Did interest rate guidance in emerging markets work?*

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Abstract

Central banks in emerging market economies experimented with explicit interest rate guidance during 2020-2021. We explore the effectiveness of this policy. Despite some heterogeneity, interest rate guidance generally provided additional monetary stimulus, as reflected in lower medium-term yields and lower term spreads. The magnitude of the reduction in 10-year yields ranged between five and twenty basis points. In the immediate aftermath of the guidance, we do not observe a systematic negative market reaction – such as de-anchoring of inflation expectations, currency depreciation pressures, or increased sovereign credit risk – that would be associated with a loss of central bank credibility or with concerns about fiscal dominance.

Keywords: Monetary policy; Forward guidance; Central bank communication; Emerging markets.
JEL Classification: E52, E58.

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1 Introduction

Explicit interest rate guidance (IRG henceforth) has been used in major advanced economies (AEs) since the Great Financial Crisis but was only recently adopted in Emerging Market Economies (EMEs).[1] As the experience in AEs has shown, IRG statements can serve as a powerful policy tool in a crisis or in the wake of an unusual shock. Amongst EMEs, Brazil, Chile, India, Israel, and Peru adopted IRG in 2020 as part of unprecedented measures taken amid the Covid-19 pandemic (albeit India and Israel had already experimented with IRG in August and October 2019, respectively).

By making IRG statements, the central bank can attempt to influence agents' expectations of the economic outlook and steer long-term interest rates in a desired direction – eg by announcing a period of "low for long" (referred to as "Odyssean" forward guidance by Campbell, 2013, Bassetto, 2019 and Bernanke, 2020). IRG can also provide clarity about the monetary authority's policy reaction function in a situation of increased uncertainty (referred to as "Delphic" forward guidance).

While IRG may serve to provide monetary stimulus, it involves trade-offs and risks. The strength of the policy commitment is traded off against its flexibility. The possibility of the central bank reneging on its commitments after announcing IRG exposes it to credibility risk (see eg Campbell, 2013), while a commitment to "low for long" can de-anchor inflation expectations. These challenges and trade-offs can be exacerbated by the exposure of EMEs to fickle capital flows and volatile financial conditions, and by their history of more persistent inflation and less well-anchored inflation expectations.

Because the adoption of IRG in EMEs is relatively new and took place during a severe external shock, little is known about its effects. This paper aims at filling this gap by taking stock of the experience of the EMEs that adopted IRG. For this, we first codify the monetary policy statements of twenty large EMEs during 2019-2021[2] and establish that only Brazil, Chile, India, Israel and Peru adopted IRG. Second, we employ a high-frequency event study and OLS local projections

[1] By IRG we refer to statements by the monetary policy setting authority explicitly committing to a future path of policy rates. Such statements in AEs have been called forward guidance (see eg Blinder, Ehrmann, Fratzscher, de Haan and Jansen, 2008, CGFS, 2019, Bernanke, 2020, and Blinder, Ehrmann, de Haan and Jansen, 2024). IRG does not include the publication of policy rate forecasts, as some small open economies regularly do. Their experience is discussed in Svensson (2015), Natvik, Rime and Syrstad (2020), Brubakk, Ellen and Xu (2021) and Hofmann and Xia (2022).

[2] As explained in Section 3, we codified a total of 219 monetary policy announcements between January 2019 and July 2021 from monetary authorities in Argentina, Brazil, Chile, Colombia, Croatia, Czechia, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Romania, South Africa, Thailand, and Turkey.

regressions à la Jordà (2005) to assess IRG statements' market impact and potential negative side effects during January 2019–July 2021.[3] The baseline sample has a total of 50 IRG monetary policy announcements among the five EMEs that adopted IRG.

We find that long-term local currency yields fell after interest rate guidance statements in emerging economies, despite some heterogeneity in the reduction of yields across countries. The reduction in long-term yields was accompanied by a compression of term spreads and a fall in market expectations of future policy rates and in term premia. The magnitude of the reduction in 10-year yields ranged between five and twenty basis points. The median reduction in long-term yields corresponds to a median reduction in term spreads of about 10 basis points. These effects are economically significant and in line with existing literature studying the effects of interest rate guidance in AEs. Importantly, we do not observe a systematic negative market reaction (such as de-anchoring of inflation expectations, currency depreciation pressures, or increased sovereign credit risk) that would be associated with a loss of central bank credibility or with concerns about fiscal dominance.

The rest of the paper is structured as follows. The next section discusses the main features of interest rate guidance adopted in EMEs and compares it with that adopted in AEs. It also discusses the main literature on interest rate guidance (aka forward guidance) and the main empirical findings of AEs' experience with that policy. Section 3 presents the data and our empirical strategy. Section 4 discusses the baseline results for the effects of IRG statements in EMEs on medium- and long-term yields, term spreads, interest rate expectations and term premia. In Section 5 we explore whether risks associated with interest rate guidance in EMEs materialised. Section 6 offers some robustness and sensitivity checks of the baseline results. Section 7 concludes.

2 Interest rate guidance in EMEs: mechanisms, benefits, risks, and usage

Explicit interest rate statements, or forward guidance as they are known in AEs, are part of monetary policymakers' communication toolkit and can be useful when specific economic or financial conditions prevail.[4] In particular, interest rate guidance may provide additional monetary accom-

[3] While in an ideal scenario we have a larger sample of countries adopting IRG and a longer time span to analyse the policy effects, the sample of countries and time period of analysis are dictated by the adoption for the first time of IRG by only five EMEs during the 2020 Covid-19 pandemic.

[4] The toolkit also comprises communications related to the objectives of monetary policy and its strategy, statements about the economic outlook, and policy announcements themselves. Central banks' practices may vary across jurisdictions regarding the identity of the communicator (eg Governor or Committee), the frequency and format of policy communications (eg press releases, press conferences, speeches), as well as the level of detail provided. For further

modation at times when policy interest rates are already at their effective lower bound, by reinforcing the prospect of loose monetary conditions continuing into the future (Blinder *et al.*, 2024, 2008).

IRG may affect financial markets and economic activity through a number of channels. First, by signalling an easier policy stance than expected by markets, the statements lower the level of future expected short-term rates, and thus the *expectations component* of long-term rates. Second, by providing greater clarity about the future path of interest rates, they reduce the volatility and dispersion of expected future policy rates, and thus the term premium, through the *risk component* of long-term rates. Third, they may alter the *transmission of monetary policy:* if markets believe central banks' announcements, they may be more responsive to the type of economic news that conditions policy (for further discussion see Ehrmann, Gaballo, Hoffmann and Georg, 2019; Filardo and Hoffmann, 2014; Moessner and Rungcharoenkitkul, 2019; Woodford, 2012).

