in quarter-on-quarter changes. For the daily variables, such as stock prices and interest rates, we first compute the monthly average and then the quarter-on-quarter changes.

$Eq.(1)$ is an autoregressive forecasting model for consumption that we use as benchmark. $Eq.(2)$ is an Augmented Distributed Lags (ADL) used to test if the addition of a regressor x_t^z improves upon the forecasting accuracy of the benchmark model, with $z \in Z$, where $Z = \{R \cup CCI\}$. $Eq.(3)$ is the ADL model that includes both an economic indicator, x_t^r, and a confidence index, x_t^{CCI}. We

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[5]As a measure of the short-term interest rate, we use the three-month Treasury bill. The unemployment rate is measured by the number of unemployed as a percentage of the labor force. Inflation is measured by the annualized quarterly change in the consumer price.

use this last specification to test if the confidence index provides information beyond that already provided by each of the other indicators. The lag length q_1 in $eq.(1)$ is selected with Schwarz's Bayesian Information Criterion (BIC). For the section of the lags length in the other equations we first fix q_1 as in the benchmark equation and then we determine q_2 and q_3 optimally with the BIC criterion. Note that ϵ_t, e_t and v_t are the error terms defined as scalars with zero mean.

The parameters of the three models are first estimated on an estimation window, (e.g. from 1985:Q1 to 2002:Q4) and are then used to predict consumption expenditure growth in the following period (e.g. 2003:Q1). The forecasting exercise is iterated until the end of the sample (2013:Q4). The optimal lag length is computed at each step. The size of the estimation window is kept constant by dropping, at each iteration, an observation at the beginning of the sample (rolling window estimation).

Predictions for the three equations at time $t + 1$ are defined as:

$$c_{t+1}^{ar} = \hat{\alpha} + \sum_{i=1}^{q_1} \hat{\beta}_i c_t \tag{4}$$

$$c_{t+1}^{z} = \hat{\gamma} + \sum_{i=1}^{q_1} \hat{\beta}_i c_t + \sum_{j=1}^{q_2} \hat{\delta}_j x_t^z \tag{5}$$

and

$$c_{t+1}^{r,CCI} = \hat{\mu} + \sum_{i=1}^{q_1} \hat{\beta}_i c_t + \sum_{j=1}^{q_2} \hat{\delta}_j x_t^r + \sum_{s=1}^{q_3} \hat{\varphi}_s x_t^{CCI} \tag{6}$$

where c_{t+1}^{ar}, c_{t+1}^{z} and $c_{t+1}^{r,CCI}$ denote the forecasts generated, respectively, with the three models; hats refer to the estimated parameters.

Forecast accuracy is evaluated by a smoothed Mean Square Forecast Error (MSFE) statistic. That is, we compute squared forecast errors over the forecasting sample 2003:Q1-2013:Q4 and then we smooth them by taking the mean over a rolling window of 17 quarters. This allows us to evaluate the accuracy of the forecasting performance over time. In addition, and in order to facilitate comparisons between alternative models, we report the results in terms of their relative MSFE. In particular, the ratio of the smoothed MSFE of the ADL in $eq.(2)$ and the smoothed MSFE of the benchmark model allows us to test whether the CCI or any indicator has predictive power for consumption growth. The relative smoothed MSFE between the model in $eq.(3)$ and the ADL model in $eq.(2)$ allows us to quantify if the confidence index provides additional information relative to the one provided by each of the other available economic indicators.

Values of the relative (smoothed) MSFE below 1.0 indicate that the forecasts produced with the model at the numerator are, on average, more accurate than the forecasts produced with the model at the denominator. To test if the predictions from the model are statistically different from those of the alternative model, we use the Diebold-Mariano test (null hypothesis of equal forecast accuracy).

Under the rolling window estimation scheme, critical values of the statistics can be compared to normal standard critical values (Giacomini and White (2006)). The test is implemented with the small sample correction proposed by Harvey, Leybourne, and Newbold (1998).

3.1 Does Consumer Confidence Improve Consumption Forecasts?

In the following, we report the main results of the forecasting exercise. Figure (3) to figure (6) test the predictive power of CCI for total household consumption expenditure in the four countries, i.e. Italy, Portugal, Germany and France. We focus on the one-step ahead forecast.

Figure (3) reports the results for Italy. First, we test whether the CCI has significant predictive power power on its own for consumption growth. Sub-plot (A) shows the ratio between the smoothed MSFEs obtained with the CCI-augmented ADL model (eq.(2)) and the benchmark model (eq.(1)). Values less than 1.0 (dashed blue line) indicate that the ADL model performs better than the benchmark model, hence the CCI adds useful information to predict consumption growth dynamics. The solid blue line reports the MSFE ratios, the symbols □, ○ and × indicate that the forecasts generated by the two competing models can be considered statistically different at 1%, 5% and 10% level of confidence, respectively. The graph in the first sub-plot shows that adding the confidence index provides slightly better forecasts until mid-2009. The accuracy of the CCI-augmented model, however, increases in the subsequent period and, by the end of the sample, it reaches an improvement over the benchmark model of about 40%. The forecasting error of the CCI-augmented model is lower than that of the benchmark model at a 10% level of confidence over most of the period from the end of 2006 to the end of 2011.

Second, we test if the CCI provides information about future consumption spending growth beyond that already contained in other economic indicators. Sub-plots (B)-(I) of Figure (3) compare the relative predictive power of the ADL model augmented with a single economic indicator, x_t^i, to (i) the benchmark model (black line) and (ii) the model in (eq.(3)) that includes both the economic indicator and the CCI (blue line). For example, if the blue line lies below the black line, it means that the confidence index adds information beyond that already contained in the economic indicator.[6] Sub-plot (J) considers an ADL model augmented with a factor estimated as the first principal component of the covariance matrix of a panel including all the economic indicators in R. For most of the economic indicators, the black line reveals no improvement in the forecast between the benchmark model and the model augmented with a single macroeconomic or financial variable (black lines tend to stay above one). The only exceptions are the three-month interest rate, which significantly improves the accuracy of the forecasts in 2009 and 2010, and the term spread variable (10 years minus 3 months), which provides about a 10% improvement over the 2007-2009 period.[7]

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[6]If the ADL model (black line) is above one, then the model with the single economic indicator does not improve the performance of the autoregressive benchmark model.

[7]Taylor and McNabb (2007) investigate the role of business and economic confidence in predicting economic downturns (as measured by below-period-average GDP growth) in European countries over the period 1983-1998. They document that, unlike for other countries, consumer confidence turned out to be of great importance in Italy.

Regarding the comparison between the smoothed MSFEs of the ADL model which includes each of the indicators in R, separately, with the smoothed MSFEs of the model (eq.(3)) that in addition to the economic indicator also includes the CCI, a ratio below one means a better performance of the model augmented with the CCI. It is worth stressing that the inclusion of two regressors with high forecast accuracy in (eq.(3)) does not necessarily imply a superior performance of that model. The good forecasting power of the single regressors can be counterbalanced by the higher estimation error required to estimate a model with more parameters. In addition, the two variables could carry the same information content. Nevertheless, the comparison between the two models in eq.(2) and eq.(3)) may provide useful insights on the information content embedded in the CCI. Sub-plots (B)-(I) show that the blue line tends to be below the black line across all different economic indicators and over the entire sample. This means that the CCI-augmented model dominates in terms of forecasting accuracy.

Figure (4) shows the results for Portugal. The confidence indicator on its own improves on the performance of the benchmark model especially from the beginning of the financial crisis onwards (see sub-plot(A)). During the mid-2007 to mid-2011 period, the improvement is about 50% and is almost always statistically significant. With the exception of the inflation and unemployment rate, the addition of economic indicators to the benchmark model improves its forecasting ability over the same period (see black lines below one in sub-plot (B)-(I)). In particular, around 2011, the model augmented with one of the interest rate variables (i.e. the long-term interest rate, the short-term interest rate, the term spread) and the unobservable factor significantly improve upon the performance of the autoregressive model. The improvement of the short-term interest rate and the factor is around 70%. It is interesting to note that, in the case of Italy, the forecasting performance of the model augmented with the confidence indicator is markedly superior to any other model. Indeed, the blue line in sub-plot(B)-(J) indicates that CCI provides additional information beyond what the other economic indicators considered in the analysis supply.

Figure (5) and figure (6) report the results for France and Germany, respectively. The confidence index does not improve significantly upon the performance of the autoregressive model. Indeed, the blue line in sub-plot (A) of both figures shows that we cannot reject the null hypothesis of equal predictive accuracy between the benchmark model and the CCI-augmented model. The black line displayed in sub-plots(B)-(J) indicates that no economic indicators contain predicting power beyond that embedded in the benchmark model. Nevertheless, the ADL model with the factor shows a good (significant) performance in 2007 in France and at the beginning of the sample in Germany.

In summary, we find substantial heterogeneity in the predictive power of confidence for consumption spending growth across countries and periods. At the beginning of the forecasting sample, there is no clear evidence of a substantial and statistically significant improvement in forecast accuracy due to the CCI. The forecasting power of the CCI-augmented model, however, changes over time. Starting from 2007 and 2009, respectively, the forecasting performance of the CCI-augmented models clearly outperforms the other models in Portugal and Italy. In contrast, our results suggest

that, both in France and Germany, it is hard to beat the forecasting performance of the bench-mark model.[8] In summary, we find substantial heterogeneity in the predictive power of confidence for consumption spending growth across countries and periods. At the beginning of the forecasting sample, there is no clear evidence of a substantial and statistically significant improvement in forecast accuracy due to the CCI. The forecasting power of the CCI-augmented model, however, changes over time. Starting from 2007 and 2009, respectively, the forecasting performance of the CCI-augmented models clearly outperforms the other models in Portugal and Italy. In contrast, our results suggest that, both in France and Germany, it is hard to beat the forecasting performance of the benchmark model.[9]

3.2 Personal Financial Situation Index

The consumer confidence indicator is an average of four different forward-looking surveys' variables, as described in Section 2. In the following, we analyze the forecasting performance of the sub-components of the CCI. Here, we only report the results regarding the future personal financial situation index (PFSI) since it delivers the most interesting performance. Figures (7) to (10) report the forecasting results for the four countries, separately.[10] Results for the other indexes are available upon request.[11]

Figure (7) shows the results for Italy. First, we explore only the forecasting power of the PFSI. Sub-plot (A) shows that from the beginning of 2006 to the end of 2010, the PFSI-augmented ADL model (eq.(2)) significantly improves upon the performance of the benchmark model by around 20%. The improvement is about 35% at the end of the sample. Further, the model augmented with the PFSI model outperforms the model augmented with the CCI (compare blue lines in subplot (A) of Figure (7) and (3)). This means that the forecasting power of the PFSI is superior to that of the aggregate index. The black lines assess the forecasting power of each of the economic indicators against the benckmark model and are included for comparison. As in the previous section, the blue line in sub-plots (B)-(I) compares the forecasting performance of the ADL model augmented with an economic indicator with that of the ADL model that also includes the PFSI. Overall, the results point towards a better predicting power of the financial survey indicator with respect to the CCI.

The results for Portugal, displayed in Figure (8), are qualitatively similar to those for Italy. The

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[8]Al-Eyd, Barrell, and Davis (2008) and Claveria, Pontus, and Ramos (2007) also document heterogeneity across European countries in the forecasting power of EC survey indicators.

[9]Al-Eyd, Barrell, and Davis (2008) and Claveria, Pontus, and Ramos (2007) also document heterogeneity across European countries in the forecasting power of EC survey indicators.

[10]The future personal situation sub-index reports a correlation with the aggregate confidence index of 0.94 in Italy, 0.96 in Portugal, 0.66 in France and 0.81 in Germany.

