



# Linkages between financial and macroeconomic indicators in emerging markets and developing economies<sup>☆</sup>

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## ABSTRACT

This paper provides empirical evidence on the finance-growth nexus, making key contributions by focusing on previously understudied Emerging Markets and Developing Economies (EMDEs) and employing mixed-frequency data. Utilizing panel forecasting models for 50 countries from 1990 to 2019, we examine the empirical link between macroeconomic indicators (e.g., aggregate production) and financial indicators (e.g., stock market indexes). Our results support the notion that financial indicators can indeed serve as robust predictors of macroeconomic indicators. Further, the use of mixed data sampling (MIDAS) models enhances the results, confirming the presence of valuable predictive information in higher-frequency data, even for lower-income countries. These findings bear particular significance for policymakers and investors, given the persistent challenge of accessing timely and reliable data on real indicators in EMDEs.

## 1. Introduction and motivation

Early in the COVID-19 pandemic, in the summer of 2020, equity markets in the U.S. and Europe started to rebound while Industrial Production (IP) continued to drop, leading to a serious disconnect between a key financial market and a key economic indicator (Davis, Liu, & Sheng, 2022; Igan, Kirti, & Peria, 2020). However, the disconnect was not homogeneous globally: equity market responses were different for less developed countries, immediately reconfirming the case for examining advanced countries and less developed countries with different lenses. Among other factors, Emerging Markets and Developing Economies (EMDEs) face sovereign stresses that are different from advanced countries, have more regional heterogeneity than developed countries (Feyen & Zuccardi Huertas, 2019, 2020), and a non-linear process of private and public debt evolution (Kose, Nagle, Ohnsorge, & Sugawara, 2020). For instance, starting in the late 1980's and early 1990's, the governments of several of these EMDEs embarked on economic reforms and liberalization on multiple fronts with differential outcomes on economic growth (see Das and Mohapatra (2003) and the studies cited within).

The multi-faceted connectedness between the financial and real sides of an economy has been studied extensively in the literature, spanning several decades and several geographical regions (see, for example, Barro, 1990; Levine, 1997; Estrella, Rodrigues, & Schich, 2003; Bekaert, Harvey, & Lundblad, 2005; Henry & Kannan, 2008; Ferrara & Marsilli, 2013; Chen & Ranciere, 2019; Levine, 2021).

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However, as early as in the mid-20th century, economists were divided on the universality of macro-financial linkages. While Samuelson (1966) famously said “the stock market has predicted nine of the last five recessions,” Barro (1988) stated, “considering how difficult it is to make accurate macroeconomic forecasts, the explanatory power of the stock market is outstanding.” Further, even pre-pandemic, these relationships remained relatively understudied and inconclusive for developing economies. Using the theoretically suggested financial indicators of the vast literature in this area and keeping in mind the data availability and other challenges of analyzing EMDEs, this study has the modest focus of documenting the linkages between financial and macroeconomic variables.

Theoretically, financial markets can influence output growth in an economy through various channels. One channel by which equity markets, the most ubiquitous of all financial markets, influence the economy is through the cost of borrowing for firms. If, due to a risk-lowering external shock (better securities regulations or financial liberalization to cite just a couple of sources), the cost of equity capital decreases, this provides financial gains to stockholders, while also leading to higher investment in now-viable projects. At the aggregate level, this leads to growth in output (Henry, 2000). However, studies such as Demetriades and Hussein (1996) and Kim and In (2003) have refuted the clear lead relationship of financial markets with lagged economic growth. Further, financial market development and liberalization have also been linked to increasing the inequality in certain economies under certain conditions, especially in lower-income countries (Das & Mohapatra, 2003; Favilukis, 2013; Ghossoub & Reed, 2017).

For the most part, equity markets, being at the forefront of financial markets, have been shown to foreshadow movements in Gross Domestic Product (GDP), a key metric of the real side of an economy. Stock prices are believed to reflect publicly available information, incorporating investors' expectations about future growth and risk tradeoffs. However, the reliability and consistency of this information content in less developed economies remain uncertain. Several dimensions contribute to this uncertainty, including the size, liquidity, and performance of a stock market, which reflect its level of development. Additionally, the degree to which stock indexes can embed and convey information to the real economy depends on the informational efficiency of the specific equity market. Even in advanced countries, not all markets are classified as semi-strong form efficient at all times, meaning that current and past publicly available information is generally reflected in prices but not across all time horizons (Daniel & Titman, 1999; Rodriguez, Aguilar-Cornejo, Femat, & Alvarez-Ramirez, 2014). Similarly, while most, but not all, less developed countries are considered weak form efficient (Kawakatsu & Morey, 1999), factors such as nonsynchronous trading, lower trading volumes and turnover, and weaker telecommunication infrastructure often result in equity prices not fully reflecting current publicly available information. As a result, the extent to which stock prices reliably reflect expectations of economic output growth may be an empirical issue for low-income and middle-income countries, collectively referred to as EMDEs following the World Bank and International Monetary Fund (IMF) nomenclature.

Another aspect to consider when analyzing the linkage between financial markets and economic output in EMDEs is the degree to which the equity markets are segmented or integrated with the rest of the world. Research by Eun and Janakiramanan (1986), Alexander, Eun, and Janakiramanan (1987), and Errunza and Miller (2000) suggests that if markets are initially segmented and then opened to foreign investors, it leads to risk-sharing and a reduction in the cost of equity capital, ultimately promoting higher growth. Therefore, the position of an emerging economy on the spectrum of market segmentation or integration with the global economy will influence the extent to which changes in stock market returns drive economic growth.

This paper employs fixed effects (FE) and mixed data sampling (MIDAS) panel forecasting models to examine the linkages between major macroeconomic indicators, such as aggregate production, inflation, and unemployment, and key financial indicators, including national stock market indexes, private credit, and exchange rates, across 50 EMDE countries from 1990 to 2019. The study makes two significant contributions. First, it considers a large sample of previously unexplored EMDEs. Empirical results of previous typical studies are based on a significantly smaller sample of EMDE countries; for instance, Mauro (2003) and Chen and Ranciere (2019) focus on 8 and 33 EMDEs, respectively, whereas our study considers a sample of 50 EMDE countries. Second, to the best of our knowledge, this is the first study to apply MIDAS panel regression models to forecast macroeconomic using financial variables within the specific context of EMDEs, while it represents one of the first studies employing the panel-MIDAS setting more broadly.

Our findings strongly support the notion that financial indicators are significant predictors of macroeconomic indicators. Furthermore, the MIDAS results suggest that the forecasting ability is further improved, confirming that there is valuable predictive information in higher-frequency data, even for lower-income countries. Notably, our results indicate that the reaction of the stock market is about three quarters ahead of the change in the real economy.

The significance of this study is threefold. First and foremost, policymakers, investors, and other market participants rely on financial data for their timeliness and simplicity. Obtaining real macroeconomic data in a timely manner is difficult for EMDEs. However, financial indicators are more readily available in such countries, potentially with lower measurement error and at higher frequencies. If established to be reliable indicators of macroeconomic variables, financial variables can facilitate the real-time representation of the state of the economy. Second, the association between financial markets and economic output can be used to cross-validate macroeconomic forecasting models for longer-term horizons, up to three years. Third, as the literature has established the significant role of the financial sector in the growth and development of emerging economies (Barro, 1990; Levine & Zervos, 1998; Wachtel, 2001, 2003), a closer examination of the causal relationships in EMDEs will shed further light on the structure of these economies and the mechanisms underlying the finance-growth phenomenon.

The rest of the paper is organized as follows. Section 2 reviews relevant literature. Section 3 details the data and methodology. Section 4 presents and discusses the empirical results. Section 5 concludes the paper.

## 2. Related literature

A growing body of evidence is available on various aspects of the broader issue of financial development and economic

development, encouraged by the evolution of endogenous growth models (Pagano, 1993). King and Levine (1993) intensified research efforts in this area, and aided by wider data availability from the IMF and the World Bank, the body of empirical evidence grew. Surveys of the literature spanning individual-country case studies (time-series studies) and cross-country pooled-data studies can be found in Thiel (2001), Wachtel (2003), Levine (2005), and more recently in Levine (2021).

Studies that have specifically examined the relationship between stock market development and economic growth include Obstfeld (1992), Levine and Zervos (1996, 1998), Singh (1997), Boyd and Smith (1998), Rajan and Zingales (1998, 2003), Beck, Demirgüç-Kunt, Levine, and Maksimovic (2001), Mauro (2003), Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004), Barro and Sala-i-Martin (2004), and Chen and Ranciere (2019), among others. The general consensus from this body of literature is that stock market growth and development is positively associated with economic growth and development.

Among the aforementioned studies, the current paper is closely related to Mauro (2003) and Chen and Ranciere (2019). Mauro (2003) examines 8 emerging and 17 advanced markets, finding a significant and positive correlation between lagged stock returns and output growth. Notably, the association remains robust across both groups, despite the diverse levels of development among the countries in the sample. Similarly, Chen and Ranciere (2019) analyze 33 emerging and 29 advanced economies, investigating the forecasting power of financial variables for macroeconomic variables. They show that financial indicators such as credit growth, stock prices, and house prices have considerable predictive power for macroeconomic variables across one- to four-quarter horizons, observed in both emerging and advanced economies. On the other hand, focusing on 16 less developed countries, Demetriades and Hussein (1996) find no support for a distinct lead relationship between financial variables and economic growth.

Several studies have examined the connection between the financial and real sides of the economy in Africa. N'Zué (2006), Odhiambo (2010), and Nyasha and Odhiambo (2015) conduct single-country studies on Cote D'Ivoire, South Africa, and Kenya, finding evidence that financial liberalization and development stimulate economic growth. Enisan and Olufisayo (2009) investigate the long-run and causal relationships between financial development and economic growth in 7 sub-Saharan countries. They identify a long-run relationship for Egypt and South Africa, a bidirectional relationship for Cote D'Ivoire, Kenya, Morocco, and Zimbabwe, and a weak relationship for Nigeria. These findings align with those of Ghirmay (2004), who examines the same causal link across 13 sub-Saharan countries.

Adjasi and Biekpe (2006) study 14 African countries with varying income levels and market capitalization. They find that while stock market development does lead to economic growth, the relationship is weaker for countries with lower income and market capitalization levels, suggesting that reaching a certain threshold of each is necessary to fully realize the economic growth impact of stock market development. Taiwan and Nene (2016) draw attention to the issue of regional economic communities in Africa, examining annual data from 10 Southern African Development Community (SADC) countries.<sup>1</sup> Their analysis reveals mixed causality results between financial development and economic growth when using broad money and direct credit as measures of financial development. They attribute the cross-country variations to differences in policies governing the financial institutions, colonial origins, and other institutional characteristics.

Naceur and Ghazouani (2007) examine the simultaneous impact of banks and financial markets on economic growth in 11 Middle Eastern and North African (MENA) countries.<sup>2</sup> Their study finds neither simultaneous nor independent impact of banks and financial markets development on economic growth. Cole, Moshirian, and Wu (2008) use a sample of 18 emerging and 18 advanced countries to provide empirical evidence that bank stock returns exhibit positive and significant predictive power for output growth. Their premise is that bank stock returns, distinct in their information content from overall market returns, reflect the health of a country's banking sector, crucial to economic growth.

In a comprehensive study, Bekaert et al. (2005) investigate the nature of the relationship between financial liberalization and economic growth. Using four different country samples, ranging in size from 95 to 28, their analysis reveals that, on average, equity market liberalization leads to a 1% increase in annual real per capita GDP growth. However, there exists significant heterogeneity across countries. Specifically, countries with higher-than-average financial development, English legal origins, high-quality institutions, and better investor protection tend to experience the highest benefits from the positive impact of financial liberalization on real growth. Additionally, the study finds that the effect of equity market liberalization persists even after controlling for capital market liberalization.<sup>3</sup>

In sum, we conclude three points from these studies. First, there is no clear empirical evidence in support of financial variables leading economic growth in EMDEs. Second, previous studies have not conducted a systematic examination of EMDEs on a large enough scale, as our study does, covering 50 EMDE countries. Third, no study has employed MIDAS panel regression models to specifically explore the relationship between financial and macroeconomic variables in the context of EMDEs.

### 3. Data and methodology

#### 3.1. Sample of countries

The World Bank annually classifies economies into four income groups: low-income (LI), lower-middle-income (LMI), upper-

<sup>1</sup> The 10 SADC countries considered are Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Namibia, South Africa, Swaziland, and Tanzania.

<sup>2</sup> The 11 MENA countries considered are Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, and Turkey.

<sup>3</sup> This study has provided the motivation for the inclusion of the liberal democracy index as a control variable.

**Table 1**

List of sample countries. *Notes:* The table lists the countries included in our sample. These countries are selected based on the 2019 World Bank income classification, which divided economies among income groups according to their 2018 GNI per capita. The income thresholds for each group are as follows: LI, \$1025 or less; LMI, \$1026–\$3995; UMI, \$3996–\$12,375; and HI, \$12,376 or more. Our sample comprises all EMDEs within the LI, LMI, and UMI income groups that have a stock exchange, along with accessible historical stock index data.

Low income	Tanzania, United Rep. of; Uganda, Rep. of
Lower middle income	Bangladesh, People's Rep. of; Cambodia, Kingdom of; Côte d'Ivoire, Rep. of (Ivory Coast); Egypt, Arab Rep. of; Ghana, Rep. of; India, Rep. of; Indonesia, Rep. of; Kenya, Rep. of; Lao People's Dem. Rep. (Laos); Mongolia; Morocco, Kingdom of; Nigeria, Federal Rep. of; Pakistan, Islamic Rep. of; Philippines, Rep. of; Tunisia, Rep. of; Ukraine; Vietnam, Socialist Rep. of; West Bank and Gaza; Zambia, Rep. of; Zimbabwe, Rep. of
Upper middle income	Argentine Rep. (Argentina); Bosnia and Herzegovina; Botswana, Rep. of; Brazil, Federative Rep. of; Bulgaria, Rep. of; China, People's Rep. of; Colombia, Rep. of; Georgia; Iraq, Rep. of; Jamaica; Jordan, Hashemite Kingdom of; Kazakhstan, Rep. of; Lebanese Rep. (Lebanon); Malaysia; Mauritius, Rep. of; United Mexican States (Mexico); Montenegro; Namibia, Rep. of; North Macedonia, Rep. of; Peru, Rep. of; Romania; Russian Federation (Russia); Serbia, Rep. of; South Africa, Rep. of; Sri Lanka, Dem. Socialist Rep. of; Thailand, Kingdom of; Turkey, Rep. of; Venezuela, Bolivarian Rep. of

**Table 2**

Summary of variables. *Notes:* The table provides the definitions, sources, and frequencies of the variables employed in this study. The variables are categorized as macroeconomic indicators, financial indicators, control variables, and deflator variables. Data sources: IMF International Financial Statistics (IFS); Bloomberg (B); Refinitiv Datastream (RD); and Varieties of Democracy (V-Dem). Frequencies: (A)nnual; (Q)uarterly; and (M)onthly.

Variable	Variable definition	Source	Frequency		
			A	Q	M
Panel A: Macroeconomic indicators					
Production, GDP	Gross Domestic Product, nominal, volume, domestic currency	IFS	✓	✓	
Consumption	Household consumption expenditure, including non-profit institutions serving households (NPISHs), nominal, volume, domestic currency	IFS	✓	✓	
Investment	Gross fixed capital formation, nominal, volume, domestic currency	IFS	✓	✓	
Exports	Exports of goods and services, nominal, volume, domestic currency	IFS	✓	✓	
Imports	Imports of goods and services, nominal, volume, domestic currency	IFS	✓	✓	
Production, IP	Industrial Production index, index	IFS	✓	✓	✓
Inflation, CPI	Consumer Price Index, all items, index (also used as monthly deflator)	IFS	✓	✓	✓
Inflation, PPI	Producer Price Index, all commodities, index	IFS	✓	✓	✓
Unemployment	Unemployment rate, percentage	IFS	✓	✓	✓
Panel B: Financial indicators					
Stock prices	Stock index, inflation-unadjusted, index	B; RD	✓	✓	✓
Credit	Claims on private sector, nominal, volume, domestic currency	IFS	✓	✓	✓
Exchange rate	Exchange rate against the U.S. dollar, nominal, rate	IFS	✓	✓	✓
Deposit rate	Deposit interest rate, nominal, percentage	IFS	✓	✓	✓
Lending rate	Lending interest rate, nominal, percentage	IFS	✓	✓	✓
Panel C: Control variables					
Gov. consumption	Government consumption expenditure, nominal, volume, domestic currency	IFS	✓	✓	
Monetary rate	Monetary policy-related interest rate, nominal, percentage	IFS	✓	✓	✓
Discount rate	Discount interest rate, nominal, percentage	IFS	✓	✓	✓
Democracy	Democracy index, index	V-Dem	✓		
Panel D: Deflator variables					
GDP deflator	Domestic GDP price deflator, index	IFS	✓	✓	
US GDP deflator	U.S. GDP price deflator, index	IFS	✓	✓	
US CPI deflator	U.S. CPI price deflator, index	IFS			✓

middle-income (UMI), and high-income (HI) countries. This classification is based on a measure of Gross National Income (GNI) per capita, calculated using the Atlas Method, with income thresholds adjusted for inflation using the Special Drawing Rights (SDR) inflator. Our sample of countries is constructed based on the 2019 World Bank income classification, which divided economies among income groups according to their 2018 GNI per capita. The income thresholds for each group are as follows: LI, \$1025 or less; LMI, \$1026 – 3995; UMI, \$3996 – 12,375; and HI, \$12,376 or more. Our study specifically focuses on EMDEs (LI, LMI, and UMI countries) that have a stock exchange, along with accessible historical stock index data. In total, our sample consists of 50 EMDE countries, listed in [Table 1](#).

### 3.2. Macroeconomic indicators

Macroeconomic indicators serve as dependent variables in our analysis. We focus our attention on three key indicators: aggregate production, as measured by GDP; inflation, as measured by the Consumer Price Index (CPI); and unemployment, as measured by the

**Table 3**

List of stock indexes. *Notes:* The table lists the ticker symbols of the stock indexes employed in this study. All stock market index data are obtained from Bloomberg and Refinitive Datastream.

Country	Ticker	Country	Ticker
Source: Bloomberg			
Argentine Rep. (Argentina)	MERVAL	Mongolia	MSETOP
Bangladesh, People's Rep. of	DSEX	Morocco, Kingdom of	MOSENEW
Bosnia and Herzegovina	BIRS	Namibia, Rep. of	FTN098
Botswana, Rep. of	BGSMAC	Nigeria, Federal Rep. of	NGSEIDX
Brazil, Federative Rep. of	IBOV	North Macedonia, Rep. of	MBI
Bulgaria, Rep. of	SOFIX	Pakistan, Islamic Rep. of	KSE
China, People's Rep. of: Mainland	SHCOMP	Peru, Rep. of	IGBVL
Colombia, Rep. of	IGBC	Philippines, Rep. of	PCOMP
Egypt, Arab Rep. of	HERMES	Romania	BET
Ghana, Rep. of;	GGSECI	Russian Federation (Russia)	IMOEX
India, Rep. of	SENSEX	Serbia, Rep. of	BELEXLIN
Indonesia, Rep. of	JCI	South Africa, Rep. of	JALSH
Jamaica	JMSMX	Sri Lanka, Dem. Socialist Rep. of	CSEALL
Jordan, Hashemite Kingdom of	JOSMGNFF	Tanzania, United Rep. of	DARSDSEI
Kazakhstan, Rep. of	KZKAK	Thailand, Kingdom of	SET
Kenya, Rep. of	NSEASI	Tunisia, Rep. of	TUSISE
Lao People's Dem. Rep. (Laos)	LSXC	Turkey, Rep. of	XU100
Lebanese Rep. (Lebanon)	BLOM	Ukraine	PFTS
Malaysia	FBMKLCI	Venezuela, Bolivarian Rep. of	IBVC
Mauritius, Rep. of	SEMDEX	Vietnam, Socialist Rep. of	VNINDEX
United Mexican States (Mexico)	MEXBOL	West Bank and Gaza	PASISI
Source: Refinitive Datastream			
Cambodia, Kingdom of	IFGECM	Montenegro	MONEXIN
Côte d'Ivoire, Rep. of (Ivory Coast)	IFGECD	Uganda, Rep. of	ALSIUGI
Georgia	IFGEGR	Zambia, Rep. of	ZAMALSH
Iraq, Rep. of	IRAQISX	Zimbabwe, Rep. of	ZIMBIND

unemployment rate. While our primary focus lies on these three macroeconomic indicators, we have also considered additional ones,<sup>4</sup> the empirical results of which are presented in the Appendix. All macroeconomic indicators are obtained from the IMF International Financial Statistics (IFS). For clarity, definitions of the “raw” macroeconomic indicators are provided in Panel A of [Table 2](#).

### 3.3. Financial indicators and control variables

Financial indicators and control variables are used as explanatory variables in the analysis. Our primary financial indicator of interest is the overall performance of the stock market, which we measure using national stock market indexes (hereafter commonly referred to as “stock prices” or “stock returns” for simplicity). Since our sample predominantly comprises countries with relatively undeveloped stock markets, we typically have access to only one broad-based stock index per country. In cases where multiple stock market indexes are available for a particular country, we select the broadest index. Stock index data are obtained from Bloomberg and Refinitiv Datastream. [Table 3](#) provides a list of the ticker symbols of the stock indexes used.

In addition to the primary financial indicator of interest, our models incorporate various other financial indicators and control variables to account for other important factors that may affect the macroeconomy. The additional financial indicators include private credit, exchange rate against the U.S. dollar, deposit rate, and lending rate. Control variables consist of government consumption, policy rate (either the monetary policy-related rate or discount rate, depending on data availability), and a liberal democracy index, serving as controls for fiscal policy, monetary policy, and sociopolitical factors, respectively. All additional financial indicators and control variables, except for the liberal democracy index, are obtained from the IFS. The liberal democracy index is sourced from the Varieties of Democracy (V-Dem) dataset. For clarity, Panels B and C of [Table 2](#) provide definitions of the “raw” financial indicators and control variables.

### 3.4. Sample period and frequencies

Our sample comprises an unbalanced panel dataset consisting of the 50 EMDEs over the period 1990–2019. We consider data at annual intervals (1990–2019, totaling 30 years), quarterly intervals (1990Q1–2019Q4, totaling 120 quarters), and monthly intervals (1990M1–2019M12, totaling 360 months). All the macroeconomic and financial indicators used in the analysis are available across all frequencies, except for the GDP-related variables, which are not released on a monthly basis. Furthermore, government consumption (a GDP-related variable) and the liberal democracy index, used as control variables, are not available on monthly and monthly/

<sup>4</sup> These include IP as another measure of aggregate production, Producer Price Index (PPI) as an alternative measure of inflation, and non-policy-determined GDP components such as Consumption, Investment, Exports, and Imports.

quarterly frequencies, respectively. Table 2 summarizes the frequency availability of the variables employed in this study.

### 3.5. Data transformations

The “raw” data consists of three main types of variables: monetary, rate, and index. Monetary “raw” variables, such as GDP, are initially denoted in nominal domestic currencies. From these nominal monetary variables, we compute nominal growth rates, which are subsequently transformed into real growth rates. Rate “raw” variables, including interest and exchange rates, are initially expressed as nominal rates. We convert all nominal rates into real rates and, when applicable, into real growth rates, such as with exchange rates. Index “raw” variables, such as the CPI, are converted into growth rates, with adjustments made for real growth rates when relevant, such as in stock indexes.<sup>5</sup>

To convert annual and quarterly nominal variables into real, we use domestic GDP price deflator indexes. For monthly variables, we rely on domestic CPI price deflator indexes due to the unavailability of GDP price deflators at the monthly frequency. Similarly, we convert annual and quarterly exchange rates to real rates using the U.S. GDP deflator, while monthly exchange rates are converted using the U.S. CPI deflator. Panel D of Table 2 provides definitions of the price deflators used for converting nominal to real variables. Additionally, all quarterly and monthly data are seasonally adjusted using the X13-ARIMA-SEATS program of the U.S. Census Bureau, whereas annual data are not subject to seasonal adjustment.

### 3.6. Potential data limitations

We acknowledge a tradeoff inherent in focusing on a large sample of EMDEs in this study. It is well-known that macroeconomic data, such as GDP figures, are subject to substantial revisions. Stark and Croushore (2002) as well as Croushore (2006) have shown that using vintage data (data available to forecasters in real-time) can lead to forecasting results that differ considerably from those obtained using revised data. However, as pointed out by Liu, Matheson, and Romeu (2012), macroeconomic data in EMDEs are often released infrequently and with significant lags, while their revisions are neither timely nor frequent. Although vintage data are available for only a small number of EMDEs, a potential avenue for future research may involve focusing on EMDEs for which both vintage and revised data are accessible. To the best of our knowledge, no study to date has conducted comparative analyses using vintage versus revised data to investigate the role of financial variables in predicting macroeconomic indicators in EMDEs.

### 3.7. Panel forecasting models

To explore the link between financial and macroeconomic indicators, we employ two sets of panel forecasting models. The first set consists of traditional FE panel forecasting regressions, which use data sampled at the same frequency. The second set comprises MIDAS panel forecasting regressions, capable of handling data sampled at different frequencies.

#### 3.7.1. FE panel forecasting models

In the spirit of Chen and Ranciere (2019), the FE panel forecasting models used take the following form:

$$\nabla^h Y_{c,t+h} = \alpha + \beta X_{c,t} + \gamma Z_{c,t} + \eta_c + \theta_t + u_{c,t+h}, \tag{1}$$

where  $Y_{c,t}$  is a macroeconomic indicator of country  $c$  at time  $t$ ,  $X_{c,t}$  is a matrix that includes financial indicators,  $Z_{c,t}$  is a matrix that includes control variables,  $\eta_c$  is the unobserved country effect,  $\theta_t$  is the time effect, and  $u_{c,t}$  is the idiosyncratic error.

The dependent variables are measures of annualized growth rates, computed as:  $(z/(h + 1)) \ln(Y_{t+h}/Y_{t-1})$ , where  $z$  is a scaling constant and  $h \geq 0$  is the forecasting period. The scaling constant takes values of 10,000, 40,000, and 120,000 for annual, quarterly, and monthly frequencies, respectively, for ease of readability and interpretation. The estimated standard errors are the Driscoll and Kraay (1998) standard errors, which are robust against heteroskedasticity, serial correlation,<sup>6</sup> and cross-sectional dependence.