The literature on forward guidance in AEs identifies three distinct types of guidance (Campbell, Ferroni, Fisher and Melosi, 2019; Filardo and Hoffmann, 2014; Moessner, Jansen and de Haan, 2017). The first type is *open-ended*, in which the central bank commits to an expansionary policy stance "for an extended period of time". The second type is *outcome- or threshold-based*, in which exit is subject to the realisation of a pre-specified economic outcome. The third type is *calendar-based*, which specifies the future policy stance for a defined period. While open-ended guidance may not convey a strong commitment, as central banks can change policy at discretion, it affords flexibility if conditions change. Calendar-based guidance offers a strong commitment but comes at the cost of tying the monetary authority's hand (if conditions change, it may be forced to follow a time-inconsistent policy, on pain of damage to its reputation if it reneges on its promise). Both open-ended and outcome-based guidance lower the risk of time-inconsistency, in the sense of the central bank having previously committed to a stance which is now wrong because circumstances changed (for a discussion of trade-offs between different types of guidance see CGFS, 2019; Ehrmann *et al.*, 2019; Filardo and Hoffmann, 2014; Mishkin, 2017; Woodford, 2012). As pointed out in Coenen, Ehrmann, Gaballo, Hoffmann, Nakov, Nardelli, Persson and Strasser (2017), central banks can switch from one type of IRG to another in the course of a policy cycle.[5]

discussion see Blinder *et al.* (2008), Blinder *et al.* (2024) and de Haan and Hoogduin (2024).

[5]The authors designate the guidance of the ECB as open-ended between July 2013 and March 2016, and as calendar-based afterwards.

The risks inherent in IRG have been extensively discussed in the literature (see, for instance, Coenen *et al.*, 2017, Orphanides, 2023, Blinder *et al.*, 2008 and Blinder *et al.*, 2024). A first risk is that it is either not understood or distorted by various stakeholders that are the recipients of the central bank's policy communications. One such group of stakeholders is households. Kryvtsov and Petersen (2021) make the point that while households may be able to understand announcements about actual policy rate changes, they may find hard to absorb forward-looking guidance and adjust their consumption and other economic behaviour accordingly. This is especially the case if communication about the time horizon of future policy patterns is absent or imprecise. Another key counterparty of central bank communications is financial markets. If, as part of its IRG the central bank has publicly designated certain economic or financial indicators as conditioning its future policy actions, markets may move in anticipation of such actions and thus preclude the central bank from observing the variables as independent indicators in their own right. This is referred to as the "echo chamber" effect in Blinder *et al.* (2024) and as the "reflection" in Morris and Shin (2018).

A second risk is that interest rate guidance is misunderstood as a firm commitment by the central bank to a specific policy despite being communicated as conditional on certain economic or financial indicators. Economic agents may then see adjustments to outcome-based policies as reneging on a commitment, and call the central bank's credibility into question. Policy mistakes may occur and communication challenges may arise with respect to IRG when guidance is based on economic variables which, on their own or in combination, may be insufficiently understood, or subject to significant discrepancies between forecasts and realisations. In this context, Moessner *et al.* (2017) discuss the Bank of England's revision of its forward guidance in in the 2010s in an environment of falling unemployment despite low inflation, and the Bank's clarification that its guidance had been meant as an elaboration of its reaction function, rather than a commitment to a specific policy path. Relatedly, Orphanides (2023) argues that the pursuit of outcome-based, rather than forecast-based monetary policy played a role in the Federal Reserve being too late in removing monetary accommodation in response to post-pandemic inflationary pressures.

A final complication pertains to the sequencing of IRG with communications about other monetary policies such as asset purchases. According to Orphanides (2023), the announcements by the Federal Reserve and the ECB that their removal of policy rate accommodation would occur only

after net asset purchases had ceased contributed to both central banks being too late in removing monetary accommodation during the post-pandemic period.

What form did IRG take in EMEs? The guidance that was adopted in Brazil, Chile, India, Israel, and Peru fits in with the typology above (see Table 1). Chile, India and Israel resorted to open-ended statements when adopting IRG (making pronouncements about keeping rates at their levels – or not increasing them – for an extended period of time). Brazil and Peru made their first statements conditional on future outcomes. Brazil went beyond the typical central bank's concerns of stabilizing inflation. Its statement also referred to "*the maintenance of the current fiscal regime*." Despite evidence suggesting higher effectiveness of calendar-based statements (Ehrmann *et al.*, 2019; Woodford, 2012), no EME central bank adopted this at first. As did AEs, most EMEs subsequently fine-tuned their statements, with some central banks switching from one type of statement to another as conditions changed (eg Chile in June 2020, India in October 2020).

What led these five EME central banks to adopt IRG? Improved central bank credibility, lack of policy space, and concerns about stagnating, shirking economic activity and market disruptions, all played a role.

First, improved central bank credibility may have dissipated concerns about de-anchoring of inflation expectations, which are traditionally considered a potential risk of tying one's hand with low rates that may have to be reneged ex post if inflation picks up (see eg Mishkin, 2017).

Second, as in AEs, the monetary environment in IRG-adopting EMEs was one of historically low nominal policy rates (Figure 1), which constrained their traditional policy space to cut rates.[6] In such conditions, explicit statements can help lower long-term rates through their expectations and risk components (Bernanke, 2020). While the central banks of Brazil, Chile and Peru adopted IRG in 2020 when interest rates hit their historical minima, the central banks of India and Israel first adopted IRG in 2019 when this was not the case. These central banks fine-tuned their IRG stance later on during the Covid-19 pandemic when interest rates hit their historical minima (see Figure A.1 in the Appendix). The analysis in this paper focuses on the IRG announcements made during the period in which a country hit its historical minimum interest rate, which we regard as its effective lower bound – ELB (also shown in Figure A.1).

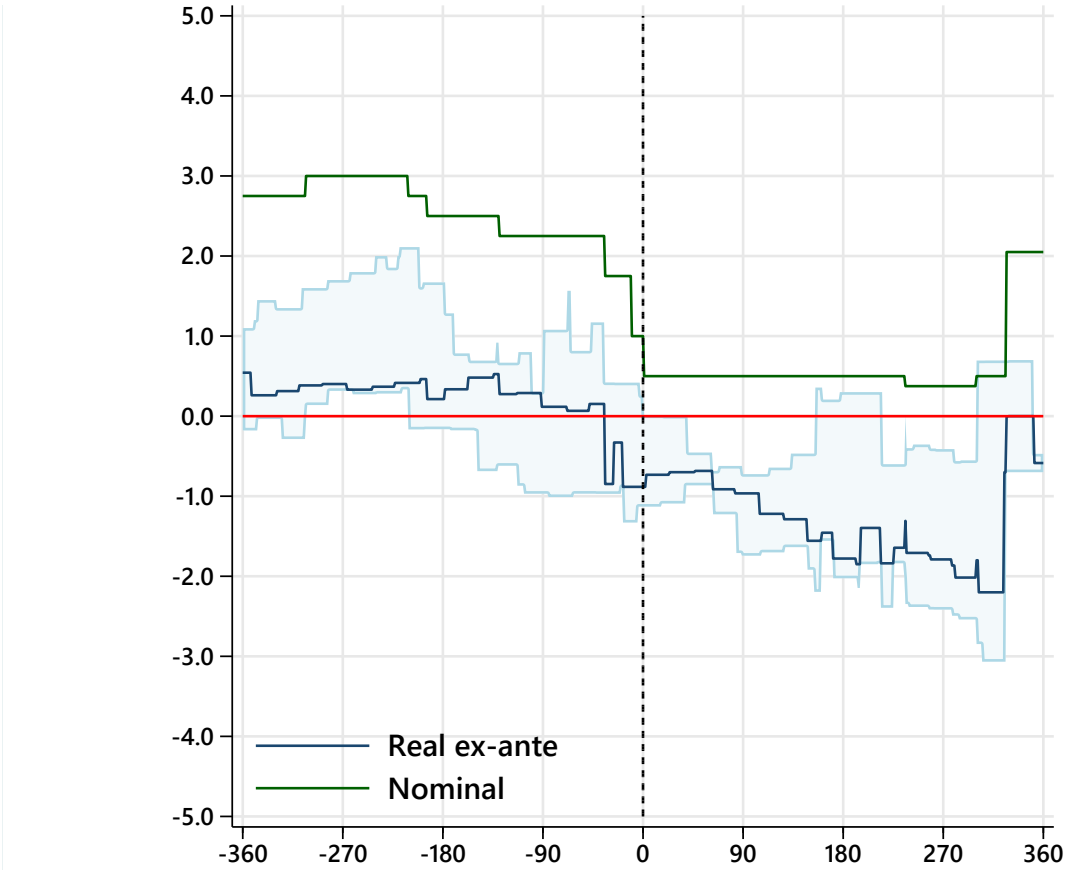
[6] Interestingly, the interest rate levels in EMEs at adoption of IRG were not that far from the levels in AEs when those countries adopted the policy after the Global Financial Crisis (see Figure A.2 in the Appendix).