[11]The results can be summarized as follows: (i) the economic situation index shows a good performance in forecasting total consumption in Italy, Portugal and to a lesser extent in France, while it fails to improve on the benchmark performance in Germany; (ii) the unemployment index has no forecasting power in Italy, France and Germany, while it shows weak forecasting improvement in Portugal; (iii) the saving index shows some forecasting power in Italy, Portugal and, although not statistically significant, also in Germany, whereas in France there is no sign of improvement.

financial index has stronger predictive power than the CCI. The sub-plot (A) shows that the PFSI-augmented model displays a major significant improvement over the accuracy of the benchmark model, i.e. above 50% from mid-2009 to mid-2011. The blue line displayed in sub-plots (B)-(J) is always below the black line, indicating that the inclusion of the PFSI has incremental power relative to the models that only include standard economic indicators.

Figure (9) displays the results for France. Unlike the CCI, the PFSI has remarkably good forecasting power for consumption spending growth. There is a significant improvement over the benchmark model of around 40% from 2007 to 2011, (sub-plot(A)).[12] The addition of the PFSI also improves the forecasting accuracy of the model that only includes the economic indicators. In contrast, no significant differences are displayed for Germany (10).[13]

3.2.1 Durable and Nondurable Consumption Expenditure

In the exercises presented above, we test the ability of consumer confidence and additional macro and financial variables to forecast total household consumption expenditure. This section now tests the ability of the expected personal financial situation survey index to predict future dynamics of two components of household consumption: expenditure in durable goods and expenditure in nondurable goods. We only focus on the financial situation index because, as shown in the previous sections, it has the best performance across countries and among the other indices. To save space, the forecasting exercise is performed only for Italy, Portugal and France, the countries where the financial situation index has incremental forecasting power over the aggregate index (see previous section).

Before moving to the forecasting analysis, we describe the consumption patterns. Figure (11) displays the quarterly growth rate of expenditure in nondurable goods and total consumption (panel A, top charts) and the growth rate of expenditure in durable and nondurable goods (panel B, bottom charts) over the past 10 years. Overall, we observe substantial heterogeneity in the behavior of the growth rates of these two components of household consumption expenditure. Dynamics in nondurable consumption expenditure are similar to those of total consumption (see panel A), whereas durable goods consumption expenditure features a more pronounced volatility (see panel B). The larger volatility of durable goods consumption makes this series more difficult to forecast. Two facts are remarkable about Italy and Portugal. First, both countries experienced a sizable decline in total consumption between 2008-2009 that coincided with a significant decline in durable goods consumption. Second, nondurable goods consumption features a large and persistent drop post-2009 (panel A).

Figures (12), (13) and (14) report the results for durable consumption expenditures in Italy, Portugal and France, respectively. The model that includes the PFSI performs somewhat better

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[12]Dreger and Kholodilin (2013) also document that this confidence sub-index outperforms the CCI in France over the 2000Q4-2010:Q1 sub-sample.

[13]According to Aastveit, Jore, and Ravazzolo (2014) augmenting the forecasting model with consumer confidence or a financial conditions index also helps predict Norwegian business cycle peaks.

than the other models, especially for Italy, where there is an improvement over the benchmark of about 20% from 2007 until the end of the sample. The improvement, with respect to the baseline model, in Portugal and France is limited to year 2010 and year 2011, respectively. More interesting is the performance of the index in predicting the growth rate of expenditure in nondurable consumption. Figure (15), reports that the PFSI adds useful information to predict consumption growth dynamics in Italy: the forecast improvement ranges from 10%, until mid-2009, to above 40% after 2011. In Portugal, the results are even more marked, as shown in Figure (16): The PFSI-augmented model improves upon the benchmark figure by about 50% from 2007 to 2012. In contrast, Figure (17) documents that in France, the PFSI does not help predicting nondurable consumption expenditure.

Results in this section show that models that include the financial index outperform all the others in terms of forecasting accuracy. With the exception of Germany, the financial survey provides information well beyond that summarized by the aggregate index of consumer confidence. Expectations regarding future personal financial conditions seem to be important for consumer decisions about both expenditures in durable and nondurable goods, especially in Italy and Portugal. Noticeably, during the most recent years, nondurable goods expenditure recorded a substantial drop in both countries.

4 Consumer Confidence Shocks

Results presented in the previous sections provide some evidence of the relevant information content of consumer confidence and, in particular consumer expectations about personal financial conditions, for predicting household consumption expenditure growth. Changes in consumer confidence could be driven by changes in expectations about future economic activity, i.e. "news", or by autonomous changes in agents' beliefs, i.e. "animal spirits". In both cases, changes in consumer confidence could be interpreted as an independent source of economic fluctuations. However, the leading role of consumer confidence with respect to consumption could also simply be due to the fact that confidence reflects the overall current state of the economic and financial conditions, i.e. when the economy is depressed, forward-looking consumers tend to have a pessimistic outlook. In order to understand if changes in confidence are an independent source of fluctuation in consumption, we explore the macroeconomic effects of unexpected changes in PFSI by means of a Vector Autoregression (VAR) model. In particular, we investigate the effects of surprise movements in the expected personal financial situation confidence sub-index on total household consumption expenditure and also on expenditure in durable and nondurable goods, separately. In addition, we include the unemployment rate and the 3-month interest rate in the model.

The different time release of the survey and economic indicators enables us to identify a confidence shock. Responses from the monthly surveys are collected during the second and third weeks of each month and sent to the European Commission by the end of the reference month. At the

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time in which the survey is filled in, respondents do not have information about the unemployment rate of the same month, or the household consumption of the same quarter. For example, for the survey collected in the first two weeks of March, i.e. the last month of the first quarter, the respondents know the consumption of the previous quarter and past realizations of the unemployment rate.[14] In particular, up to the first two weeks of March, the respondents in Germany know the unemployment rate of February, whereas in Portugal, Italy and France, they only know the January unemployment rate. The VAR also includes the short-term nominal interest rate which, like many financial variables, is available in real time. Thus, we redefine the quarters such that they start in the second week of the last month of the current quarter and end in the first week of the first month of the next quarter. Quarters are then redefined as: $\widetilde{Q1}$, from the second week of March to the first week of June; $\widetilde{Q2}$, from the second week of June to the first week of September; $\widetilde{Q3}$, from the second week of September to the first week of December; $\widetilde{Q4}$, from the second week of December to the first week of March.[15]

The first equation of the VAR includes the most recent information available to the agents when responding to the survey. For example, if the survey is provided on June 10th of $\widetilde{Q2}$, the right-hand side variables include consumption growth up to March, the unemployment rate figure of April (May in the case of Germany) and the interest rate up to June 9th. Thus, the variables included in the model are aligned to reflect the fact that the forecasters' information set includes the most updated past values of the variables. The timing of the survey is thus consistent with the use of a recursive (i.e. Cholesky) identification scheme that orders the survey variable first.[16]

4.1 VAR Results

In this section, we report the main results from the VAR model. Figure (18) displays the response of total household consumption expenditure, the unemployment rate and the short-term interest rate to an unexpected negative shock to PFSI. Panels (A)-(D) report the results for Italy, Portugal, France and Germany, separately.

Unanticipated downward revisions to PFSI generate a reduction in the short-term interest rate, a decline in total consumption, and a persistent and hump-shaped increase in unemployment. Notice, however, that the response of total consumption is not significantly different from zero in France and Germany. In contrast, in response to an unexpected decline in PFSI of 1 per cent, total consumption declines by about 0.4 per cent in both Italy and Portugal. Further, in both countries, the unemployment rate displays a peak response of around 0.2 per cent after about 10 quarters. These results suggest that exogenous changes in confidence generate sizable macroeconomic effects.

For Italy, Portugal and France, we also explore the response of expenditure in durable goods

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[14]In our dataset, survey variables include the responses in the last month of each quarter (March, June, September and December).

[15]The tilde symbol refers to the new quarter definition.

[16]See Leduc and Sill (2013) and D'Agostino and Mendicino (2015) for the identification of expectations shocks using a similar strategy.

and nondurable goods, separately. The second row of Figure (19) displays the response of durable consumption (A.d-C.d) and nondurable consumption (A.nd-C.nd). In the first column, we use data for Italy, whereas in the second and third columns we use data for Portugal and France. The response of expenditure in durable goods is considerably larger than that of expenditure in nondurable goods in all countries. This result is related to the larger volatility of durable consumption expenditures. It is important to notice that the responses of the other variables, i.e. unemployment and the interest rate, are not affected by the choice of the consumption variable. It is worth highlighting that, unlike Italy and Portugal, the response of both expenditure in durable and nondurable consumption to unexpected changes in PFSI is not significant in France.

The results presented above indicate that if consumers become pessimistic regarding their future personal financial situation economic activity can slow and household consumption expenditure decline. In contrast, the effect of unexpected changes in the personal financial situation index in France seems to affect total household consumption expenditure mainly through other sub-components of consumption. These findings are in line with the forecasting results presented in the previous sections and suggest that consumer confidence predicts household consumption because it represents an independent source of economic fluctuations.

5   Conclusion

This paper studies whether consumer confidence helps to predict future changes in private consumption spending in euro area countries. In particular, we investigate if the importance of confidence varies across time and countries. To address this question, we first explore the short-term forecasting power of confidence indicators over the last two decades. Our findings show a large degree of heterogeneity in the leading role of confidence both across countries and periods. Confidence indicators have a better forecasting performance during periods of financial distress and in countries that suffered more remarkable downturns, such as Italy and Portugal. Further, the sub-index of personal financial conditions expectations has stronger forecasting power than the overall consumer confidence index and also turns out to have significant forecasting power in France. This index helps to forecast both durable and nondurable goods. Second, we document that surprise movements in consumer confidence represent an independent source of business cycle fluctuations.

References

AASTVEIT, K., A. S. JORE, AND F. RAVAZZOLO (2014): "Forecasting recessions in real time," *Norges Bank working paper*, 02.

AL-EYD, A., R. BARRELL, AND P. DAVIS (2008): "Consumer Confidence Indices and Short-term Forecasting of Consumption," *Manchester School*, 77, 96–111.

BARSKY, R. B., AND E. R. SIMS (2012): "Information, Animal Spirits, and the Meaning of Innovations in Consumer Confidence," *American Economic Review*, 102(4), 13431377.

BRAM, J., AND S. LUDVIGSON (1998): "Does Consumer Confidence Forecast Household Expenditure? A Sentiment Index Horse Race," *FRBNY Economic Policy Review*.

BRINCA, P., AND S. DEES (2013): "Consumer Confidence as a Predictor of Consumption Spending: Evidence for the United States and Euro Area," *International Economics*, 134, 1–14.

CARROLL, C. D., J. C. FUHRER, AND D. W. WILCOX (1994): "Does Consumer Sentiment Forecast Household Spending? If So, Why?," *American Economic Review*, 84, 1397–1408.

CLAVERIA, O., E. PONTUS, AND R. RAMOS (2007): "Business and Consumer Expectations and Macroeconomic Forecasts," *International Journal of Forecasting*, 23, 47–69.

CROUSHORE, D. (2005): "Do Consumer-Confidence Indexes Help Forecast Consumer Spending in Real Time?," *The North American Journal of Economics and Finance*, 16, 435–450.

D'AGOSTINO, A., AND C. MENDICINO (2015): "Expectation-Driven Cycles: Time-Varying Effects," *European Central Bank Working Paper*.

DREGER, C., AND K. A. KHOLODILIN (2013): "Forecasting Private Consumption by Consumer Surveys," *Journal of Forecasting*, 32, 10–12.

GIACOMINI, R., AND H. WHITE (2006): "Tests of Conditional Predictive Ability," *Econometrica*, 74, 1545–1578.

HARVEY, D. I., S. J. LEYBOURNE, AND P. NEWBOLD (1998): "Tests for Forecast Encompassing," *Journal of Business and Economic Statistics*, 16(2), 254–59.

LEDUC, S., AND K. SILL (2013): "Expectations and economic fluctuations: an analysis using survey data," *Review of Economics and Statistics*, 95(4), 1352–1367.

LEMMON, M., AND E. PORTNIAGUINA (2006): "Consumer Confidence and Asset Prices: Some Empirical Evidence," *The Review of Financial Studies*, 19, 1499–1529.

LUDVIGSON, S. (2004): "Consumer Confidence and Consumer Spending," *Journal of Economic Perspectives*, 18, 29–50.

