International Journal of Forecasting 29 (2013) 605–621

Contents lists available at ScienceDirect

International Journal of Forecasting

journal homepage: www.elsevier.com/locate/ijforecast

Information rigidity in growth forecasts: Some cross-country evidence

Prakash Loungani [a,1], Herman Stekler [b,*], Natalia Tamirisa [a,2]

[a] International Monetary Fund, 700 19th St., N.W., Washington, DC, 20431, United States
[b] George Washington University, Department of Economics, 2115 G Street, N.W., Monroe Hall 340, Washington, DC, United States

ARTICLE INFO

Keywords:
Efficiency
Turning points
Cross-country forecasts

ABSTRACT

We document information rigidity in forecasts of real GDP growth in 46 countries over the past two decades. We also investigate: (i) whether rigidities differ across countries, particularly between advanced countries and emerging markets; (ii) whether rigidities are lower around turning points in the economy, such as in times of recessions and crises; and (iii) how quickly forecasters incorporate news about growth in other countries into their growth forecasts, with a focus on the way in which advanced countries' growth forecasts incorporate news about emerging market growth, and vice versa.

1. Introduction

This paper studies the properties of forecasts of real GDP growth for a large set of advanced and emerging market economies over the past two decades. The source of the data is *Consensus Forecasts*, which covers both advanced economies (the label used by the IMF's *World Economic Outlook* to refer to high-income economies) and major emerging market economies. The structure of the data — forecasters provide monthly or bimonthly updates of their forecasts of a fixed event (viz. annual real GDP growth) — provides a simple way to document the sluggishness with which news is absorbed into growth forecasts, while the wide country coverage allows us to look at differences in information rigidities between advanced and emerging market groups, and at linkages between forecast revisions in advanced countries and emerging market economies. Given the long time dimension of the data (the last two decades), we can compare differences in information rigidities during economic recessions and crises, and in "calm" periods.

The paper draws on existing techniques for testing information rigidities in forecasting. We first apply the test suggested by Coibion and Gorodnichenko (2010), which measures the extent to which forecast errors reflect past forecast revisions. To test the robustness of the results, we use Nordhaus' (1987) test, which evaluates how different a sequence of forecasts is from a martingale process. Nordhaus' (1987) test has an important advantage over Coibion and Gorodnichenko's (2010) test, in that it does not require the use of data on the actual growth outcomes, and thus avoids the need to select the appropriate vintage of the actual data. The third test we apply focuses on the international dimensions of information rigidities in forecasting. It compares the speed of absorption of international and domestic news in the cross-country setting proposed by Isiklar, Lahiri, and Loungani (2006). The three tests are all complementary, and serve as cross-checks on each other.

The main contribution of the paper lies in documenting the extent of information rigidities in a broad sample of advanced and emerging economies over the business cycle. Earlier studies focused either exclusively on the United States or only on major advanced economies (see, for example, Coibion & Gorodnichenko, 2009, 2010; Fintzen & Stekler, 1999; Isiklar et al., 2006; Öller & Barot, 2000; Zarnowitz, 1986). Although Loungani (2001) examined the behavior of forecasts for emerging economies, his paper used both a shorter sample and a smaller battery of tests

* Corresponding author. Tel.: +1 202 994 6150; fax: +1 202 994 6147.
E-mail addresses: ploungani@imf.org (P. Loungani), hstekler@gwu.edu (H. Stekler), ntamirisa@imf.org (N. Tamirisa).
1 Tel.: +1 202 623 7043; fax: +1 202 589 7043.
2 Tel.: +1 202 623 4371; fax: +1 202 589 4371.

0169-2070/$ – see front matter
http://dx.doi.org/10.1016/j.ijforecast.2013.02.006

than the present study. Another contribution of this paper is that we examine "predictive failure" at business cycle turning points by differentiating between the "regular" recession episodes triggered, for example, by a tightening of monetary policy, and the recession episodes caused by economic and financial crises.

Our main findings are as follows. First, there is considerable sluggishness in revisions of growth forecasts for both advanced and emerging economies. This is consistent with the sticky information models of Mankiw and Reis (2002), the imperfect information models of Sims (2003) and Woodford (2002), and behavioral explanations for forecast smoothing (Fildes & Stekler, 2002; Nordhaus, 1987; Nordhaus & Durlauf, 1984) and extends the findings of Coibion and Gorodnichenko (2010) to emerging economies. We do not find strong evidence that it takes appreciably longer for forecasters in emerging economies to update their information sets relative to those in advanced economies. We used both the Coibion and Gorodnichenko (2010) and Nordhaus (1987) tests for information rigidities and obtained similar results, indicating that our findings are robust.