Table 1: Monetary policy statements announcing the adoption of IRG in EMEs and AEs

Country group	Country	Date of IRG	Statement when adoption of IRG	Type of IRG adopted
EMEs	IL	28.Aug.19	The Monetary Committee's assessment is [...], the interest rate will not be increased **for an extended period.** Moreover, if necessary, the Committee will take additional steps toward making monetary policy even more accommodative in order to support a process at the end of which inflation will stabilize around the midpoint of the target range, and to support economic activity.	Open-ended
	IN	04.Oct.19	The MPC also decided to continue with an accommodative stance **as long as it is necessary** to revive growth, while ensuring that inflation remains within the target.	Open-ended
	CL	31.Mar.20	[...] the Board estimates that for inflation to converge to the 3% target, monetary policy needs to remain highly expansionary **for an extended period.**	Open-ended
	PE	07.May.20	The Board considers it appropriate to maintain a strong expansionary monetary stance for an extended period and **while the negative effects of the pandemic on inflation and its determinants persist.**	Outcome-based
	BR	05.Aug.20	[...] the Copom does not foresee reductions in the monetary stimulus **unless inflation expectations, as well as its baseline scenario inflation projections, are sufficiently close to the inflation target at the relevant horizon for monetary policy**, which currently includes 2021 and, to a lesser extent, 2022. This intention is conditional on the maintenance of the current fiscal regime and on the anchoring of long-term inflation expectations.	Outcome-based
AEs	US	16.Dec.08	[...] the Committee anticipates that weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate **for some time.**	Open-ended
	CA	16.Dec.08	[...] Conditional on the outlook for inflation, the target overnight rate can be expected to remain at its current level **until the end of the second quarter of 2010 in order to achieve the inflation target.**	Calendar-based
	JP	05.Oct.10	The Bank will maintain the virtually zero interest rate policy **until it judges**, on the basis of the "understanding of medium- to long-term price stability," **that price stability is in sight**, on condition that no problem will be identified in examining risk factors, including the accumulation of financial imbalances.	Outcome-based
	EA	04.Jul.13	[...] Looking ahead, our monetary policy stance will remain accommodative for as long as necessary. The Governing Council expects the key ECB interest rates to remain at present or lower levels **for an extended period of time.**	Open-ended
	GB	07.Aug.13	The Committee intends at a minimum to maintain the current highly stimulative stance of monetary policy **until economic slack has been substantially reduced**, provided this does not entail material risks to either price stability or financial stability. In particular, the MPC intends not to raise Bank Rate from its current level of 0.5% **at least until the Labour Force Survey headline measure of the unemployment rate has fallen to a threshold of 7%, subject to the conditions below.**	Outcome-based

Third, all five EMEs which resorted to IRG stated that their objective was to support economic activity and help inflation and inflation expectations converge to target (Table 1). Indeed, in 2019

Figure 1: Real ex-ante monetary policy rates at the time IRG was introduced in EMEs



This graph shows the level of interest rates in emerging market economies at adoption of IRG for the first time. The vertical dashed line indicates implementation of IRG for the first time. The horizontal axis indicates the number of days before and after the first interest rate guidance statement. The band shows the inter-quartile range of the real ex-ante interest policy rates, and the dark blue line the medians. The green line stands for the median nominal policy rate. The dates of first adoption of IRG are as follows: IL 28.Aug.2019, IN 04.Oct.2019, CL 31.Mar.2020, PE 07.May.2020, BR 05.Aug.2020.

and 2020 inflation rates were at historically low levels in all five EMEs. IRG statements made in Brazil, Chile and Peru expressed concerns about the pandemic's effects on economic activity, first and foremost (before concerns about inflation overshooting its target arose and led to a hiking cycle in the second half of 2021).

Lastly, some of the IRG statements contained concerns about market dislocations,[7] particularly at the height of the Covid-19 crisis, and IRG was deployed to reduce uncertainty about the future

[7]See for example the policy statement of August 2019 from the Bank of Israel in Table 1, or the monetary policy statement of July 2021 from the Central Reserve Bank of Peru: "The Board considers it appropriate to maintain an expansionary stance as long as the negative effects of the pandemic on inflation and its determinants persist [...] *Financial markets were highly volatile* in a context of electoral uncertainty *and the BCRP's actions were intended to mitigate this volatility*," (emphasis added).

path of interest rates. In Chile, India and Israel, central banks complemented IRG with large-scale asset purchases (LSAPs), though the latter were implemented with the stated objective of remedying market dislocations rather than providing additional monetary easing.

3 Data and Empirical methodology

To gauge the effects of IRG in EMEs, we started by codifying the monetary policy statements of twenty large EMEs[8] in 2020 and identified statements of explicit IRG. We sourced the statements from each central bank's website and double-checked against the database of unconventional monetary policy measures compiled by Cantú, Cavallino, De Fiore and Yetman (2021). We found that only five EMEs implemented IRG in 2020: Brazil, Chile, India, Israel and Peru. For these five countries we then codified all monetary policy statements for the period January 2019 to July 2021 (when our sample ends). We codified a total of 219 monetary policy announcements in our sample of twenty EMEs during January 2019 – July 2021. The baseline sample has a total of 50 IRG monetary policy announcements among the five EMEs that adopted IRG.

We coded IRG statements as either open-ended, outcome-based, or calendar-based based on our reading and following the literature on forward guidance in AEs. To illustrate, the statement excerpts relevant for the coding are in bold in Table 1. Table 2 presents a summary of our baseline sample of IRG statements. The complete list is in Table A.2 in the Appendix.