MEHRA, Y. P., AND E. W. MARTIN (2003): "Why Does Consumer Sentiment Predict Household Spending?," *Federal Reserve Bank of Richmond Economic Quarterly*, 89(4).

PETEV, I., L. PISTAFERRI, AND I. SAPORTA-EKSTEN (2012): "Consumption and the Great Recession: an Analysis of Trends, Perceptions, and Distributional Effects," *Analyses of the Great Recession in D. Grusky, B. Western and C. Wimer (eds.)*.
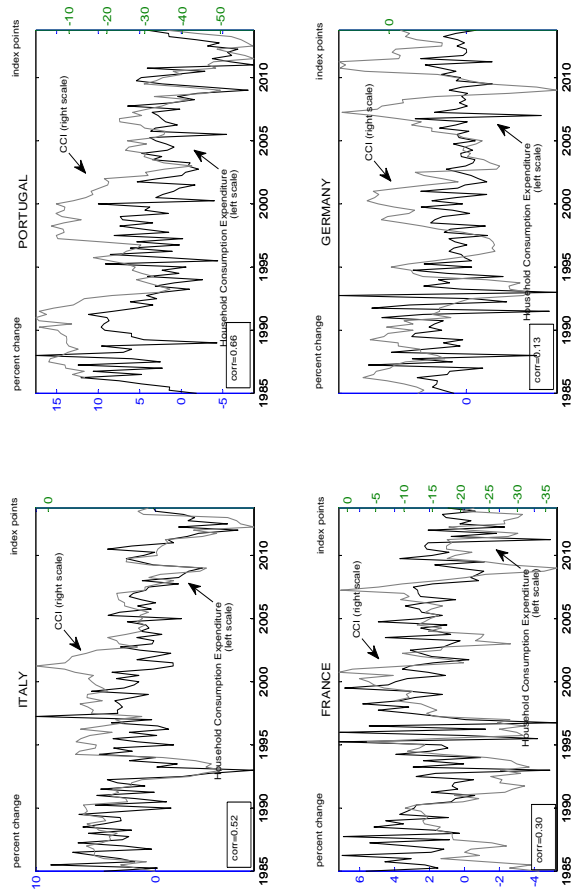
Taylor, K., and R. McNabb (2007): "Business Cycles and the Role of Confidence: Evidence for Europe," *Oxford Bulletin of Economics and Statistics*, 69, 0305–9049.

Figure 1: *Consumption Components in the Euro Area*

index points
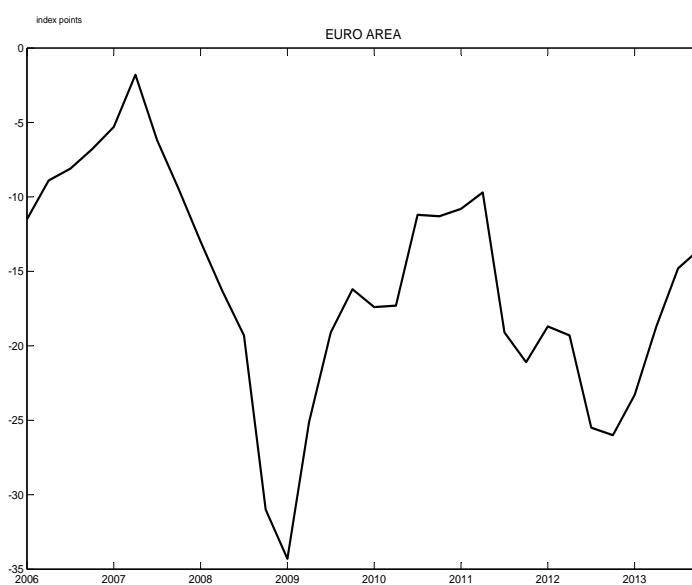
EURO AREA

Note: Consumer confidence indicator(CCI).

Figure 2: *Consumption Components in the Euro Area*

Note: Black line: Annualized quarterly growth rate of total household consumption expenditures, left scale; Gray line: Consumer confidence indicator(CCI), right scale.

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Figure 3: *Forecasting Performance of the confidence indicator index - Italy, Final Consumption*
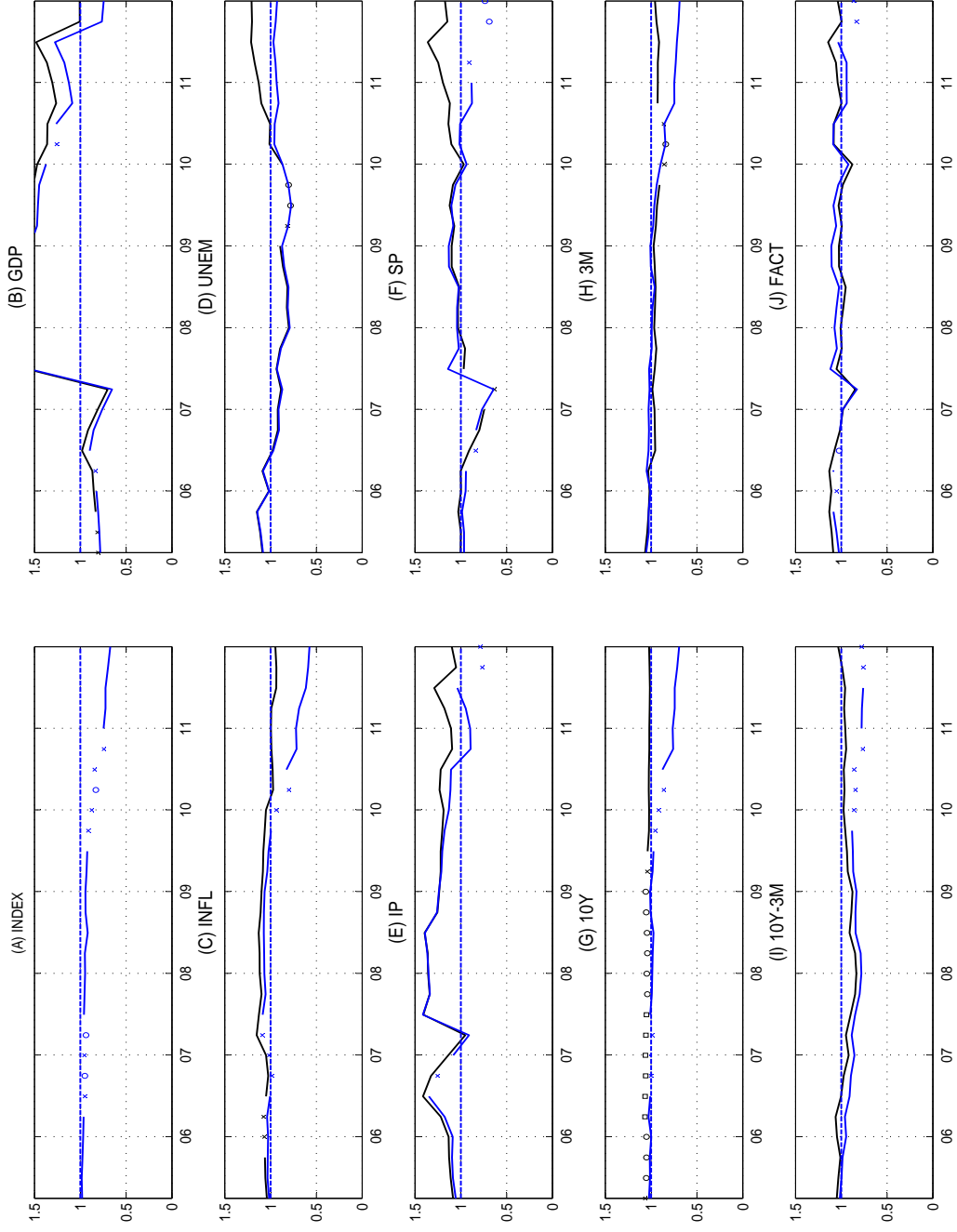
Note: relative smooth mean square forecast error of different models. The first subplot, "INDEX", reports the ratio between the (smooth) MSFE of the survey indicator (*eq.*(2)) and the (smooth) MSFE obtained with the autoregressive benchmark model (*eq.*(1)). A ratio below indicates that the ADL model performs better in forecasting than the benchmark; □, ∘ and × denote that the two forecasts can be considered statistically different at 1%, 5% and 10% level of confidence respectively. The blue lines in the other panels report the same statistics for the other macro and financial indicators. The black line is the ratio between the (smooth) MSFE of model in *eq.*(3) and the model in *eq.*(2); a ratio below one indicates that the ADL model with the macro indicator augmented with the survey indicator improves on the performance of the model with the macro indicator only.

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Figure 4: *Forecasting Performance of the confidence indicator index - Portugal, Final Consumption*
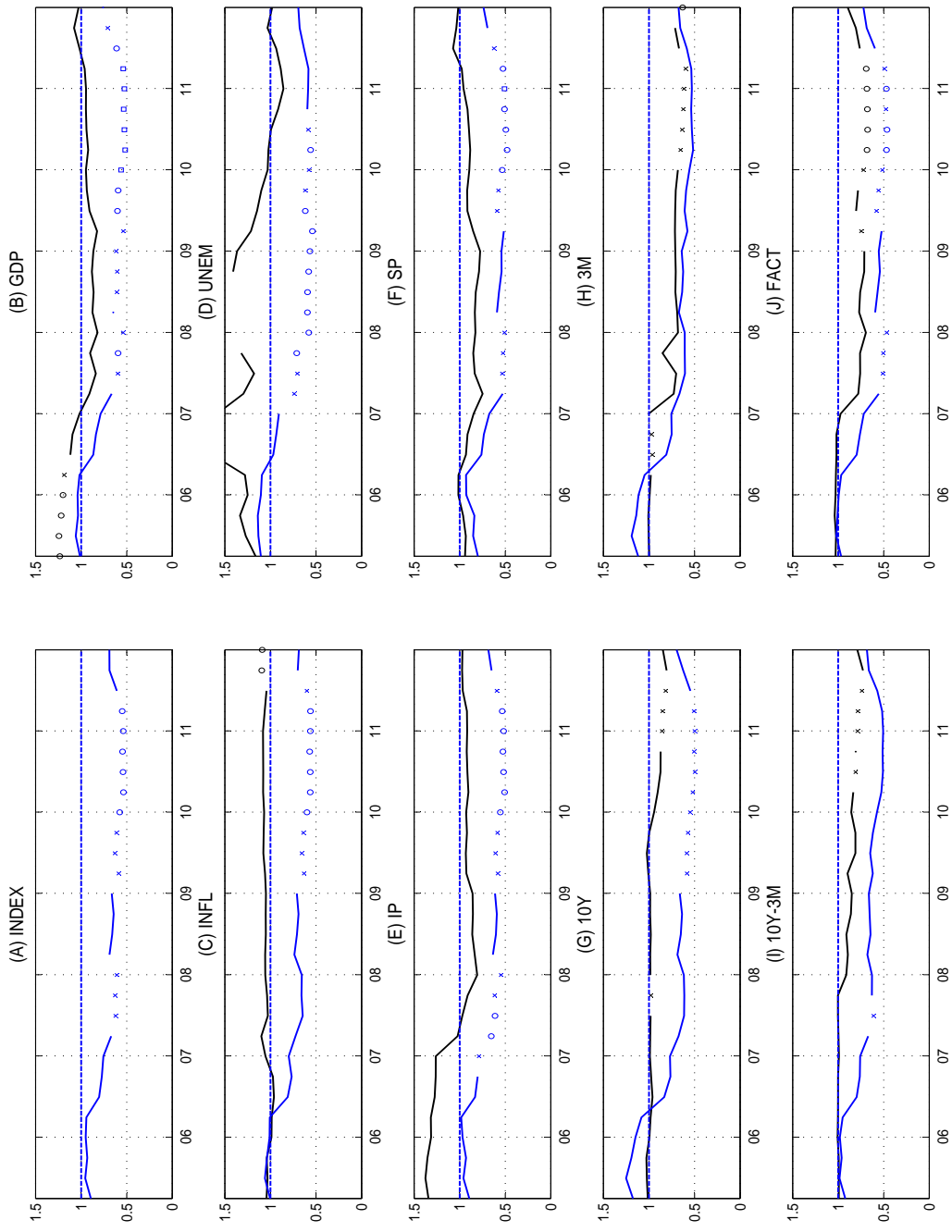
Note: see note in Figure 3