#### 3.7.2. MIDAS panel forecasting models

Given the varying availability of macroeconomic and financial variables at different frequencies, integrating higher-frequency explanatory variables into forecasting models holds the potential to enhance their forecasting power, as these variables may contain additional valuable information. This consideration leads us to explore MIDAS panel forecasting models, following the recent developments discussed in Khalaf, Kichian, Saunders, and Voia (2021). The employed MIDAS panel forecasting models take the following form:

$$\nabla^h Y_{c,t+h} = \alpha + \beta \sum_{j=1}^m w_j(\theta) X_{c,t,j} + \gamma Z_{c,t} + \eta_c + \theta_t + u_{c,t+h}. \tag{2}$$

<sup>5</sup> All growth rates are computed using the natural logarithm to ensure consistency and accuracy in measuring the changes over time.

<sup>6</sup> We also estimated dynamic versions of the models, which included lags in both dependent and explanatory variables to explicitly account for serial correlation. The order of the lagged variables was determined by the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). The statistical significance of the main variables of interest remained unaffected.

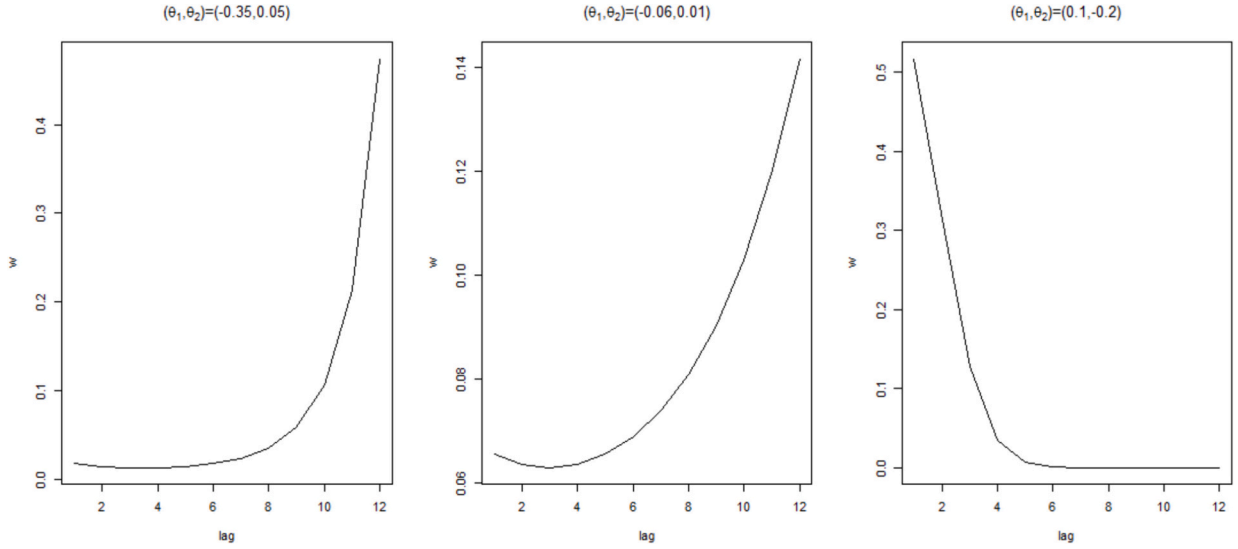


Fig. 1. Weight functions for monthly stock returns to match the annual frequency.

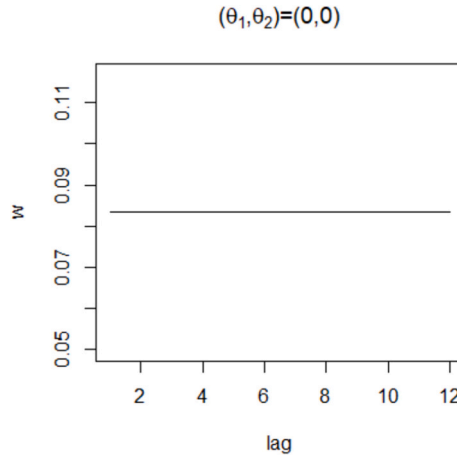


Fig. 2. Equal weights.

The meanings of these variables align with those in (equation (1)), with the distinction that the variables represented by  $X_{c,t,j}$  exhibit a higher frequency compared to  $Y_{c,t+h}$  and follow a specific lag order. Consequently,  $X_{c,t}$  variables are aggregated to match the frequency of  $Y_{c,t}$  using weighting functions,  $w_j(\theta)$ , where  $\theta$  is a vector of constant user-pre-set parameters. The weights can be uniform across observations or adjusted so that recent observations receive higher (or lower) weights compared to older ones.

Following Ghysels, Santa-Clara, and Valkanov (2004) and Khalaf et al. (2021), we adopt weighting functions using the exponential Almon lag polynomial of length 2. Formally:

$$w_j(\theta) = \frac{\exp(j\theta_1)\exp(j^2\theta_2)}{\sum_{k=1}^m \exp(k\theta_1)\exp(k^2\theta_2)}$$

**Monthly to annual.** To aggregate the monthly stock returns to match the annual frequency of the dependent variable, we use three cases, following a similar approach to Khalaf et al. (2021):

- i.  $(\theta_1, \theta_2) = (-0.35, 0.05)$ : rapid increase with higher weights on older observations.
- ii.  $(\theta_1, \theta_2) = (-0.06, 0.01)$ : slow increase with relatively higher weights on older observations.
- iii.  $(\theta_1, \theta_2) = (0.1, -0.2)$ : rapid decay with higher weights on recent observations.

The plots in Fig. 1 illustrate the varying weights against lag lengths to depict the three different cases used. For instance, the first

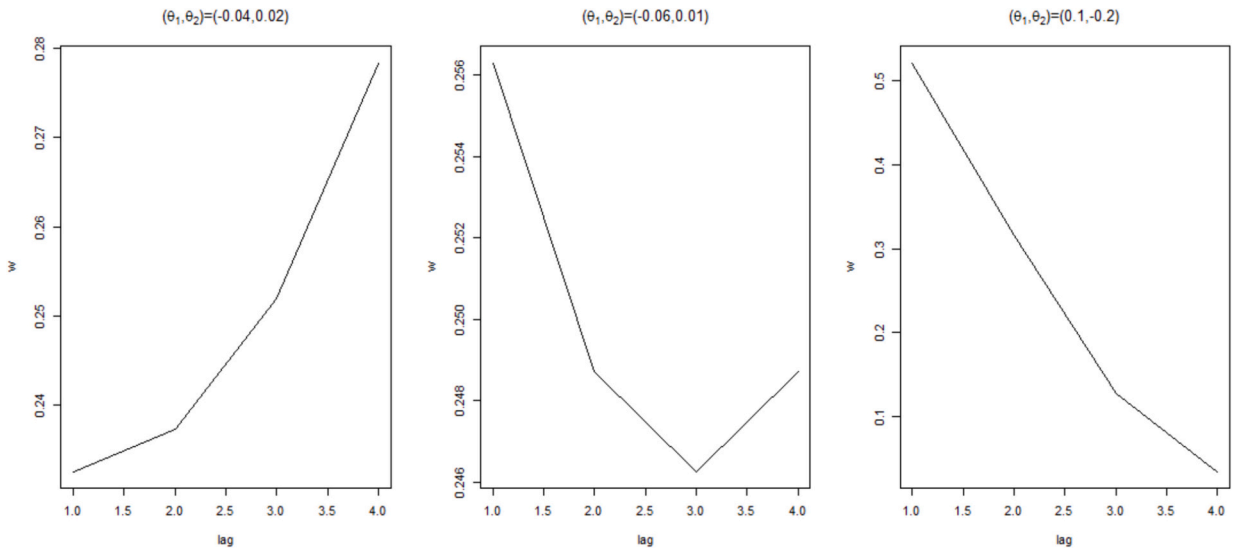


Fig. 3. Weight functions for quarterly stock returns to match the annual frequency.

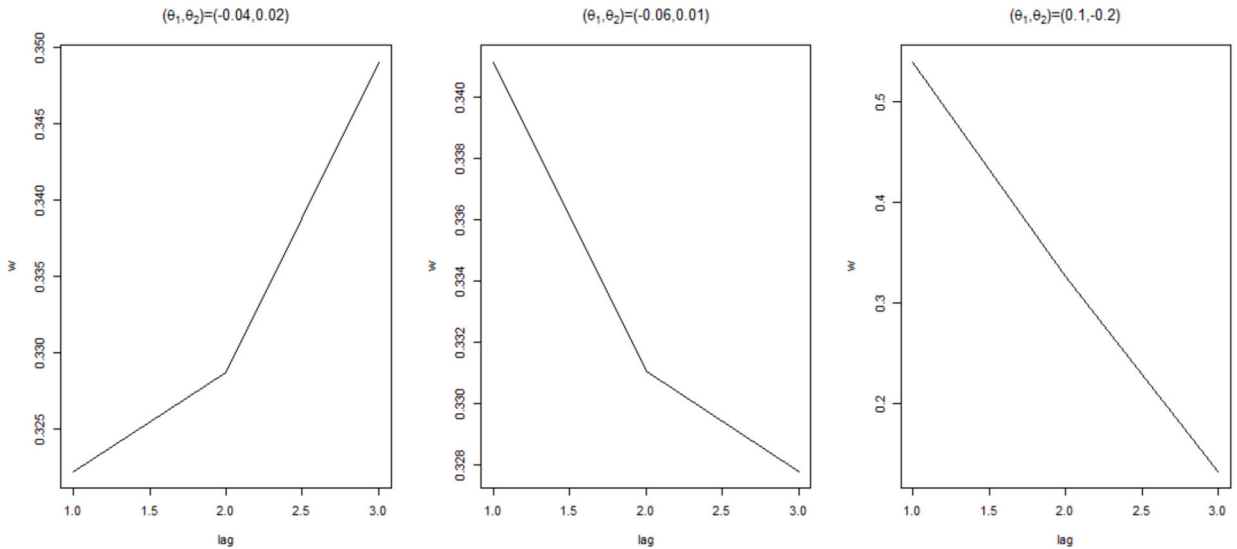


Fig. 4. Weight functions for monthly stock returns to match the quarterly frequency.

panel on the left corresponds to case (i) above, where  $(\theta_1, \theta_2) = (-0.35, 0.05)$ . It demonstrates that observations from 11 to 12 months prior are given approximately 40% weight relative to observations from the immediately preceding month. Similarly, the panel on the right corresponds to case (iii) above, where  $(\theta_1, \theta_2) = (0.1, -0.2)$ . It shows that the most recent observations, from the immediately preceding months, are given a 50% weight, with a rapid decline in the weight given to observations from 6 months or older.

It is important to note that when  $(\theta_1, \theta_2) = (0, 0)$ , the model in (equation (2)) is roughly equivalent to the model in (equation (1)). The plot corresponding to the  $(\theta_1, \theta_2) = (0, 0)$  case is presented in Fig. 2.

**Quarterly to annual.** To aggregate the quarterly stock returns to match the annual frequency, we use the following specifications:

- i.  $(\theta_1, \theta_2) = (-0.04, 0.02)$ : rapid increase with higher weights on older observations.
- ii.  $(\theta_1, \theta_2) = (-0.06, 0.01)$ : slow increase with relatively higher weights on older observations.
- iii.  $(\theta_1, \theta_2) = (0.1, -0.2)$ : rapid decay with higher weights on recent observations.

The corresponding plots are presented in Fig. 3.

**Monthly to quarterly.** The specifications for the “monthly to quarterly” case are identical to those in the “quarterly to annual” case, with the corresponding plots presented in Fig. 4.



Table 4

Annual FE panel forecasting models for main economic indicators. Notes: The table presents country-level FE panel regressions estimated using eq. (1). Data frequency is annual, covering the sample period from 1990 to 2019. Forecast horizons include nowcasting, 1-year-, 2-year-, and 3-year-ahead. Dependent variables are the following macroeconomic indicators: (Panel A) production, GDP; (Panel B) inflation, CPI; and (Panel C) unemployment. Explanatory variables consist of financial indicators and control variables. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. Driscoll-Kraay standard errors are reported in parentheses. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

Panel A: Production, GDP												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	0.693 (0.488)	0.105 (0.622)	0.138 (0.601)	1.219*** (0.292)	0.726* (0.315)	0.568 (0.302)	1.041*** (0.256)	0.928* (0.355)	0.931** (0.317)	0.966*** (0.238)	1.029** (0.300)	1.042** (0.284)
Credit		10.728*** (1.376)	9.986*** (1.784)		7.583*** (0.759)	7.996*** (1.007)		4.190*** (0.772)	4.777*** (1.073)		2.151* (0.830)	2.640* (1.207)
Exchange rate		-5.114*** (0.930)	-3.743*** (0.645)		-4.186*** (0.625)	-4.568*** (0.712)		-3.053*** (0.543)	-3.135*** (0.749)		-2.139*** (0.560)	-2.211** (0.733)
Deposit rate			-0.949 (8.399)			-2.378 (4.011)			-10.532 (5.385)			-12.169* (5.014)
Lending rate			-1.604 (6.474)			1.982 (4.161)			7.286 (4.308)			9.540** (3.142)
Observations	852	671	539	805	628	506	758	584	470	711	539	433
Within R <sup>2</sup>	0.193	0.374	0.353	0.237	0.412	0.388	0.258	0.393	0.369	0.279	0.395	0.371
Stock prices	0.141 (0.468)	-0.456 (0.427)	-0.335 (0.406)	0.993** (0.328)	0.596* (0.275)	0.490 (0.311)	1.043** (0.282)	1.027*** (0.236)	1.042*** (0.215)	1.032*** (0.206)	1.139*** (0.171)	1.081*** (0.163)
Credit		10.133*** (1.174)	9.809*** (1.444)		7.426*** (0.938)	8.440*** (0.792)		4.257*** (0.725)	5.619*** (0.775)		1.859** (0.530)	3.232*** (0.697)
Exchange rate		-4.640*** (1.121)	-3.027*** (0.505)		-3.222*** (0.449)	-3.731*** (0.591)		-2.166*** (0.508)	-2.570** (0.714)		-1.462** (0.457)	-1.752* (0.714)
Deposit rate			-11.417 (7.878)			-7.457 (5.432)			-10.577 (5.838)			-13.897** (4.149)
Lending rate			6.428 (6.158)			7.651 (4.640)			11.199* (4.265)			14.548*** (3.013)
Government consumption	9.777*** (1.728)	5.518*** (1.264)	3.926** (1.395)	7.568*** (1.103)	4.933*** (1.068)	4.179*** (1.105)	4.644*** (0.883)	3.454** (0.961)	2.766* (1.084)	2.995*** (0.596)	2.508*** (0.648)	2.117** (0.740)
Policy rate	2.701 (1.700)	-1.402 (3.683)	-0.080 (4.143)	-1.108 (1.703)	-4.151* (1.723)	-2.330 (3.994)	-1.015 (1.620)	-5.550* (2.199)	-5.108 (4.215)	-0.620 (0.933)	-3.713 (1.851)	-3.214 (3.871)
Democracy	-1.319 (1.198)	-1.896 (1.340)	-1.506 (1.582)	-0.716 (0.806)	-1.219 (0.793)	-0.958 (0.954)	-0.622 (0.505)	-0.673 (0.673)	-0.660 (0.800)	-0.606 (0.469)	-1.020 (0.547)	-0.842 (0.641)
Observations	635	544	454	599	510	427	562	474	397	525	437	366
Within R <sup>2</sup>	0.298	0.407	0.365	0.349	0.445	0.431	0.362	0.419	0.435	0.384	0.406	0.432
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Inflation, CPI												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	-4.187 (2.091)	-1.632** (0.611)	-0.806 (0.391)	-1.369 (1.479)	-0.444 (0.611)	0.338 (0.449)	-1.581 (1.362)	-0.857 (0.431)	-0.373 (0.374)	-1.559 (1.133)	-1.008* (0.385)	-0.662* (0.313)
Credit		-7.523*** (1.837)	-6.290*** (1.352)		-3.680* (1.602)	-2.332* (1.018)		-0.469 (1.263)	0.335 (1.143)		0.149 (1.880)	0.861 (1.236)
Exchange rate		-5.122 (2.598)	-0.507 (2.612)		2.338 (2.037)	7.197** (2.168)		3.254 (1.788)	6.002*** (1.508)		1.435 (1.220)	3.565** (1.155)
Deposit rate			-48.229** (15.767)			-43.899** (13.188)			-22.818* (8.596)			-13.753 (8.320)
Lending rate			13.905 (7.072)			8.588 (6.954)			0.766 (5.967)			-3.714 (5.437)
Observations	804	625	528	785	608	514	746	571	485	702	529	450

(continued on next page)

Table 4 (continued)

Panel B: Inflation, CPI												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Within R <sup>2</sup>	0.210	0.302	0.434	0.217	0.248	0.420	0.229	0.331	0.462	0.250	0.376	0.494
Stock prices	-3.605** (1.246)	-1.745*** (0.462)	-1.239* (0.595)	-2.017* (0.960)	-0.764 (0.459)	-0.397 (0.540)	-2.185* (0.936)	-1.116** (0.315)	-1.029** (0.300)	-2.051* (0.869)	-1.140*** (0.270)	-1.065** (0.295)
Credit		-3.257 (1.658)	-2.774 (1.572)		0.604 (1.621)	0.730 (1.349)		2.287 (1.769)	2.198 (1.753)		2.515 (1.427)	2.507 (1.392)
Exchange rate		-5.927* (2.769)	-3.521 (1.903)		1.406 (2.061)	3.517** (1.224)		2.946 (1.749)	3.752** (1.232)		1.213 (0.988)	1.533 (0.902)
Deposit rate			-76.007** (22.246)			-72.613*** (18.911)			-45.466** (15.490)			-29.027 (14.408)
Lending rate			29.284 (15.497)			22.607 (15.097)			11.810 (12.993)			3.713 (11.654)
Government consumption	-14.967** (4.312)	-7.712** (2.154)	-7.382*** (1.783)	-10.221* (4.016)	-6.420* (2.524)	-6.103** (1.869)	-5.613 (3.486)	-1.322 (1.212)	-0.535 (0.949)	-5.124 (3.360)	-1.212 (1.023)	-0.658 (1.009)
Policy rate	-54.077 (32.104)	-7.834 (6.576)	24.139* (11.034)	-34.044 (23.715)	-12.580 (7.512)	23.187** (8.246)	-26.966 (20.149)	-10.077* (3.779)	17.565** (5.604)	-23.850 (15.369)	-10.695** (3.323)	10.917** (3.890)
Democracy	0.955 (3.592)	0.435 (1.187)	-0.485 (0.761)	0.247 (3.112)	-0.184 (1.054)	-0.372 (0.830)	0.903 (2.535)	-1.534* (0.727)	-1.055* (0.469)	0.500 (1.877)	-1.525* (0.594)	-1.296* (0.549)
Observations	600	511	442	586	498	431	557	469	408	523	435	379
Within R <sup>2</sup>	0.456	0.365	0.489	0.413	0.325	0.471	0.413	0.434	0.554	0.428	0.494	0.586
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Unemployment												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	0.012 (0.253)	-0.006 (0.361)	0.014 (0.364)	-0.291 (0.152)	-0.236 (0.213)	-0.252 (0.218)	-0.371** (0.104)	-0.401* (0.158)	-0.440* (0.161)	-0.314** (0.104)	-0.425* (0.157)	-0.475** (0.163)
Credit		-1.465 (0.789)	-1.980 (1.090)		-0.657 (0.522)	-1.214 (0.700)		0.159 (0.396)	-0.383 (0.653)		0.764 (0.451)	0.503 (0.760)
Exchange rate		0.896 (0.487)	1.886*** (0.471)		0.896* (0.392)	1.951*** (0.444)		0.455 (0.330)	1.302* (0.534)		0.334 (0.270)	1.013* (0.417)
Deposit rate			-4.070 (3.192)			-5.578 (3.074)			-3.664 (4.075)			-2.239 (3.526)
Lending rate			3.714 (4.393)			3.660 (3.340)			1.800 (3.605)			0.248 (3.319)
Observations	680	529	424	642	492	394	604	456	365	568	421	337
Within R <sup>2</sup>	0.064	0.117	0.086	0.090	0.175	0.140	0.111	0.213	0.151	0.135	0.250	0.177
Stock prices	0.178 (0.261)	-0.117 (0.283)	-0.216 (0.295)	-0.244 (0.174)	-0.414 (0.217)	-0.422 (0.211)	-0.335 (0.173)	-0.565** (0.184)	-0.605** (0.169)	-0.337* (0.160)	-0.574** (0.168)	-0.583*** (0.152)
Credit		-1.721 (0.855)	-1.698 (0.989)		-0.801 (0.731)	-1.146 (0.778)		0.218 (0.446)	-0.196 (0.533)		0.914* (0.435)	0.649 (0.526)
Exchange rate		0.447 (0.448)	1.568* (0.584)		0.753 (0.373)	1.835** (0.596)		0.376 (0.293)	1.044 (0.664)		0.337 (0.208)	0.645 (0.475)
Deposit rate			-4.621 (5.033)			-7.654 (4.610)			-5.405 (4.922)			-3.794 (3.679)
Lending rate			6.055 (3.131)			3.414 (3.091)			0.383 (3.473)			-2.236 (3.128)

(continued on next page)

Table 4 (continued)

Panel C: Unemployment												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Government consumption	-1.000 (0.849)	-1.362** (0.371)	-1.928** (0.603)	-1.561* (0.701)	-1.633 (0.951)	-2.050* (0.955)	-0.402 (0.416)	-0.687 (0.623)	-1.044 (0.584)	0.013 (0.247)	-0.319 (0.319)	-0.594 (0.300)
Policy rate	0.296 (1.056)	2.926 (2.608)	0.073 (4.736)	0.488 (0.586)	1.510 (1.704)	3.507 (3.220)	0.910 (0.475)	1.580 (1.223)	4.872* (2.287)	0.716 (0.442)	1.395 (0.844)	6.327*** (1.056)
Democracy	-0.555 (0.439)	0.009 (0.167)	-0.209 (0.259)	-0.377 (0.243)	0.117 (0.189)	0.015 (0.129)	-0.169 (0.183)	0.144 (0.109)	0.047 (0.112)	-0.009 (0.147)	0.203 (0.099)	0.083 (0.069)
Observations	492	415	347	462	386	323	432	358	300	403	330	277
Within R <sup>2</sup>	0.150	0.172	0.219	0.192	0.210	0.260	0.198	0.217	0.243	0.206	0.268	0.313
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## 4. Empirical results

### 4.1. FE panel forecasting models

The FE panel forecasting models are estimated for annual (Table 4), quarterly (Table 5), and monthly (Table 6) frequencies. For the annual estimations, the relations are examined in the context of nowcasting, 1-year-, 2-year-, and 3-year-ahead forecast horizons. For the quarterly estimations, the relations are examined in the context of nowcasting, 1-quarter-, 2-quarter-, and 4-quarter-ahead forecast horizons. For the monthly estimations, the relations are examined in the context of nowcasting, 1-month-, 2-month-, and 3-month-ahead forecast horizons.

The top half of each table presents the estimation results of the models without control variables, while the bottom half displays the results with the inclusion of controls. Each subpanel, read from left to right, provides the results for nowcasting and three forecasting horizons. Due to variations in data coverage across financial indicators, we present the results within each horizon using three model specifications: the model with only stock prices, the model incorporating credit and exchange rates, and the full specification, which further includes deposit and lending rates.

In the following subsections, our discussion centers on three financial indicators: stock prices, credit, and exchange rates. While the coefficients of deposit and lending rates are reported, they are not discussed due to their consistent lack of statistical significance. Similarly, the coefficients of the control variables are reported but not discussed.

#### 4.1.1. Annual frequency

Table 4 presents the results for predicting the three major macroeconomic indicators: aggregate production, GDP (Panel A); inflation, CPI (Panel B); and unemployment (Panel C), using annual frequency data.

Stock prices appear to have significant forecasting power for GDP growth across 1-year-, 2-year-, and 3-year-ahead forecast horizons, both with and without controls and under all specifications. For instance, according to the coefficients from the non-augmented specification without controls, a one-percentage-point increase in stock prices is associated with a 0.012% annual rate increase in GDP growth at the 1-year horizon, a 0.0104% annual rate increase at the 2-year horizon, and a 0.0097% annual rate increase at the 3-year horizon. The results are similar for the specifications with controls, except that the tapering off with the increase in the forecasting horizon is not so consistent. Contrary to the significant associations observed over longer forecast horizons, stock prices do not appear to significantly predict GDP growth in nowcasting. This result is not surprising, given that stock markets often move in anticipation of the real economy (Stock & Watson, 2003). The statistically insignificant results for stock prices predicting GDP growth in nowcasting, alongside the statistically significant results for longer forecasting horizons, support the idea that stock markets can serve as forward-looking predictors of the real economy.

Credit appears to be a highly significant predictor of annual GDP growth. For instance, by using the coefficients from one of the two augmented specifications without controls, a one-percentage-point increase in credit corresponds to a 0.107% annual rate increase in GDP growth in nowcasting, tapering off to a 0.076% annual rate rise at the 1-year horizon, a 0.042% annual rate rise at the 2-year horizon, and a 0.022% annual rate rise at the 3-year horizon. All coefficients associated with credit as a predictor of GDP growth are statistically significant across all model specifications and forecast horizons.

Similar to credit, exchange rate emerges as a significant predictor of GDP growth across all model specifications and forecast horizons, both with and without controls. For instance, looking at the coefficients from the augmented specification without controls, a one-percentage-point increase in the exchange rate (depreciation) leads to a 0.051% annual rate decline in GDP growth in nowcasting, a 0.042% annual rate decline for the 1-year horizon, a 0.031% annual rate decline for the 2-year horizon, and a 0.021% annual rate decline in the 3-year horizon. These results align with recent literature on the negative impact of the dollar increase on EMDEs, particularly for commodity-exporting countries (see Bruno & Shin, 2023; Druck, Magud, & Mariscal, 2018). Obstfeld and Zhou (2023) further suggest that this “contractionary” impact is even stronger for countries lacking inflation-targeting monetary policies, operating under fixed exchange rate regimes, or burdened with high levels of dollar-denominated debt.

The results for predicting inflation and unemployment suggest that stock prices and exchange rates are significant predictors, a finding consistent with Afonso and Blanco-Arana (2022), albeit based on a larger sample of EMDEs. While in some instances there is a consistent decay of statistical significance as the forecast horizon is moved farther in or out, the forecasting ability of stock prices and exchange rates remains generally similar to that for predicting GDP growth. On the other hand, the results for credit as a predictor of inflation and unemployment indicate that credit is not a significant predictor of these macroeconomic variables.

