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# The effects of FX-interventions on forecasters disagreement: A mixed data sampling view<sup>☆</sup>

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## ABSTRACT

We analyse the heterogeneity of exchange rate forecasts by a panel of professional forecasters. Adopting the view that forecasters' economic behaviour is such that they constantly collect, process and analyse relevant information when producing forecasts, we apply a Mixed-Data Sampling (MIDAS) regression approach. This enables us to explore the roles played by key drivers for which available data are at different frequencies from forecast disagreement. Examining the Colombian peso/U.S. dollar exchange rate, we find that central bank intervention is most effective in reducing heterogeneity in the very short-run, and when conducted against a background of high exchange rate volatility.

## 1. Introduction

Countries engaged in floating exchange regimes have a wish to avoid undue or unnecessary exchange rate fluctuations. While market expectations of future exchange rate values might play a key role in what happens to actual values, it is clear that market participants have heterogeneous expectations on future exchange rates. Indeed, market heterogeneity is regarded by many as the key consideration in understanding exchange rate dynamics and volatility. In this respect, there is much potential value in analysing what drives heterogeneous exchange rate expectations and the extent to which intervention in the foreign exchange markets by central banks can reduce such forecast disagreement. For many countries, there are consistently recorded data sets for panels of professional forecasters who have strong interests in exchange rate behaviour. The availability of such data enables researchers to consider how effective intervention can be.

Much of the early work on furthering our understanding of professional exchange rate forecasts focused on investigating unbiasedness; see, for example, [Capistrán and López-Moctezuma \(2010\)](#) on the Mexican peso/U.S. dollar exchange rate, [Cho and Hersch \(1998\)](#) and [Mitchell and Pearce \(2007\)](#) on the Japanese yen/U.S. dollar exchange rate, and [Leitner and Schmidt \(2006\)](#) on the U.S. dollar/euro exchange rate. Such studies offer at best, only mixed support in favour of unbiasedness. What comes out in more recent work is that good exchange rate forecasts are related to a proper understanding of fundamentals such as interest rates (see e.g. [Dick et al., 2015](#)). More recent work by [Beckmann and Czudaj \(2017a\)](#) finds that expectations are not only affected by announcements, but also by the degree of uncertainty regarding the future stance of fiscal and monetary policies. Further to

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this, [Beckmann and Czudaj \(2017b\)](#) find that uncertainty effects on forecast errors- based on economic policy, macroeconomic and financial uncertainty as well as disagreement among inflation forecasters- are more significant compared to the adjustment of exchange rate expectations. [Reitz et al. \(2010\)](#) in analysing the Japanese yen/U.S. dollar exchange rate, find that foreign exchange intervention dampens expectation heterogeneity.

In this paper, we investigate the heterogeneity of exchange rate forecasts made by a panel of professional forecasters of the Colombian peso to U.S. dollar exchange rate. We examine the determinants of heterogeneity or disagreement in exchange rate expectations in a time-series dimension. In doing so, we ask whether intervention by the Colombian central bank in the foreign exchange market is effective in reducing the heterogeneity of professional exchange rate forecasts. This is an important question in terms of whether or not action by central banks can stabilise the exchange rate. Intervention can potentially influence exchange rate values through the direct impact of official purchases and sales on the market price of a currency (portfolio balance channel), as well as indirectly through moving the expectations of market agents (signalling channel). Under the coordination channel, central banks intervention is a signal that addresses a coordination failure among fundamentals-based traders encouraging them to engage in stabilising speculation. In this respect, reduced uncertainty is a channel through which foreign exchange intervention might reduce forecast disagreement. However, studies on the issue of intervention effectiveness, when considering a range of exchange rates and different types of intervention, have reached mixed views on how effective intervention is in terms of stabilising the exchange rate and influencing expectations.<sup>1</sup> Whereas [Reitz et al. \(2010\)](#) find that official interventions dampen heterogeneity via coordinating agents' expectations in the case of the Japanese yen/U.S. dollar exchange rate, the study by [Beine et al. \(2007\)](#) finds that heterogeneity increases for both expected and unexpected (official and secret) interventions in the cases of both the Japanese yen and euro/U.S. dollar exchange rate. [Disyatat and Galati \(2007\)](#) find that the Czech National Bank intervention had some (weakly) statistically significant impact on the spot rate but not on its short-term volatility. [Onder and Villamizar-Villegas \(2018\)](#), on the other hand, find that while both announced and unannounced purchases of foreign currency by the Turkish central bank have a significant effect in reducing exchange rate volatility of the Turkish Lira, only announced interventions have a significant impact on exchange rate changes.