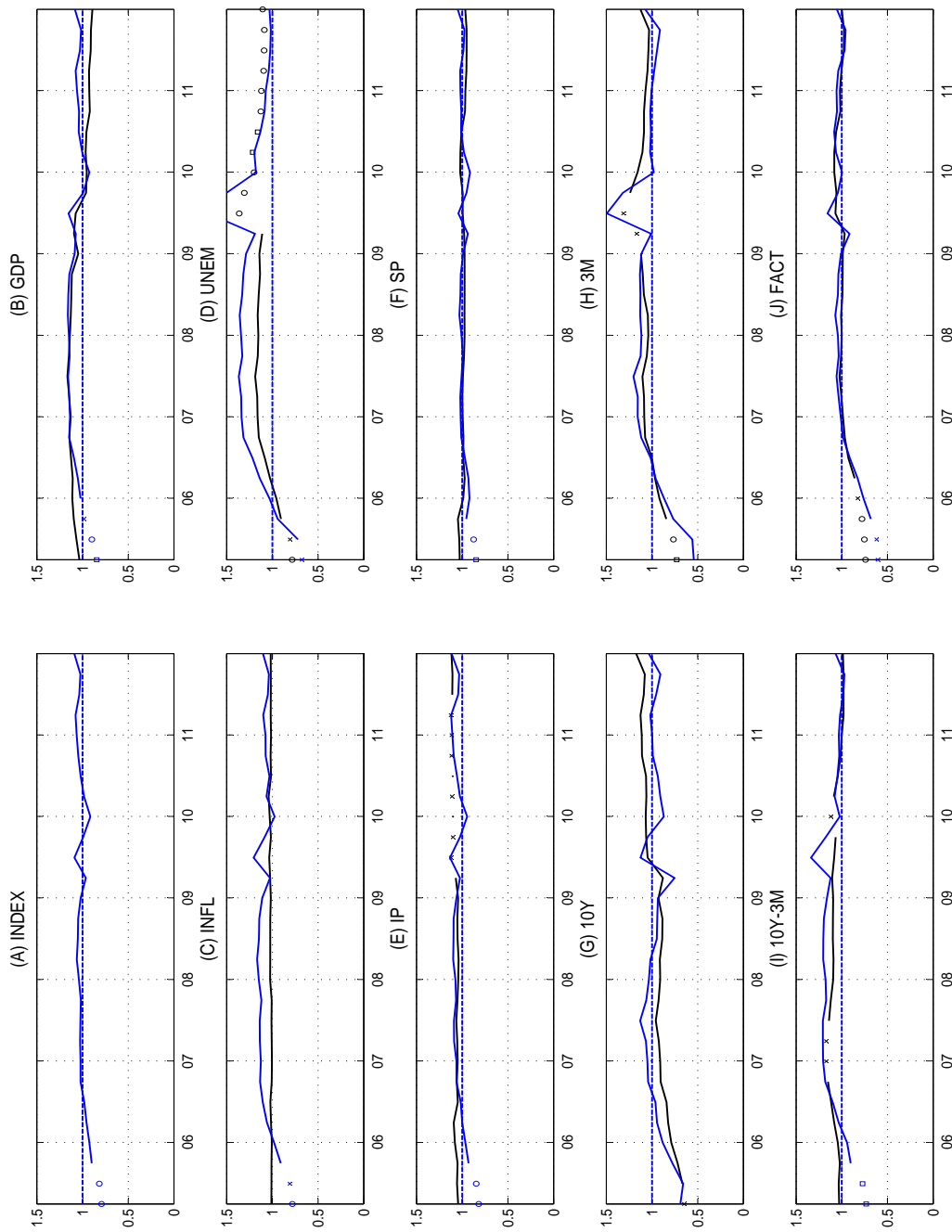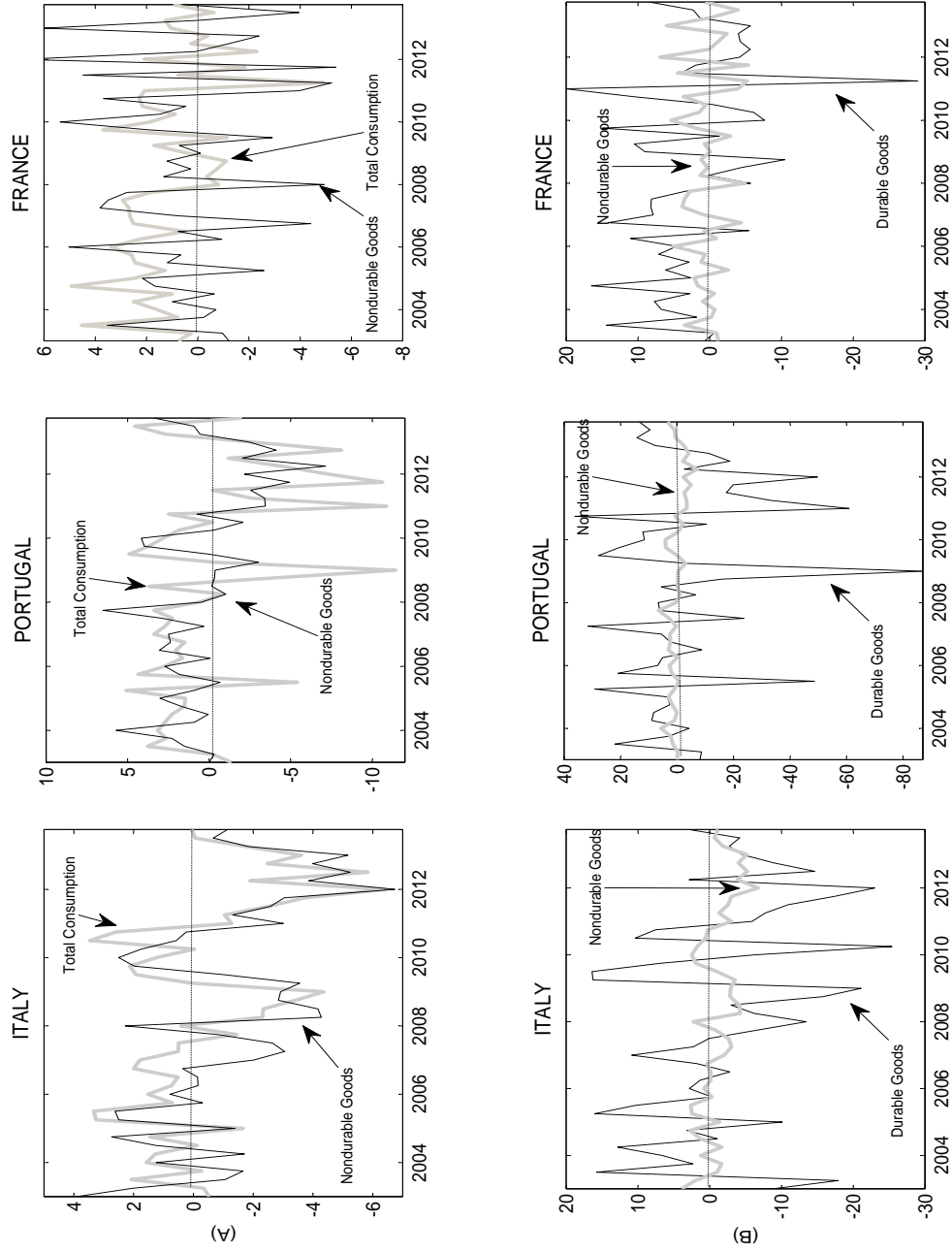Figure 5: *Forecasting Performance of the confidence indicator index - France, Final Consumption*

Note: see note in Figure 3

19
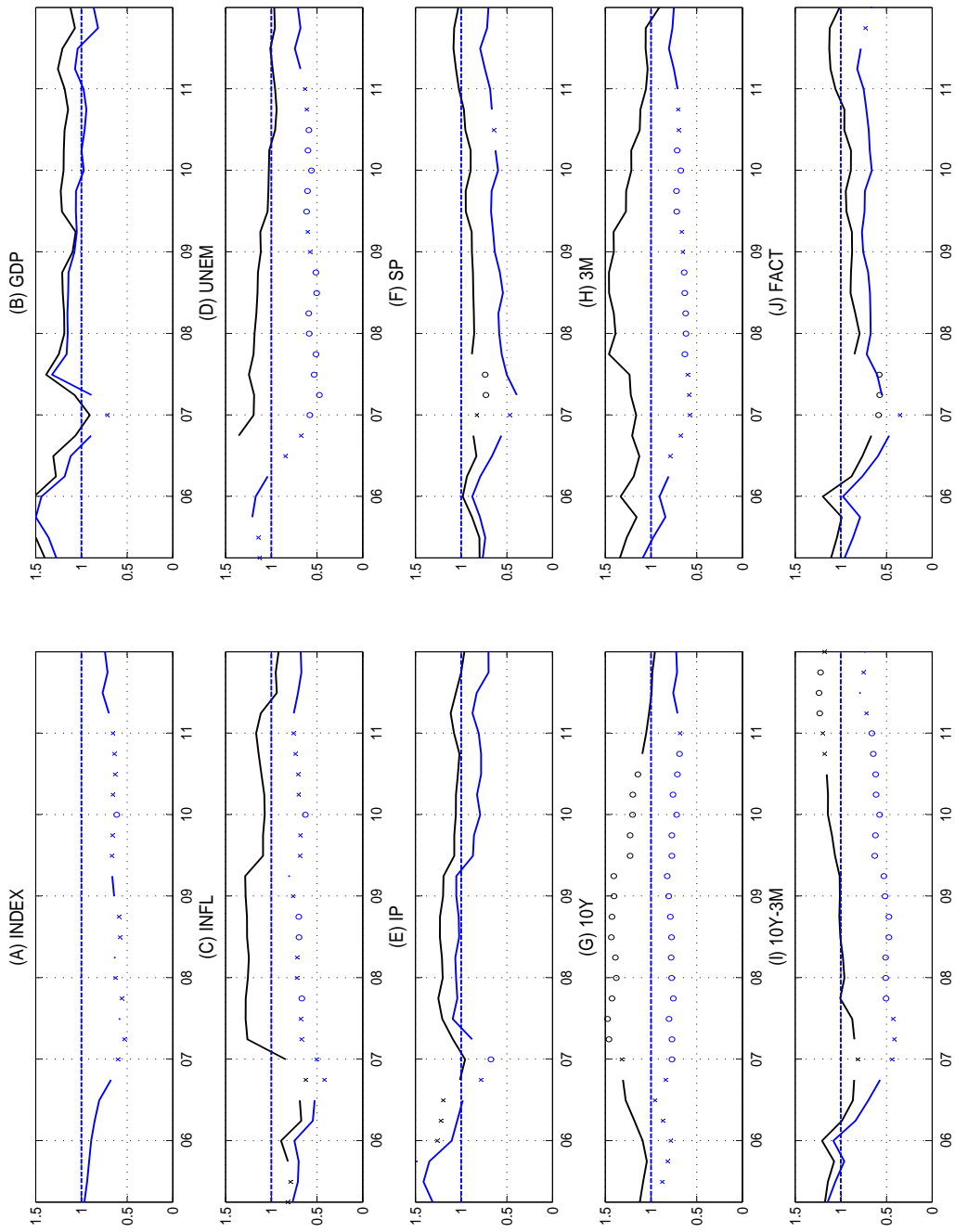
Figure 6: *Forecasting Performance of the confidence indicator index – Germany, Final Consumption*