Table 2: Interest rate guidance statements in EMEs, 2019–2021

Country	Date IRG was introduced	Number of IRG statements	Number of times IRG was changed	Concurrent measures		IRG statements at the ELB without simultaneous rate cuts or LSAPs
				Rate cuts	LSAPs	
BR	05.Aug.20	5	1	1	0	1
CL	31.Mar.20	11	2	1	3	1
IL	28.Aug.19	8	1	0	0	1
IN	04.Oct.19	11	2	3	1	1
PE	07.May.20	15	0	0	0	1

This table summarizes the interest rate guidance statements in our sample. The statements are detailed in Table A.2 in the Appendix.

Based on the assumption (verified in section 6) that extensions or simple restatements of previous announcements do not feed new information to the market, we focus on the statements in

[8] Argentina, Brazil, Chile, Colombia, Croatia, Czechia, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Romania, South Africa, Thailand, and Turkey.

which IRG was adopted for the first time or in which the wording substantially altered the characteristics of the guidance. This includes cases where the type was modified, say from open-ended to outcome-based, or where conditionalities were changed. We also restrict the baseline analysis to those announcements that were adopted at the historical minimum of the policy rate (which we treat as the effective lower bound – ELB). To strip out the effects of concurrent policy measures, we eliminate statements accompanied by policy rate cuts and/or LSAPs announcements.[9] This reduces the sample to five "clean" IRG statements, listed in Table A.2 in the Appendix (the "baseline sample", for short).[10]

We first analyse the effects of IRG based on an event study using daily data. For both medium- (5-year) and long-term (10-year) yields, we compute cumulative changes for windows starting five days before and ending five days after each announcement. We present results separately for each of the five IRG statements in the baseline sample.

We complement the event study approach with a local linear projection regression analysis following the methodology of Jordà (2005). We estimate variations of the following baseline model:

$$y_{i,t}^{h} = \alpha_i^h + \beta_i^h IRG_{i,t} + \theta_i^h X_{i,t} + \varepsilon_{i,t}^h \tag{1}$$

where $y_{i,t}^{h}$ denotes the cumulative change of variable y in country i from the statement of date t to day h, for $h = 1, ..., 5$. Our main variable of interest is local currency yields (5- and 10-year yields), but we also estimate the model for term spreads, inflation expectations, sovereign credit default swaps (CDSs) and exchange rates. $IRG_{i,t}$ is a dummy variable that takes value 1 on the date of a baseline IRG statement in country i (those at the ELB, not simultaneous with an interest rate cut or announcement of a bond purchase programme). The coefficients of interest are the β_i^h, which quantify the impact of a baseline IRG statement at horizon h on variable y.

[9] For a discussion of the signalling effects of LSAP announcements, see Bauer and Rudebusch (2014); on their use in combination with forward guidance refer to Andrade, Breckenfelder, De Fiore, Karadi and Tristani (2016), Masayuki and Kaihatsu (2016) and Ehrmann *et al.* (2019). A decomposition of the effects of the ECB's forward guidance and QE using high-frequency data is performed by Rostagno, Altavilla, Carboni, Lemke, Motto and Saint Guilhem (2021).

[10] While five baseline "clean" IRG announcements seems a low number, the reader should bear in mind that monetary policy announcements are limited in nature, particularly if one wants to focus on those non-concurrent with other policies and implemented at the ELB, as done in this paper. As reference, the literature studying forward guidance in AEs has also focused on a low number of announcements. For example, Table 1 in Ehrmann *et al.* (2019) lists four distinct periods in which IRG was implemented during ELB periods by the US Federal Reserve in 2008-2016, and two IRG announcements in the cases of the ECB and Bank of England. Table A1 in the survey by Moessner *et al.* (2017) lists two distinct types of IRG announcements by Bank of England, one by the ECB, and four by the US Federal Reserve.

The regressions control for a vector $(X_{i,t})$ of daily country-specific control variables. In our baseline specification for local currency yields this includes a dummy that takes the value 1 if a large-scale asset purchase programme was announced that day, the level of the monetary policy rate, the daily change in the monetary policy rate, the level of sovereign CDSs, the returns of the domestic stock exchange index and the volatility of such returns, the level of the term spread, and the level of the exchange rate.

In our baseline estimation, we estimate equation 1 country by country, treating α_i^h as the constant in each country-specific regression. We complement the baseline country-by-country regressions with an analysis pooling the data for the five IRG-adopting countries into a single model. To this end, we estimate both the mean group estimator of Pesaran (2006) and the dynamic common correlated effects estimator of Chudik and Pesaran (2015).[11]

We complement the results based on IRG-adopting countries with a panel analysis by estimating a panel fixed effects model pooling the five IRG-adopting EMEs in our baseline sample with the fifteen non-IRG adopting EMEs. In the panel approach, we control for the same set of daily covariates in vector $(X_{i,t})$,[12] and additionally include in model 1 country (α_i^h) and day (δ_t^h) fixed effects, as well as a dummy indicator $(MPD_{i,t})$ that takes the value 1 on days that the central bank had a scheduled monetary policy decision. This dummy takes the value 1 on the date of the monetary policy decision regardless of the outcome of the decision or any announcement made by the central bank. For the IRG-adopting countries, this dummy takes value zero on the dates of the baseline five "clean" IRG statements.

Following Montiel-Olea and Plagborg-Møller (2021), in all local projection models we include the first lag of the dependent variable. These authors show that inference based on lag-augmented local projections models is asymptotically valid for stationary data and for long horizons.

As with the literature studying any other single policy, a problem that we cannot easily solve is that some of the IRG statements took place simultaneously with other measures. The baseline

[11] See Canova (2024) for a discussion of why these estimators are the preferred way of obtaining unbiased coefficients for the average effects in a local-projections setting when having a long panel ($T \to \infty$, as in our application). These estimators are unbiased even if there is dynamic cross-sectional heterogeneity (ie the dynamic responses across countries are not homogeneous).

[12] In an ideal panel setting with policy and non-policy adopting countries, the adoption of the policy should be as good as randomly assigned conditional on the control covariates (see Jordà, 2023). This implies that the probability density function for each control variable included in equation 1 is similar for each sub-sample of IRG- and no-IRG adopting economies. In section 6 we provide evidence that this holds in our specification.

results exclude statements that were concurrent with interest rate cuts and/or LSAPs announcements. While in principle the estimated effects of IRG statements may be confounded by other central bank or fiscal policies (eg lending operations, FX market interventions, or fiscal stimuli), the daily frequency of the observations that we work with greatly limits this risk. Furthermore, inference based on the pooled panel of countries should allay some of these concerns, as the mix of policy measures varied across countries. Finally, a robustness check based on randomization inference further gives credence to the notion that the baseline findings are not the result of spurious correlations.

The sample in the baseline regressions includes the five EMEs that adopted IRG: Brazil (BR), Chile (CL), Israel (IL), India (IN), and Peru (PE). The fifteen non-IRG adopting EMEs are: Argentina, Colombia, Croatia, Czechia, Hungary, Indonesia, Korea, Malaysia, Mexico, Philippines, Poland, Romania, South Africa, Thailand, and Turkey. We use daily data from 1 January 2019 to 15 July 2021. Daily financial variables used in the paper are listed, along their source, in Table A.1 in the Appendix.