In the case of Latin American exchange rates, [Marins et al. \(2017\)](#) and [Tapia and Tokman \(2004\)](#) for example find that interventions by the respective Brazilian and Chilean central banks have limited impact on the exchange rate. These studies suggest that any effects are more likely to have a noticeable effect over a longer time span. In other work, [Pincheira Brown \(2018\)](#) finds that interventions do have an impact on daily Chilean exchange rate returns, while [Catalán-Herrera \(2016\)](#) finds that intervention has a dampening effect over the daily Guatemalan exchange rate return's volatility, but no influence over the level of the exchange rate. For Colombia, [Kamil \(2008\)](#) finds that the effectiveness of the Central Bank's foreign exchange intervention depends on its ability to surprise the market. [Vargas-Herrera and Villamizar-Villegas \(2021\)](#) put forward a partial equilibrium model with frictions which illustrates that foreign exchange interventions are less (more) effective when market uncertainty is low (high) as agents are more (less) willing to bet against the central bank.

In terms of value-added to the literature, our study contributes on a number of fronts. First, previous work on analysing professional exchange rate forecasts has utilised data at a given frequency. However, there exist a variety of relevant data sets on key drivers such as interventions or interest rates that are often consistently available, but at a higher frequency. While such data might be aggregated in order to use at a lower frequency, the process of aggregation can itself lead to a loss information. In contrast to previous studies of exchange rate forecast heterogeneity, in this paper we follow the (perhaps) more intuitive view that the economic behaviour of forecasters is such that they constantly gather, process and analyse relevant information when producing their forecasts. Thus, we incorporate such continuum of information into our analysis using a Mixed-Data Sampling (MIDAS) regression approach. A MIDAS regression model is a very general type of autoregressive distributed lag model, in which high-frequency data are used to help in the prediction of a low-frequency variable. Second, we further contribute to the literature as we explore whether changes in the composition of forecasters impacts on the degree of forecast disagreement. In noticeable distinction from the more studied surveys of the U.S. Federal Reserve, the Bank of England, and the European central bank, the metrics of the Colombian survey reveal a somewhat more homogeneous composition of the panel of experts. Third, not only do we analyse heterogeneity for end-of-current month forecasts, but also over the longer horizon of one-year ahead. Finally, we offer some insights into a potential non-linearity in terms of the effectiveness of intervention on forecast disagreement being related to the extent of exchange rate volatility.

The paper consists of six sections including this introduction. The second section describes the data set employed and provides some preliminary metrics. We find that the more regular forecasters do not necessarily provide forecasts that differ from irregular forecasters. The third section discusses the drivers of forecast heterogeneity that we analyse. The fourth section presents the results of the MIDAS approach using data based on mixed frequencies. Among other things, we find that foreign exchange market intervention reduces forecast heterogeneity particularly when exchange rate volatility is high. The fifth section engages in sub-sample estimation to examine whether changing economic conditions affect the magnitude of the response of exchange rate forecast disagreement to the set of low- and high-frequency variables. The final section offers concluding remarks.

## 2. Data on exchange rate expectations

The main source of information for this paper is the survey of external economic analysts developed by the Banco de la República (Central Bank of Colombia), henceforth BR. In September 2003 the bank started to ask a group of experts, on a monthly basis, for

<sup>1</sup> See e.g. [Villamizar-Villegas and Perez-Reyna \(2017\)](#) for a recent survey of influential theories on sterilised foreign exchange interventions.