#### 4.1.2. Quarterly frequency

Table 5 (Panels A, B, and C) presents the empirical results of the same models as in Table 4, but for the quarterly frequency. Overall, the results are consistent with those of Table 4 and Chen and Ranciere (2019). Specifically, stock prices, credit, and exchange rates appear to be significant predictors of the three major macroeconomic indicators considered, with the exception of credit not being a significant predictor of inflation and unemployment. One notable difference is that for the quarterly frequency, stock prices do not appear to be as strong or consistent a predictor of GDP growth as observed in the annual frequency.

#### 4.1.3. Monthly frequency

Table 6 (Panels A, B, and C) presents the monthly frequency version of these empirical analyses. Since GDP data is not available at the monthly frequency, we use IP as the predicted variable instead. Stock prices as a predictor is not significant for IP, and neither are credit nor exchange rates. This could be attributed to the fact that IP data are noisy and not as reliable as GDP data. However, stock

Table 5

Quarterly FE panel forecasting models for main economic indicators. *Notes:* The table presents country-level FE panel regressions estimated using eq. (1). The data frequency is quarterly, covering the sample period from 1990Q1 to 2019Q4. Forecast horizons include nowcasting, 1-quarter-, 2-quarter-, and 4-quarter-ahead. Dependent variables are the following macroeconomic indicators: (Panel A) production, GDP; (Panel B) inflation, CPI; and (Panel C) unemployment. Explanatory variables consist of financial indicators and control variables. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. Driscoll-Kraay standard errors are reported in parentheses. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

Panel A: Production, GDP												
	Nowcasting		1-quarter-ahead forecast				2-quarter-ahead forecast			4-quarter-ahead forecast		
Stock prices	0.659 (5.434)	1.984 (2.131)	3.701 (2.208)	3.591 (2.886)	2.412* (1.174)	3.420** (1.172)	4.125* (2.013)	2.066 (1.459)	2.597 (1.590)	3.735* (1.596)	2.478* (1.235)	2.875* (1.140)
Credit		34.293** (11.475)	52.355*** (7.633)		20.171** (6.214)	33.608*** (5.163)		15.457*** (4.440)	26.040*** (3.936)	13.185*** (2.938)	21.285*** (2.906)	
Exchange rate		-17.797** (5.458)	-10.801 (5.543)		-16.316*** (3.603)	-13.310** (4.675)		-13.936*** (3.158)	-11.902** (3.517)	-10.043*** (2.358)	-8.463*** (2.416)	
Deposit rate			28.643* (11.187)		-4.816 (8.721)				-19.188* (7.550)		-26.712*** (6.755)	
Lending rate			-9.567 (6.644)		-3.698 (5.620)				1.189 (5.455)		8.222 (4.972)	
Observations	2044	1592	1333	2018	1568	1313	1992	1544	1293	1941	1497	1254
Within R <sup>2</sup>	0.150	0.281	0.239	0.185	0.366	0.305	0.216	0.417	0.367	0.240	0.437	0.413
Stock prices	-1.745 (4.971)	2.473 (2.652)	5.225* (2.219)	2.154 (2.740)	2.142 (1.564)	3.163* (1.545)	3.279 (2.084)	2.048 (1.410)	2.527 (1.608)	3.647* (1.715)	2.681* (1.031)	3.305** (1.056)
Credit		46.624*** (8.606)	58.934*** (8.424)		29.909*** (7.480)	39.903*** (6.484)		22.201*** (6.301)	28.866*** (3.991)	18.842** (6.022)	25.358*** (4.069)	
Exchange rate		-9.608 (6.651)	-5.606 (5.432)		-8.720*** (2.248)	-7.882* (3.311)		-7.400*** (1.809)	-8.045** (2.560)	-5.584** (1.675)	-5.645** (1.684)	
Deposit rate			20.864 (19.838)		-15.879 (12.376)				-31.006** (10.555)		-42.235*** (10.263)	
Lending rate			-12.835 (8.362)		-2.871 (7.778)				4.983 (7.241)		13.650* (6.139)	
Government consumption	13.256* (5.360)	5.505*** (1.458)	3.536** (1.087)	5.790* (2.272)	2.134** (0.646)	1.642** (0.610)	4.151** (1.542)	1.856** (0.601)	1.924** (0.395)	3.104* (1.228)	1.165** (0.395)	1.360*** (0.319)
Policy rate	-3.471 (2.513)	-19.614** (6.446)	3.954 (12.717)	-4.854 (2.939)	-14.729*** (4.262)	5.330 (9.198)	-4.474* (1.744)	-12.075** (3.761)	2.310 (8.885)	-2.725* (1.135)	-8.937* (3.624)	3.464 (6.995)
Observations	1380	1145	958	1360	1127	943	1340	1109	928	1301	1074	899
Within R <sup>2</sup>	0.261	0.239	0.251	0.258	0.326	0.316	0.284	0.383	0.377	0.300	0.418	0.446
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Inflation, CPI												
	Nowcasting		1-quarter-ahead forecast				2-quarter-ahead forecast			4-quarter-ahead forecast		
Stock prices	25.656 (26.908)	-2.989* (1.308)	-1.823 (1.497)	13.967 (16.394)	-2.832** (1.013)	-1.947 (1.069)	8.354 (12.112)	-2.724** (0.975)	-1.814 (1.103)	4.492 (8.080)	-1.315 (0.837)	-0.645 (0.955)
Credit		-18.474 (9.655)	-15.504 (6.931)		-8.509 (6.469)	-4.708 (7.549)		-6.023 (6.469)	-2.103 (6.923)	-2.464 (5.646)	2.197 (6.029)	
Exchange rate		-1.662 (5.447)	-1.329 (6.057)		9.933 (6.664)	11.346 (7.808)		9.695 (5.353)	10.913 (6.211)	9.275* (4.102)	9.905* (4.577)	
Deposit rate			-18.827 (9.717)		-26.596** (9.845)				-21.422* (8.424)		-12.975 (7.769)	
Lending rate			10.939 (7.829)		10.999 (7.386)				6.884 (6.780)		1.702 (6.321)	
Observations	1939	1492	1300	1926	1479	1289	1911	1464	1276	1880	1433	1250
Within R <sup>2</sup>	0.358	0.173	0.186	0.366	0.188	0.219	0.373	0.198	0.233	0.383	0.200	0.237
Stock prices	27.892 (30.705)	-4.986*** (1.343)	-2.564* (1.260)	15.569 (18.740)	-5.025** (1.542)	-3.385* (1.429)	10.338 (13.765)	-4.765*** (1.354)	-3.228* (1.219)	5.745 (9.014)	-3.307** (1.028)	-2.138* (1.028)

(continued on next page)

Table 5 (continued)

Panel B: Inflation, CPI												
	Nowcasting		1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast			
Credit		-7.937 (7.156)	-0.774 (7.637)	0.508 (6.613)	7.132 (6.801)	3.888 (6.223)	11.269* (5.541)	5.672 (5.544)	13.315*** (3.695)			
Exchange rate		-7.001 (5.009)	-5.134 (5.420)	0.872 (4.260)	2.615 (4.499)	2.388 (3.397)	4.100 (3.634)	3.258 (2.498)	4.332 (2.588)			
Deposit rate			-51.010*** (13.928)		-50.601*** (12.314)		-42.589*** (11.977)		-32.229** (10.524)			
Lending rate			12.701 (11.822)		12.811 (11.794)		9.911 (11.513)		3.075 (10.429)			
Government consumption	-17.105 (13.734)	0.104 (1.054)	0.146 (1.103)	-11.080 (8.737)	0.359 (0.775)	0.662 (0.835)	-9.059 (6.492)	-0.312 (0.662)	0.036 (0.647)	-6.553 (4.553)	-0.303 (0.483)	-0.181 (0.462)
Policy rate	32.480** (12.215)	26.506** (9.852)	36.478** (11.027)	33.524*** (8.299)	20.608* (9.601)	30.449** (8.940)	30.281*** (7.087)	16.448 (9.091)	24.611** (8.168)	25.460*** (6.119)	11.721 (7.815)	22.671*** (6.505)
Observations	1308	1079	924	1298	1069	916	1287	1058	907	1264	1035	889
Within R <sup>2</sup>	0.544	0.256	0.269	0.578	0.285	0.332	0.597	0.303	0.369	0.623	0.310	0.406
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Unemployment												
	Nowcasting		1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast			
Stock prices	-1.194 (0.664)	-1.315* (0.537)	-1.470* (0.664)	-0.794 (0.501)	-1.080* (0.435)	-1.292** (0.447)	-1.052** (0.354)	-0.888* (0.426)	-1.129* (0.468)	-1.079** (0.333)	-0.861* (0.385)	
Credit		-5.397** (1.767)	-6.309** (2.336)		-2.804 (1.412)	-4.269* (1.720)	-3.121** (1.096)	-4.045** (1.495)		-2.235** (0.800)	-3.433** (1.167)	
Exchange rate		3.341* (1.584)	3.115* (1.542)		2.937* (1.380)	2.288 (1.247)	2.506* (1.100)	2.264* (0.982)		1.761* (0.727)	1.146 (0.753)	
Deposit rate			-0.415 (4.822)		0.260 (4.432)		-0.384 (4.040)		1.310 (3.469)		4.981* (2.405)	
Lending rate			8.883* (3.462)		7.334* (3.083)		6.999* (2.795)		4.981* (2.405)		1.310 (3.469)	
Observations	1492	1322	1166	1474	1305	1151	1454	1286	1134	1414	1248	1100
Within R <sup>2</sup>	0.120	0.102	0.118	0.119	0.124	0.157	0.147	0.141	0.179	0.166	0.166	0.203
Stock prices	-1.995* (0.943)	-1.699 (0.944)	-1.812 (1.052)	-1.949** (0.706)	-1.694* (0.677)	-1.993** (0.661)	-1.376** (0.461)	-1.117* (0.438)	-1.264* (0.478)	-1.448*** (0.421)	-1.354** (0.429)	-1.411** (0.445)
Credit		-6.670 (3.346)	-5.384 (3.170)		-5.044 (2.736)	-3.702 (2.433)	-5.116* (2.512)	-3.734 (2.329)		-3.628* (1.806)	-3.028 (1.746)	
Exchange rate		0.984 (1.677)	1.400 (1.450)		0.475 (1.297)	0.228 (1.070)	0.351 (1.139)	0.696 (0.889)		-0.163 (0.814)	-0.130 (0.750)	
Deposit rate			5.112 (6.259)		5.811 (5.157)		4.340 (4.809)		4.683 (4.136)		1.334 (3.469)	
Lending rate			7.816* (3.810)		5.158 (3.522)		4.364 (3.626)		4.683 (4.136)		1.334 (3.469)	
Government consumption	-0.231 (0.326)	-0.224 (0.357)	-0.330 (0.320)	-0.277 (0.201)	-0.212 (0.227)	-0.234 (0.199)	-0.258 (0.194)	-0.204 (0.214)	-0.318 (0.190)	-0.138 (0.163)	-0.063 (0.179)	-0.220 (0.139)
Policy rate	0.830 (1.607)	2.742 (1.871)	-2.594 (4.259)	2.328 (1.305)	3.844* (1.752)	0.082 (3.075)	1.462 (1.208)	3.139* (1.571)	0.822 (2.577)	1.412 (0.920)	2.880* (1.335)	3.266 (2.216)
Observations	1009	957	838	996	944	827	981	929	814	951	899	788
Within R <sup>2</sup>	0.146	0.125	0.150	0.175	0.153	0.189	0.177	0.161	0.191	0.190	0.177	0.205
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6

Monthly FE panel forecasting models for main economic indicators. Notes: The table presents country-level FE panel regressions estimated using eq. (1). Data frequency is monthly, covering the sample period from 1990 M1 to 2019 M12. Forecast horizons include nowcasting, 1-month-, 2-month-, and 3-month-ahead. Dependent variables are the following macroeconomic indicators: (Panel A) production, IP; (Panel B) inflation, CPI; and (Panel C) unemployment. Explanatory variables consist of financial indicators and control variables. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. Driscoll-Kraay standard errors are reported in parentheses. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

Panel A: Production, IP												
	Nowcasting			1-month-ahead forecast			2-month-ahead forecast			3-month-ahead forecast		
Stock prices	-14.176 (10.381)	-32.569 (16.594)	-39.258 (22.641)	-8.776 (7.365)	-21.203* (10.484)	-27.836* (11.043)	5.840 (3.383)	1.472 (6.432)	-0.743 (7.223)	1.437 (3.080)	-1.113 (5.507)	-2.374 (5.845)
Credit		111.689 (62.338)	137.823 (80.042)		-52.826 (71.387)	-101.999 (96.642)		-35.749 (53.112)	-76.328 (74.419)		-22.378 (36.450)	-55.713 (50.171)
Exchange rate		-45.834 (37.564)	-44.434 (42.852)		-5.714 (28.468)	3.706 (33.079)		10.623 (27.021)	30.501 (29.882)		7.331 (15.184)	20.375 (16.799)
Deposit rate			-7.824 (78.756)			-77.994 (39.325)			-83.202 <sup>†</sup> (39.564)			-68.301 (35.899)
Lending rate			9.001 (37.557)			25.610 (29.000)			23.418 (22.745)			19.658 (20.472)
Observations	4154	3361	2500	4134	3341	2485	4114	3321	2470	4094	3301	2455
Within R <sup>2</sup>	0.091	0.096	0.087	0.088	0.093	0.094	0.102	0.106	0.106	0.120	0.128	0.127
Stock prices	-46.293* (21.202)	-61.951* (28.485)	-66.164 (34.518)	-35.163*** (10.535)	-45.944*** (11.485)	-49.268*** (12.096)	-7.041 (6.008)	-15.580 (8.549)	-17.052 (9.957)	-8.130 (5.190)	-12.729 (6.517)	-13.478 (7.181)
Credit		109.983 (79.020)	124.980 (118.908)		-71.330 (93.242)	-175.767 (143.803)		-56.899 (71.327)	-102.553 (111.055)		-35.520 (49.032)	-65.531 (73.527)
Exchange rate		-41.466 (45.449)	-26.177 (52.088)		-11.566 (32.942)	2.974 (40.772)		17.334 (35.014)	42.029 (38.120)		15.243 (19.478)	27.618 (21.602)
Deposit rate			-2.981 (129.262)			-82.760 (94.004)			-61.078 (78.145)			-18.785 (66.497)
Lending rate			14.764 (51.875)			34.911 (36.793)			38.554 (29.432)			36.337 (27.184)
Policy rate	-10.495** (3.702)	2.716 (20.035)	2.716 (99.627)	-17.759*** (4.229)	-16.534 (12.289)	1.205 (77.521)	-15.437*** (2.907)	-19.019 (11.916)	-32.343 (66.312)	-13.318*** (2.620)	-18.033 (10.331)	-56.616 (58.600)
Observations	2997	2559	1933	2983	2545	1922	2969	2531	1911	2955	2517	1900
Within R <sup>2</sup>	0.115	0.117	0.105	0.115	0.117	0.118	0.123	0.124	0.124	0.141	0.142	0.140
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Inflation, CPI												
	Nowcasting			1-month-ahead forecast			2-month-ahead forecast			3-month-ahead forecast		
Stock prices	-348.993* (137.962)	-8.946*** (2.410)	-7.226** (2.339)	-188.867* (76.439)	-5.612** (1.851)	-4.465* (1.890)	-124.042* (52.267)	-4.351** (1.659)	-3.756* (1.768)	-83.295* (38.895)	-3.543* (1.581)	-3.159 (1.803)
Credit		-115.349*** (15.274)	-135.391*** (18.132)		-73.299*** (11.633)	-84.973*** (14.396)		-46.829*** (8.535)	-53.628*** (10.466)		-35.450*** (7.320)	-39.175*** (8.532)
Exchange rate		-25.887 (13.349)	-21.720 (15.016)		-1.671 (9.587)	-0.112 (11.107)		9.093 (8.858)	10.891 (10.353)		11.051 (7.117)	12.500 (8.314)
Deposit rate			-88.560*** (15.512)			-57.474*** (15.121)			-41.495** (14.286)			-32.763* (13.163)
Lending rate			12.358 (7.226)			12.732 (6.558)			12.195* (6.158)			12.186* (5.760)
Observations	11,142	8304	6639	11,096	8264	6609	11,049	8223	6578	11,002	8182	6547
Within R <sup>2</sup>	0.328	0.212	0.252	0.234	0.177	0.193	0.198	0.164	0.171	0.164	0.164	0.168
Stock prices	-104.420 (74.383)	-8.986*** (2.586)	-6.960** (2.412)	-76.921 (56.268)	-5.635* (2.232)	-4.479* (2.213)	-63.624 (46.595)	-4.293* (2.017)	-3.547 (2.085)	-55.399 (41.330)	-3.688 (2.037)	-3.224 (2.205)
Credit		-105.123*** (15.011)	-111.095*** (15.749)		-60.346*** (10.206)	-62.475*** (11.174)		-37.922*** (8.251)	-38.669*** (9.026)		-27.753*** (7.329)	-26.956*** (8.037)

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Table 6 (continued)

Panel B: Inflation, CPI												
	Nowcasting		1-month-ahead forecast			2-month-ahead forecast			3-month-ahead forecast			
Exchange rate		-20.370 (14.357)	-19.991 (15.951)	-0.717 (9.575)	-1.755 (10.721)	7.044 (7.690)	6.300 (8.727)		8.492 (6.004)	8.113 (6.849)		
Deposit rate			-89.843*** (12.538)		-64.900*** (11.958)		-51.021*** (11.492)			-44.791*** (11.040)		
Lending rate			19.886* (9.828)		19.353* (8.469)		18.029* (7.840)			17.506* (7.401)		
Policy rate	-8.974*** (1.397)	-8.541 (11.635)	5.342 (9.871)	-0.158 (1.305)	3.322 (9.618)	9.782 (9.006)	1.742 (1.166)	8.458 (8.703)	10.765 (8.380)	2.199* (0.978)	10.614 (8.196)	11.336 (7.910)
Observations	7998	6608	5525	7967	6578	5500	7935	6547	5474	7903	6516	5448
Within R <sup>2</sup>	0.523	0.219	0.242	0.237	0.194	0.203	0.259	0.192	0.196	0.283	0.196	0.199
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Unemployment												
	Nowcasting		1-month-ahead forecast			2-month-ahead forecast			3-month-ahead forecast			
Stock prices	-1.934 (1.429)	-1.712 (1.502)	-2.320 (1.591)	-0.461 (1.003)	-0.345 (1.090)	-0.539 (1.159)	-1.140 (0.864)	-1.183 (0.900)	-1.719 (0.916)	-1.293* (0.656)	-1.108 (0.653)	-1.575* (0.681)
Credit		-21.929** (6.584)	-21.622** (7.320)		-15.279** (5.469)	-13.757* (5.537)		-9.662* (4.730)	-7.484 (4.427)		-12.099** (4.306)	-9.952* (4.035)
Exchange rate		3.633 (3.159)	2.684 (3.505)		2.558 (2.880)	0.478 (2.810)		1.874 (2.254)	0.590 (2.115)		1.900 (1.784)	0.649 (1.476)
Deposit rate			7.503 (6.715)		10.127 (5.761)		10.583 (5.783)		10.583 (5.783)		10.813 (5.598)	10.813 (5.598)
Lending rate			10.115** (3.842)		8.570* (3.550)		8.353* (3.534)		8.353* (3.534)		7.742* (3.418)	7.742* (3.418)
Observations	1924	1713	1524	1910	1703	1515	1896	1693	1506	1882	1683	1497
Within R <sup>2</sup>	0.200	0.171	0.197	0.191	0.172	0.230	0.194	0.177	0.264	0.205	0.195	0.299
Stock prices	-1.201 (1.415)	-0.412 (1.408)	-1.104 (1.446)	0.566 (0.774)	0.720 (0.817)	0.791 (0.923)	-0.866 (0.909)	-0.820 (0.930)	-1.263 (0.974)	-0.741 (0.654)	-0.719 (0.649)	-1.063 (0.726)
Credit		-17.370** (6.317)	-16.066* (7.789)		-12.698* (5.228)	-8.612 (6.149)		-8.266 (4.606)	-3.321 (4.841)		-10.228* (4.222)	-6.101 (4.501)
Exchange rate		3.249 (3.163)	2.218 (3.674)		2.070 (2.586)	0.020 (2.782)		1.124 (1.968)	-0.074 (2.071)		1.593 (1.569)	0.224 (1.541)
Deposit rate			13.668 (12.189)		18.904 (10.911)		22.089* (10.882)		22.089* (10.882)		21.309* (10.309)	21.309* (10.309)
Lending rate			9.700** (3.602)		8.269* (3.330)		8.357* (3.312)		8.357* (3.312)		7.342* (3.233)	7.342* (3.233)
Policy rate	10.301*** (2.616)	14.989*** (3.130)	-4.805 (10.141)	10.964*** (2.488)	15.164*** (2.984)	-7.877 (9.058)	11.362*** (2.439)	15.041*** (2.910)	-10.948 (8.355)	11.345*** (2.323)	14.786*** (2.769)	-9.422 (7.807)
Observations	1612	1485	1296	1603	1477	1289	1594	1469	1282	1585	1461	1275
Within R <sup>2</sup>	0.184	0.198	0.215	0.217	0.225	0.257	0.242	0.242	0.300	0.254	0.264	0.318
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



Table 7

Monthly predicting annual MIDAS panel forecasting models for main economic indicators. Notes: The table presents country-level MIDAS panel regressions estimated using eq. (2). Data frequency is annual for the left-hand-side variables, covering the sample period from 1990 to 2019, and monthly for the right-hand-side variables, covering the sample period from 1990 M1 to 2019 M12. Forecast horizons include nowcasting, 1-year-, 2-year-, and 3-year-ahead. Weights used are the following (Fig. 1):  $(\theta_1, \theta_2) = (-0.35, 0.05)$ ;  $(\theta_1, \theta_2) = (-0.06, 0.01)$ ; and  $(\theta_1, \theta_2) = (0.1, -0.2)$ . Dependent variables are the following macroeconomic indicators: (Panel A) production, GDP; (Panel B) inflation, CPI; and (Panel C) unemployment. Explanatory variables consist of financial indicators. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. Driscoll-Kraay standard errors are reported in parentheses. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Panel A1: Production, GDP, $(\theta_1, \theta_2) = (-0.35, 0.05)$												
Stock prices	6.164*** (1.518)	5.628* (2.460)	5.801* (2.804)	4.433*** (1.189)	6.073** (1.917)	6.087** (2.233)	3.251** (1.019)	6.695*** (1.695)	7.607*** (1.968)	2.613** (0.889)	6.477*** (1.498)	7.457*** (1.752)
Credit		10.501*** (1.071)	9.781*** (1.192)		7.095*** (0.838)	7.246*** (0.953)		3.870*** (0.744)	4.203*** (0.845)		1.830** (0.674)	2.083** (0.766)
Exchange rate		-5.301*** (0.984)	-3.643** (1.214)		-4.276*** (0.765)	-4.444*** (0.981)		-3.185*** (0.683)	-3.148*** (0.874)		-2.422*** (0.648)	-2.530** (0.867)
Deposit rate			-2.073 (7.023)			-4.705 (5.680)			-12.740* (5.101)			-14.046** (4.706)
Lending rate			-2.872 (5.931)			3.578 (4.773)			8.745* (4.257)			10.329** (3.840)
R <sup>2</sup>	0.021	0.175	0.152	0.019	0.167	0.168	0.015	0.112	0.136	0.013	0.081	0.115
Panel A2: Production, GDP, $(\theta_1, \theta_2) = (-0.06, 0.01)$												
Stock prices	14.382*** (4.310)	6.208 (4.658)	6.681 (5.146)	15.602*** (3.339)	10.481** (3.592)	8.748* (4.089)	12.970*** (2.874)	12.901*** (3.185)	13.442*** (3.625)	11.109*** (2.511)	13.122*** (2.790)	13.814*** (3.177)
Credit		10.712*** (1.069)	10.034*** (1.185)		7.216*** (0.835)	7.465*** (0.948)		3.923*** (0.741)	4.373*** (0.840)		1.917** (0.667)	2.307** (0.756)
Exchange rate		-5.156*** (0.985)	-3.626** (1.219)		-4.122*** (0.764)	-4.398*** (0.985)		-3.066*** (0.681)	-3.080*** (0.876)		-2.231*** (0.642)	-2.268** (0.868)
Deposit rate			-0.795 (7.013)			-3.318 (5.673)			-11.320* (5.083)			-12.948** (4.678)
Lending rate			-2.970 (5.958)			3.248 (4.799)			8.182 (4.269)			9.932* (3.839)
R <sup>2</sup>	0.014	0.170	0.147	0.029	0.164	0.163	0.029	0.114	0.134	0.030	0.087	0.117
Panel A3: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	-5.463* (2.590)	2.569 (2.883)	7.370* (3.119)	2.555 (2.000)	6.512** (2.231)	9.064*** (2.462)	4.010* (1.715)	7.298*** (1.970)	8.765*** (2.186)	3.376* (1.505)	6.552*** (1.753)	7.623*** (1.969)
Credit		10.885*** (1.060)	10.185*** (1.171)		7.505*** (0.828)	7.669*** (0.931)		4.306*** (0.736)	4.714*** (0.831)		2.384*** (0.667)	2.759*** (0.755)
Exchange rate		-5.181*** (0.986)	-3.720** (1.212)		-4.183*** (0.764)	-4.482*** (0.974)		-3.084*** (0.683)	-3.212*** (0.872)		-2.100** (0.648)	-2.189* (0.874)
Deposit rate			-0.603 (6.984)			-3.109 (5.616)			-10.370* (5.066)			-12.047* (4.694)
Lending rate			-3.269 (5.929)			2.860 (4.748)			7.896 (4.260)			9.847* (3.860)
R <sup>2</sup>	0.006	0.169	0.154	0.002	0.164	0.179	0.008	0.109	0.139	0.008	0.072	0.108
Observations	857	673	540	810	631	508	763	587	472	716	542	435
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B1: Inflation, CPI, $(\theta_1, \theta_2) = (-0.35, 0.05)$												
Stock prices	-175.692*** (4.854)	-21.511*** (3.263)	-12.665*** (3.383)	-147.930*** (4.811)	-15.352*** (2.908)	-6.495* (2.994)	-117.753*** (4.584)	-11.439*** (2.258)	-5.816* (2.356)	-92.060*** (3.861)	-8.803*** (2.003)	-4.443* (2.111)
Credit		-5.943*** (1.477)	-5.472*** (1.446)		-2.328 (1.315)	-1.738 (1.280)		0.242 (1.022)	0.582 (1.008)		0.595 (0.911)	0.958 (0.911)

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Table 7 (continued)