(A) INDEX

(B) GDP

(C) INFL

(D) UNEM

(E) IP

(F) SP

(G) 10Y

(H) 3M

(I) 10Y-3M

(J) FACT
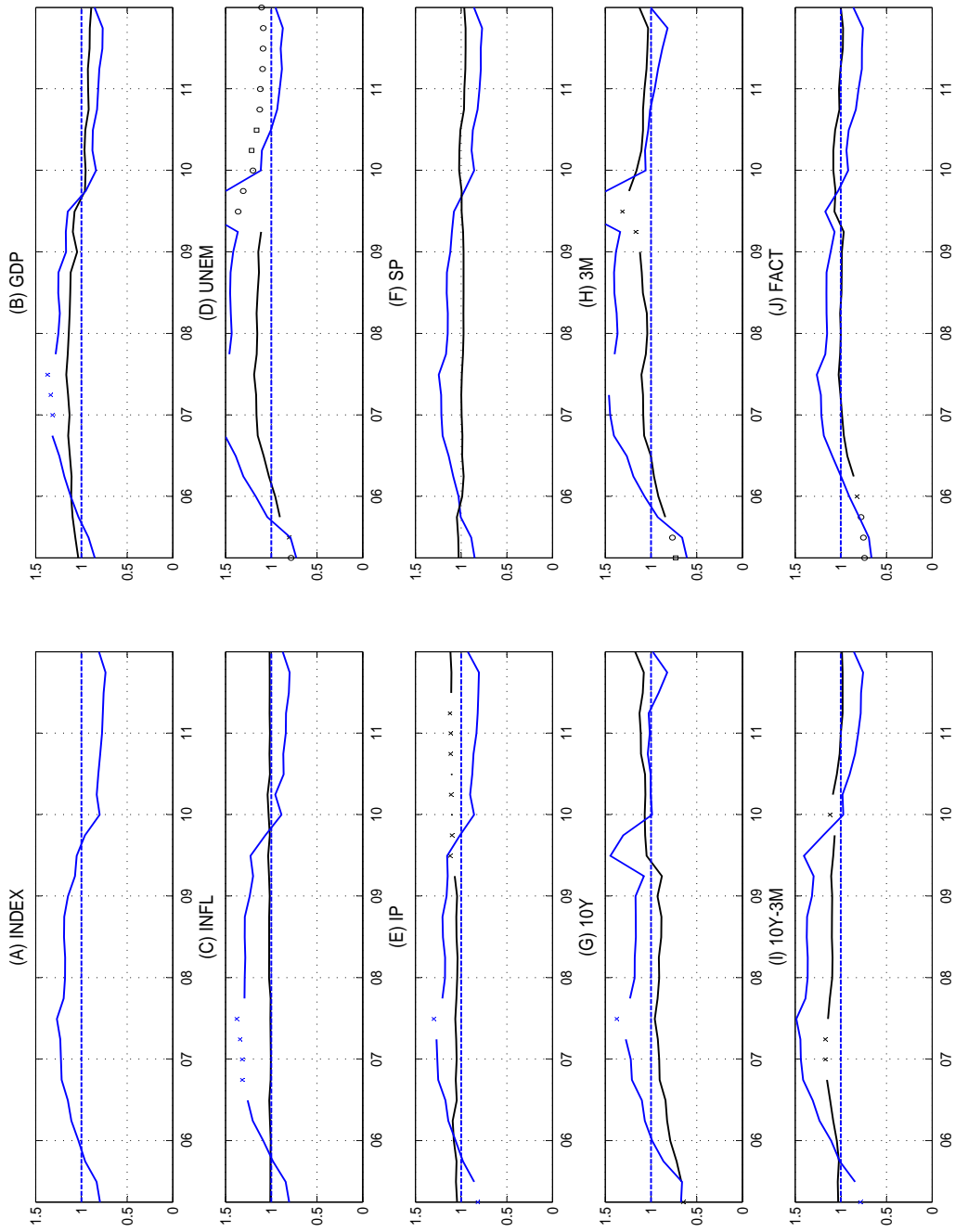
Note: see note in Figure 3

Figure 7: *Forecasting performance of the financial situation over next 12 months index - Italy, Final Consumption*
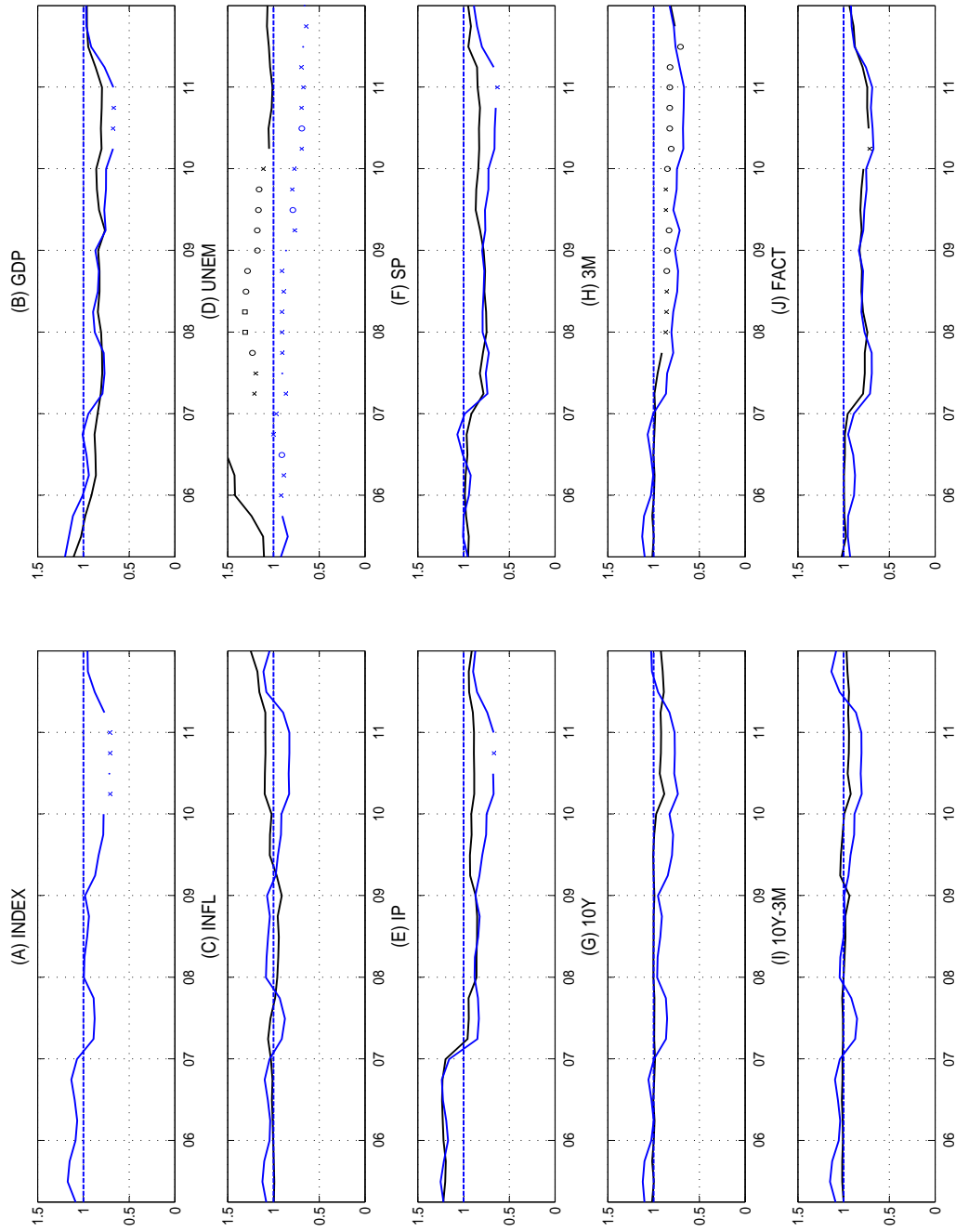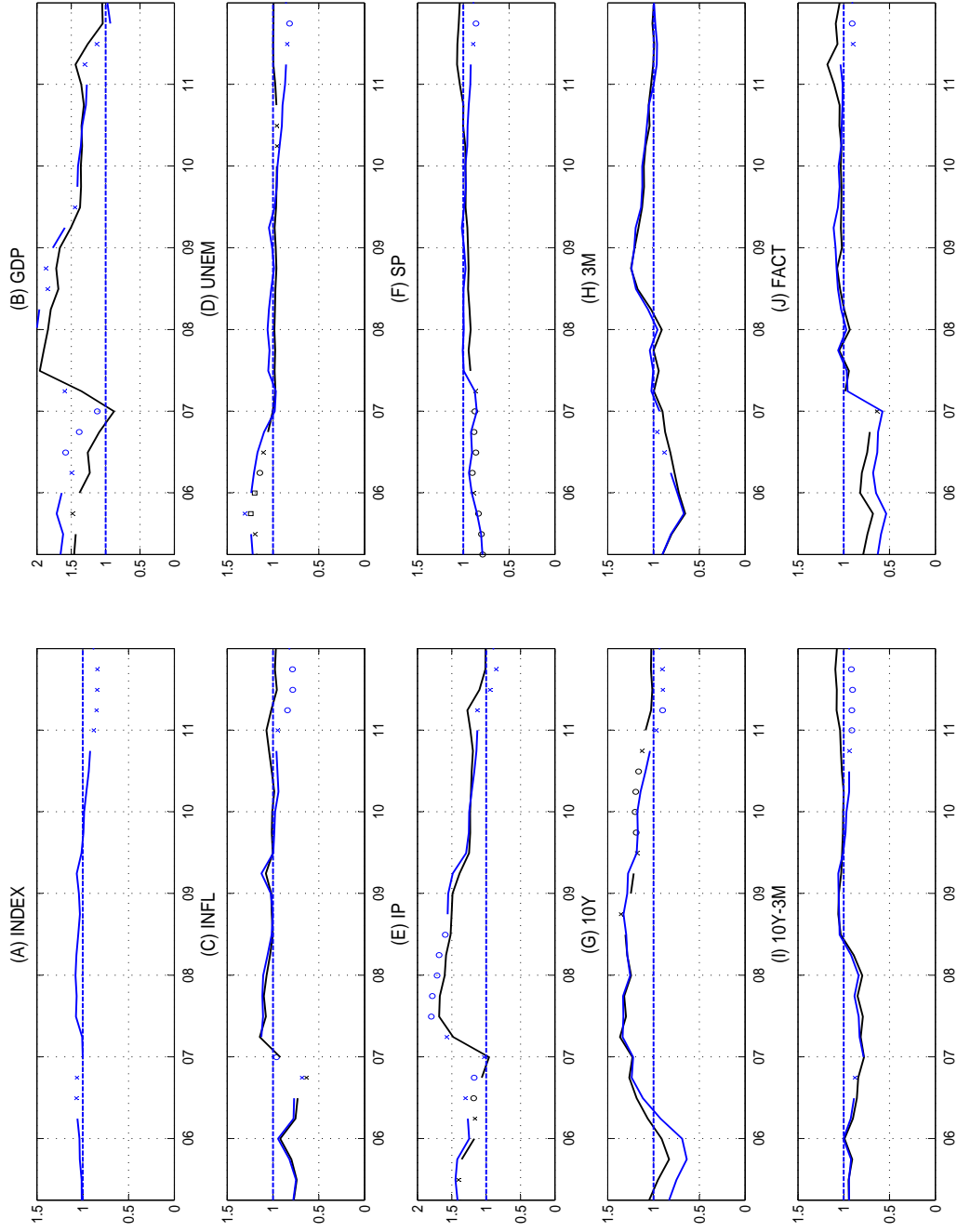
Note: see note in Figure 3