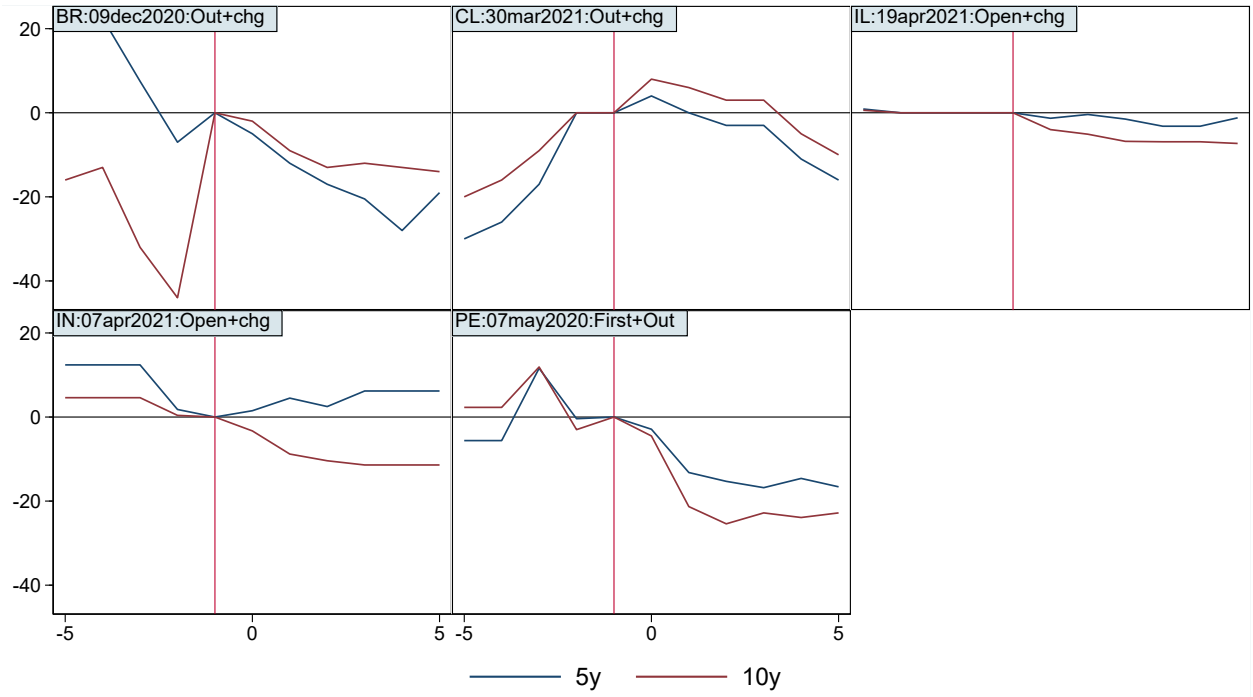
4 Did interest rate guidance work in EMEs?

4.1 Effects on medium- and long-term local currency yields

We start by analysing the responses of local currency (LC) yields to each of the five baseline IRG statements by means of the event study presented in Figure 2. Despite some heterogeneity and a somewhat muted effect on the day of the announcement, interest rate guidance was followed by a reduction in long-term yields. In most countries the cumulative reduction reaches over twenty basis points (bps) by day 4. Brazil, Chile and Peru saw the largest reductions.

The reductions in long-term yields documented in the event studies are borne out and statistically significant based on the regression analysis using OLS local projections à la Jordà (2005). Table 3 shows the estimated coefficients β^h from model 1 for each country that adopted IRG, for each estimating horizon $h = 0, ..., 5$ after baseline IRG statements, for both 5- and 10-year local currency yields. The results of these regressions indicate that IRG statements reduced long-term local currency yields in a significant and persistent way in all countries, with the exception of 5-year LC yields in India. One day after an IRG statement 5-year yields fell up to 13 basis points in Brazil and 10-year LC yields fell up to 18 basis points in Peru. In all cases, that effect persists and continues

Figure 2: Changes in local currency yields around baseline IRG statements (in basis points)



This figure shows the cumulative change in 5- and 10-year local currency yields five days before and five days after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in basis points in 5- and 10-year yields relative to the day prior to the IRG statement.

to build up in subsequent days.

Comparisons based on country-specific regressions, however, should be taken with care, as the level of LC currency yields is quite different across countries (eg in 2019, the average 10-year LC yield was 7.9 percent in Brazil, 7.0 percent in India, 4.7 percent in Peru, 3.6 in Chile, and 1.4 percent in Israel). Expressing the results in basis points, nonetheless, allows us to compare them with the existing literature and assess their economic significance. Despite some variation of the estimated effects across jurisdictions and over time, they are economically significant and in the same ballpark as previous estimates for explicit interest rate statements in AEs. For example, Bernanke (2020) reports one-day yield reductions on 10-year Treasuries of 27 basis point in the United States following the forward guidance announcements of 9.Aug.2011 and 25.Jan.2012. Filardo and Hoffmann (2014) document reductions of between 1 and 12 bps in the UK, the Euro Area, and Japan for the period 2010-2013 (see also Borio and Zabai, 2016, CGFS, 2019, and Swanson, 2021).

Our baseline regressions are run country-by-country, essentially using the daily variation in

yields surrounding non-IRG statement days within a given country as controls for identifying the effect of IRG statements. We complement these country-specific results by pooling the five IRG-adopting countries into a single model and obtain average effects. These regressions are run after standardising the variables,[13] so that differences across countries in the level and volatility of a given variable do not bias the results. At the bottom of Table 3 we present estimated coefficient of both the mean group estimator of Pesaran (2006) (hereafter MG) and the dynamic common correlated effects estimator of Chudik and Pesaran (2015) (hereafter DCCE). The estimated average effects indicate a persistent and statistically significant reduction of long-term local currency yields (ie 10-year yields) following IRG announcements.

We further complement our baseline results based on the five IRG-adopting countries by pooling their data with the other fifteen EMEs in our sample that did not adopt the policy. This would allow to use the variation in local currency yields of non-IRG adopting countries to help identify the effect of IRG statements in those that adopted IRG.

In these regressions we additionally include both country and day fixed effects, as well as a dummy indicator that takes the value 1 on days that the central bank had a scheduled monetary policy decision. Country fixed effects allow us to control for time-invariant country characteristics that may affect local currency yields (eg the development of the local debt market, the institutional characteristics of the central bank, or its regular communication style, such as the publication – or not – of conditional forecasts).[14] Time fixed effects control for global factors affecting all countries simultaneously (eg policy announcements by major economies). The only variation not absorbed by these fixed effects owes to country-specific daily characteristics, which we control for in vector $X_{i,t}$ as before. As with the regressions pooling IRG-adopting countries, these panel regressions are run after standardising the variables. In these panel models we base inference in Driscoll and Kraay (1998) standard errors, which allow for general forms of cross-sectional and temporal dependence.

[13] We follow the usual practice of standardizing variables by subtracting their sample mean and dividing the result by the sample standard deviation. Both mean and standard deviation are computed over the period Jan 2019 – Jul 2021.