	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast				
Exchange rate		−4.678*** (1.395)	−0.475 (1.459)	2.565* (1.246)	7.101*** (1.304)	3.458*** (0.971)	6.020*** (1.030)	1.773* (0.898)	3.752*** (0.979)				
Deposit rate			−44.855*** (8.422)		−42.436*** (7.499)		−21.686*** (5.894)		−13.084* (5.371)				
Lending rate			14.551* (7.108)		9.911 (6.292)		1.563 (4.927)		−3.369 (4.475)				
R <sup>2</sup>	0.642	0.153	0.238	0.569	0.066	0.205	0.494	0.070	0.164	0.472	0.047	0.135	
Panel B2: Inflation, CPI, ( $\theta_1, \theta_2$ ) = (−0.06, 0.01)													
Stock prices		−241.157*** (21.329)	−28.425*** (6.281)	−15.374* (6.242)	−185.840*** (19.745)	−12.262* (5.536)	0.718 (5.511)	−152.386*** (17.465)	−13.868** (4.303)	−5.864 (4.368)	−122.078*** (14.442)	−13.461*** (3.769)	−7.490 (3.867)
Credit		−6.877*** (1.493)	−6.009*** (1.446)		−3.308* (1.330)	−2.275 (1.276)		−0.291 (1.028)	0.302 (1.005)		0.291 (0.909)	0.838 (0.904)	
Exchange rate		−5.173*** (1.422)	−0.491 (1.473)		2.264 (1.272)	7.229*** (1.313)		3.274*** (0.986)	6.048*** (1.036)		1.507 (0.904)	3.659*** (0.982)	
Deposit rate			−47.489*** (8.463)			−43.794*** (7.512)			−22.772*** (5.904)			−13.794* (5.356)	
Lending rate			14.770* (7.181)			9.285 (6.336)			1.562 (4.961)			−3.095 (4.486)	
R <sup>2</sup>	0.149	0.119	0.225	0.110	0.026	0.196	0.101	0.042	0.155	0.101	0.033	0.134	
Panel B3: Inflation, CPI, ( $\theta_1, \theta_2$ ) = (0.1, −0.2)													
Stock prices		66.100*** (13.774)	−11.938** (4.012)	−8.861* (3.880)	68.653*** (12.187)	−8.349* (3.534)	−4.852 (3.415)	59.042*** (10.802)	−6.412* (2.753)	−4.302 (2.700)	45.539*** (8.962)	−8.745*** (2.416)	−6.878** (2.409)
Credit		−7.840*** (1.490)	−6.453*** (1.434)		−3.694** (1.312)	−2.241 (1.261)		−0.789 (1.019)	0.121 (0.994)		−0.225 (0.895)	0.572 (0.890)	
Exchange rate		−4.987*** (1.436)	−0.279 (1.472)		2.345 (1.271)	7.195*** (1.307)		3.297*** (0.990)	6.096*** (1.034)		1.372 (0.906)	3.572*** (0.977)	
Deposit rate			−47.952*** (8.472)			−43.934*** (7.496)			−23.060*** (5.899)			−14.134** (5.324)	
Lending rate			14.633* (7.187)			9.977 (6.321)			1.650 (4.957)			−2.839 (4.461)	
R <sup>2</sup>	0.031	0.101	0.224	0.042	0.028	0.200	0.042	0.032	0.157	0.039	0.034	0.144	
Observations	809	627	529	791	611	516	752	574	487	707	532	452	
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast				
Panel C1: Unemployment, ( $\theta_1, \theta_2$ ) = (−0.35, 0.05)													
Stock prices		0.462 (0.840)	−1.707 (1.442)	−0.951 (1.677)	−0.019 (0.597)	−2.209* (0.976)	−2.577* (1.152)	−0.098 (0.492)	−2.999*** (0.830)	−3.575*** (0.985)	−0.296 (0.402)	−2.804*** (0.699)	−3.265*** (0.835)
Credit			−1.342* (0.622)	−1.903** (0.708)		−0.577 (0.428)	−1.074* (0.498)		0.261 (0.365)	−0.201 (0.312)		0.831** (0.312)	0.632 (0.366)
Exchange rate		0.919 (0.549)		1.861** (0.692)		0.970* (0.391)	2.018*** (0.516)		0.571 (0.335)	1.462** (0.451)		0.462 (0.292)	1.214** (0.390)
Deposit rate			−4.073 (4.223)			−5.273 (2.947)			−3.106 (2.500)			−1.914 (2.180)	
Lending rate			3.992 (3.558)			3.842 (2.447)			1.833 (2.046)			0.316 (1.755)	
R <sup>2</sup>	0.000	0.019	0.040	0.000	0.030	0.077	0.000	0.037	0.079	0.001	0.057	0.092	
Panel C2: Unemployment, ( $\theta_1, \theta_2$ ) = (−0.06, 0.01)													
Stock prices		1.185 (2.380)	0.164 (2.661)	0.911 (2.990)	−2.313 (1.693)	−2.870 (1.802)	−3.232 (2.079)	−3.096* (1.395)	−4.986** (1.524)	−5.685** (1.764)	−2.830* (1.139)	−5.068*** (1.279)	−5.713*** (1.484)
Credit			−1.452* (0.620)	−1.996** (0.701)		−0.641* (0.428)	−1.183** (0.495)		0.195 (0.365)	−0.325 (0.421)		0.789* (0.311)	0.538 (0.363)
Exchange rate		0.889 (0.550)		1.897** (0.693)		0.921* (0.391)	1.980*** (0.520)		0.500 (0.335)	1.362** (0.454)		0.388 (0.291)	1.105** (0.391)

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Table 7 (continued)

	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Deposit rate			-4.289 (4.208)			-5.711 (2.948)			-3.700 (2.501)			-2.452 (2.171)
Lending rate			3.868 (3.565)			3.926 (2.460)			2.076 (2.057)			0.591 (1.757)
R <sup>2</sup>	0.000	0.016	0.039	0.003	0.024	0.070	0.009	0.032	0.070	0.012	0.057	0.091
Panel C3: Unemployment, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	1.206 (1.366)	0.066 (1.629)	-2.320 (1.784)	-0.650 (0.978)	-1.121 (1.122)	-2.226 (1.263)	-1.852* (0.801)	-2.044* (0.949)	-2.932** (1.075)	-1.906** (0.657)	-2.488** (0.807)	-3.094*** (0.920)
Credit		-1.448* (0.617)	-1.944** (0.696)		-0.722 (0.425)	-1.279** (0.492)		0.039 (0.364)	-0.511 (0.420)		0.624* (0.311)	0.355 (0.362)
Exchange rate		0.888 (0.550)	1.879** (0.690)		0.911* (0.392)	1.979*** (0.519)		0.460 (0.337)	1.365** (0.457)		0.336 (0.293)	1.084** (0.395)
Deposit rate			-4.367 (4.199)			-5.898* (2.944)			-4.117 (2.512)			-2.969 (2.182)
Lending rate			4.295 (3.560)			4.033 (2.460)			2.233 (2.072)			0.814 (1.772)
R <sup>2</sup>	0.001	0.016	0.043	0.001	0.021	0.072	0.010	0.017	0.061	0.016	0.041	0.080
Observations	682	530	424	644	493	394	606	457	365	569	422	337
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8

Quarterly predicting annual MIDAS panel forecasting models for main economic indicators. Notes: The table presents country-level MIDAS panel regressions estimated using eq. (2). Data frequency is annual for the left-hand-side variables, covering the sample period from 1990 to 2019, and quarterly for the right-hand-side variables, covering the sample period from 1990Q1 to 2019Q12. Weights used are the following (Fig. 3):  $(\theta_1, \theta_2) = (-0.04, 0.02)$ ;  $(\theta_1, \theta_2) = (-0.06, 0.01)$ ; and  $(\theta_1, \theta_2) = (0.1, -0.2)$ . Forecast horizons include nowcasting, 1-year-, 2-year-, and 3-year-ahead. Dependent variables are the following macroeconomic indicators: (Panel A) production, GDP; (Panel B) inflation, CPI; and (Panel C) unemployment. Explanatory variables consist of financial indicators. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. Driscoll-Kraay standard errors are reported in parentheses. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

	Nowcasting		1-year-ahead forecast		2-year-ahead forecast		3-year-ahead forecast					
Panel A1: Production, GDP Growth, $(\theta_1, \theta_2) = (-0.04, 0.02)$												
Stock prices	1.389 (2.377)	-0.579 (1.951)	0.945 (2.161)	6.868*** (1.725)	4.332** (1.572)	3.906* (1.677)	5.762*** (1.460)	5.512*** (1.439)	5.233*** (1.509)	6.079*** (1.255)	6.609*** (1.267)	6.096*** (1.308)
Credit		12.954*** (1.245)	12.448*** (1.373)		8.770*** (1.007)	9.240*** (1.061)		5.053*** (0.915)	5.883*** (0.946)		3.198*** (0.834)	4.179*** (0.850)
Exchange rate		-6.847*** (1.123)	-5.460*** (1.428)		-5.817*** (0.904)	-6.661*** (1.115)		-4.099*** (0.829)	-4.270*** (1.009)		-2.729*** (0.738)	-2.968*** (0.886)
Deposit rate			-1.838 (8.193)			-12.028 (6.381)			-24.390*** (5.741)			-26.750*** (5.073)
Lending rate			-5.835 (6.445)			1.877 (4.945)			12.233** (4.454)			17.050*** (3.930)
R <sup>2</sup>	0.001	0.319	0.285	0.038	0.310	0.368	0.040	0.213	0.327	0.061	0.191	0.335
Panel A2: Production, GDP Growth, $(\theta_1, \theta_2) = (-0.06, 0.01)$												
Stock prices	0.465 (2.400)	-0.909 (1.982)	0.771 (2.177)	6.531*** (1.744)	4.143* (1.602)	3.750* (1.693)	5.626*** (1.476)	5.462*** (1.467)	5.171*** (1.524)	5.998*** (1.269)	6.644*** (1.291)	6.079*** (1.320)
Credit		12.965*** (1.244)	12.464*** (1.372)		8.806*** (1.008)	9.268*** (1.061)		5.092*** (0.915)	5.912*** (0.946)		3.245** (0.835)	4.209*** (0.851)
Exchange rate		-6.859*** (1.124)	-5.471*** (1.429)		-5.790*** (0.906)	-6.658*** (1.118)		-4.058*** (0.831)	-4.250*** (1.011)		-2.676*** (0.739)	-2.936** (0.889)
Deposit rate			-1.850 (8.194)			-12.001 (6.387)			-24.347*** (5.748)			-26.687*** (5.079)
Lending rate			-5.781 (6.447)			1.914 (4.951)			12.237** (4.459)			17.041*** (3.935)
R <sup>2</sup>	0.000	0.319	0.285	0.034	0.308	0.367	0.037	0.211	0.325	0.059	0.189	0.333
Panel A3: Production, GDP Growth, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	-5.174** (1.967)	-1.708 (1.762)	0.482 (1.859)	2.119 (1.463)	1.919 (1.446)	2.269 (1.460)	2.686* (1.234)	3.310* (1.331)	3.405* (1.320)	3.233** (1.066)	4.496*** (1.182)	4.164*** (1.152)
Credit		12.908*** (1.240)	12.498*** (1.366)		9.008*** (1.014)	9.436*** (1.062)		5.387*** (0.925)	6.156*** (0.950)		3.643*** (0.850)	4.504*** (0.860)
Exchange rate		-6.960*** (1.128)	-5.480*** (1.433)		-5.749*** (0.919)	-6.726*** (1.127)		-3.922*** (0.847)	-4.291*** (1.026)		-2.451** (0.760)	-2.939** (0.909)
Deposit rate			-1.875 (8.195)			-12.040 (6.419)			-24.418*** (5.806)			-26.665*** (5.168)
Lending rate			-5.685 (6.436)			2.395 (4.967)			12.826** (4.496)			17.684*** (3.998)
R <sup>2</sup>	0.016	0.321	0.285	0.005	0.297	0.361	0.012	0.190	0.312	0.025	0.154	0.310
Observations	472	373	309	452	354	293	432	335	277	411	314	259
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B1: Inflation, CPI, $(\theta_1, \theta_2) = (-0.04, 0.02)$												
Stock prices	-8.919 (5.424)	-13.133*** (3.245)	-6.363* (2.997)	-6.705 (4.984)	-7.071** (2.704)	-0.765 (2.497)	-6.449 (4.709)	-5.806* (2.256)	-1.375 (2.211)	-6.651 (4.498)	-6.585*** (1.898)	-2.822 (1.916)
Credit		-5.768** (2.152)	-5.662** (1.920)		-0.910 (1.796)	-0.842 (1.593)		1.966 (1.486)	1.829 (1.392)		2.628* (1.266)	2.397 (1.227)

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Table 8 (continued)

	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Exchange rate	-6.761** (2.095)	-1.165 (1.978)	2.332 (1.751)	7.494*** (1.663)	2.037 (1.458)	5.499*** (1.465)	1.093 (1.231)	3.478** (1.273)				
Deposit rate		-66.875*** (11.346)		-51.449*** (9.518)		-26.564** (8.277)		-11.737 (7.289)				
Lending rate		17.568* (8.905)		8.140 (7.369)		-3.581 (6.402)		-9.717 (5.638)				
R <sup>2</sup>	0.007	0.109	0.261	0.005	0.033	0.251	0.005	0.037	0.210	0.006	0.060	0.201
Panel B2: Inflation, CPI, ( $\theta_1, \theta_2$ ) = (-0.06, 0.01)												
Stock prices	-6.190 (5.460)	-12.863*** (3.284)	-6.359* (3.019)	-4.298 (5.015)	-6.874* (2.735)	-0.773 (2.516)	-4.415 (4.740)	-5.566* (2.284)	-1.265 (2.229)	-4.959 (4.528)	-6.448*** (1.922)	-2.750 (1.933)
Credit		-5.894** (2.153)	-5.699** (1.918)		-0.982 (1.795)	-0.846 (1.591)		1.897 (1.486)	1.812 (1.391)		2.564* (1.266)	2.375 (1.226)
Exchange rate		-6.841*** (2.102)	-1.197 (1.980)		2.291 (1.755)	7.489*** (1.665)		2.007 (1.462)	5.502*** (1.467)		1.049 (1.234)	3.469** (1.275)
Deposit rate			-66.954*** (11.349)			-51.459*** (9.519)			-26.576** (8.278)			-11.774 (7.292)
Lending rate			17.590* (8.908)			8.146 (7.371)			-3.612 (6.404)			-9.731 (5.641)
R <sup>2</sup>	0.003	0.106	0.261	0.002	0.031	0.251	0.002	0.035	0.210	0.003	0.057	0.200
Panel B3: Inflation, CPI, ( $\theta_1, \theta_2$ ) = (0.1, -0.2)												
Stock prices	11.441* (4.423)	-7.282* (2.895)	-5.025 (2.586)	11.176** (4.051)	-3.732 (2.399)	-1.254 (2.151)	8.555* (3.842)	-2.696 (2.006)	-0.931 (1.907)	6.165 (3.685)	-3.737* (1.700)	-1.955 (1.662)
Credit		-6.798** (2.167)	-6.005** (1.910)		-1.465 (1.794)	-0.864 (1.582)		1.468 (1.484)	1.742 (1.381)		2.081 (1.270)	2.225 (1.218)
Exchange rate		-6.860** (2.151)	-1.247 (1.989)		2.307 (1.785)	7.399*** (1.671)		2.037 (1.489)	5.497*** (1.474)		1.004 (1.264)	3.466** (1.284)
Deposit rate			-67.174*** (11.367)			-51.561*** (9.516)			-26.615** (8.282)			-11.899 (7.303)
Lending rate			17.233 (8.909)			8.317 (7.358)			-3.708 (6.397)			-9.962 (5.642)
R <sup>2</sup>	0.016	0.080	0.259	0.019	0.019	0.252	0.013	0.020	0.210	0.008	0.034	0.198
Observations	468	349	301	452	336	290	433	319	276	414	300	260
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Panel C1: Unemployment, ( $\theta_1, \theta_2$ ) = (-0.04, 0.02)												
Stock prices	-0.105 (1.141)	-1.622 (1.170)	-1.189 (1.336)	-2.220** (0.757)	-2.371** (0.800)	-2.074* (0.916)	-2.601*** (0.602)	-2.912*** (0.662)	-2.716*** (0.773)	-2.560*** (0.502)	-3.111*** (0.555)	-2.887*** (0.659)
Credit		-2.114** (0.755)	-2.036* (0.851)		-1.179* (0.519)	-1.218* (0.589)		-0.386 (0.430)	-0.558 (0.495)		0.236 (0.371)	0.083 (0.436)
Exchange rate		1.239 (0.680)	2.690** (0.886)		1.375** (0.467)	2.390*** (0.609)		0.889* (0.389)	1.868*** (0.517)		0.679* (0.329)	1.357** (0.453)
Deposit rate			-8.645 (5.107)			-6.574 (3.496)			-3.292 (2.919)			-0.921 (2.586)
Lending rate			8.987* (3.989)			6.213* (2.694)			2.666 (2.230)			-0.141 (1.945)
R <sup>2</sup>	0.000	0.046	0.076	0.022	0.084	0.117	0.049	0.096	0.126	0.070	0.133	0.147
Panel C2: Unemployment, ( $\theta_1, \theta_2$ ) = (-0.06, 0.01)												
Stock prices	-0.151 (1.152)	-1.759 (1.189)	-1.467 (1.345)	-2.269** (0.764)	-2.454** (0.813)	-2.217* (0.922)	-2.677*** (0.608)	-3.020*** (0.673)	-2.832*** (0.777)	-2.649*** (0.506)	-3.233*** (0.563)	-3.000*** (0.663)
Credit		-2.119** (0.754)	-2.022* (0.850)		-1.190* (0.518)	-1.217* (0.588)		-0.401 (0.429)	-0.562 (0.493)		0.219 (0.369)	0.079 (0.434)
Exchange rate		1.224 (0.680)	2.660** (0.886)		1.354** (0.467)	2.366*** (0.609)		0.864* (0.388)	1.842*** (0.517)		0.651* (0.328)	1.326** (0.452)

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Table 8 (continued)

	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Deposit rate			-8.686 (5.103)			-6.606 (3.491)			-3.334 (2.913)			-0.942 (2.579)
Lending rate			9.085* (3.986)			6.271* (2.691)			2.716 (2.226)			-0.104 (1.939)
R <sup>2</sup>	0.000	0.047	0.077	0.023	0.085	0.119	0.051	0.098	0.130	0.074	0.138	0.152
Panel C3: Unemployment, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	-0.228 (0.954)	-2.036 (1.064)	-2.672* (1.145)	-1.553* (0.636)	-2.145** (0.735)	-2.456** (0.788)	-2.021*** (0.508)	-2.661*** (0.609)	-2.710*** (0.660)	-2.132*** (0.424)	-2.926*** (0.512)	-2.812*** (0.566)
Credit		-2.217** (0.750)	-2.022* (0.839)		-1.321* (0.517)	-1.285* (0.579)		-0.580 (0.428)	-0.682 (0.485)		0.015 (0.368)	-0.043 (0.427)
Exchange rate		1.111 (0.682)	2.468** (0.882)		1.242** (0.471)	2.264*** (0.606)		0.712 (0.392)	1.746*** (0.515)		0.473 (0.331)	1.204** (0.451)
Deposit rate			-8.897 (5.060)			-6.799 (3.464)			-3.563 (2.891)			-1.012 (2.554)
Lending rate			9.509* (3.947)			6.417* (2.666)			2.745 (2.207)			-0.177 (1.918)
R <sup>2</sup>	0.000	0.052	0.093	0.015	0.083	0.134	0.042	0.095	0.143	0.069	0.137	0.168
Observations	455	341	292	435	323	276	415	304	259	395	284	241
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9

Monthly predicting quarterly MIDAS panel forecasting models for main economic indicators. *Notes:* The table presents country-level MIDAS panel regressions estimated using eq. (2). Data frequency is quarterly for the left-hand-side variables, covering the sample period from 1990Q1 to 2019Q4, and monthly for the right-hand-side variables, covering the sample period from 1990 M1 to 2019 M12. Weights used are the following (Fig. 4):  $(\theta_1, \theta_2) = (-0.04, 0.02)$ ;  $(\theta_1, \theta_2) = (-0.06, 0.01)$ ; and  $(\theta_1, \theta_2) = (0.1, -0.2)$ . Forecast horizons include nowcasting, 1-quarter-, 2-quarter-, and 3-quarter-ahead. Dependent variables are the following macroeconomic indicators: (Panel A) production, GDP; (Panel B) inflation, CPI; and (Panel C) unemployment. Explanatory variables consist of financial indicators. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. Driscoll-Kraay standard errors are reported in parentheses. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

	Nowcasting		1-quarter-ahead forecast				2-quarter-ahead forecast			4-quarter-ahead forecast		
Panel A1: Production, GDP, $(\theta_1, \theta_2) = (-0.04, 0.02)$												
Stock prices	-0.782 (1.773)	-0.012 (1.425)	0.443 (1.538)	-0.954 (1.101)	-0.239 (0.942)	-0.562 (1.025)	0.160 (0.841)	-0.701 (0.708)	-1.046 (0.744)	-0.461 (0.699)	-0.738 (0.593)	-1.157 (0.612)
Credit		17.203*** (2.484)	16.100*** (2.667)		9.658*** (1.643)	10.804*** (1.778)		6.530*** (1.236)	8.200*** (1.290)		6.325*** (1.034)	8.199*** (1.060)
Exchange rate		0.388 (1.742)	-0.647 (1.909)		-2.559* (1.153)	-1.703*** (1.273)		-2.764** (0.869)	-1.212 (0.926)		-2.671*** (0.727)	-1.436 (0.762)
Deposit rate			6.947 (5.666)			-3.059 (3.776)			-5.730* (2.740)			-5.828* (2.256)
Lending rate			-0.080 (4.756)			-0.127 (3.170)			-1.061 (2.300)			-0.484 (1.891)
R <sup>2</sup>	0.000	0.102	0.121	0.001	0.065	0.078	0.000	0.059	0.107	0.001	0.078	0.148
Panel A2: Production, GDP, $(\theta_1, \theta_2) = (-0.06, 0.01)$												
Stock prices	-0.933 (1.792)	-0.088 (1.434)	0.387 (1.547)	-1.013 (1.114)	-0.229 (0.949)	-0.565 (1.031)	0.123 (0.851)	-0.632 (0.713)	-1.008 (0.748)	-0.510 (0.707)	-0.709 (0.597)	-1.165 (0.615)
Credit		17.195*** (2.484)	16.099*** (2.667)		9.658*** (1.644)	10.802*** (1.778)		6.534*** (1.236)	8.198*** (1.290)		6.325*** (1.034)	8.195*** (1.060)
Exchange rate		0.391 (1.743)	-0.647 (1.909)		-2.558* (1.153)	-1.699 (1.273)		-2.763** (0.869)	-1.207 (0.926)		-2.669*** (0.727)	-1.426 (0.762)
Deposit rate			6.953 (5.666)			-3.068 (3.776)			-5.746* (2.741)			-5.848** (2.256)
Lending rate			-0.091 (4.755)			-0.124 (3.169)			-1.049 (2.300)			-0.477 (1.891)
R <sup>2</sup>	0.000	0.103	0.120	0.001	0.065	0.078	0.000	0.058	0.107	0.001	0.078	0.148
Panel A3: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	-2.001 (1.714)	-0.685 (1.327)	-0.197 (1.420)	-1.319 (1.066)	-0.173 (0.878)	-0.569 (0.946)	-0.220 (0.814)	0.105 (0.660)	-0.482 (0.688)	-0.788 (0.677)	-0.267 (0.553)	-0.938 (0.566)
Credit		17.109*** (2.486)	16.076*** (2.668)		9.657*** (1.645)	10.786*** (1.778)		6.612*** (1.239)	8.199*** (1.293)		6.359*** (1.037)	8.174*** (1.062)
Exchange rate		0.443 (1.745)	-0.593 (1.917)		-2.552* (1.155)	-1.656 (1.278)		-2.794** (0.871)	-1.204 (0.932)		-2.673*** (0.729)	-1.368 (0.766)
Deposit rate			6.912 (5.671)			-3.156 (3.780)			-5.814* (2.747)			-5.994** (2.261)
Lending rate			-0.167 (4.752)			-0.094 (3.167)			-0.945 (2.302)			-0.392 (1.891)
R <sup>2</sup>	0.002	0.103	0.120	0.003	0.065	0.079	0.000	0.057	0.104	0.002	0.076	0.147
Observations	748	613	531	745	610	529	740	605	525	734	599	520
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B1: Inflation, CPI, $(\theta_1, \theta_2) = (-0.04, 0.02)$												
Stock prices	11.363 (7.130)	-0.089 (0.821)	-0.343 (0.854)	7.644 (4.977)	-0.036 (0.650)	-0.514 (0.668)	4.308 (3.961)	0.157 (0.635)	-0.147 (0.666)	3.446 (3.447)	-0.170 (0.891)	-0.140 (0.984)
Credit		1.147 (1.436)	0.791 (1.498)		1.588 (1.137)	1.925 (1.173)		2.543* (1.112)	3.234** (1.170)		2.951 (1.560)	3.435* (1.728)
Exchange rate		-2.221* (1.043)	-1.313 (1.102)		0.012 (0.827)	1.307 (0.863)		-0.048 (0.808)	0.974 (0.862)		-0.342*** (1.134)	0.498 (1.274)

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Table 9 (continued)