21
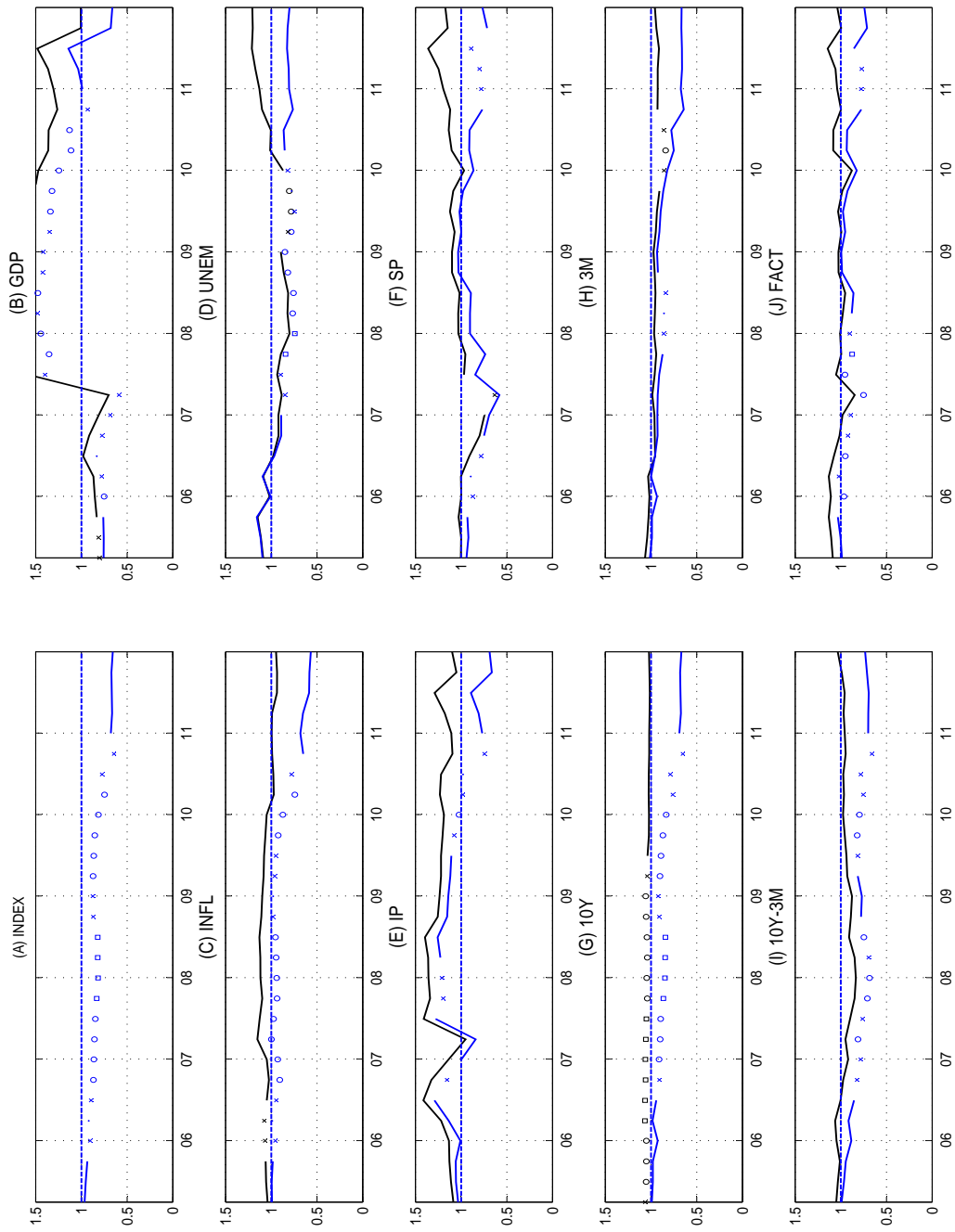
Figure 8: *Forecasting performance of the financial situation over next 12 months index - Portugal, Final Consumption*
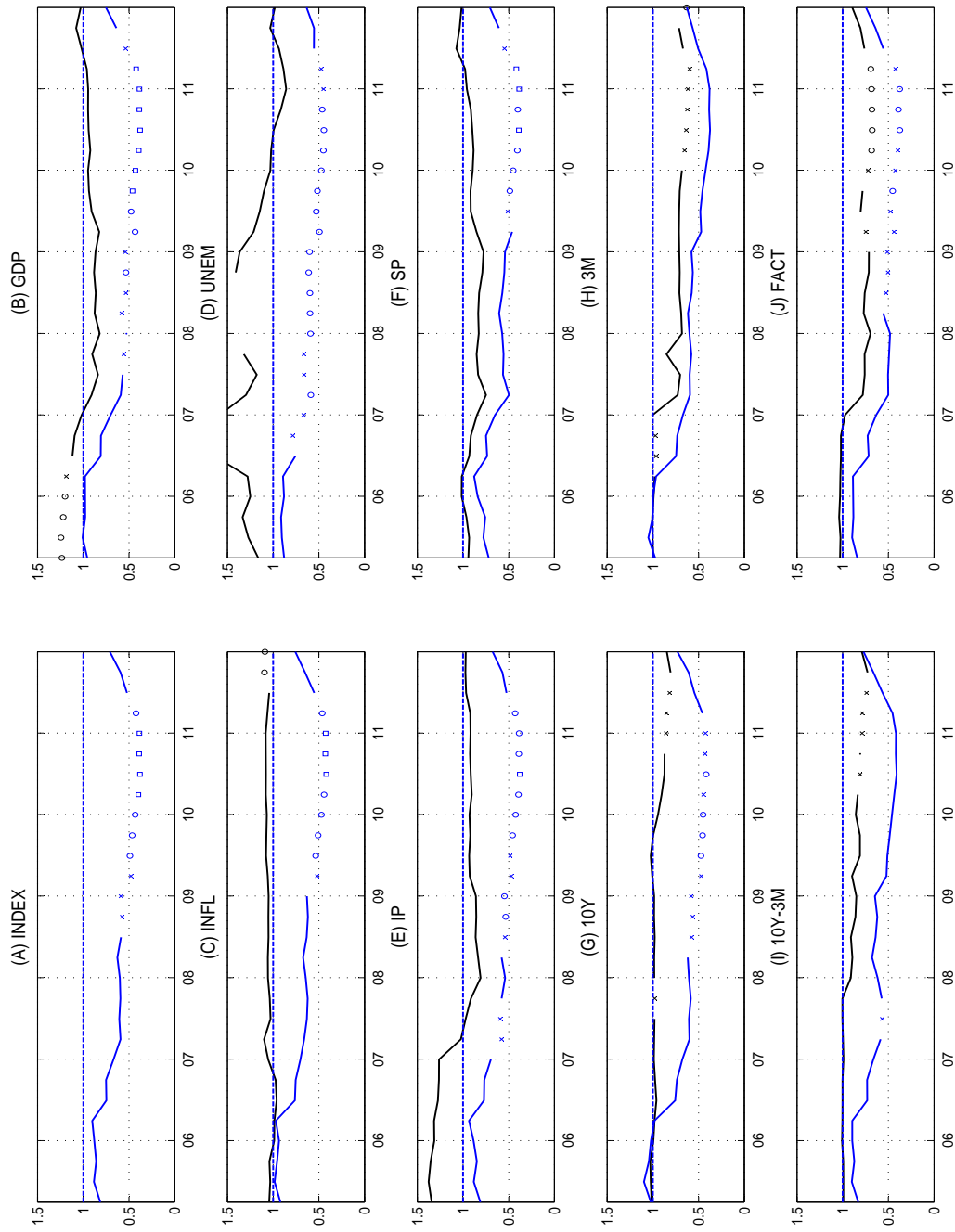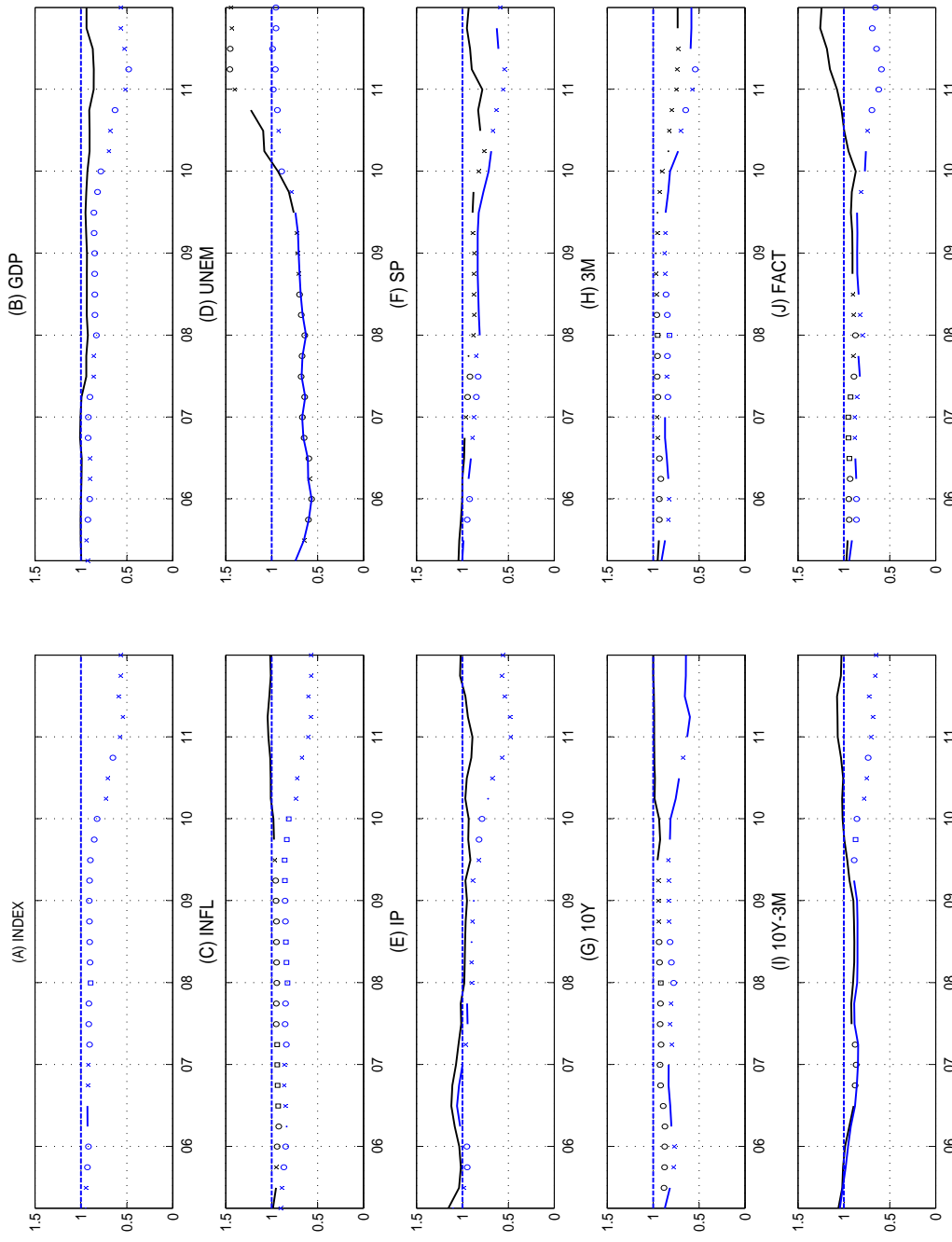
Note: see note in Figure 3

Figure 9: *Forecasting performance of the financial situation over next 12 months index – France, Final Consumption*