Second, the sluggishness in forecast revisions declines during recessions and banking crises. We find that forecasts in the year preceding a recession year start to depart from the unconditional mean, with the pace of revision picking up over the course of the year of the recession. A similar pattern holds for banking crises. After a large shock, forecasters tend to watch incoming news more carefully and incorporate them into their forecasts more fully than in calm periods. These findings support models with a state-dependent acquisition of information (for example, Gorodnichenko, 2008). Indeed, history shows that most recessions remain undetected until they are well underway. Such "predictive failure" is common in the case of recessions in the United States and other advanced economies (Fintzen & Stekler, 1999; Öller & Barot, 2000; Zarnowitz, 1986). We confirm its presence in forecasts for a broad set of emerging economies, thereby extending the findings of Loungani (2001). For both advanced and emerging economies, we document such "predictive failure" in recession and crisis episodes. Interestingly, information rigidities appear to be smaller in forecasts for emerging economies than advanced economies during recessions and crises, suggesting that information acquisition takes place faster in emerging economies than in advanced economies in such periods.

Third, we confirm the finding of sluggish forecast adjustment in a multivariate setting, by estimating a seven-country VAR model for forecast revisions. The seven economies are the so-called G-3 (United States, Germany, Japan) and the BRICs (Brazil, Russia, India, China), which broadens the setting of Isiklar et al. (2006) to emerging markets. Like the above authors, we find considerable asymmetries in the speed of absorption of news. Forecasters are somewhat slower to absorb news from other countries than own-country (or domestic) news. A new finding in this paper is that news from foreign emerging economies, such as China, are absorbed with a longer lag than those from foreign advanced economies, possibly because of uncertainty about the degree of economic and financial integration between advanced and emerging economies. The issue of poor data quality for emerging market economies might also have a bearing on the results.

The rest of the paper is organized as follows. The next section describes the statistical tests which are used to test for the presence of information rigidities in both single country and multi-country contexts. Section 3 discusses the structure of the *Consensus Forecasts* dataset, as well as the other data which are necessary for such testing. Section 4 presents basic statistical and graphical evidence on the extent of information rigidity, and documents the way in which this rigidity is attenuated during recessions and banking crises. Section 5 discusses the empirical results of testing for information rigidities. The last section concludes.

2. Testing for information rigidities

2.1. Single-country tests

We use two statistical tests suggested by Nordhaus (1987) to document the extent of informational rigidity in a single-country context. Suppose that $F_{t,h}$ is the forecast of growth made at horizon h based on the full information set available at that horizon, and $r_{t,h}$ is the forecast revision between horizons h and $h+1$. The first test, used recently by Coibion and Gorodnichenko (2010) to test theories of sticky and imperfect information, is to regress the forecast error, defined as the difference between the actual value $A_{t,h}$ and the forecast $F_{t,h}$ of real GDP growth, on the forecast revision $r_{t,h+k}$:

$$A_{t,h} - F_{t,h} = \alpha_0 + \alpha_1 r_{t,h+k} + e_{t,h}, \tag{1}$$

where t is the target year, h is the forecast horizon and $k \geq 1$. Assuming that there are J countries in a system, $r_{t,h}$ in Eq. (1) is a $(J \times 1)$ vector containing the forecast revisions of the J countries, and the coefficients α_0 and α_1 are the $(J \times J)$ matrices of coefficients of $r_{t,h+k}$. The coefficient on the forecast revision is zero under the null of full information, whereas a positive value indicates information rigidities. One feature of this test is that it requires the use of the growth outcomes, and hence requires a decision on whether to use the latest available data or an earlier vintage.

The second test of information rigidity exploits the fact that we have a sequence of forecasts for the same fixed event, viz., annual real GDP growth. Under the null of full information, the sequence of forecasts of the same event must follow a martingale (Nordhaus, 1987). To implement the test, we run regressions of the forecast revision $r_{t,h}$ on past forecast revisions over a period k:

$$r_{t,h} = \beta_0 + \beta_1 r_{t,h+k} + u_{t,h}. \tag{2}$$

As before, t is the target year, h is the forecast horizon and $k \geq 1$. If $\beta_1 = 0$, there is no informational rigidity in the forecasts. Note that the implementation of the test does not involve use of the actual growth outcomes, and hence sidesteps the issue of what vintage of the actual data to use (revised data vs. a preliminary release of the data). To determine the robustness of results, we consider alternative values of k.