[14] For example, for central banks that regularly publish conditional policy rate paths (eg Israel, and Chile starting in March 2020) the additional information content of IRG statements may be lower than in countries where authorities do not regularly publish such projections (eg Brazil, India and Peru).

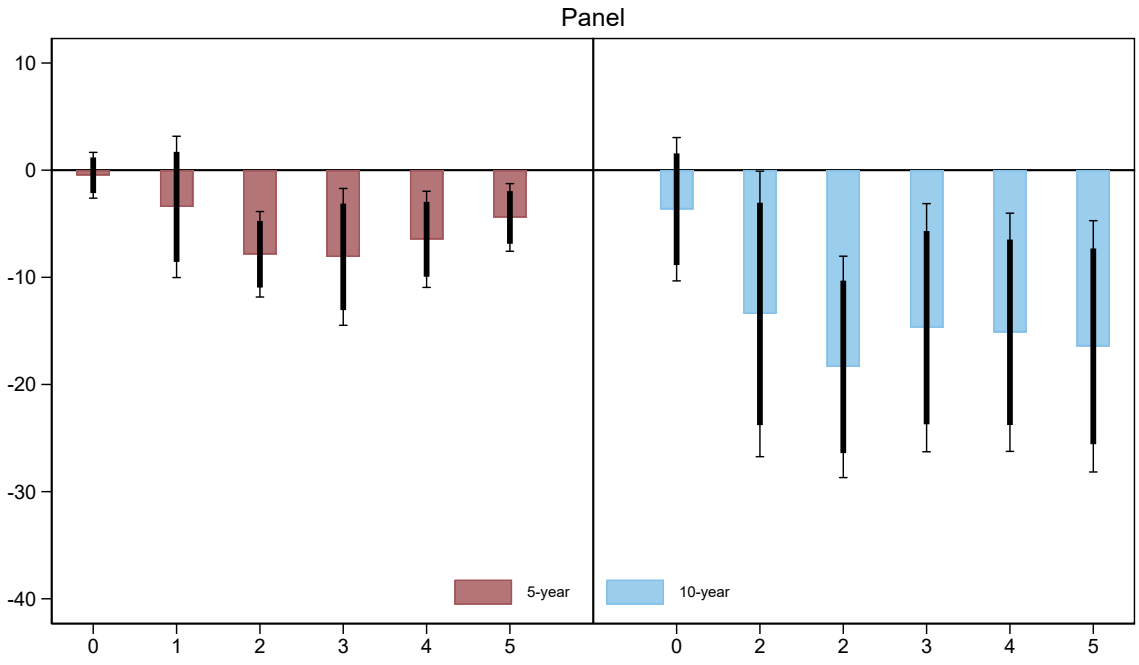
Table 3: Baseline results. Changes in local yields after interest rate guidance statements

The first five rows of this table show country-specific estimated coefficients for the cumulative change in 5- and 10-year local currency yields after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in basis points in 5- and 10-year yields relative to the day preceding the IRG statement. Estimated coefficients are based on the regression model presented in Section 3. Control variables include a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the level of sovereign CDS, the returns of the domestic stock exchange index and their volatility, the level of the term spread, and the level of the exchange rate. Robust standard errors are in parenthesis. The last two rows present results after pooling the five countries, specifically the mean group (MG) estimator of Pesaran (2006) and the dynamic common correlated effects (DCCE) estimator of Chudik and Pesaran (2015). Newey and West (1987) heteroscedasticity autocorrelation robust standard errors are reported in parenthesis in both cases. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	5-year LC yields						10-year LC yields					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Country-specific regressions												
Brazil	-7.33***	-12.53***	-14.22***	-15.34***	-17.46***	-5.36*	-3.02	-24.86***	-33.65***	-31.65***	-35.68***	-40.29***
	(2.117)	(2.340)	(2.532)	(2.633)	(2.991)	(2.848)	(3.497)	(3.784)	(2.494)	(2.327)	(2.477)	(2.028)
Chile	2.52***	-2.93***	-3.11***	-0.61	-8.10***	-6.51***	6.80***	1.42	-0.20	1.79**	-6.17***	-4.60***
	(0.659)	(0.847)	(0.913)	(0.952)	(0.923)	(1.135)	(0.608)	(0.942)	(0.872)	(0.863)	(0.892)	(0.910)
India	1.39***	4.65***	0.64	5.64***	2.53***	3.00***	-3.60***	-7.15***	-4.73***	-3.67***	-2.32***	-1.77***
	(0.420)	(0.486)	(0.502)	(0.490)	(0.548)	(0.546)	(0.315)	(0.429)	(0.671)	(0.606)	(0.670)	(0.605)
Israel	-1.24***	0.43*	-1.07***	-1.84***	-0.58**	1.52***	-3.99***	-2.31***	-2.75***	-0.96**	-0.93**	-1.28**
	(0.173)	(0.229)	(0.184)	(0.238)	(0.258)	(0.257)	(0.277)	(0.491)	(0.431)	(0.450)	(0.468)	(0.514)
Peru	-1.98**	-11.41***	-5.16***	-4.33***	0.03	-4.09***	-3.66**	-19.48***	-10.90***	-3.16	-5.96**	-3.27
	(0.799)	(0.886)	(1.364)	(1.151)	(1.398)	(1.428)	(1.725)	(1.979)	(2.600)	(1.947)	(2.572)	(2.389)
Obs	662	662	661	660	659	658	662	662	661	660	659	658
Pooled regressions												
MG estimator	-1.75	-4.14	-5.17**	-3.79	-4.94	-1.63	-2.72	-14.09**	-13.18**	-8.68	-12.27*	-11.91
	(1.865)	(3.762)	(2.495)	(3.734)	(3.717)	(2.516)	(3.378)	(5.950)	(5.988)	(6.214)	(6.321)	(7.485)
Obs	3,310	3,310	3,305	3,300	3,295	3,290	3,310	3,310	3,305	3,300	3,295	3,290
DCCE estimator	0.08	-1.63	-4.67***	-4.20	-2.89**	-2.15	-1.80	-11.67***	-16.95***	-11.68**	-11.47**	-13.45***
	(1.330)	(2.778)	(1.340)	(2.627)	(1.333)	(2.503)	(5.540)	(4.432)	(3.630)	(4.701)	(4.528)	(2.630)
Obs	3,305	3,305	3,300	3,295	3,290	3,285	3,305	3,305	3,300	3,295	3,290	3,285

Figure 3 shows the estimated coefficients, together with 90% and 95% confidence intervals. The results are in line with the country-by-country and pooled regressions of IRG-adopting countries, indicating an statistically significant negative effect of IRG statements on local currency yields, particularly for 10-year yields and after two days of the announcement. The effect on the day of the announcement seems muted.