	Nowcasting		1-quarter-ahead forecast				2-quarter-ahead forecast		4-quarter-ahead forecast			
Deposit rate			-4.037 (3.150)			-4.456 (2.465)			-2.999 (2.460)			-2.895 (3.639)
Lending rate			1.508 (2.664)			0.080 (2.085)			-0.973 (2.080)			-0.240 (3.073)
R <sup>2</sup>	0.002	0.009	0.013	0.002	0.005	0.027	0.001	0.012	0.032	0.001	0.008	0.013
Panel B2: Inflation, CPI, $(\theta_1, \theta_2) = (-0.06, 0.01)$												
Stock prices	11.730 (7.187)	-0.120 (0.827)	-0.373 (0.859)	7.795 (5.017)	-0.051 (0.655)	-0.532 (0.672)	4.531 (3.993)	0.190 (0.640)	-0.117 (0.671)	3.641 (3.474)	-0.156 (1.278)	-0.138 (0.991)
Credit		1.144 (1.436)	0.789 (1.498)		1.586 (1.137)	1.923 (1.173)		2.546* (1.112)	3.233** (1.170)		2.951 (1.560)	3.434* (1.728)
Exchange rate		-2.219* (1.043)	-1.307 (1.103)		0.013 (0.827)	1.313 (0.863)		-0.050 (0.808)	0.973 (0.862)		-0.342 (1.134)	0.499 (1.275)
Deposit rate			-4.044 (3.151)			-4.466 (2.465)			-3.000 (2.460)			-2.897 (3.639)
Lending rate			1.506 (2.664)			0.081 (2.084)			-0.967 (2.080)			-0.238 (3.073)
R <sup>2</sup>	0.002	0.009	0.013	0.002	0.005	0.027	0.001	0.012	0.032	0.001	0.008	0.013
Panel B3: Inflation, CPI, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	11.693 (6.904)	-0.375 (0.765)	-0.564 (0.789)	6.990 (4.821)	-0.184 (0.606)	-0.566 (0.618)	5.080 (3.835)	0.395 (0.592)	0.128 (0.616)	4.198 (3.337)	-0.003 (0.831)	-0.098 (0.911)
Credit		1.106 (1.437)	0.767 (1.498)		1.567 (1.139)	1.902 (1.173)		2.581* (1.113)	3.240** (1.170)		2.964 (1.562)	3.431* (1.728)
Exchange rate		-2.189* (1.045)	-1.244 (1.108)		0.028 (0.828)	1.363 (0.867)		-0.079 (0.810)	0.940 (0.867)		-0.348 (1.136)	0.504 (1.281)
Deposit rate			-4.144 (3.153)			-4.559 (2.468)			-2.967 (2.463)			-2.911 (3.644)
Lending rate			1.511 (2.660)			0.111 (2.082)			-0.935 (2.078)			-0.225 (3.070)
R <sup>2</sup>	0.002	0.010	0.013	0.001	0.005	0.028	0.001	0.013	0.032	0.001	0.008	0.013
Observations	1678	577	515	1672	576	514	1667	574	512	1660	572	510
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Nowcasting		1-quarter-ahead forecast				2-quarter-ahead forecast		4-quarter-ahead forecast			
Panel C1: Unemployment, $(\theta_1, \theta_2) = (-0.04, 0.02)$												
Stock prices	-0.063 (0.430)	-0.287 (0.479)	-0.235 (0.487)	0.132 (0.302)	0.050 (0.315)	0.116 (0.316)	0.222 (0.254)	0.219 (0.273)	0.298 (0.274)	0.100 (0.226)	0.185 (0.249)	0.299 (0.251)
Credit		-2.068* (0.846)	-2.650** (0.872)		-1.028 (0.556)	-1.770** (0.566)		-0.948* (0.481)	-1.597** (0.489)		-0.663 (0.439)	-1.316** (0.448)
Exchange rate		1.854** (0.589)	1.172 (0.638)		1.508*** (0.388)	0.698 (0.415)		1.009** (0.335)	0.374 (0.359)		0.672* (0.307)	0.134 (0.330)
Deposit rate			1.585 (2.062)			3.804** (1.339)			2.630* (1.158)			2.177* (1.064)
Lending rate			1.378 (1.654)			-0.310 (1.074)			0.283 (0.928)			0.477 (0.851)
R <sup>2</sup>	0.000	0.030	0.052	0.000	0.039	0.097	0.001	0.028	0.086	0.000	0.016	0.078
Panel C2: Unemployment, $(\theta_1, \theta_2) = (-0.06, 0.01)$												
Stock prices	-0.036 (0.433)	-0.287 (0.481)	-0.229 (0.489)	0.142 (0.304)	0.041 (0.316)	0.115 (0.317)	0.218 (0.256)	0.191 (0.274)	0.278 (0.275)	0.099 (0.227)	0.168 (0.252)	0.289 (0.252)
Credit		-2.070* (0.846)	-2.651** (0.872)		-1.029 (0.556)	-1.770** (0.566)		-0.949* (0.481)	-1.597** (0.489)		-0.664 (0.439)	-1.316** (0.448)
Exchange rate		1.856** (0.589)	1.174 (0.638)		1.507*** (0.388)	0.696 (0.416)		1.008** (0.335)	0.372 (0.360)		0.671* (0.307)	0.131 (0.330)
Deposit rate			1.580 (2.062)			3.807** (1.339)			2.636* (1.158)			2.184* (1.064)
Lending rate			1.381 (1.654)			-0.311 (1.074)			0.278 (0.928)			0.472 (0.851)

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Table 9 (continued)

	Nowcasting			1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast		
$R^2$	0.000	0.030	0.052	0.000	0.039	0.097	0.001	0.027	0.085	0.000	0.016	0.078
Panel C3: Unemployment, $(\theta_1, \theta_2) = (0.1, -0.2)$												
Stock prices	0.213 (0.411)	-0.214 (0.437)	-0.115 (0.445)	0.194 (0.288)	-0.050 (0.287)	0.085 (0.289)	0.134 (0.244)	-0.075 (0.249)	0.064 (0.251)	0.067 (0.216)	-0.008 (0.228)	0.143 (0.230)
Credit		-2.074* (0.848)	-2.649** (0.873)		-1.040 (0.557)	-1.769** (0.566)		-0.978* (0.482)	-1.602** (0.490)		-0.680 (0.440)	-1.317** (0.449)
Exchange rate		1.872** (0.591)	1.180 (0.643)		1.514*** (0.389)	0.688 (0.418)		1.021** (0.337)	0.379 (0.363)		0.676* (0.308)	0.124 (0.333)
Deposit rate			1.562 (2.066)			3.825** (1.342)			2.636* (1.162)			2.209* (1.068)
Lending rate			1.407 (1.653)			-0.324 (1.073)			0.242 (0.929)			0.437 (0.852)
$R^2$	0.000	0.030	0.051	0.001	0.039	0.097	0.000	0.026	0.083	0.000	0.014	0.075
Observations	793	472	455	781	468	451	768	463	446	755	458	441
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table 10**

Summary of annual FE and monthly predicting annual MIDAS panel forecasting models. *Notes:* The table presents summary country-level FE and MIDAS panel regressions estimated using eqs. (1) and (2), respectively; the full results are presented in Table 4, Panel A, and Tables A6–A7 in the Appendix. Data frequency is annual for the left-hand-side variables, covering the sample period from 1990 to 2019, and either annual (FE) or monthly (MIDAS) for the right-hand-side variables, covering the sample period from 1990 M1 to 2019 M12. The forecast horizons include nowcasting, 1-year-, 2-year-, and 3-year-ahead. Weights used are the following (Fig. 1):  $(\theta_1, \theta_2) = (-0.35, 0.05)$ ;  $(\theta_1, \theta_2) = (-0.06, 0.01)$ ; and  $(\theta_1, \theta_2) = (0.1, -0.2)$ . Dependent variable is production, GDP. Explanatory variables consist of financial indicators and control variables. Variables are defined in Table 2 and discussed in Sections 3.2–3.3. For detailed information on the transformations applied to the variables, refer to Section 3.5. \*, \*\*, and \*\*\* imply statistical significance on the 5%, 1%, and 0.1%, respectively.

Sample	$\theta_1$	$\theta_2$	Nowcasting	1-year-ahead forecast	2-year-ahead forecast	3-year-ahead forecast
Panel A: FE without controls						
All countries	–	–	0.693	1.219***	1.041***	0.966***
LI-LMI	–	–	0.123	1.245**	1.053*	1.024*
UMI	–	–	1.284**	1.398**	1.214***	1.102***
Panel B: FE with controls						
All countries	–	–	0.141	0.993**	1.043**	1.032***
LI-LMI	–	–	– 0.299	0.571	0.778*	0.987**
UMI	–	–	0.786	1.375**	1.266**	1.112***
Panel C: MIDAS without controls						
All countries	– 0.35	0.05	6.164***	4.433***	3.251**	2.613**
LI-LMI	– 0.35	0.05	18.196***	13.456***	10.280***	8.578**
UMI	– 0.35	0.05	5.041**	3.557**	2.638**	2.073*
All countries	– 0.06	0.01	14.382***	15.602***	12.970***	11.109***
LI-LMI	– 0.06	0.01	18.339*	17.954**	14.645*	12.195*
UMI	– 0.06	0.01	16.644***	17.132***	14.625***	12.450***
All countries	0.10	– 0.20	– 5.463*	2.555	4.010*	3.376*
LI-LMI	0.10	– 0.20	7.004	7.791	10.895*	9.674*
UMI	0.10	– 0.20	– 8.779**	0.749	2.010	1.676
Panel C: MIDAS with controls						
All countries	– 0.35	0.05	5.564**	8.407***	7.276***	5.687***
LI-LMI	– 0.35	0.05	8.034*	6.455*	4.974	4.916*
UMI	– 0.35	0.05	6.519*	9.846***	8.346***	5.937***
All countries	– 0.06	0.01	6.404	14.234***	14.484***	12.936***
LI-LMI	– 0.06	0.01	3.680	7.880	9.371	12.121**
UMI	– 0.06	0.01	13.066*	19.017***	17.512***	13.874***
All countries	0.10	– 0.20	– 4.681	3.508	3.664*	3.067*
LI-LMI	0.10	– 0.20	0.377	6.291	5.820	5.870
UMI	0.10	– 0.20	– 4.314	3.400	2.761	1.987

prices and credit appear to be significant for predicting inflation at the monthly frequency, while credit also appears to be significant in predicting unemployment.

Interestingly, exchange rate is not significant in the monthly frequency for predicting any of the three macroeconomic indicators. Exchange rates reflect the relative economic strength with respect to the U.S. Therefore, a drop in the exchange rate could result from rising interest rates in the U.S., a deterioration of economic conditions in the country, or a more rapid interest rate cut compared to the U.S. These factors could have conflicting effects on the real side of the economy, leading to varying predictions across different time periods.<sup>7</sup>

#### 4.2. MIDAS panel forecasting models

The MIDAS panel forecasting models are estimated for the “monthly to annual” (Table 7), “quarterly to annual” (Table 8), and “monthly to quarterly” (Table 9) cases. The format of Tables 7–9 closely follow that of Tables 4–6. Each subpanel provides the results for nowcasting and three forecasting horizons, read from left to right. Within each horizon, we present the results from three model specifications: stock prices alone, stock prices with credit and exchange rates, and the full model specification including the deposit rate and lending rate. Unlike Tables 4–6, Tables 7–9 include three horizontal subpanels presenting the three cases of the parameters  $(\theta_1, \theta_2)$ . Due to space constraints, Tables 7–9 do not include the results of the models with control variables.<sup>8</sup>

<sup>7</sup> For EMDE countries such as Argentina and Zimbabwe, low exchange rates are typically associated with hyperinflation, sovereign debt defaults, and the outflow of foreign capital, all of which have a negative impact on the economy. However, these countries also heavily rely on exports of natural resources, and high exchange rates can also negatively affect the economy. Therefore, the short-term impact of exchange rates on these countries is not clear.

<sup>8</sup> The results of the MIDAS specifications for the dependent variable GDP, including controls, are presented in Table A7 in the Appendix.

#### 4.2.1. Monthly to annual

Table 7 presents the empirical results of the MIDAS panel forecasting models for the “monthly to annual” case, where monthly stock prices are used to predict annual aggregate production, GDP (Panel A), inflation, CPI (Panel B), and unemployment (Panel C).

Comparing the MIDAS results to the corresponding FE results in Table 4, it is apparent that all three cases of the parameters  $(\theta_1, \theta_2)$  show an improvement over the FE results, consistent with the univariate MIDAS improvements found by Ferrara and Marsilli (2013). However, the three cases are not equally effective. When comparing the results across the three cases of the parameters, it is clear that monthly financial indicators predict annual macroeconomic indicators more uniformly strongly when relatively higher weights are placed on older observations, i.e.,  $(\theta_1, \theta_2) = (-0.35, 0.05)$  and  $(\theta_1, \theta_2) = (-0.06, 0.01)$ , while the best performance is observed when the increase in weights is rapid, i.e.,  $(\theta_1, \theta_2) = (-0.35, 0.05)$ .

One striking contribution of MIDAS panel models is evident in the forecasting ability of monthly stock prices as a predictor of annual GDP growth. The results reveal that with the appropriate choice of the parameter, such as  $(\theta_1, \theta_2) = (-0.35, 0.05)$ , the significance is improved, even for nowcasting; it is important to recall that in Table 4, Panel A, stock prices were not significant predictors of GDP growth in nowcasting. In other words, when we select the parameters such that more recent observations have lower weights, with a rapid increase to higher weights for the oldest observations, monthly stock prices can significantly predict annual GDP growth rates for nowcasting. This result suggests that the reaction of the stock market is about three quarters ahead of the change in the real economy, akin to the predictive power of the yield spread on economic recessions.

#### 4.2.2. Quarterly to annual and monthly to quarterly

Tables 8 and 9 (Panels A, B, and C) present the empirical results of the MIDAS panel forecasting models for the “quarterly to annual” and “monthly to quarterly” cases, respectively. Upon comparison, the results for both cases show minimal differences. When comparing these results to the corresponding FE results in Tables 4 and 5, respectively, it becomes evident that both models yield similar results in terms of statistical significance. While there are indeed some improvements in MIDAS results over the FE results in certain instances, these improvements are minor. This is not unexpected, given that each year comprises only four quarters and each quarter consists of only three months, leaving limited scope for the mixed frequency to significantly enhance predictions.

#### 4.3. LI-LMI versus UMI

Higher income levels at the country level can be interpreted as indicative of more developed financial markets and institutions, better capital mobilization, and advanced technology within the country (Levine, 1997, 2005), facilitating financial markets’ ability to incorporate participants’ expectations about future growth more accurately (Henry, 2000). Based on these studies, we split the full sample of countries among EMDEs into two income groups: LI-LMI comprising 22 countries and UMI comprising 28 countries; refer to Table 1 for the list of countries in each group.

Due to space constraints, our analysis for these subsamples focuses solely on GDP growth as the dependent variable. Table 10 summarizes the estimated coefficients and statistical significance of stock prices obtained from the non-augmented specification of FE and MIDAS panel forecasting models, with and without controls.<sup>9</sup> The results are presented separately for all countries, as well as for the LI-LMI and UMI subsamples. Our findings reveal the following: the FE analysis shows a significant impact of stock returns on GDP growth within the UMI subgroup, while it remains largely insignificant for the LI-LMI subgroup. However, the MIDAS analysis of the same subsamples enhances the results for LI-LMI countries, underscoring the MIDAS models’ ability to extract additional valuable predictive information in higher-frequency data. It is worth noting that assigning higher weights to older observations in the MIDAS models consistently yields better outcomes across both subsamples.

### 5. Summary and conclusions

This study employs panel forecasting models to investigate the empirical link between macroeconomic and financial indicators across 50 EMDE countries over the period 1990 – 2019. Despite extensive research in the broader literature, there remains a lack of clear empirical evidence supporting the notion that financial variables lead economic growth in EMDEs. Our research contributes to filling this gap by examining previously understudied EMDEs with a larger sample of countries compared to previous studies, and by utilizing mixed-frequency models to better detect potential macro-finance linkages in EMDEs.

Overall, our findings strongly support the notion that financial indicators are significant predictors of macroeconomic indicators in EMDEs. Specifically, our empirical results indicate that common financial variables, such as national stock market indexes, private credit, and exchange rates, are robust predictors of key macroeconomic variables, including aggregate production, inflation, and unemployment, in EMDEs. Moreover, the application of MIDAS panel forecasting models enhances the predictive power of our results, confirming the presence of valuable predictive information in higher-frequency data, even for lower-income countries. Notably, our findings suggest that the reaction of the stock market anticipates changes in the real economy by approximately three quarters.

The comprehensive empirical evidence provided in this paper aims to dispel two prevailing presumptions from previous literature: (i) the perceived difficulty in discerning the relationship between financial and macroeconomic indicators in EMDEs, and (ii) the belief that this relationship is weaker in EMDEs. Our findings suggest that financial markets play a useful role in signaling changes in

<sup>9</sup> For the full results, refer to Table 4, Panel A, and Tables A6-A7 in the Appendix.

macroeconomic variables in EMDEs as well.

### CRedit authorship contribution statement

**Rita Biswas:** Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Prakash Loungani:** Writing – review & editing, Visualization, Validation, Resources, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Zhongwen Liang:** Writing – review & editing, Visualization, Validation, Methodology, Formal analysis. **Michael Michaelides:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

### Declaration of competing interest

None.

### Data availability

Data will be made available on request.

### Additional tables

This Appendix includes additional tables for which there was not enough space in the paper.

**Table A1**

Annual FE panel forecasting models for additional economic indicators.

Panel A: Production, IP												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	2.015 (1.338)	1.559 (1.987)	1.295 (1.989)	2.301*** (0.621)	1.692 (0.857)	1.177 (1.000)	1.791** (0.552)	1.833* (0.641)	1.957* (0.794)	1.519** (0.524)	1.939*** (0.441)	1.778** (0.491)
Credit		6.167 (6.045)	4.954 (7.886)		2.932 (3.066)	2.589 (3.779)		-1.715 (2.931)	-2.315 (3.427)		-0.446 (1.508)	0.102 (1.816)
Exchange rate		-9.188** (2.957)	-15.493* (6.252)		-2.911 (3.589)	-5.939* (2.460)		-4.285** (1.329)	-6.219** (1.822)		-1.177 (1.573)	-3.688* (1.424)
Deposit rate			33.557 (19.364)			25.471 (19.730)			-9.717 (22.511)			-4.074 (15.465)
Lending rate			-6.252 (19.684)			3.472 (15.973)			9.148 (12.603)			11.163 (10.853)
Observations	369	301	234	349	281	218	326	258	200	302	234	181
Within R <sup>2</sup>	0.183	0.192	0.213	0.240	0.234	0.261	0.276	0.291	0.304	0.352	0.363	0.392
Stock prices	3.189 (2.646)	2.919 (3.779)	3.279 (4.267)	2.078** (0.685)	1.102 (0.744)	0.886 (1.107)	1.743* (0.644)	2.033* (0.725)	1.837 (0.883)	1.738* (0.644)	1.984** (0.601)	1.473* (0.622)
Credit		-2.771 (12.992)	-6.553 (17.543)		1.705 (4.455)	1.354 (7.359)		-4.856 (2.323)	-5.359 (2.973)		-2.428 (2.387)	-3.080 (3.254)
Exchange rate		-7.811* (3.149)	-9.210 (4.438)		-2.756 (1.973)	-1.977 (1.943)		-1.062 (2.235)	-1.588 (2.989)		-0.994 (1.491)	-1.635 (2.207)
Deposit rate			13.137 (22.061)			12.381 (10.545)			-13.389 (22.257)			-15.017 (12.303)
Lending rate			-2.948 (16.353)			15.442 (17.547)			22.710 (12.329)			20.525* (8.445)
Government consumption	25.374 (21.578)	32.159 (32.756)	39.050 (38.026)	2.053 (5.232)	-2.587 (6.334)	-0.528 (8.196)	5.707* (2.268)	5.129* (1.865)	3.876 (4.664)	1.801 (2.746)	0.627 (4.027)	2.099 (5.140)
Policy rate	-3.415 (4.671)	14.849 (15.651)	14.932 (22.427)	-3.445 (7.277)	14.787 (12.163)	0.320 (20.534)	-7.114 (5.138)	-11.733 (17.187)	-21.020 (15.295)	0.735 (3.289)	3.123 (7.223)	2.197 (12.503)
Democracy	-8.258 (4.935)	-6.507 (5.147)	-6.153 (7.332)	-3.115 (2.630)	-1.892 (2.160)	-0.642 (4.154)	-2.790 (3.652)	-2.127 (4.196)	-3.827 (4.033)	-3.816 (1.947)	-3.121 (1.742)	-3.006** (0.964)
Observations	273	238	191	257	222	178	238	203	163	219	184	148
Within R <sup>2</sup>	0.195	0.187	0.204	0.207	0.173	0.191	0.265	0.228	0.249	0.319	0.265	0.319
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Inflation, PPI												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	-0.887 (1.435)	-1.688 (1.441)	-0.607 (0.832)	-0.892 (1.286)	-0.129 (0.992)	0.479 (0.796)	-1.622 (1.242)	-0.512 (0.944)	-0.862 (0.600)	-1.503 (1.113)	-1.129 (0.603)	-1.151* (0.498)
Credit		-10.058* (4.170)	-9.906* (4.172)		-5.552 (3.497)	-6.858** (2.238)		-1.718 (2.379)	-3.387 (2.315)		-0.117 (2.131)	-1.593 (2.315)

(continued on next page)

Table A1 (continued)

Panel B: Inflation, PPI												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Exchange rate		-8.570 <sup>*</sup> (3.335)	7.144 <sup>*</sup> (2.673)		4.379 <sup>*</sup> (1.870)	13.892 <sup>***</sup> (1.654)		4.535 <sup>**</sup> (1.405)	9.817 <sup>***</sup> (1.442)		3.963 <sup>*</sup> (1.458)	7.883 <sup>***</sup> (1.340)
Deposit rate			-90.927 <sup>***</sup> (22.654)			-67.846 <sup>**</sup> (22.216)			-46.148 <sup>*</sup> (18.163)			-32.571 (15.573)
Lending rate			31.112 (18.649)			18.538 (15.806)			11.055 (11.263)			3.431 (7.641)
Observations	420	331	247	401	312	232	379	290	216	357	268	200
Within R <sup>2</sup>	0.335	0.403	0.591	0.336	0.378	0.623	0.348	0.408	0.605	0.366	0.475	0.635
Stock prices	-1.063 (1.725)	-2.238 (1.172)	-1.290 (0.981)	-0.694 (1.446)	-0.558 (0.881)	-0.522 (0.892)	-1.210 (1.383)	-0.363 (0.721)	-1.296 <sup>**</sup> (0.409)	-1.152 (1.318)	-1.062 <sup>*</sup> (0.378)	-1.206 <sup>**</sup> (0.352)
Credit		-2.661 (3.374)	1.213 (4.418)		0.524 (2.580)	2.422 (3.929)		1.808 (1.332)	2.265 (3.432)		1.088 (1.568)	2.585 (2.502)
Exchange rate		-6.098 (3.023)	2.638 (2.323)		6.156 <sup>**</sup> (1.784)	8.682 <sup>***</sup> (1.246)		6.603 <sup>***</sup> (1.346)	5.055 <sup>***</sup> (1.041)		5.496 <sup>**</sup> (1.346)	4.821 <sup>***</sup> (0.947)
Deposit rate			-76.335 <sup>**</sup> (24.896)			-60.597 (29.066)			-44.996 (27.127)			-37.208 (23.673)
Lending rate			30.431 (30.885)			21.403 (25.013)			12.470 (16.578)			8.340 (10.559)
Government consumption	-26.172 <sup>*</sup> (11.444)	-17.885 <sup>*</sup> (8.004)	-17.422 (8.471)	-12.054 (9.270)	-10.039 <sup>*</sup> (3.716)	-15.381 <sup>*</sup> (5.953)	-8.959 (8.618)	-5.795 <sup>*</sup> (2.403)	-9.457 (5.480)	-6.309 (7.817)	-1.145 (1.650)	-7.126 (4.440)
Policy rate	-29.144 (20.088)	-38.364 <sup>*</sup> (17.351)	11.320 (20.607)	-15.552 (17.654)	-30.472 <sup>*</sup> (11.499)	8.946 (10.125)	-11.646 (17.122)	-28.302 <sup>*</sup> (10.171)	11.826 (12.271)	-13.295 (15.991)	-23.941 <sup>*</sup> (8.052)	5.641 (13.313)
Democracy	0.049 (4.185)	-0.575 (2.029)	-0.944 (1.741)	-2.589 (3.167)	-1.691 (1.736)	-1.364 (1.199)	-2.333 (3.534)	-1.791 (1.931)	-0.376 (1.389)	-3.605 (4.113)	-1.405 (1.155)	-0.922 (1.314)
Observations	327	277	213	311	261	201	293	243	188	275	225	175
Within R <sup>2</sup>	0.484	0.504	0.621	0.470	0.515	0.694	0.489	0.572	0.711	0.506	0.619	0.748
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A2

Quarterly FE panel forecasting models for additional economic indicators.

