Rationality of survey based inflation expectations: A study of 18 emerging economies' inflation forecasts

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A R T I C L E   I N F O

A B S T R A C T

This study investigates rationality of inflation expectations of 18 emerging economies' inflation rates using 10 years (2001–2011) of one month-ahead consensus survey forecasts of annual inflation rate from a data source previously unexploited by the researchers. Given the nature of the data, we use the panel method to assess the relationship between the actual and the expected inflation rates. We perform various diagnostic tests to identify the appropriate panel test for the data by applying the most recent econometric techniques. We use a recently developed panel regression method based on simple OLS technique but derive standard errors corrected for serial correlation, panel heterogeneity and cross-sectional dependence. Empirical results show that forecasters' expectations are strongly unbiased, and efficient to most commonly used sources of information including money supply and oil prices. This research fills the gap in the existing literature by studying a large cross section of emerging economies inflation rates as there is no comprehensive study on the issue for these economies.

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1. Introduction

Forecasting of important macroeconomic variables and asset prices have always been an important activity in large corporations, and government departments of many countries. Although not a new way of predicting the future, consensus survey forecast is now widely used by businesses and government entities. It is a large and growing industry at present. This method surveys experts' opinions about the future change in a variable. The method seems to make forecasting more accurate since the survey collects the opinions of experts only, not the public in general. Because of its usefulness, consensus survey data is now collected by increasingly more central banks, businesses, and academic institutions on different macroeconomic variables, like, interest rate, exchange rate, GDP growth rates, inflation rates, current account, unemployment rate, industrial production, etc. A number of businesses and newspapers, including Wall Street Journal, Economists, Financial Times, etc. collect and publish consensus survey of many economic and financial variables of interest for their readers. The data can provide valuable information about the efficiency of expectations by the experts. Thus, it has caught attention of many researchers in the fields of economics and finance. The central question that researchers try to investigate is whether the forecast correctly predicts the future. This line of research is known as rationality of expectations. Muth (1961) first proposed

the idea of rational expectations, which asserts that outcome of an economic activity will not differ systematically from what people expected them to be. He argued that agents are utility maximizers and will process information efficiently to predict the future. This hypothesis has been tested extensively in the financial markets. Mestre (2007) derives the properties of a rational expectations solution as follows:

1. Expectations should differ from actual values by an unforecastable residual.
2. Expectations should be formed using all relevant information in the available data set, i.e. all observed pre-determined variables that matter for the model solution should enter the expectations formation mechanism and nothing more.
3. Expectations should be efficient in the sense that alternative forecasts should lead to errors with higher variance than rational expectations.

There are two versions of rationality: weak form and strong form. If expectations are strong form, then expectations meet all three above mentioned conditions. Weak form amounts to allowing for some degree of error auto-correlation in the forecasts and may be some amounts of bias in the forecast. Weak form tests of rationality examine whether expectations of an economic variable are unbiased predictors of future realized values of the variable. Test of efficiency examines whether past values of the variable can be used to explain the error between the expected and the realized value (forecast error) and whether the forecast errors can be explained by other theoretically relevant variables. Forecasts will be efficient if forecasters use all available information.

In this study, we use a new international dataset that surveys and collects monthly inflation forecasts on average annual inflation rate for 18 countries which are considered emerging; Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Mexico, Philippines, Poland, Russia, South Africa, Thailand, Turkey and Venezuela. We collected 10 years of consensus survey data published by a source (www.Fx4casts.com) previously unexploited by researchers. However, we only focused on forecast rationality of one-month ahead inflation forecast to be consistent with forecast horizons used by other previous studies. We used forecast data published in December of every month for the annual inflation rate. Actual annual inflation rate is published in January of every year in the sample. This study investigates the weak-form rationality and also investigate efficiency of inflation expectations of 18 emerging economies. Although there are many studies of rationality of inflation expectations for developed countries, there is no comprehensive study that investigates rationality of inflation expectations of emerging economies. This research attempts to fill this gap in the literature on this issue. Our study time period coincides with the most recent global financial crisis time period, which makes the study more interesting as the forecasters had to deal with uncertainties coming from different sources. Since the study will utilize recently developed panel econometric techniques for small samples, this paper might be used as an example in panel econometric courses. The remaining of the paper is organized as follows. Section 2 describes the literatures related to the study, Section 3 describes the methodology, and Section 4 provides an overview of the data used in the study. Empirical results and discussions are presented in Section 5, and Section 6 presents the conclusions of the study.

2. Literature review

There are many studies related to rationality of survey expectations of inflation using both survey of experts as well as general public. The literature on testing the rationality of inflation or price forecasts is old and extensive. The literature on this topic has attempted to test rational expectation of price or inflation expectations either indirectly by using proxy for expectations using various econometric methods, or by using direct survey data that asks surveyors explicitly about their expectations. The use of survey data in empirical studies of inflation and price forecasts can be broadly divided into two parts. First, many researchers have used consumer survey data to test for rational expectations. Papers in this category include, but are not limited to, Rich (1989), Smyth (1992) and Thomas (1999). Second, the most popular data sources have been the so-called *professional surveys* where experts are surveyed for their opinions. Gil-Alana et al. (2012) showed that these survey based forecasts outperform traditional out-of-sample predictions. There are five main data sources that have been used in the literature for the USA. First, many papers which include, but are not limited to, Rich (1990), Mullineaux (1978), Pearce (1979), Thomas (1999), Fama and Gibbons (1984) used *Livingstone Price Expectation* survey data. Second, other papers such as Gil-Alana et al. (2012) have used survey-based expectations using survey conducted by the Federal Reserve Bank of Philadelphia. Third, Pearce (1987) used survey data compiled by the Money Market Services Inc. (MMS). Fourth, Souleles (2004) conducted a comprehensive study using Michigan micro data and found that consumer expectations are biased, and it is also time varying. He also found that expectations are inefficient. Finally, the most popular data has been the ASA-NBER data on professional forecasts which has been used extensively in papers that include, but are not limited to, Keane and Runkle (1990), Bonham and Cohen (1995), Zarnowjtz (1969, 1974, 1984, 1985), Baghestani and Nelson (2011) and Dovern and Weisser (2011). Regardless of the data set that were used, the most prevalent result that emerged from almost all the papers, with a very few exceptions, is that price forecasts are not rational. Second, the forecast horizon has been almost always one-period ahead, regardless of the data frequency used. There has also been some work with international data as well. Oral et al. (2011) used consensus survey data collected from professionals published by Turkish Central Bank, and they could not find evidence of rationality of expectations. Curtis (2006) concluded that consumers do not fulfill rational expectations hypothesis while forming inflation expectations. Bakshi and Yates (1998) also found similar results using inflation expectations drawn from a survey of UK employees by Gallup.