Figure 3: Changes in local yields after IRG statements. Panel regression with IRG and non-IRG adopting countries (standardised yields)



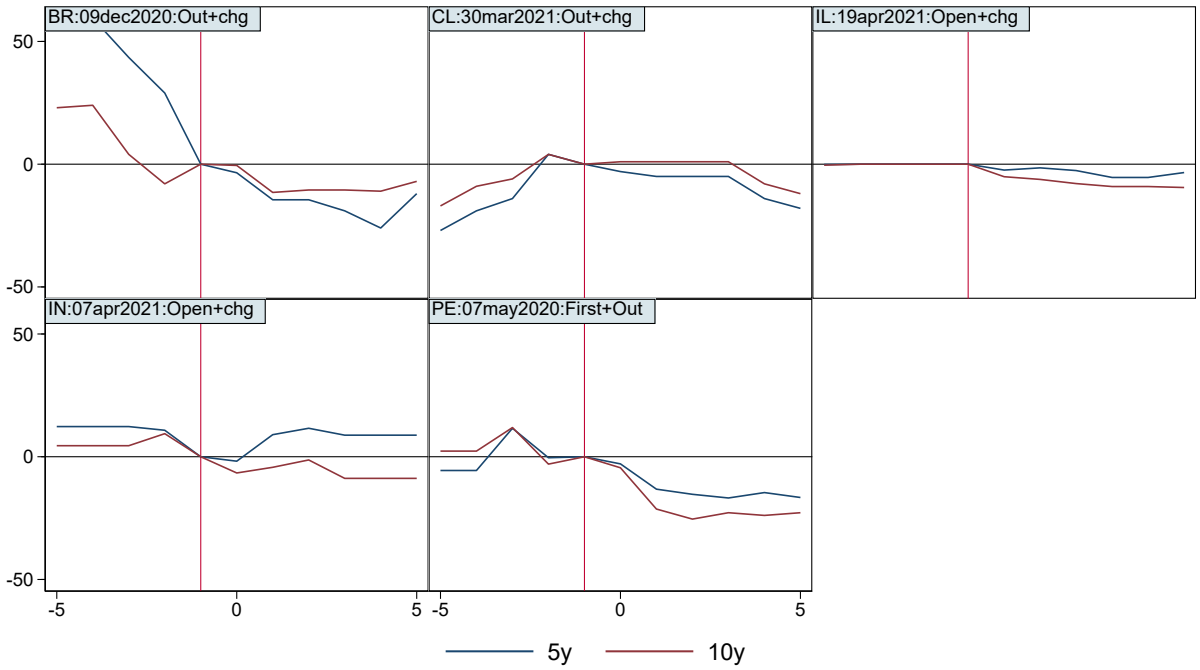
This figure shows the estimated coefficients for the cumulative change in 5- and 10-year local currency yields after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in basis points in 5- and 10-year yields relative to the day preceding the IRG statement. Estimated coefficients are based on the regression model presented in Section 3, including both country and day fixed effects. Control variables further include a dummy indicator that takes the value 1 on days that the central bank had a scheduled monetary policy decision, a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the level of sovereign CDS, the returns of the domestic stock exchange index and their volatility, the level of the term spread, and the level of the exchange rate. All variables are standardised. Confidence intervals are constructed based on Driscoll and Kraay (1998) standard errors.

4.2 Effects on term spreads

The decline in long-term yields observed after IRG statements is also accompanied by a compression in term spreads – defined as the difference between longer-term and 1-year yields. Figure

4 shows the plot with the event studies for term spreads for each country and both tenors: 5Y-1Y and 10Y-1Y. Table A.3 in the Appendix shows the results of country-specific OLS local projections. While there are some differences across countries in speed and intensity, both term spreads decrease in the days following IRG statements (with the exception of India's 5Y-1Y term spread). The compression in term spreads is in line with the findings of the literature on forward guidance in AEs. For example, Woodford (2012) reports a flattening of the OIS yield curve after the "mid-2013" announcement made by the Federal Reserve in 2011.

Figure 4: Changes in term spreads around baseline IRG statements (in basis points)



This graph shows the cumulative change in term spreads, defined as the difference between 5- and 10-year with 1-year local currency yields, five days before and five days after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in basis points relative to the day prior to the IRG statement. Day zero is the day of the IRG statement.

4.3 Effects on expected interest rates and term premia

So far we have shown that IRG statements in EMEs reduced long-term yields and that this was accompanied by a compression of term spreads. This is in line with the expected effects of interest rate guidance discussed in Section 2. In this subsection, we further document that IRG statements in EMEs were also accompanied by a reduction in the market's expectations of future policy rates

and in term premia. For this, we show the changes in both expected interest rates and term premia before and after the five IRG in our baseline sample, rather than estimating a model.[15]

Figure 5 shows that the market's expected policy rates and term premia fell after IRG statements in the EMEs that implemented the policy (with the exception of Chile, which we discuss below). For example, following a significant change in the wording of Brazil's central bank policy statement in December 2020 – making more explicit the central bank's reading of economic conditions – expected interest rates at all horizons fell.[16] Expected rates also fell after a change in IRG in April 2021 in India, when the central bank made its guidance open-ended,[17] and in Israel when the Bank of Israel re-introduced open-ended guidance in April 2021 after removing such guidance one year before.[18]

In the case of Peru, market-implied policy rates are not available but the decomposition of 10-year yields indicates that both expected average short-term rates and term premium fell after the adoption of IRG in May 2020 (statement in Table 1). Interestingly, and as was the case for Brazil, the decrease is more pronounced for the term premium component. This suggests that IRG statements in EMEs may reduce long-term yields mainly by reducing the risk component of long-term rates (establishing this systematically is outside the scope of this paper, and we leave it for further research).