Panel A: Production, IP												
	Nowcasting			1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast		
Stock prices	1.600 (6.769)	0.681 (8.448)	2.902 (9.788)	6.251 (4.488)	3.884 (5.685)	4.956 (6.501)	5.549 (4.228)	3.436 (5.511)	3.582 (6.386)	3.760 (2.610)	2.157 (3.484)	1.803 (3.716)
Credit		-4.045 (14.830)	-14.746 (22.640)		10.233 (14.486)	5.724 (21.130)		13.200 (9.611)	13.825 (13.787)		10.081 (6.953)	10.009 (8.783)
Exchange rate		-5.889 (16.626)	-9.391 (18.659)		1.494 (13.322)	5.825 (15.123)		-7.324 (9.229)	-7.565 (9.827)		-4.001 (6.869)	-2.041 (7.349)
Deposit rate			-7.115 (34.741)			0.301 (26.210)			-4.143 (31.010)			-23.698 (28.857)
Lending rate			-4.801 (15.423)			-3.026 (12.371)			2.468 (14.775)			15.000 (14.762)
Observations	983	818	671	974	809	664	963	798	655	940	775	637
Within R <sup>2</sup>	0.221	0.207	0.210	0.295	0.288	0.286	0.333	0.333	0.332	0.357	0.362	0.365
Stock prices	-8.360 (12.411)	-9.633 (14.489)	-9.147 (17.908)	-2.249 (8.035)	-3.745 (14.486)	-3.173 (11.479)	-0.087 (7.297)	-1.424 (8.795)	-3.037 (11.265)	1.843 (3.991)	1.357 (4.674)	0.011 (5.502)
Credit		-10.350 (20.096)	-27.359 (38.409)		4.336 (15.319)	-3.342 (31.471)		7.961 (11.241)	10.261 (19.231)		7.315 (8.627)	10.025 (9.448)
Exchange rate		17.561 (17.552)	15.919 (23.611)		14.660 (14.942)	23.974 (18.742)		1.720 (9.264)	1.610 (10.917)		4.074 (7.123)	7.633 (9.066)
Deposit rate			-10.047 (56.837)			8.067 (42.640)			16.356 (43.561)			-7.185 (30.007)
Lending rate			19.052 (20.183)			13.540 (18.752)			18.464 (18.945)			26.952 (18.545)
Government consumption	6.740 (12.603)	11.884 (10.294)	7.745 (13.113)	5.764 (7.282)	7.845 (6.219)	8.415 (5.115)	1.885 (5.011)	2.224 (4.358)	0.496 (5.115)	0.357 (3.147)	1.185 (3.010)	-1.346 (3.792)
Policy rate	-9.937 <sup>*</sup> (4.401)	-12.192 (14.029)	-24.760 (50.350)	-14.651 <sup>***</sup> (3.953)	-10.033 (10.060)	-24.342 (43.934)	-13.044 <sup>**</sup> (3.913)	-10.676 (7.992)	-39.801 (32.263)	-9.170 <sup>***</sup> (2.603)	-7.177 (7.394)	-26.181 (27.501)
Observations	688	604	457	683	599	454	676	592	449	661	577	439
Within R <sup>2</sup>	0.262	0.220	0.227	0.322	0.277	0.278	0.353	0.305	0.304	0.384	0.340	0.355
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Inflation, PPI

	Nowcasting			1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast		
Stock prices	-1.997 (2.731)	-4.329 <sup>*</sup> (1.700)	-0.677 (1.924)	-3.309 (2.685)	-2.183 (1.475)	1.112 (1.883)	-4.262 (2.625)	-2.546 (1.463)	0.198 (1.802)	-4.653 (2.594)	-1.867 (1.485)	0.148 (1.944)
Credit		-41.765 <sup>***</sup> (9.404)	-41.698 <sup>**</sup> (13.317)		-31.213 <sup>***</sup> (8.932)	-33.634 <sup>**</sup> (11.721)		-25.040 <sup>**</sup> (8.556)	-25.729 <sup>*</sup> (10.533)		-18.808 <sup>**</sup> (7.041)	-17.528 <sup>**</sup> (8.104)

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Table A2 (continued)

Panel B: Inflation, PPI												
	Nowcasting		1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast			
Exchange rate	18.113 <sup>*</sup> (8.288)	17.874 <sup>*</sup> (7.171)	39.218 <sup>***</sup> (6.511)	38.955 <sup>***</sup> (6.296)	33.138 <sup>***</sup> (6.541)	34.149 <sup>***</sup> (7.441)	26.007 <sup>***</sup> (5.490)	25.240 <sup>***</sup> (5.927)				
Deposit rate		-42.306 <sup>*</sup> (20.192)		-34.284 (17.648)		-17.152 (18.277)		4.702 (17.127)				
Lending rate		12.785 (15.674)		9.352 (13.642)		0.685 (11.968)		-8.466 (9.175)				
Observations	1235	952	819	1223	940	809	1209	926	797	1181	898	773
Within R <sup>2</sup>	0.324	0.381	0.374	0.346	0.445	0.438	0.349	0.448	0.449	0.354	0.435	0.442
Stock prices	0.472 (3.679)	-6.414 (3.975)	-1.715 (3.607)	-1.695 (3.354)	-3.934 (3.211)	-0.271 (2.939)	-2.844 (2.962)	-4.464 (2.787)	-1.390 (2.403)	-3.510 (2.982)	-3.411 (2.535)	-1.168 (2.356)
Credit		-34.229 <sup>**</sup> (11.087)	-22.676 (13.936)	-18.951 (9.566)	-10.643 (10.655)	-13.943 (9.063)	-2.272 (7.469)	-9.721 (7.844)	4.323 (6.233)			
Exchange rate	21.193 <sup>*</sup> (9.474)	24.223 <sup>**</sup> (8.116)	38.021 <sup>***</sup> (7.613)	38.877 <sup>***</sup> (7.144)	30.831 <sup>***</sup> (6.471)	32.529 <sup>***</sup> (6.430)	21.708 <sup>***</sup> (4.897)	20.856 <sup>***</sup> (3.806)				
Deposit rate		-66.839 <sup>*</sup> (29.793)		-55.953 <sup>*</sup> (25.495)		-31.427 (24.455)		-8.297 (20.942)				
Lending rate		17.274 (21.518)		16.393 (20.343)		11.460 (19.168)		1.050 (14.994)				
Government consumption	-13.543 (11.093)	-4.174 (5.059)	-1.631 (5.236)	-6.279 (8.306)	-2.018 (3.178)	-0.144 (3.193)	-6.235 (7.013)	-2.617 (2.722)	-0.578 (2.790)	-5.945 (6.011)	-2.013 (2.107)	-1.489 (1.172)
Policy rate	25.620 <sup>**</sup> (9.705)	18.273 (15.658)	15.089 (34.053)	35.953 <sup>***</sup> (8.092)	15.032 (12.918)	11.836 (27.572)	36.320 <sup>***</sup> (7.996)	10.561 (11.165)	-5.140 (30.397)	33.176 <sup>***</sup> (8.248)	5.629 (8.969)	-10.464 (27.359)
Observations	861	727	631	852	718	624	841	707	615	819	685	597
Within R <sup>2</sup>	0.506	0.432	0.456	0.592	0.516	0.544	0.622	0.530	0.577	0.644	0.528	0.598
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table A3**

Monthly FE panel forecasting models for additional economic indicators.

Panel A: Inflation, PPI												
	Nowcasting			1-month-ahead forecast			2-month-ahead forecast			3-month-ahead forecast		
Stock prices	-2.173 (5.492)	-5.435 (4.526)	-4.477 (4.955)	-2.788 (4.839)	-2.698 (4.345)	0.603 (5.701)	-2.941 (4.974)	-1.416 (4.098)	0.981 (5.414)	-2.702 (4.371)	-1.378 (3.959)	0.395 (5.173)
Credit		-66.015** (22.386)	-87.104** (27.004)		-33.150 (17.036)	-60.522** (21.038)		-28.665* (14.522)	-50.503** (17.870)		-24.167 (13.910)	-45.233** (17.215)
Exchange rate		45.414*** (9.788)	43.198*** (11.817)		69.980*** (9.386)	62.527*** (9.572)		66.664*** (7.798)	62.935*** (8.162)		56.929*** (7.625)	55.276*** (7.639)
Deposit rate			-17.019 (26.599)			-15.367 (24.976)			-10.397 (22.857)			-5.843 (21.290)
Lending rate			-0.163 (15.657)			1.677 (14.739)			-0.148 (13.374)			-2.531 (12.338)
Observations	5125	3967	3124	5102	3944	3106	5079	3921	3088	5056	3898	3070
Within R <sup>2</sup>	0.228	0.247	0.273	0.272	0.320	0.346	0.292	0.352	0.383	0.307	0.368	0.403
Stock prices	2.698 (5.878)	-4.645 (6.094)	0.544 (5.950)	2.136 (4.476)	-2.266 (4.466)	5.266 (6.317)	0.692 (4.434)	-2.394 (3.833)	3.613 (5.726)	0.858 (4.087)	-2.049 (3.609)	2.570 (5.303)
Credit		-37.561 (21.609)	-44.404 (24.459)		3.120 (13.477)	-9.421 (18.373)		1.613 (12.207)	-4.955 (15.844)		5.181 (11.635)	-0.338 (14.243)
Exchange rate		56.015*** (11.783)	55.684*** (13.291)		76.993*** (10.458)	67.473*** (10.294)		70.101*** (8.584)	63.495*** (9.334)		58.696*** (7.412)	53.991*** (7.678)
Deposit rate			-27.401 (21.044)			-21.817 (18.636)			-19.870 (16.832)			-17.178 (16.541)
Lending rate			5.360 (20.299)			6.508 (19.515)			7.593 (18.583)			7.218 (18.131)
Policy rate	40.551** (13.722)	10.539 (10.632)	3.099 (22.186)	45.995*** (12.257)	12.085 (9.753)	-0.060 (21.773)	46.696*** (10.150)	9.796 (9.382)	-4.196 (21.098)	44.733*** (9.331)	7.874 (9.155)	-7.402 (20.809)
Observations	3819	3211	2574	3801	3193	2560	3783	3175	2546	3765	3157	2532
Within R <sup>2</sup>	0.359	0.283	0.310	0.447	0.373	0.397	0.497	0.411	0.442	0.518	0.429	0.468
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table A4**  
Annual FE panel forecasting models for GDP components.

Panel A: Consumption												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	1.196 (0.986)	0.550 (0.579)	0.818 (0.490)	1.265* (0.556)	0.772 (0.652)	0.904 (0.633)	1.021* (0.476)	1.072 (0.607)	1.474* (0.553)	1.161* (0.431)	1.584** (0.503)	1.877*** (0.492)
Credit		14.362*** (2.328)	13.357*** (1.768)		9.299*** (1.816)	10.108*** (1.848)		4.432** (1.480)	5.580* (2.082)		1.148 (1.279)	1.941 (1.881)
Exchange rate		-7.350** (2.439)	-7.795*** (1.241)		-4.760** (1.295)	-7.099*** (1.129)		-3.812*** (0.730)	-4.215*** (0.730)		-3.312*** (0.753)	-3.797*** (1.018)
Deposit rate			27.419** (7.832)			29.585*** (4.075)			11.861 (8.908)			10.616 (9.226)
Lending rate			-17.087 (10.382)			-17.431* (6.408)			-14.183* (6.444)			-11.603 (6.438)
Observations	843	669	537	797	626	504	751	582	468	705	537	431
Within R <sup>2</sup>	0.088	0.204	0.211	0.101	0.197	0.219	0.108	0.179	0.181	0.122	0.191	0.177
Stock prices	1.334 (0.818)	0.644 (0.618)	0.849 (0.645)	0.621 (0.551)	0.265 (0.557)	0.359 (0.539)	0.538 (0.361)	0.619 (0.426)	1.013** (0.328)	0.780* (0.302)	1.014*** (0.264)	1.133*** (0.240)
Credit		13.280*** (1.878)	13.409*** (1.273)		10.203*** (1.335)	12.066*** (1.692)		6.272*** (1.511)	8.024*** (1.842)		2.339* (0.962)	3.695** (1.300)
Exchange rate		-8.087** (2.534)	-6.428*** (1.594)		-4.425** (1.297)	-5.429*** (1.387)		-2.889** (0.967)	-2.733** (0.945)		-2.995*** (0.727)	-3.177** (1.008)
Deposit rate			-5.714 (10.975)			-3.909 (10.214)			-7.580 (7.225)			-8.219 (5.039)
Lending rate			1.803 (13.502)			4.564 (8.622)			7.257 (6.329)			9.316 (4.730)
Government consumption	10.325** (3.357)	3.906 (4.361)	0.566 (3.966)	6.312* (2.580)	2.879 (3.495)	1.001 (3.705)	3.971* (1.896)	3.071 (2.147)	1.558 (2.114)	2.245 (1.411)	2.327 (1.262)	1.245 (1.416)
Policy rate	13.167* (5.414)	14.837* (6.601)	6.925 (11.132)	1.213 (2.402)	6.411* (2.973)	5.920 (9.442)	-1.997 (1.482)	-6.911* (3.275)	-9.435 (5.824)	-0.308 (0.828)	-1.667 (2.035)	-3.668 (4.370)
Democracy	-1.347 (1.489)	-0.444 (1.917)	0.730 (2.029)	0.391 (1.010)	-0.709 (1.010)	-0.371 (1.200)	0.611 (0.731)	0.184 (1.076)	0.265 (1.148)	0.434 (0.649)	-0.123 (0.711)	0.147 (0.786)
Observations	635	544	454	599	510	427	562	474	397	525	437	366
Within R <sup>2</sup>	0.168	0.250	0.231	0.156	0.263	0.279	0.174	0.263	0.300	0.188	0.250	0.261
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Investment												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	2.515 (2.032)	0.822 (1.412)	0.980 (2.058)	4.732*** (1.175)	3.194* (1.294)	2.438 (1.492)	4.366*** (1.019)	3.714** (1.067)	3.617** (1.207)	4.218*** (0.722)	4.287*** (0.632)	4.353*** (0.600)
Credit		32.192*** (6.450)	32.180*** (8.665)		19.734*** (3.172)	21.732*** (3.912)		9.496** (3.374)	12.139* (4.581)		3.642 (3.559)	5.889 (5.175)
Exchange rate		-5.464 (3.563)	-2.188 (4.481)		-2.422 (2.135)	-3.416 (3.502)		-0.419 (1.959)	-1.124 (2.822)		-1.687 (2.013)	-3.253 (2.786)
Deposit rate			-21.899 (37.197)			-18.575 (20.016)			-36.684 (21.552)			-36.607* (15.043)
Lending rate			0.740 (29.151)			23.215 (14.435)			33.578* (13.487)			33.448** (9.694)
Observations	843	669	537	797	626	504	751	582	468	705	537	431
Within R <sup>2</sup>	0.135	0.229	0.213	0.209	0.284	0.250	0.243	0.287	0.254	0.289	0.315	0.279
Stock prices	3.218 (2.411)	0.255 (2.337)	1.327 (3.176)	5.119*** (1.346)	3.351* (1.450)	3.098 (1.641)	5.161*** (1.091)	4.283*** (1.013)	4.406** (1.243)	5.113*** (0.764)	4.787*** (0.703)	4.631*** (0.849)
Credit		37.506*** (7.430)	36.296*** (7.492)		20.716*** (5.300)	23.815*** (3.776)		10.460* (4.210)	14.863** (4.484)		3.357 (2.591)	7.533* (3.644)

(continued on next page)



Table A4 (continued)

Panel B: Investment												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Exchange rate		-5.594 (4.602)	-2.503 (2.979)	-3.240 (2.487)	-5.679 (3.403)	-0.275 (1.318)	-2.488 (2.484)	-0.339 (1.609)	-3.131 (2.775)			
Deposit rate			-19.694 (40.257)		-8.703 (21.413)		-21.685 (15.976)		-22.517 (15.632)			
Lending rate			13.040 (30.406)		18.786 (22.424)		29.280 (20.246)		37.271 <sup>+</sup> (14.952)			
Government consumption	18.283 <sup>*</sup> (8.638)	-2.916 (8.205)	5.225 (8.755)	15.777 <sup>***</sup> (3.644)	4.528 (2.423)	8.299 <sup>+</sup> (3.173)	6.251 (3.380)	0.904 (4.130)	4.518 (2.218)	5.083 (2.934)	2.868 (3.771)	6.668 <sup>+</sup> (3.193)
Policy rate	18.575 <sup>**</sup> (6.122)	-6.731 (18.118)	-16.113 (18.127)	3.804 (3.444)	5.421 (5.296)	4.549 (15.944)	0.849 (2.905)	-2.930 (7.623)	-3.680 (15.361)	-1.081 (2.384)	-3.579 (7.395)	-10.149 (16.448)
Democracy	-4.800 (2.923)	-2.927 (2.888)	-1.790 (2.906)	-4.559 (2.767)	-3.628 (2.284)	-2.130 (2.559)	-3.275 (1.757)	-0.464 (1.086)	-0.616 (1.527)	-2.731 <sup>+</sup> (1.156)	-0.221 (1.143)	0.037 (1.170)
Observations	635	544	454	599	510	427	562	474	397	525	437	366
Within R <sup>2</sup>	0.178	0.239	0.240	0.243	0.282	0.285	0.272	0.280	0.294	0.316	0.293	0.293
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Exports												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	-0.318 (1.591)	1.902 (1.748)	0.903 (1.529)	-0.035 (1.125)	1.713 (0.867)	1.965 <sup>+</sup> (0.831)	0.207 (0.832)	1.332 (0.848)	0.812 (0.882)	-0.005 (0.650)	0.666 (0.597)	0.613 (0.609)
Credit		-7.753 <sup>*</sup> (3.535)	-1.837 (4.181)		-1.387 (1.591)	-0.106 (1.583)		-1.384 (1.809)	-0.744 (2.386)		0.707 (1.444)	1.075 (1.651)
Exchange rate		18.025 (11.505)	7.918 (4.615)		19.200 <sup>***</sup> (4.327)	16.882 <sup>***</sup> (1.587)		13.497 <sup>***</sup> (3.033)	10.499 <sup>***</sup> (1.601)		10.631 <sup>**</sup> (3.008)	6.454 <sup>**</sup> (1.775)
Deposit rate			12.004 (27.600)		5.105 (23.628)		15.987 (25.067)		29.360 (17.616)			
Lending rate			-6.569 (20.499)		-6.053 (16.631)		-8.272 (18.414)		-23.447 (14.693)			
Observations	840	666	534	794	623	501	748	579	465	702	534	428
Within R <sup>2</sup>	0.207	0.347	0.358	0.233	0.429	0.424	0.214	0.413	0.367	0.229	0.417	0.355
Stock prices	1.106 (1.283)	2.213 (1.446)	1.406 (1.355)	2.068 <sup>*</sup> (0.890)	3.426 <sup>***</sup> (0.839)	3.600 <sup>***</sup> (0.583)	1.337 (0.931)	1.927 <sup>*</sup> (0.842)	1.320 (0.696)	0.735 (0.695)	1.205 <sup>*</sup> (0.518)	1.050 (0.580)
Credit		-9.738 (5.944)	-2.403 (4.831)		-1.624 (2.605)	0.726 (2.409)		-1.116 (2.802)	0.048 (2.886)		1.523 (2.117)	3.204 (2.070)
Exchange rate		19.623 (11.080)	6.292 (5.038)		21.276 <sup>***</sup> (3.430)	18.237 <sup>***</sup> (1.867)		14.495 <sup>***</sup> (2.883)	11.520 <sup>***</sup> (2.437)		12.152 <sup>***</sup> (2.139)	8.109 <sup>***</sup> (1.351)
Deposit rate			17.190 (32.892)		11.360 (34.449)		23.535 (27.663)		37.380 (18.454)			
Lending rate			-14.903 (25.733)		-4.599 (21.060)		-1.709 (22.798)		-9.376 (17.659)			
Government consumption	-7.582 (8.584)	-2.421 (6.141)	-0.153 (5.312)	-4.875 (4.247)	-0.598 (2.886)	-2.164 (3.613)	-6.627 (4.377)	-4.507 (5.026)	-6.240 (5.183)	-3.137 (3.525)	-2.621 (3.529)	-3.831 (4.312)
Policy rate	3.802 (9.419)	-33.405 <sup>†</sup> (14.845)	-7.290 (16.927)	11.907 <sup>*</sup> (5.621)	-26.790 <sup>***</sup> (5.919)	-23.358 (16.189)	7.705 (4.938)	-19.027 <sup>***</sup> (4.867)	-27.306 <sup>+</sup> (12.915)	4.974 (4.665)	-20.813 <sup>***</sup> (3.738)	-34.353 <sup>**</sup> (12.069)
Democracy	0.327 (2.083)	-1.479 (1.810)	0.570 (1.874)	1.606 (1.464)	0.118 (1.868)	0.944 (2.068)	2.107 (1.520)	1.071 (1.795)	2.631 (1.908)	1.720 (1.706)	0.050 (1.726)	0.340 (1.534)
Observations	632	541	451	596	507	424	559	471	394	522	434	363
Within R <sup>2</sup>	0.310	0.380	0.362	0.348	0.455	0.428	0.326	0.402	0.365	0.309	0.383	0.349
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D: Imports												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	1.744 (2.766)	0.976 (1.557)	0.767 (1.754)	2.065 <sup>*</sup> (0.999)	2.146 (1.143)	2.046 (1.366)	1.877 <sup>*</sup> (0.741)	2.043 <sup>**</sup> (0.729)	1.836 <sup>*</sup> (0.801)	1.878 <sup>**</sup> (0.586)	2.357 <sup>***</sup> (0.586)	2.196 <sup>***</sup> (0.496)
Credit		16.548 <sup>**</sup> (5.857)	18.011 <sup>**</sup> (5.681)		11.328 <sup>***</sup> (2.326)	13.026 <sup>***</sup> (2.474)		4.812 <sup>**</sup> (1.319)	7.119 <sup>*</sup> (2.774)		2.667 <sup>*</sup> (1.276)	4.593 (2.524)
Exchange rate		6.311 (4.980)	4.840 (3.639)		12.065 <sup>***</sup> (1.980)	11.056 <sup>***</sup> (2.214)		7.730 <sup>***</sup> (1.490)	6.189 <sup>**</sup> (1.773)		4.469 <sup>**</sup> (1.574)	1.428 (1.750)
Deposit rate			1.211 (26.529)			20.033 (15.141)			13.801 (22.114)			21.134 (21.030)
Lending rate			-24.651 (14.333)			-19.830 (14.073)			-19.541 (14.951)			-24.059 (17.866)
Observations	840	666	534	794	623	501	748	579	465	702	534	428
Within R <sup>2</sup>	0.244	0.401	0.395	0.308	0.438	0.417	0.293	0.403	0.366	0.306	0.396	0.352
Stock prices	3.993 (3.041)	1.893 (1.901)	1.878 (1.978)	2.861 <sup>*</sup> (1.085)	2.731 <sup>*</sup> (1.121)	2.759 <sup>*</sup> (1.255)	2.376 <sup>**</sup> (0.678)	1.948 <sup>*</sup> (0.777)	1.963 <sup>*</sup> (0.726)	2.381 <sup>***</sup> (0.551)	2.451 <sup>***</sup> (0.430)	2.338 <sup>***</sup> (0.583)
Credit		16.041 (7.899)	17.831 <sup>*</sup> (7.707)		12.829 <sup>***</sup> (3.177)	16.065 <sup>***</sup> (2.041)		7.233 <sup>**</sup> (2.128)	10.852 <sup>**</sup> (2.985)		4.560 <sup>**</sup> (1.351)	7.505 <sup>***</sup> (2.005)
Exchange rate		8.187 (4.959)	4.440 (5.052)		13.054 <sup>***</sup> (2.498)	10.078 <sup>**</sup> (3.445)		8.960 <sup>***</sup> (1.223)	5.788 (2.818)		6.251 <sup>***</sup> (0.799)	2.153 (1.751)
Deposit rate			5.667 (25.066)			26.099 (14.916)			36.653 <sup>*</sup> (17.024)			36.537 <sup>*</sup> (17.626)
Lending rate			-25.059 (25.615)			-14.125 (18.329)			-10.140 (18.621)			-6.888 (16.998)
Government consumption	24.398 <sup>**</sup> (6.723)	15.183 <sup>**</sup> (4.288)	13.519 <sup>*</sup> (4.964)	13.344 <sup>*</sup> (6.442)	13.328 <sup>*</sup> (6.345)	13.643 <sup>*</sup> (6.524)	1.411 (3.869)	2.699 (3.047)	1.875 (2.926)	2.507 (2.969)	3.144 (2.837)	3.390 (3.090)
Policy rate	23.878 <sup>*</sup> (9.880)	-29.598 <sup>*</sup> (14.312)	-24.177 (26.165)	8.061 (5.395)	-12.579 (9.980)	-16.989 (22.840)	2.319 (4.567)	-23.206 <sup>***</sup> (6.144)	-41.304 (21.002)	2.265 (3.934)	-17.726 <sup>**</sup> (5.946)	-37.320 <sup>*</sup> (13.645)
Democracy	-2.909 (3.252)	1.301 (2.786)	5.389 <sup>*</sup> (2.335)	1.400 (1.709)	-0.281 (1.817)	1.694 (1.954)	2.002 (1.658)	1.944 (1.339)	3.755 <sup>*</sup> (1.423)	1.552 (1.325)	1.506 (1.626)	1.768 (1.680)
Observations	632	541	451	596	507	424	559	471	394	522	434	363
Within R <sup>2</sup>	0.358	0.438	0.450	0.399	0.484	0.473	0.375	0.445	0.427	0.369	0.416	0.392
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table A5**  
Quarterly FE panel forecasting models for GDP components.