(A) INDEX

(B) GDP

(C) INFL

(D) UNEM

(E) IP

(F) SP

(G) 10Y

(H) 3M

(I) 10Y-3M

(J) FACT
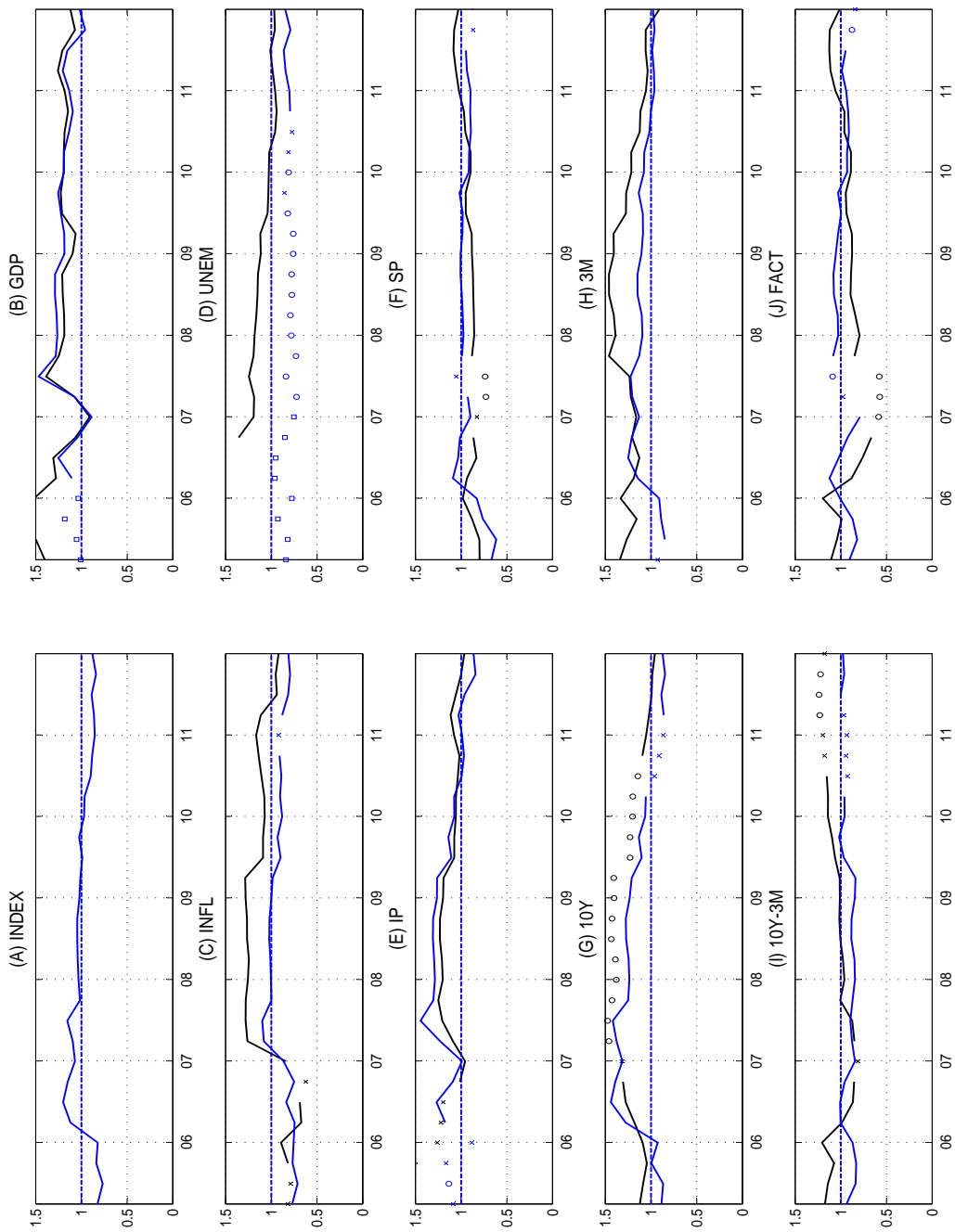
Note: see note in Figure 3

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Figure 10: *Forecasting performance of the financial situation over next 12 months index - Germany, Final Consumption*

Note: see note in Figure 3

Figure 11: *Consumption Components*

Note: Annualized quarterly growth rate of durable goods (gray line) and nondurable goods consumption (black line).

Figure 12: *Forecasting performance of the financial situation over next 12 months index - Italy, Durable Consumption*
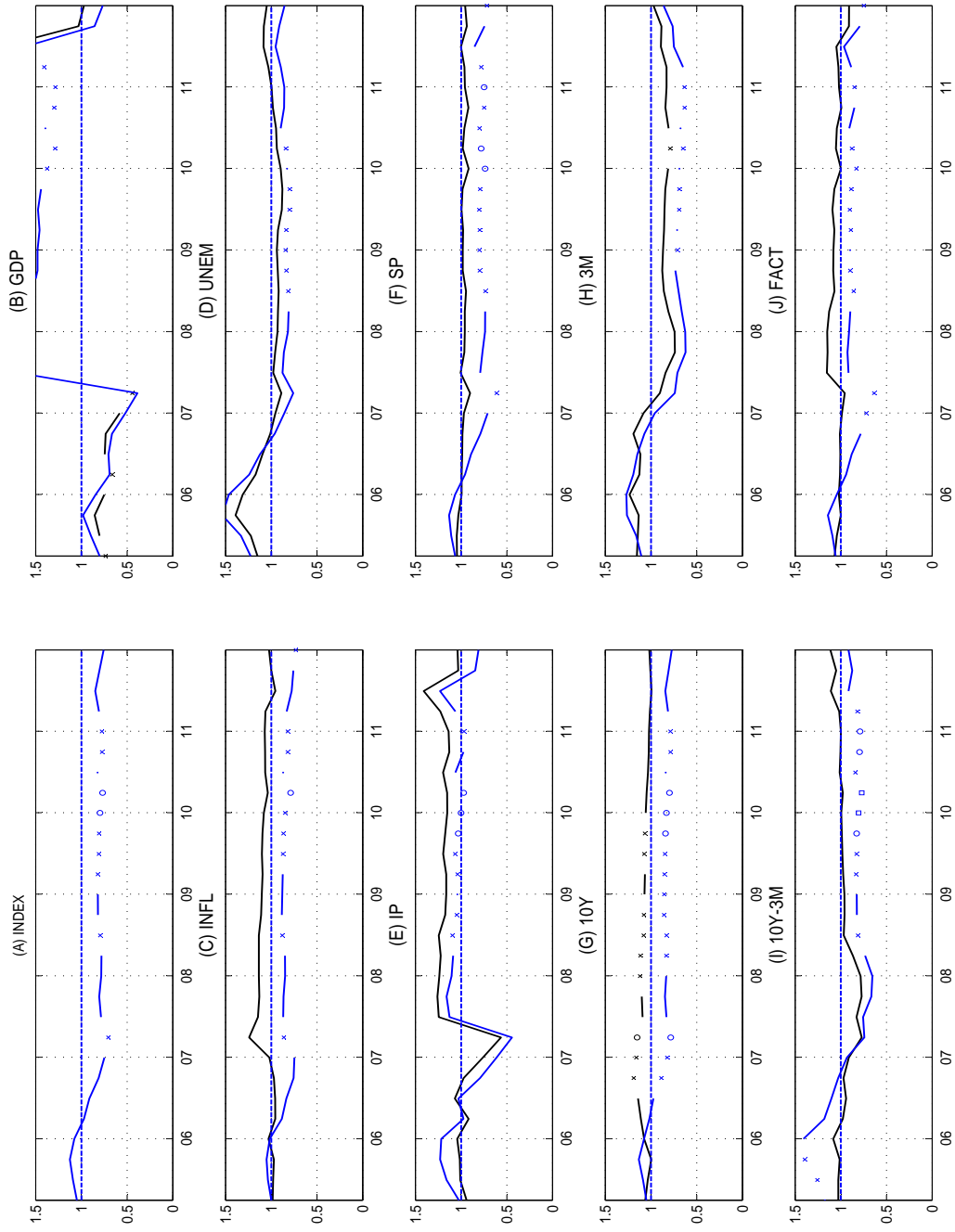
Note: see note in Figure 3

Figure 13: *Forecasting performance of the financial situation over next 12 months index - Portugal, Durable Consumption*

Note: see note in Figure 3

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Figure 14: *Forecasting performance of the financial situation over next 12 months index - France, Durable Consumption*
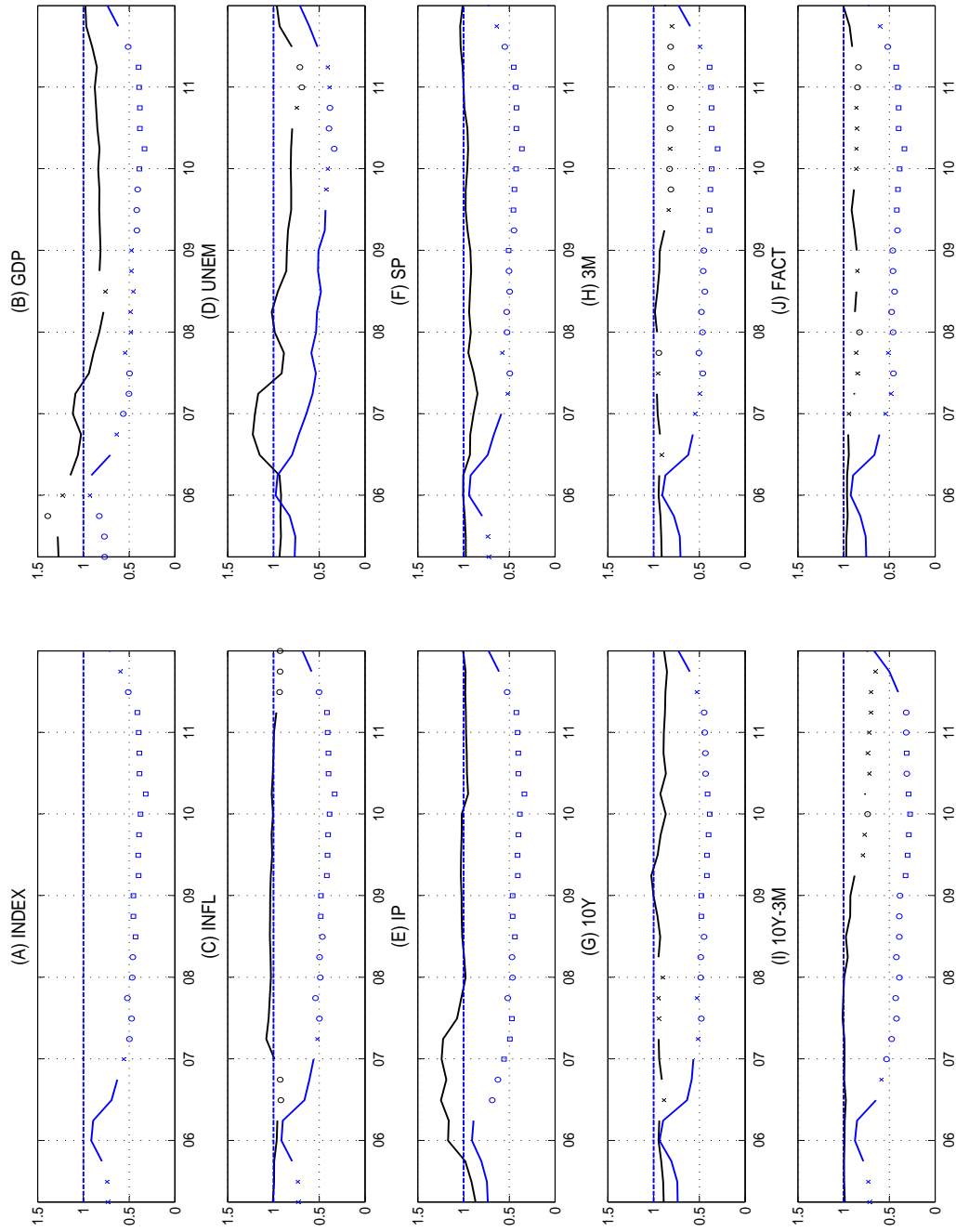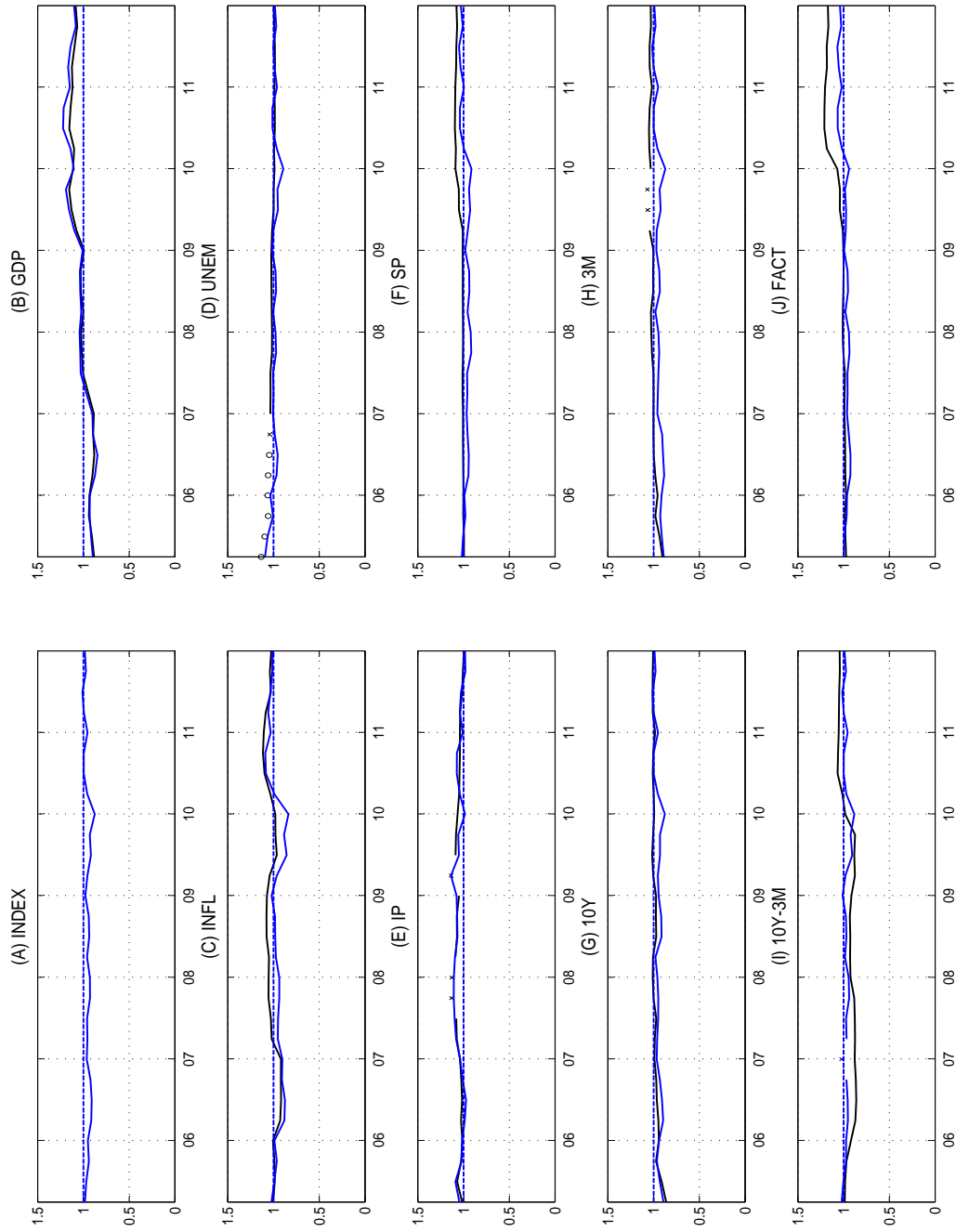