Panel A: Consumption												
	Nowcasting		1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast			
Stock prices	7.841 (7.050)	5.746 <sup>*</sup> (2.675)	4.177 (2.877)	2.393 (3.243)	1.053 (2.203)	0.113 (2.465)	4.404 (2.358)	1.452 (1.848)	1.358 (2.163)	4.635 <sup>*</sup> (1.858)	3.017 (1.543)	2.890 (1.883)
Credit		82.794 <sup>***</sup> (20.857)	104.234 <sup>***</sup> (14.735)		44.008 <sup>***</sup> (11.448)	55.231 <sup>***</sup> (8.145)		35.498 <sup>***</sup> (7.434)	44.797 <sup>***</sup> (6.262)		22.802 <sup>***</sup> (4.459)	33.557 <sup>***</sup> (4.010)
Exchange rate		-11.314 (7.697)	0.838 (6.907)		-29.224 <sup>***</sup> (5.998)	-16.805 <sup>***</sup> (4.793)		-21.546 <sup>***</sup> (3.710)	-14.829 <sup>**</sup> (4.835)		-15.691 <sup>***</sup> (2.579)	-12.961 <sup>***</sup> (3.518)
Deposit rate			92.917 <sup>***</sup> (22.007)			11.605 (14.190)			-7.891 (12.042)			-26.085 <sup>**</sup> (9.326)
Lending rate			-16.422 (10.513)			-0.604 (7.413)			3.316 (6.858)			9.904 (5.977)
Observations	1793	1391	1169	1770	1370	1151	1747	1349	1133	1702	1308	1098
Within R <sup>2</sup>	0.092	0.279	0.295	0.100	0.267	0.190	0.114	0.296	0.213	0.135	0.311	0.262
Stock prices	10.532 (5.885)	8.004 <sup>**</sup> (2.464)	8.473 <sup>**</sup> (2.481)	4.101 (3.196)	2.275 (2.636)	1.218 (3.107)	5.374 <sup>*</sup> (2.430)	2.241 (1.581)	2.172 (1.706)	4.892 <sup>**</sup> (1.805)	2.705 <sup>*</sup> (1.306)	2.594 <sup>*</sup> (1.278)
Credit		97.113 <sup>***</sup> (14.901)	120.928 <sup>***</sup> (16.775)		57.264 <sup>***</sup> (6.986)	63.680 <sup>***</sup> (8.669)		43.119 <sup>***</sup> (5.634)	51.005 <sup>***</sup> (7.362)		26.218 <sup>***</sup> (4.989)	35.291 <sup>***</sup> (4.355)
Exchange rate		-5.625 (8.195)	6.107 (6.246)		-21.081 <sup>**</sup> (6.737)	-10.116 <sup>**</sup> (3.734)		-15.193 <sup>***</sup> (3.796)	-9.969 <sup>**</sup> (3.345)		-9.745 <sup>***</sup> (2.549)	-6.798 <sup>*</sup> (2.575)
Deposit rate			71.854 <sup>*</sup> (27.371)			-5.105 (18.020)			-22.234 (17.303)			-42.569 <sup>**</sup> (12.425)
Lending rate			-31.520 <sup>*</sup> (11.974)			-0.952 (10.249)			5.050 (11.140)			12.842 (8.296)
Government consumption	24.751 <sup>**</sup> (8.523)	9.498 <sup>*</sup> (3.591)	4.483 (2.519)	6.784 <sup>**</sup> (2.542)	4.386 <sup>**</sup> (1.505)	2.665 <sup>*</sup> (1.265)	5.416 <sup>***</sup> (1.539)	2.612 <sup>**</sup> (0.920)	1.911 <sup>*</sup> (0.867)	3.621 <sup>***</sup> (1.005)	1.785 <sup>**</sup> (0.576)	1.519 <sup>*</sup> (0.619)
Policy rate	13.857 <sup>†</sup> (5.889)	-16.843 (10.587)	35.840 (4.200)	-2.400 (4.200)	-18.379 <sup>***</sup> (4.426)	9.678 (12.728)	-0.709 (2.158)	-12.273 <sup>**</sup> (3.657)	6.876 (12.237)	-0.356 (1.356)	-7.963 <sup>*</sup> (3.731)	11.021 (10.076)
Observations	1380	1145	958	1360	1127	943	1340	1109	928	1301	1074	899
Within R <sup>2</sup>	0.186	0.240	0.329	0.134	0.218	0.194	0.145	0.226	0.217	0.163	0.230	0.250
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Investment												
	Nowcasting		1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast			
Stock prices	3.333 (9.723)	0.108 (6.506)	5.991 (6.226)	3.700 (8.437)	5.983 (5.575)	10.120 (5.621)	13.606 <sup>*</sup> (6.096)	11.989 (6.308)	14.974 <sup>*</sup> (7.204)	14.273 <sup>**</sup> (5.034)	13.811 <sup>*</sup> (5.337)	16.083 <sup>**</sup> (5.858)
Credit		45.378 (34.146)	109.248 <sup>***</sup> (23.571)		42.264 <sup>*</sup> (16.647)	75.673 <sup>***</sup> (16.860)		27.331 <sup>*</sup> (13.461)	55.165 <sup>***</sup> (12.832)		11.724 (10.562)	32.139 <sup>*</sup> (13.511)
Exchange rate		-34.834 <sup>*</sup> (15.418)	-10.432 (21.297)		-44.424 <sup>***</sup> (10.682)	-29.804 (15.558)		-29.297 <sup>***</sup> (7.587)	-21.047 <sup>*</sup> (8.754)		-18.539 <sup>*</sup> (7.533)	-14.892 <sup>*</sup> (7.436)
Deposit rate			-17.343 (43.018)			-64.476 (34.727)			-83.945 <sup>†</sup> (36.352)			-107.758 <sup>**</sup> (32.451)
Lending rate			2.702 (23.740)			13.617 (20.750)			24.376 (19.769)			42.543 <sup>†</sup> (19.049)
Observations	1733	1331	1109	1711	1311	1092	1689	1291	1075	1646	1252	1042
Within R <sup>2</sup>	0.135	0.150	0.162	0.200	0.248	0.242	0.248	0.298	0.293	0.295	0.344	0.346
Stock prices	-0.191 (12.042)	-0.738 (7.718)	3.588 (8.836)	5.296 (6.661)	5.167 (5.145)	8.758 (5.745)	15.872 <sup>**</sup> (5.607)	11.294 <sup>*</sup> (5.223)	13.596 <sup>*</sup> (5.962)	16.766 <sup>***</sup> (4.790)	15.563 <sup>***</sup> (4.252)	17.419 <sup>***</sup> (4.772)
Credit		104.363 <sup>***</sup> (28.810)	149.471 <sup>***</sup> (30.072)		80.934 <sup>**</sup> (26.472)	113.582 <sup>***</sup> (22.949)		51.425 <sup>*</sup> (24.019)	79.272 <sup>***</sup> (20.163)		25.729 (20.650)	47.132 <sup>**</sup> (17.602)
Exchange rate		-5.288 (13.238)	9.130 (17.556)		-25.851 <sup>**</sup> (8.339)	-13.838 (11.978)		-13.838 (7.055)	-7.529 (7.873)		-8.641 (7.101)	-4.882 (6.813)

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Table A5 (continued)

Panel B: Investment												
	Nowcasting			1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast		
Deposit rate			-25.326 (55.440)			-73.333 (42.735)			-90.665 (46.348)			-113.854** (37.663)
Lending rate			11.805 (33.264)			27.472 (26.657)			41.379 (25.435)			60.046* (23.538)
Government consumption	25.881 (15.096)	0.256 (8.398)	-5.384 (8.563)	11.653* (5.292)	3.934 (2.544)	3.401 (2.764)	10.593* (4.647)	2.195 (2.467)	2.623 (2.523)	4.943 (3.210)	-0.410 (1.217)	0.769 (1.975)
Policy rate	-5.031 (9.672)	-72.611** (21.554)	-32.652 (31.616)	-16.169*** (3.600)	-43.259** (15.800)	-41.976 (26.395)	-11.355*** (3.239)	-30.040 (15.176)	-40.968 (26.132)	-9.121*** (2.280)	-19.190 (13.322)	-37.014 (24.982)
Observations	1341	1106	919	1322	1089	905	1303	1072	891	1266	1039	864
Within R <sup>2</sup>	0.161	0.157	0.164	0.228	0.225	0.234	0.257	0.253	0.277	0.307	0.288	0.331
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Exports												
	Nowcasting			1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast		
Stock prices	-16.193 (18.228)	0.843 (8.620)	8.286 (8.618)	-12.254 (9.324)	-1.485 (4.999)	4.678 (4.390)	-8.295 (5.881)	0.732 (5.667)	6.144 (5.333)	-4.250 (3.515)	-0.138 (3.372)	4.050 (3.095)
Credit		-94.120** (31.521)	-0.438 (25.699)		-79.225*** (22.040)	-11.241 (18.797)		-51.894** (17.313)	5.819 (15.167)		-20.989 (11.522)	15.143 (9.505)
Exchange rate		142.640*** (21.409)	128.944*** (13.843)		117.300*** (19.076)	119.318*** (15.655)		75.097*** (16.087)	75.814*** (13.989)		41.910*** (8.980)	38.937*** (7.760)
Deposit rate			-7.680 (44.979)			-31.988 (36.749)			-31.962 (30.877)			-10.061 (22.987)
Lending rate			-2.568 (36.487)			0.010 (28.389)			3.971 (25.129)			-1.069 (18.148)
Observations	1793	1391	1169	1770	1370	1151	1747	1349	1133	1702	1308	1098
Within R <sup>2</sup>	0.192	0.348	0.292	0.231	0.456	0.419	0.268	0.468	0.429	0.289	0.452	0.431
Stock prices	-17.778 (16.665)	2.642 (9.308)	8.643 (9.929)	-14.171 (10.180)	1.424 (5.181)	6.314 (5.799)	-4.881 (6.541)	6.848 (5.550)	10.694 (6.020)	-1.437 (3.843)	4.145 (2.833)	5.790 (3.464)
Credit		-67.395 (35.856)	19.796 (31.432)		-48.785 (24.957)	3.497 (21.253)		-22.832 (19.950)	24.124 (18.047)		2.384 (12.163)	26.713 (13.606)
Exchange rate		173.551*** (22.207)	142.447*** (19.677)		145.496*** (16.206)	136.659*** (16.171)		93.792*** (14.073)	83.660*** (13.278)		51.706*** (9.449)	38.390*** (7.048)
Deposit rate			-7.348 (70.146)			-22.559 (44.287)			17.893 (35.673)			37.573 (28.783)
Lending rate			-2.327 (46.850)			3.874 (35.194)			9.167 (32.912)			-4.961 (20.542)
Government consumption	5.917 (10.432)	8.019 (5.933)	5.468 (5.016)	3.072 (5.022)	2.850 (2.769)	1.631 (2.980)	0.392 (3.692)	1.566 (2.423)	2.557 (2.234)	1.413 (2.279)	0.579 (1.238)	0.067 (1.339)
Policy rate	0.482 (8.495)	-55.083** (17.205)	-14.595 (64.079)	2.312 (5.566)	-51.914*** (9.717)	-26.199 (37.582)	-2.791 (5.505)	-43.613*** (8.440)	-68.286* (33.734)	-3.320 (2.674)	-29.686*** (5.390)	-46.642* (21.592)
Observations	1380	1145	958	1360	1127	943	1340	1109	928	1301	1074	899
Within R <sup>2</sup>	0.253	0.322	0.296	0.276	0.466	0.441	0.311	0.468	0.445	0.332	0.448	0.437
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Imports												
	Nowcasting			1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast		
Stock prices	10.975 (5.810)	-0.211 (6.712)	7.322 (7.326)	3.868 (4.466)	0.743 (4.819)	4.840 (4.663)	8.301* (3.736)	8.762 (5.031)	12.055* (5.098)	6.948** (2.642)	8.375* (3.997)	10.977** (3.618)

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Table A5 (continued)

Panel D: Imports												
	Nowcasting		1-quarter-ahead forecast			2-quarter-ahead forecast			4-quarter-ahead forecast			
Credit		-6.257 (43.044)	75.248 <sup>*</sup> (29.154)		-15.397 (25.033)	39.606 (20.715)		-7.405 (17.971)	43.196 <sup>**</sup> (13.661)		-5.026 (10.641)	28.899 <sup>**</sup> (10.143)
Exchange rate		82.140 <sup>***</sup> (15.081)	104.957 <sup>***</sup> (16.262)		63.689 <sup>***</sup> (11.603)	84.782 <sup>***</sup> (10.516)		35.987 <sup>***</sup> (10.328)	45.039 <sup>***</sup> (11.180)		18.475 <sup>**</sup> (5.748)	22.874 <sup>***</sup> (6.502)
Deposit rate			-28.944 (43.769)			-58.379 <sup>*</sup> (27.931)			-43.918 (23.741)			-47.986 <sup>*</sup> (19.293)
Lending rate			-1.106 (30.387)			1.213 (19.281)			0.803 (15.784)			10.523 (13.159)
Observations	1793	1391	1169	1770	1370	1151	1747	1349	1133	1702	1308	1098
Within R <sup>2</sup>	0.218	0.332	0.324	0.314	0.461	0.452	0.371	0.501	0.479	0.412	0.534	0.497
Stock prices	6.491 (7.058)	2.496 (7.058)	10.201 (8.608)	2.253 (4.904)	4.632 (3.972)	7.560 (5.460)	9.786 <sup>**</sup> (3.726)	13.002 <sup>**</sup> (4.668)	15.684 <sup>**</sup> (5.131)	9.305 <sup>**</sup> (2.908)	12.230 <sup>**</sup> (3.853)	13.503 <sup>**</sup> (4.053)
Credit		53.521 (39.487)	125.519 <sup>***</sup> (32.666)		31.359 (25.564)	75.241 <sup>**</sup> (23.137)		26.736 (21.333)	75.871 <sup>***</sup> (15.888)		13.544 (16.737)	41.127 <sup>**</sup> (13.066)
Exchange rate		115.544 <sup>***</sup> (10.715)	116.531 <sup>***</sup> (17.464)		91.491 <sup>***</sup> (7.775)	98.185 <sup>***</sup> (12.117)		57.210 <sup>***</sup> (8.174)	55.256 <sup>***</sup> (11.893)		29.752 <sup>***</sup> (5.706)	25.183 <sup>**</sup> (7.689)
Deposit rate			-48.228 (58.793)			-53.861 (35.021)			-8.003 (25.578)			-9.774 (24.857)
Lending rate			-11.028 (42.504)			7.259 (27.131)			8.648 (20.036)			7.158 (15.171)
Government consumption	27.480 <sup>*</sup> (10.822)	20.692 <sup>***</sup> (5.435)	14.572 <sup>*</sup> (5.826)	5.845 (4.178)	5.437 (3.312)	2.597 (3.369)	6.099 (3.728)	4.943 <sup>*</sup> (2.449)	4.473 (2.505)	2.590 (1.897)	1.919 (1.597)	1.494 (1.679)
Policy rate	7.668 (8.131)	-79.686 <sup>**</sup> (26.066)	25.261 (53.680)	-5.777 (4.844)	-64.704 <sup>***</sup> (13.776)	-26.559 (30.387)	-5.053 (3.625)	-48.197 <sup>***</sup> (11.395)	-64.476 <sup>*</sup> (24.776)	-2.564 (2.077)	-28.295 <sup>**</sup> (8.965)	-43.033 <sup>*</sup> (16.926)
Observations	1380	1145	958	1360	1127	943	1340	1109	928	1301	1074	899
Within R <sup>2</sup>	0.244	0.348	0.363	0.336	0.470	0.469	0.389	0.492	0.488	0.425	0.494	0.471
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A6

Annual FE panel forecasting models for Production, GDP.

Panel A: Production, GDP, LI-LMI countries												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	0.123 (0.709)	-0.383 (0.950)	-0.508 (1.038)	1.245** (0.358)	0.763 (0.461)	0.835 (0.529)	1.053* (0.381)	0.702 (0.518)	0.872 (0.669)	1.024* (0.424)	0.817 (0.555)	1.010 (0.704)
Credit		10.054*** (2.287)	11.288*** (2.428)		7.997*** (1.178)	8.936*** (1.462)		5.552*** (0.638)	6.142*** (0.968)		3.328*** (0.621)	3.838*** (0.922)
Exchange rate		-7.657*** (1.387)	-7.730** (1.294)		-7.477*** (1.320)	-8.094*** (1.132)		-5.317*** (0.872)	-5.874*** (0.800)		-3.500* (1.216)	-3.812** (1.268)
Deposit rate			1.591 (15.527)			0.412 (7.531)			-1.802 (8.528)			-3.684 (9.618)
Lending rate			-8.166 (13.991)			-3.139 (9.947)			0.684 (5.901)			1.337 (3.752)
Observations	312	259	194	291	240	181	270	221	167	249	202	153
Within R <sup>2</sup>	0.175	0.337	0.378	0.216	0.393	0.422	0.247	0.380	0.397	0.270	0.364	0.364
Stock prices	-0.299 (0.473)	-1.011 (0.540)	-1.460* (0.516)	0.571 (0.444)	-0.056 (0.400)	-0.110 (0.470)	0.778* (0.348)	0.328 (0.368)	0.516 (0.380)	0.987** (0.299)	0.667 (0.321)	0.854* (0.301)
Credit		9.573*** (2.252)	10.436*** (2.255)		8.431*** (1.372)	8.955*** (1.505)		6.396*** (1.094)	6.861*** (1.139)		3.787** (1.084)	4.296*** (1.001)
Exchange rate		-5.124*** (0.757)	-4.526* (1.598)		-5.042*** (0.867)	-4.906** (1.241)		-4.498*** (0.553)	-3.989*** (0.579)		-3.234** (0.832)	-3.171* (1.185)
Deposit rate			-25.588 (13.961)			-13.080 (11.046)			-5.675 (12.357)			-3.280 (10.533)
Lending rate			13.288 (8.652)			12.930 (8.006)			12.036 (6.146)			11.497 (6.215)
Government consumption	8.817** (2.811)	7.170* (2.562)	6.206*** (1.827)	6.977*** (1.827)	5.695** (1.667)	4.946** (1.447)	5.830*** (1.427)	4.766** (1.197)	4.281** (1.071)	3.724*** (0.912)	3.451** (0.859)	3.046** (0.835)
Policy rate	-9.813* (3.834)	-10.756* (4.156)	-1.453 (7.383)	-5.209 (4.619)	-5.279 (4.768)	-5.709 (7.229)	-2.871 (4.271)	-2.140 (4.283)	-8.354 (6.118)	-3.854 (3.022)	-3.261 (3.077)	-10.339* (4.058)
Democracy	0.400 (0.761)	1.120 (1.203)	2.010 (1.006)	0.378 (0.742)	1.335 (1.201)	2.222 (1.108)	0.733 (0.452)	1.342 (0.894)	1.585 (1.034)	1.041* (0.386)	1.558 (0.805)	1.203 (1.045)
Observations	221	201	161	207	187	150	192	172	138	177	157	126
Within R <sup>2</sup>	0.292	0.403	0.444	0.255	0.417	0.424	0.311	0.455	0.461	0.348	0.432	0.430
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Production, GDP, UMI countries												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	1.284** (0.443)	0.926* (0.396)	1.363** (0.438)	1.398** (0.413)	0.894 (0.460)	0.807 (0.613)	1.214*** (0.307)	1.142* (0.529)	1.231* (0.548)	1.102*** (0.265)	1.211* (0.435)	1.134* (0.436)
Credit		12.492*** (1.948)	11.447*** (2.556)		8.061*** (1.429)	8.787*** (1.892)		3.591* (1.394)	4.175 (2.113)		1.522 (1.399)	1.893 (2.291)
Exchange rate		-3.543 (1.927)	-0.104 (1.570)		-2.591** (0.917)	-2.076 (1.083)		-2.251** (0.732)	-1.427 (1.063)		-1.748** (0.534)	-1.541* (0.622)
Deposit rate			-4.752 (4.330)			-6.822 (5.403)			-18.714** (5.196)			-18.192** (5.180)
Lending rate			0.615 (4.470)			5.339 (3.056)			11.026** (3.820)			13.963*** (2.667)
Observations	540	412	345	514	388	325	488	363	303	462	337	280
R <sup>2</sup>	0.267	0.428	0.403	0.305	0.465	0.427	0.315	0.427	0.405	0.331	0.429	0.410
Stock prices	0.786 (0.578)	0.526 (0.504)	1.170 (0.581)	1.375** (0.436)	1.107* (0.478)	1.245 (0.645)	1.266** (0.369)	1.294** (0.463)	1.519** (0.346)	1.112*** (0.286)	1.294*** (0.346)	1.350** (0.372)
Credit		11.480*** (2.345)	11.180*** (2.598)		7.332*** (1.915)	8.783*** (1.638)		3.454* (1.311)	4.627** (1.535)		1.244 (1.099)	2.305 (1.530)

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Table A6 (continued)

Panel B: Production, GDP, UMI countries												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Exchange rate		-4.375 <sup>†</sup> (2.005)	-1.511 (1.608)		-2.669 <sup>**</sup> (0.731)	-3.266 <sup>**</sup> (0.939)		-1.883 <sup>†</sup> (0.789)	-2.060 (1.051)		-1.361 <sup>†</sup> (0.512)	-1.528 (0.890)
Deposit rate			-3.586 (6.806)			-2.908 (6.823)			-15.518 <sup>†</sup> (7.280)			-20.024 <sup>***</sup> (5.277)
Lending rate			-2.160 (3.244)			3.110 (3.684)			10.072 <sup>†</sup> (4.647)			14.519 <sup>***</sup> (3.791)
Government consumption	11.327 <sup>**</sup> (3.311)	2.659 (3.983)	0.147 (4.087)	8.726 <sup>***</sup> (1.759)	4.327 (2.758)	3.572 (2.652)	3.946 <sup>**</sup> (1.214)	1.611 (2.487)	0.337 (2.181)	2.209 <sup>†</sup> (0.903)	0.964 (1.844)	0.631 (1.662)
Policy rate	3.738 (1.865)	4.090 (6.024)	6.063 (7.234)	-0.535 (1.892)	-2.467 (3.608)	0.866 (5.979)	-0.784 (1.808)	-5.907 (3.370)	0.369 (5.594)	-0.084 (0.887)	-2.765 (2.459)	4.205 (6.147)
Democracy	-1.329 (1.655)	-2.825 (2.015)	-2.514 (2.149)	-0.716 (1.025)	-1.731 (1.108)	-1.757 (1.306)	-0.716 (0.660)	-1.057 (1.020)	-1.233 (1.154)	-0.990 (0.684)	-1.736 (0.859)	-1.280 (0.869)
Observations	414	343	293	392	323	277	370	302	259	348	280	240
R <sup>2</sup>	0.368	0.475	0.430	0.438	0.515	0.508	0.442	0.476	0.500	0.460	0.466	0.505
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A7

Monthly predicting annual MIDAS panel forecasting models for Production, GDP.

Panel A: Production, GDP, $(\theta_1, \theta_2) = (-0.35, 0.05)$ , All countries												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	6.164*** (1.518)	5.628* (2.460)	5.801* (2.804)	4.433*** (1.189)	6.073** (1.917)	6.087** (2.233)	3.251** (1.019)	6.695*** (1.693)	7.607*** (1.968)	2.613** (0.889)	6.477*** (1.498)	7.457*** (1.752)
Credit		10.501*** (1.071)	9.781*** (1.192)		7.095*** (0.838)	7.246*** (0.953)		3.870*** (0.744)	4.203*** (0.845)		1.830** (0.674)	2.083** (0.766)
Exchange rate		-5.301*** (0.984)	-3.643** (1.214)		-4.276*** (0.765)	-4.444*** (0.981)		-3.185*** (0.683)	-3.148*** (0.874)		-2.422*** (0.648)	-2.530** (0.867)
Deposit rate			-2.073 (7.023)			-4.705 (5.680)			-12.740* (5.101)			-14.046** (4.706)
Lending rate			-2.872 (5.931)			3.578 (4.773)			8.745* (4.257)			10.329** (3.840)
Observations	857	673	540	810	631	508	763	587	472	716	542	435
R <sup>2</sup>	0.021	0.175	0.152	0.019	0.167	0.168	0.015	0.112	0.136	0.013	0.081	0.115
Stock prices	5.564** (2.039)	0.685 (2.517)	1.143 (1.947)	8.407*** (1.525)	4.985* (2.231)	3.654 (1.732)	7.276*** (1.304)	6.163*** (1.950)	5.903** (1.549)	5.687*** (1.141)	6.090*** (1.549)	5.754*** (1.729)
Credit		10.085*** (1.187)	9.798*** (1.346)		6.791*** (0.925)	7.709*** (1.051)		3.882*** (0.829)	5.146*** (0.928)		1.532** (0.747)	2.783* (0.825)
Exchange rate		-4.500*** (0.985)	-2.780 (1.272)		-3.199*** (0.763)	-3.512*** (0.999)		-2.253** (0.680)	-2.595** (0.879)		-1.698** (0.645)	-2.055* (0.868)
Deposit rate			-10.386 (8.815)			-9.708 (6.945)			-13.120* (6.057)			-16.046** (5.504)
Lending rate			4.679 (6.098)			9.527* (4.794)			13.141** (4.233)			15.680*** (3.797)
Government consumption	9.626*** (1.496)	6.135*** (1.514)	4.579** (1.721)	6.574*** (1.120)	4.416*** (1.194)	3.619** (1.351)	3.883*** (0.977)	2.862** (1.082)	2.031 (1.207)	2.410** (0.860)	1.998* (0.971)	1.484 (1.088)
Policy rate	0.755 (1.845)	-2.688 (2.805)	-1.102 (5.896)	-3.072* (1.386)	-3.692 (2.231)	-1.650 (4.609)	-2.702* (1.205)	-4.772* (2.033)	-3.921 (4.133)	-2.110* (1.070)	-3.428 (1.935)	-2.178 (3.689)
Democracy	-1.308 (0.877)	-2.045* (1.028)	-1.648 (1.134)	-0.669 (0.651)	-1.058 (0.810)	-0.834 (0.899)	-0.562 (0.561)	-0.437 (0.735)	-0.427 (0.797)	-0.597 (0.502)	-0.801 (0.693)	-0.673 (0.712)
Observations	637	545	455	602	512	429	565	476	399	528	439	368
R <sup>2</sup>	0.101	0.209	0.168	0.123	0.198	0.199	0.097	0.136	0.173	0.074	0.090	0.150
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Production, GDP, $(\theta_1, \theta_2) = (-0.35, 0.05)$ , LI-LMI countries												
	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	18.196*** (4.264)	11.450** (3.949)	8.453 (4.371)	13.456*** (3.454)	7.430* (3.022)	6.667 (3.600)	10.280*** (3.066)	6.819* (2.705)	6.662* (3.284)	8.578** (2.697)	6.655** (2.361)	6.880* (2.896)
Credit		9.716*** (1.720)	9.654*** (1.784)		7.974*** (1.327)	8.069*** (1.480)		5.137*** (1.211)	5.139*** (1.382)		2.821** (1.083)	2.534* (1.261)
Exchange rate		-8.294*** (1.855)	-6.665** (1.992)		-8.029*** (1.414)	-7.780*** (1.642)		-5.676*** (1.298)	-5.541*** (1.550)		-4.244** (1.362)	-4.410* (1.736)
Deposit rate			-2.231 (11.733)			-0.697 (9.868)			-3.455 (9.274)			-2.111 (8.617)
Lending rate			-7.098 (10.380)			-3.008 (8.750)			1.362 (8.212)			0.354 (7.456)
Observations	336	278	210	314	258	196	292	238	181	270	218	166
R <sup>2</sup>	0.060	0.197	0.206	0.054	0.239	0.248	0.044	0.174	0.175	0.044	0.124	0.119
Stock prices	8.034* (3.636)	1.847 (3.558)	0.407 (3.836)	6.455* (2.981)	1.043 (3.002)	0.357 (3.383)	4.974 (2.563)	1.029 (2.633)	0.894 (3.005)	4.916* (2.122)	2.563 (2.247)	2.469 (2.639)
Credit		8.714*** (1.631)	9.400*** (1.746)		8.186*** (1.391)	8.701*** (1.561)		6.280*** (1.267)	6.824*** (1.459)		3.770*** (1.104)	4.323** (1.317)

(continued on next page)



Table A7 (continued)