(A) INDEX

(B) GDP

(C) INFL

(D) UNEM

(E) IP

(F) SP

(G) 10Y

(H) 3M

(I) 10Y-3M

(J) FACT

Note: see note in Figure 3

Figure 15: *Forecasting performance of the financial situation over next 12 months index - Italy, Nondurable Consumption*
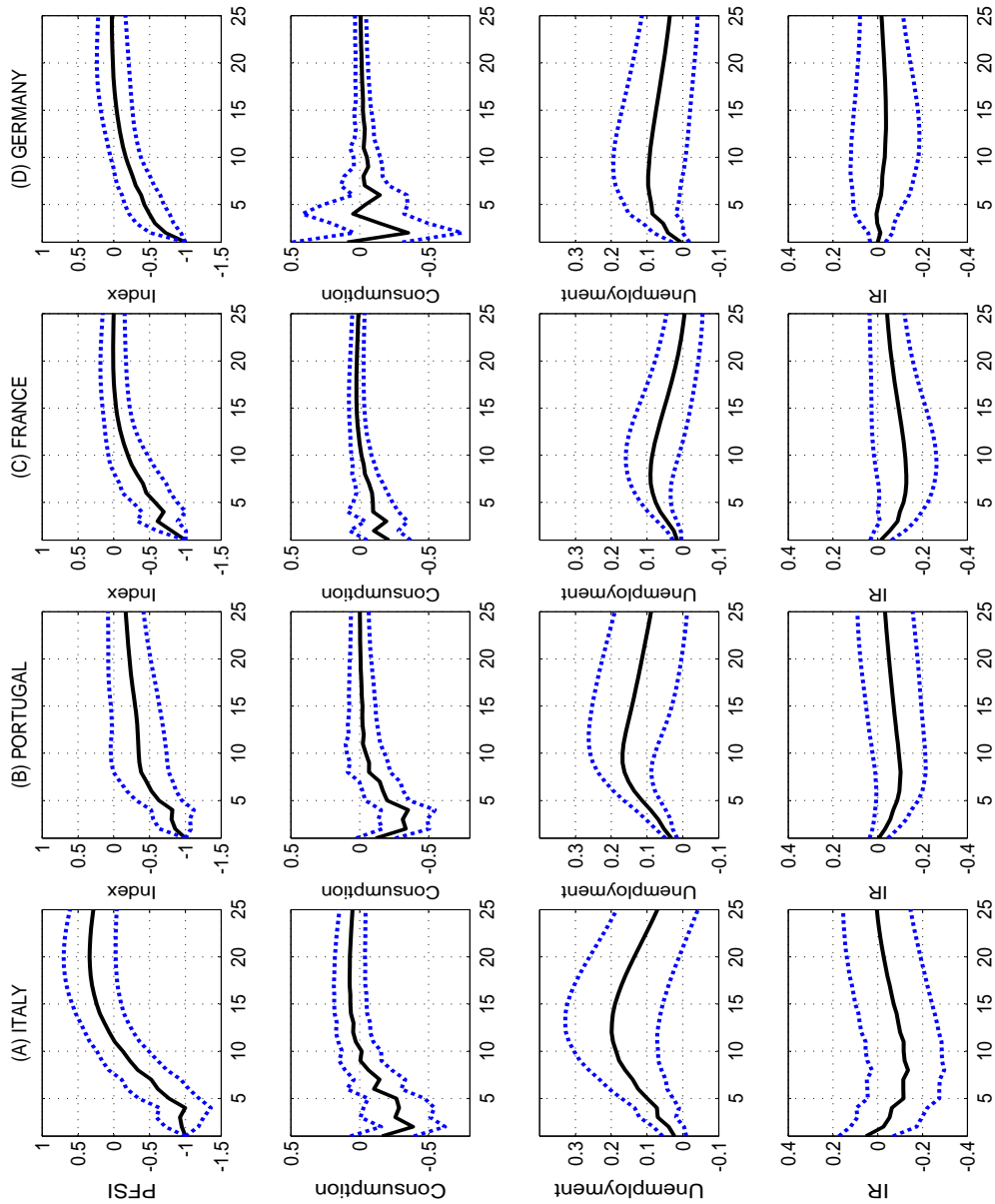

(A) INDEX

(B) GDP

(C) INFL

(D) UNEM

(E) IP

(F) SP

(G) 10Y

(H) 3M

(I) 10Y-3M

(J) FACT

Note: see note in Figure 3

Figure 16: *Forecasting performance of the financial situation over next 12 months index - Portugal, Nondurable Consumption*

(A) INDEX

(B) GDP

(C) INFL

(D) UNEM

(E) IP

(F) SP

(G) 10Y

(H) 3M

(I) 10Y-3M

(J) FACT

Note: see note in Figure 3

Figure 17: *Forecasting performance of the financial situation over next 12 months index - France, Nondurable Consumption*
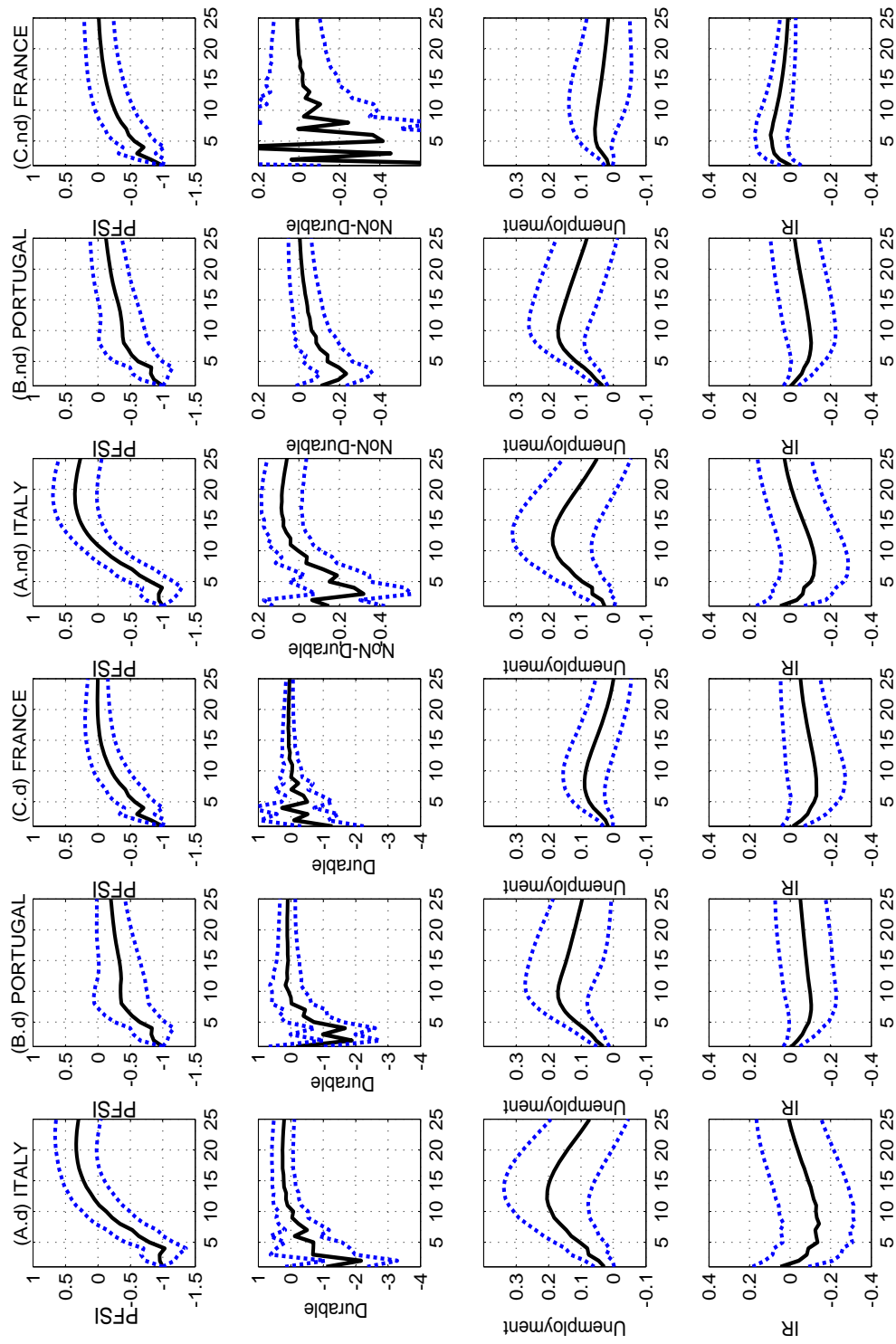

(A) INDEX

(B) GDP

(C) INFL

(D) UNEM

(E) IP

(F) SP

(G) 10Y

(H) 3M

(I) 10Y-3M

(J) FACT

Note: see note in Figure 3

Figure 18: *IRF Consumption*

Note - Impulse-responses to an unexpected negative shock to the personal financial situation index (PFSI) for Italy (column A), Portugal (column B), France (column C) and Germany (column D). Variables included in the VAR: total households consumption, unemployment rate, 3-month interest rate (IR).

Figure 19: **IRF Durable Nondurable Consumption - ITALY, PORTUGAL and France**

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European Stability Mechanism