Panel B: Production, GDP, $(\theta_1, \theta_2) = (-0.35, 0.05)$ , LI-LMI countries												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Exchange rate		-4.491** (1.619)	-3.947* (1.792)		-4.801*** (1.353)	-4.615** (1.582)		-4.244*** (1.216)	-3.570* (1.457)		-3.144* (1.309)	-2.882 (1.687)
Deposit rate			-21.133 (13.497)			-13.112 (12.201)			-7.308 (11.205)			-4.695 (10.353)
Lending rate			12.359 (9.876)			14.170 (9.019)			14.796 (8.389)			12.929 (7.641)
Government consumption	8.110*** (1.778)	7.120*** (1.634)	6.369*** (1.869)	6.625*** (1.471)	5.820*** (1.377)	5.216** (1.670)	5.738*** (1.283)	5.025*** (1.230)	4.671** (1.528)	3.623*** (1.069)	3.492** (1.058)	3.230* (1.354)
Policy rate	-12.046** (4.251)	-13.145** (4.293)	-7.036 (7.678)	-6.073 (3.475)	-6.051 (3.541)	-7.404 (6.729)	-3.406 (3.007)	-2.804 (3.147)	-9.749 (6.274)	-3.745 (2.515)	-3.257 (2.782)	-10.160 (5.500)
Democracy	-0.344 (1.527)	0.247 (1.717)	1.354 (2.095)	0.059 (1.263)	1.192 (1.475)	2.101 (1.892)	0.648 (1.107)	1.476 (1.340)	1.682 (1.730)	0.866 (0.935)	1.587 (1.186)	1.145 (1.569)
Observations	224	203	163	210	189	152	195	174	140	180	159	128
R <sup>2</sup>	0.166	0.301	0.337	0.160	0.331	0.350	0.165	0.311	0.327	0.145	0.243	0.248
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Production, GDP, $(\theta_1, \theta_2) = (-0.35, 0.05)$ , UMI countries												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	5.041** (1.534)	1.503 (3.178)	4.779 (3.905)	3.557** (1.167)	4.667 (2.520)	6.758* (2.994)	2.638** (0.969)	6.033** (2.235)	8.962*** (2.577)	2.073* (0.843)	6.025** (2.018)	8.279*** (2.362)
Credit		11.984*** (1.412)	11.908*** (1.755)		7.053*** (1.119)	8.014*** (1.339)		3.160** (0.986)	4.029*** (1.139)		1.247 (0.902)	2.113* (1.043)
Exchange rate		-3.796** (1.164)	-0.823 (1.624)		-2.681** (0.917)	-2.306 (1.268)		-2.392** (0.815)	-1.980 (1.088)		-1.842* (0.742)	-1.774 (0.986)
Deposit rate			-5.153 (9.143)			-9.163 (7.044)			-20.203** (6.085)			-22.229*** (5.688)
Lending rate			0.388 (7.432)			8.209 (5.688)			14.009** (4.871)			17.390*** (4.392)
Observations	521	395	330	496	373	312	471	349	291	446	324	269
R <sup>2</sup>	0.023	0.199	0.156	0.021	0.142	0.158	0.017	0.081	0.150	0.015	0.057	0.156
Stock prices	6.519* (2.538)	2.792 (3.568)	4.715 (4.284)	9.846*** (1.856)	7.446** (2.707)	6.693* (3.203)	8.346*** (1.566)	7.610** (2.402)	9.002** (2.723)	5.937*** (1.399)	6.844** (2.189)	8.266** (2.476)
Credit		11.639*** (1.720)	11.386*** (2.126)		6.409*** (1.301)	7.302*** (1.593)		2.889* (1.129)	3.557** (1.331)		0.766 (1.026)	1.262 (1.193)
Exchange rate		-4.363** (1.316)	-1.752 (1.880)		-2.983** (1.001)	-3.314* (1.438)		-2.309** (0.879)	-2.597* (1.225)		-1.696* (0.798)	-1.948 (1.095)
Deposit rate			-4.716 (12.348)			-7.331 (9.402)			-18.517* (7.894)			-24.103** (7.238)
Lending rate			-1.516 (7.953)			6.719 (5.953)			12.362* (5.047)			16.370*** (4.500)
Government consumption	11.616*** (2.387)	3.654 (2.775)	1.125 (3.154)	6.955*** (1.754)	2.927 (2.181)	1.738 (2.377)	2.598 (1.539)	0.207 (2.007)	-1.509 (1.222)	1.163 (1.384)	0.055 (1.857)	-0.827 (1.958)
Policy rate	1.381 (2.178)	2.301 (3.840)	3.812 (9.704)	-3.228* (1.589)	-1.887 (3.060)	1.554 (7.383)	-3.077* (1.369)	-4.660 (2.777)	1.865 (6.356)	-1.974 (1.238)	-2.845 (2.776)	4.886 (5.737)
Democracy	-1.173 (1.094)	-2.699* (1.309)	-2.280 (1.415)	-0.582 (0.789)	-1.376 (1.014)	-1.307 (1.085)	-0.633 (0.669)	-0.743 (0.904)	-0.784 (0.926)	-0.944 (0.614)	-1.337 (0.873)	-0.855 (0.831)
Observations	413	342	292	392	323	277	370	302	259	348	280	240
R <sup>2</sup>	0.108	0.214	0.151	0.126	0.159	0.157	0.096	0.097	0.150	0.068	0.072	0.166
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D: Production, GDP,  $(\theta_1, \theta_2) = (-0.06, 0.01)$ , All countries

	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	14.382*** (4.310)	6.208 (4.658)	6.681 (5.146)	15.602*** (3.339)	10.481** (3.592)	8.748* (4.089)	12.970*** (2.874)	12.901*** (3.185)	13.442*** (3.625)	11.109*** (2.511)	13.122*** (2.790)	13.814*** (3.177)
Credit		10.712*** (1.069)	10.034*** (1.185)		7.216*** (0.835)	7.465*** (0.948)		3.923*** (0.741)	4.373*** (0.840)		1.917** (0.667)	2.307** (0.756)
Exchange rate		-5.156*** (0.985)	-3.626** (1.219)		-4.122*** (0.764)	-4.398*** (0.985)		-3.066*** (0.681)	-3.080*** (0.876)		-2.231*** (0.642)	-2.268** (0.868)
Deposit rate			-0.795 (7.013)			-3.318 (5.673)			-11.320* (5.083)			-12.948** (4.678)
Lending rate			-2.970 (5.958)			3.248 (4.799)			8.182 (4.269)			9.932* (3.839)
Observations	857	673	540	810	631	508	763	587	472	716	542	435
R <sup>2</sup>	0.014	0.170	0.147	0.029	0.164	0.163	0.029	0.114	0.134	0.030	0.087	0.117
Stock prices	6.404 (4.449)	-2.102 (4.954)	-0.400 (5.615)	14.234*** (3.324)	8.037* (3.824)	6.434 (4.348)	14.484*** (2.831)	13.440*** (3.393)	13.834*** (3.781)	12.936*** (2.438)	14.008*** (3.004)	13.515*** (3.297)
Credit		10.160*** (1.187)	9.881*** (1.341)		6.846*** (0.927)	7.789*** (1.047)		3.851*** (0.826)	5.162*** (0.919)		1.538* (0.740)	2.852*** (0.813)
Exchange rate		-4.490*** (0.984)	-2.799* (1.273)		-3.112*** (0.764)	-3.468*** (1.001)		-2.152** (0.678)	-2.466** (0.875)		-1.521* (0.638)	-1.758* (0.863)
Deposit rate			-10.284 (8.815)			-8.973 (6.950)			-11.979* (6.017)			-15.415** (5.450)
Lending rate			4.955 (6.139)			9.167 (4.831)			12.094** (4.231)			14.878*** (3.776)
Government consumption	10.087*** (1.489)	6.142*** (1.512)	4.651** (1.711)	7.088*** (1.125)	4.626*** (1.197)	3.820** (1.346)	4.254*** (0.977)	3.140** (1.078)	2.323 (1.196)	2.696** (0.854)	2.287* (0.965)	1.760 (1.075)
Policy rate	2.131 (1.755)	-2.482 (2.787)	-1.121 (5.898)	-1.389 (1.340)	-3.389 (2.228)	-1.660 (4.612)	-1.422 (1.158)	-4.864* (2.025)	-4.163 (4.108)	-1.141 (1.013)	-3.603 (1.919)	-2.289 (3.656)
Democracy	-1.347 (0.881)	-2.008 (1.031)	-1.634 (1.138)	-0.709 (0.659)	-1.165 (0.815)	-0.920 (0.903)	-0.589 (0.564)	-0.600 (0.734)	-0.599 (0.794)	-0.594 (0.500)	-0.969 (0.689)	-0.807 (0.707)
Observations	637	545	455	602	512	429	565	476	399	528	439	368
R <sup>2</sup>	0.092	0.209	0.168	0.104	0.194	0.198	0.088	0.142	0.183	0.080	0.105	0.166
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel E: Production, GDP,  $(\theta_1, \theta_2) = (-0.06, 0.01)$ , LI-LMI countries

	Nowcasting			1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	18.339* (8.428)	11.997 (7.631)	6.549 (8.181)	17.954** (6.748)	10.361 (5.718)	8.757 (6.647)	14.645* (6.024)	10.088 (5.205)	10.253 (6.145)	12.195* (5.319)	10.809* (4.511)	11.893* (5.371)
Credit		10.371*** (1.727)	10.193*** (1.782)		8.321*** (1.319)	8.365*** (1.470)		5.409*** (1.207)	5.353*** (1.375)		3.102** (1.073)	2.766* (1.246)
Exchange rate		-8.307*** (1.878)	-6.850*** (2.007)		-8.048*** (1.423)	-7.941*** (1.648)		-5.710*** (1.306)	-5.703*** (1.555)		-3.990** (1.368)	-4.275* (1.740)
Deposit rate			0.394 (11.743)			1.089 (9.836)			-2.080 (9.253)			-1.360 (8.613)
Lending rate			-7.478 (10.470)			-3.352 (8.793)			1.290 (8.249)			0.568 (7.479)
Observations	336	278	210	314	258	196	292	238	181	270	218	166
R <sup>2</sup>	0.016	0.177	0.192	0.026	0.229	0.240	0.024	0.163	0.167	0.023	0.113	0.114
Stock prices	3.680 (7.886)	-7.848 (7.625)	-14.666 (8.345)	7.880 (6.388)	-1.899 (6.352)	-5.207 (7.364)	9.371 (5.459)	3.002 (5.606)	2.602 (6.590)	12.121** (4.460)	8.247 (4.751)	8.663 (5.644)
Credit		9.226*** (1.625)	10.005*** (1.717)		8.392*** (1.383)	8.958*** (1.545)		6.244*** (1.264)	6.808*** (1.450)		3.679** (1.091)	4.242** (1.295)
Exchange rate		-4.829** (1.606)	-4.193* (1.761)		-4.939*** (1.344)	-4.729** (1.568)		-4.233*** (1.209)	-3.573* (1.449)		-2.887* (1.313)	-2.641 (1.681)
Deposit rate			-22.199 (13.345)			-13.699 (12.195)			-7.252 (11.202)			-4.774 (10.238)

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Table A7 (continued)

Panel E: Production, GDP, $(\theta_1, \theta_2) = (-0.06, 0.01)$ , LI-LMI countries											
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Lending rate			13.482 (9.772)			14.730 (9.020)			14.730 (8.389)		12.787 (7.568)
Government consumption	8.871*** (1.773)	7.452*** (1.611)	6.762*** (1.828)	7.035*** (1.467)	5.939*** (1.367)	5.382** (1.656)	5.988*** (1.267)	5.051*** (1.218)	4.691** (1.514)	3.781*** (1.047)	3.243* (1.333)
Policy rate	-9.808* (4.224)	-11.577** (4.232)	-5.195 (7.571)	-4.910 (3.451)	-5.511 (3.513)	-6.665 (6.708)	-2.937 (2.975)	-2.876 (3.129)	-9.812 (6.264)	-3.558 (2.454)	-3.727 (2.777)
Democracy	0.085 (1.548)	0.868 (1.731)	1.997 (2.076)	0.279 (1.273)	1.425 (1.487)	2.386 (1.891)	0.723 (1.107)	1.411 (1.349)	1.646 (1.731)	0.938 (0.919)	1.425 (1.174)
Observations	224	203	163	210	189	152	195	174	140	180	159
R <sup>2</sup>	0.144	0.305	0.353	0.144	0.331	0.353	0.160	0.312	0.328	0.157	0.253
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel F: Production, GDP, $(\theta_1, \theta_2) = (-0.06, 0.01)$ , UMI countries											
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast		
Stock prices	16.644*** (4.976)	4.586 (6.020)	13.122 (7.158)	17.132*** (3.751)	10.951* (4.742)	13.244* (5.515)	14.625*** (3.113)	14.976*** (4.158)	19.760*** (4.724)	12.450*** (2.708)	15.145*** (3.719)
Credit		11.998*** (1.408)	12.088*** (1.740)		7.112** (1.114)	8.274*** (1.330)		3.166** (0.976)	4.261*** (1.123)		1.244 (0.889)
Exchange rate		-3.736** (1.153)	-0.488 (1.625)		-2.481** (0.906)	-1.922 (1.272)		-2.217** (0.802)	-1.487 (1.083)		-1.686* (0.727)
Deposit rate			-3.854 (9.102)			-7.601 (7.026)			-18.663** (6.004)		-20.839*** (5.579)
Lending rate			-0.847 (7.461)			7.280 (5.721)			12.434* (4.851)		16.057*** (4.366)
Observations	521	395	330	496	373	312	471	349	291	446	324
R <sup>2</sup>	0.024	0.200	0.162	0.045	0.147	0.161	0.050	0.098	0.168	0.051	0.082
Stock prices	13.066* (5.666)	7.754 (6.777)	15.268 (7.792)	19.017*** (4.164)	13.271* (5.161)	13.789* (5.864)	17.512*** (3.506)	15.873*** (4.526)	18.703*** (4.965)	13.874*** (3.077)	15.181*** (4.082)
Credit		11.604*** (1.719)	11.458*** (2.107)		6.387*** (1.303)	7.466*** (1.584)		2.836* (1.124)	3.740** (1.318)		0.696 (1.018)
Exchange rate		-4.257** (1.308)	-1.448 (1.872)		-2.682** (0.997)	-2.956* (1.437)		-2.059* (0.873)	-2.167 (1.220)		-1.486 (0.789)
Deposit rate			-4.243 (12.225)			-6.069 (9.333)			-16.957* (7.802)		-22.676** (7.137)
Lending rate			-3.286 (7.983)			5.655 (5.990)			10.888* (5.050)		15.142*** (4.502)
Government consumption	12.188*** (2.374)	3.948 (2.791)	1.618 (3.139)	7.813*** (1.766)	3.399 (2.204)	2.335 (2.375)	3.152* (1.544)	0.628 (2.012)	-0.992 (1.544)	1.612 (1.377)	0.510 (1.854)
Policy rate	2.736 (2.042)	2.406 (3.813)	4.981 (9.668)	-1.185 (1.519)	-1.516 (3.057)	1.785 (2.766)	-1.465 (1.300)	-4.776 (2.766)	1.767 (6.304)	-0.832 (1.157)	-2.950 (2.751)
Democracy	-1.206 (1.095)	-2.762* (1.304)	-2.434 (1.406)	-0.609 (0.797)	-1.567 (1.013)	-1.509 (1.081)	-0.619 (0.672)	-0.915 (0.897)	-1.021 (0.918)	-0.912 (0.611)	-1.545 (0.866)
Observations	413	342	292	392	323	277	370	302	259	348	280
R <sup>2</sup>	0.105	0.216	0.161	0.109	0.156	0.161	0.087	0.105	0.163	0.075	0.088
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel G: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$ , All countries											

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Table A7 (continued)

Panel G: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$ , All countries												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	-5.463 <sup>*</sup> (2.590)	2.569 (2.883)	7.370 <sup>*</sup> (3.119)	2.555 (2.000)	6.512 <sup>**</sup> (2.231)	9.064 <sup>***</sup> (2.462)	4.010 <sup>*</sup> (1.715)	7.298 <sup>***</sup> (1.970)	8.765 <sup>***</sup> (2.186)	3.376 <sup>*</sup> (1.505)	6.552 <sup>***</sup> (1.753)	7.623 <sup>***</sup> (1.969)
Credit		10.885 <sup>***</sup> (1.060)	10.185 <sup>***</sup> (1.171)		7.505 <sup>***</sup> (0.828)	7.669 <sup>***</sup> (0.931)		4.306 <sup>***</sup> (0.736)	4.714 <sup>***</sup> (0.667)		2.384 <sup>***</sup> (0.667)	2.759 <sup>***</sup> (0.755)
Exchange rate		-5.181 <sup>***</sup> (0.986)	-3.720 <sup>**</sup> (1.212)		-4.183 <sup>***</sup> (0.764)	-4.482 <sup>***</sup> (0.974)		-3.084 <sup>***</sup> (0.683)	-3.212 <sup>***</sup> (0.872)		-2.100 <sup>**</sup> (0.648)	-2.189 <sup>*</sup> (0.874)
Deposit rate			-0.603 (6.984)			-3.109 (5.616)			-10.370 <sup>*</sup> (5.066)			-12.047 <sup>*</sup> (4.694)
Lending rate			-3.269 (5.929)			2.860 (4.748)			7.896 (4.260)			9.847 <sup>*</sup> (3.860)
Observations	857	673	540	810	631	508	763	587	472	716	542	435
R <sup>2</sup>	0.006	0.169	0.154	0.002	0.164	0.179	0.008	0.109	0.139	0.008	0.072	0.108
Stock prices	-4.681 (2.625)	2.798 (3.043)	5.938 (3.289)	3.508 (1.969)	9.302 <sup>***</sup> (2.323)	10.000 <sup>***</sup> (2.509)	3.664 <sup>*</sup> (1.682)	9.290 <sup>***</sup> (2.069)	9.105 <sup>***</sup> (2.194)	3.067 <sup>*</sup> (1.458)	7.978 <sup>***</sup> (1.874)	7.136 <sup>***</sup> (1.975)
Credit		10.158 <sup>***</sup> (1.182)	9.916 <sup>***</sup> (1.328)		7.175 <sup>***</sup> (0.911)	7.992 <sup>***</sup> (1.022)		4.300 <sup>***</sup> (0.819)	5.520 <sup>***</sup> (0.909)		2.098 <sup>**</sup> (0.743)	3.306 <sup>***</sup> (0.815)
Exchange rate		-4.518 <sup>***</sup> (0.984)	-2.831 <sup>*</sup> (1.266)		-3.189 <sup>***</sup> (0.754)	-3.574 <sup>***</sup> (0.980)		-2.213 <sup>**</sup> (0.674)	-2.689 <sup>**</sup> (0.868)		-1.402 <sup>*</sup> (0.641)	-1.750 <sup>*</sup> (0.870)
Deposit rate			-10.734 (8.778)			-9.970 (6.819)			-12.916 <sup>*</sup> (5.983)			-16.389 <sup>**</sup> (5.490)
Lending rate			3.968 (6.071)			8.444 (4.711)			12.396 <sup>**</sup> (4.192)			15.614 <sup>***</sup> (3.784)
Government consumption	10.137 <sup>***</sup> (1.485)	6.226 <sup>***</sup> (1.512)	4.718 <sup>**</sup> (1.705)	7.402 <sup>***</sup> (1.140)	4.791 <sup>***</sup> (1.182)	3.987 <sup>**</sup> (1.321)	4.548 <sup>***</sup> (0.998)	3.257 <sup>**</sup> (1.074)	2.474 <sup>*</sup> (1.190)	2.916 <sup>***</sup> (0.876)	2.296 <sup>*</sup> (0.970)	1.845 (1.081)
Policy rate	2.280 (1.735)	-2.718 (2.779)	-0.442 (5.884)	-0.432 (1.353)	-3.480 (2.195)	-0.537 (4.536)	-0.230 (1.174)	-4.244 <sup>*</sup> (2.002)	-2.638 (4.094)	-0.005 (1.031)	-2.826 (1.913)	-0.940 (3.684)
Democracy	-1.187 (0.883)	-2.191 <sup>*</sup> (1.040)	-1.978 (1.145)	-0.697 (0.670)	-1.566 (0.813)	-1.425 (0.896)	-0.625 (0.578)	-1.012 (0.741)	-1.002 (0.801)	-0.566 (0.514)	-1.206 (0.701)	-1.017 (0.720)
Observations	637	545	455	602	512	429	565	476	399	528	439	368
R <sup>2</sup>	0.094	0.210	0.175	0.079	0.215	0.227	0.049	0.151	0.192	0.033	0.097	0.156
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel H: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$ , LI-LMI countries												
	Nowcasting		1-year-ahead forecast			2-year-ahead forecast			3-year-ahead forecast			
Stock prices	7.004 (5.868)	7.865 (5.198)	9.964 (3.941)	7.791 (4.740)	7.693 (5.379)	8.213 (4.379)	10.895 <sup>*</sup> (4.244)	7.712 <sup>*</sup> (4.335)	9.128 <sup>*</sup> (4.021)	9.674 <sup>*</sup> (3.878)	7.758 <sup>*</sup> (3.214)	8.967 <sup>*</sup> (3.749)
Credit		10.614 <sup>***</sup> (1.703)	10.069 <sup>***</sup> (1.748)		8.512 <sup>***</sup> (1.296)	8.402 <sup>***</sup> (1.445)		5.581 <sup>***</sup> (1.184)	5.396 <sup>***</sup> (1.349)		3.378 <sup>**</sup> (1.053)	3.011 <sup>*</sup> (1.226)
Exchange rate		-8.336 <sup>***</sup> (1.878)	-6.842 <sup>***</sup> (1.991)		-8.075 <sup>***</sup> (1.421)	-7.929 <sup>***</sup> (1.639)		-5.654 <sup>***</sup> (1.304)	-5.614 <sup>***</sup> (1.543)		-3.524 <sup>*</sup> (1.384)	-3.535 <sup>*</sup> (1.764)
Deposit rate			0.627 (11.620)			1.526 (9.762)			-1.185 (9.146)			-1.178 (8.578)
Lending rate			-6.999 (10.391)			-2.966 (8.748)			1.499 (8.185)			1.101 (7.467)
Observations	336	278	210	314	258	196	292	238	181	270	218	166
R <sup>2</sup>	0.005	0.176	0.205	0.010	0.231	0.248	0.026	0.167	0.180	0.027	0.114	0.119
Stock prices	0.377 (5.062)	-2.243 (4.777)	-0.679 (5.025)	6.291 (4.116)	4.148 (3.961)	5.211 (4.357)	5.820 (3.555)	4.844 (3.516)	5.620 (3.903)	5.870 (3.090)	4.471 (3.199)	5.404 (3.702)
Credit		8.960 <sup>***</sup> (1.603)	9.455 <sup>***</sup> (1.712)		8.174 <sup>***</sup> (1.351)	8.600 <sup>***</sup> (1.513)		6.196 <sup>***</sup> (1.234)	6.725 <sup>***</sup> (1.415)		3.919 <sup>***</sup> (1.079)	4.499 <sup>***</sup> (1.278)

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Table A7 (continued)

Panel H: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$ , LI-LMI countries												
	Nowcasting		1-year-ahead forecast				2-year-ahead forecast			3-year-ahead forecast		
Exchange rate		-4.621** (1.598)	-3.967* (1.778)		-4.881*** (1.327)	-4.637** (1.556)		-4.288*** (1.189)	-3.581* (1.429)		-2.895* (1.327)	-2.289 (1.725)
Deposit rate			-21.021 (13.530)			-14.024 (12.143)			-8.221 (11.098)			-7.323 (10.299)
Lending rate			12.309 (9.890)			14.710 (8.964)			15.595 (8.308)			14.610 (7.595)
Government consumption	8.978*** (1.761)	7.310*** (1.607)	6.417*** (1.841)	7.155*** (1.450)	5.850*** (1.356)	5.193** (1.639)	6.144*** (1.259)	5.071*** (1.208)	4.722** (1.495)	3.980*** (1.056)	3.607*** (1.045)	3.371* (1.330)
Policy rate	-9.384* (4.137)	-12.675** (4.145)	-7.002 (7.624)	-3.822 (3.370)	-5.520 (3.423)	-6.675 (6.641)	-1.613 (2.914)	-2.186 (3.044)	-9.000 (6.159)	-1.771 (2.430)	-2.528 (2.703)	-8.981 (5.396)
Democracy	0.186 (1.547)	0.621 (1.731)	1.441 (2.109)	0.225 (1.269)	0.925 (1.477)	1.688 (1.888)	0.714 (1.110)	1.100 (1.345)	1.244 (1.725)	1.124 (0.926)	1.599 (1.167)	1.179 (1.530)
Observations	224	203	203	210	189	152	195	174	140	180	159	128
R <sup>2</sup>	0.143	0.301	0.337	0.148	0.335	0.358	0.159	0.320	0.340	0.134	0.247	0.258
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel I: Production, GDP, $(\theta_1, \theta_2) = (0.1, -0.2)$ , UMI countries													
	Nowcasting		1-year-ahead forecast				2-year-ahead forecast			3-year-ahead forecast			
Stock prices		-8.779** (2.829)	0.913 (3.446)	7.791 (3.978)	0.749 (2.130)	6.760* (2.697)	10.660*** (3.025)	2.010 (1.763)	7.218** (2.382)	9.552*** (2.626)	1.676 (1.528)	6.151** (2.135)	7.352** (2.359)
Credit			12.064*** (1.413)	12.471*** (1.747)		7.416*** (1.116)	8.785*** (1.320)		3.563*** (0.985)	4.818*** (1.137)	1.672 (0.906)	2.922** (1.045)	2.922** (1.045)
Exchange rate			-3.731** (1.154)	-0.635 (1.618)		-2.508** (0.905)	-1.962 (1.252)		-2.189** (0.807)	-1.729 (1.088)		-1.595* (0.738)	-1.491 (0.995)
Deposit rate				-4.064 (9.090)			-7.635 (6.936)			-18.042** (6.058)			-19.658*** (5.670)
Lending rate				-0.646 (7.431)			6.733 (5.637)			12.810** (4.891)			16.524*** (4.446)
Observations	521	395	330	496	373	312	471	349	291	446	324	269	
R <sup>2</sup>	0.020	0.199	0.163	0.000	0.149	0.181	0.003	0.087	0.154	0.003	0.055	0.146	
Stock prices		-4.314 (3.221)	6.169 (3.961)	10.364* (4.364)	3.400 (2.371)	11.426*** (2.980)	12.515*** (3.252)	2.761 (1.995)	9.491*** (2.629)	9.912*** (2.771)	1.987 (1.734)	8.204*** (2.381)	7.438** (2.477)
Credit			11.988*** (1.724)	11.961*** (2.104)		7.089*** (1.291)	8.037*** (1.556)		3.493** (1.129)	4.275** (1.325)		1.379 (1.029)	1.994 (1.197)
Exchange rate			-4.258** (1.305)	-1.666 (1.861)		-2.649** (0.982)	-3.084* (1.405)		-2.015* (0.872)	-2.460* (1.220)		-1.392 (0.792)	-1.770 (1.102)
Deposit rate				-3.885 (12.172)			-5.928 (9.142)			-16.326* (7.824)			-21.366** (7.207)
Lending rate				-3.382 (7.921)			4.555 (5.856)			11.008* (5.067)			15.408*** (4.564)
Government consumption	12.055*** (2.396)	4.049 (2.782)	1.757 (3.129)	7.968*** (1.822)	3.618 (2.166)	2.633 (2.329)	3.253* (1.607)	0.560 (2.005)	-1.027 (2.119)	1.666 (1.428)	0.294 (1.856)		-0.424 (1.972)
Policy rate	3.297 (2.030)	1.987 (3.824)	4.165 (9.581)	-0.133 (1.556)	-2.433 (3.028)	1.602 (7.191)	-0.273 (1.337)	-4.822 (2.762)	1.762 (6.325)	0.153 (1.186)	-2.928 (2.764)	4.644 (5.766)	
Democracy	-1.301 (1.099)	-3.013* (1.311)	-2.951* (1.422)	-0.758 (0.819)	-2.097* (1.007)	-2.237* (1.079)	-0.796 (0.696)	-1.434 (0.905)	-1.586 (0.938)	-0.994 (0.631)	-1.988* (0.883)		-1.473 (0.851)
Observations	413	342	292	392	323	277	370	302	259	348	280	240	
R <sup>2</sup>	0.097	0.219	0.167	0.059	0.181	0.195	0.021	0.107	0.158	0.015	0.080	0.156	
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

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