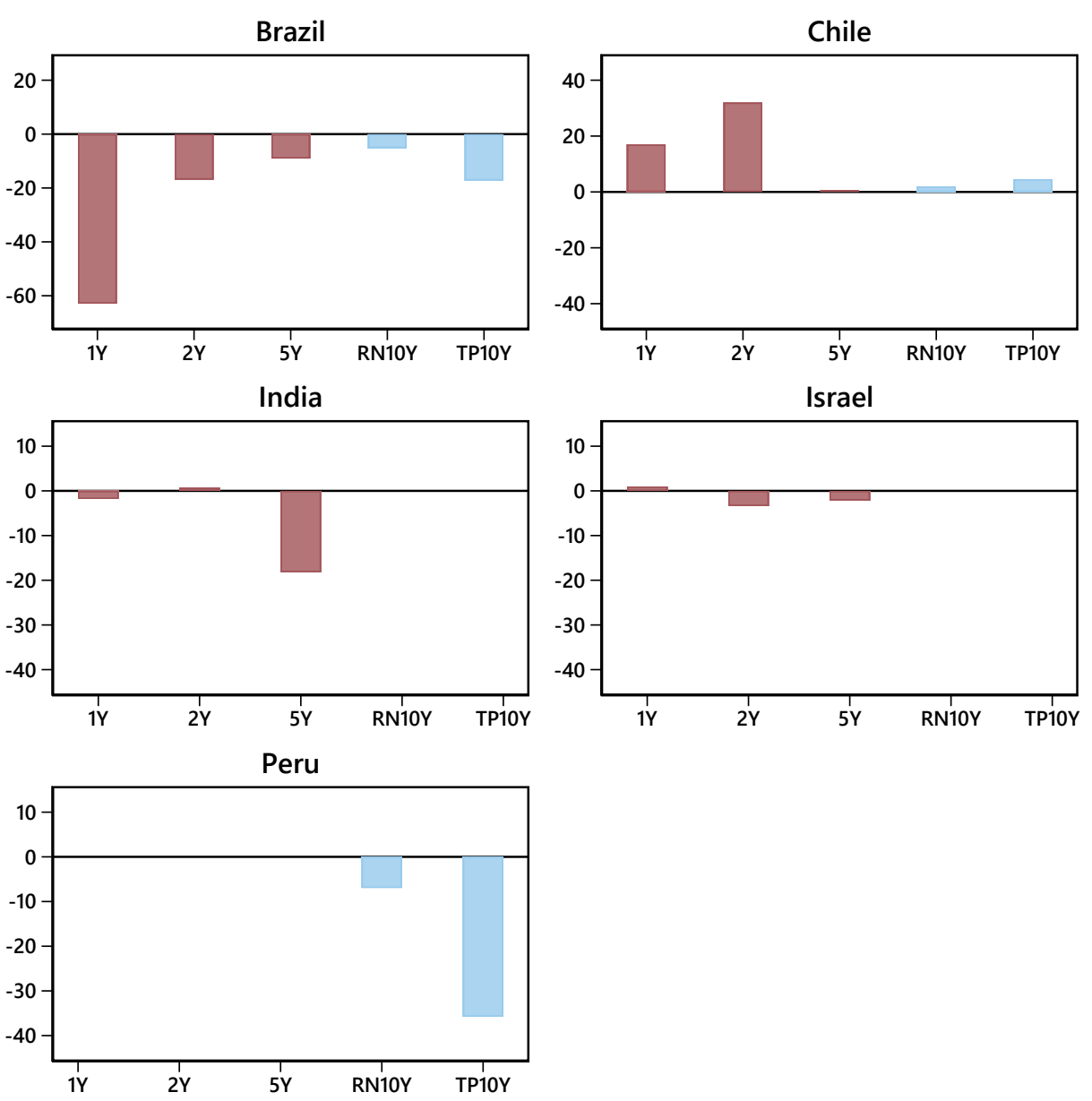
[15]Market expectations of rates at 1-, 2-, and 5-year horizons are market implied policy interest rates from Bloomberg. Lack of data precludes us from undertaking this analysis for Peru. For the three Latin American countries, we also use the decomposition of 10-year local currency yields between expected average short-term interest rate (or risk-neutral rate) and term premium from CEMLA (the Association of Central Banks of Latin America and the Caribbean).

[16]In its policy statement of 9 December, the Central Bank of Brazil remarked that "[...] *the Copom does not intend to reduce the monetary stimulus as long as specified conditions are met. The Committee judges that those conditions continue to hold. In spite of having increased since the last meeting, in particular for 2021, inflation expectations, as well as inflation projections for its baseline scenario, are still below the inflation target for the relevant horizon for monetary policy; the current fiscal regime has not been changed; and long-term inflation expectations remain well anchored.* [...]." In its previous statement on 28 October, it only said "[...] *the Copom does not intend to reduce the monetary stimulus unless inflation expectations, as well as its baseline scenario inflation projections, are sufficiently close to the inflation target at the relevant horizon* [...]."

[17]In its policy statement of 5 February, the Reserve Bank of India stated that "[...] *The MPC also decided to continue with the accommodative stance as long as necessary – at least during the current financial year and into the next financial year – to revive growth on a durable basis* [...]." In its statement of 7 April it changed the calendar-based guidance to an open-ended guidance, stating that "[...] *The MPC also decided to continue with the accommodative stance as long as necessary to sustain growth on a durable basis* [...]."

[18]In its policy statement of 19 of April, the Bank of Israel included the statement that "[...] *there are still challenges to economic activity in view of the health risks in Israel and abroad. The crisis's adverse effects on the economy, particularly the labor market, are expected to be prolonged. The Committee will therefore continue to conduct a very accommodative monetary policy for a prolonged time, using a range of tools as necessary, including the interest rate tool* [...]." Such statements with explicit guidance were stopped in February 2020, after the bank made its first IRG statement in August 2019.

Figure 5: Changes in expected interest rates and term premia after IRG statements (in basis points)



This figure shows the change in the market-implied policy rate (MIPR) at 1-, 2- and 5-year horizons, and expected average short-term rates and term premium derived from 10-year yields after IRG statements. Variables are measured as the average in the five trading days after and before baseline IRG statements. MIPRs are sourced from Bloomberg, which computes them using forward interest rates for 1-, 2-, and 5-years. Expected average short-term rates (RN10Y) and term premium (TP10Y) are from the decomposition of 10-year local currency yields available from CEMLA for Latin American economies.

The reduction in expected interest rates in EMEs was also economically significant, despite differences across countries due to widely different levels (on the days of baseline IRG statements, policy rates were 2% in Brazil, 0.5% in Chile, 4% in India, 0.1% in Israel, and 0.25% in Peru). Interest rates for 1- and 2-years ahead dropped the most in Brazil, falling 63 and 17 bps, respectively. The decrease in Israel for 2-years rates was 3 bps, and that for India's 1-year rate 2 bps. The reduction in expected rates was much more uniform for medium-term rates, with the 5-year expected rate falling 9, 18 and 2 bps in Brazil, India and Israel, respectively. These results are consistent with the empirical evidence of Filardo and Hoffmann (2014), documenting reductions in forward interbank rates on the days following IRG effected by the Federal Reserve, the ECB and Japan during the period 2008-13 (ranging from 2.5 to 30 bps). Del Negro, Giannoni and Patterson (2015) find that IRG statements in the US lower the short-term rate four quarters ahead by 15 bps and the long-term rate by 20 bps.

In the case of Chile, a change in wording introduced by the central bank on 30 March 2021, which switched its guidance from outcome- to calendar-based, resulted in rather higher expected rates. While contrary to the expected effect of the new explicit interest rate guidance, this seems a rational reaction to the change in wording and next day's update to the central bank's policy rate corridor showing a higher ceiling for the end-2021 policy rate.[19]

In summary, we find that long-term local currency yields fell after interest rate guidance statements in emerging economies. The reduction in long-term yields was accompanied by a compression of term spreads and a fall in market expectations of future policy rates and term premia. The magnitude of the reduction in long-term yields, terms spreads and expected policy rates is in line with existing literature studying the effects of interest rate guidance in AEs. These results are obtained non-parametrically based on an event study approach, and also analytically based on the OLS local projections à la Jordà (2005).

[19] In its policy statement of 27 January, the Central Bank of Chile stated that "[...] *the MPR will remain unchanged over most of the two-year monetary policy horizon* [...]." While in its statement of 30 March it changed the calendar-based guidance to an outcome-based guidance, stating that "[...] *the MPR will be held at its 0.5% minimum until the recovery of the economy takes hold and spreads to the more lagging components of expenditure, which will take several quarters* [...]." In addition, this was followed the next day by a monetary policy report showing an interest rate corridor with a higher ceiling for the policy rate by end-2021. Unsurprisingly, market-implied policy rates were also brought forward and higher than previously expected.

5 Did negative market reactions to IRG materialise?

Explicit interest rate guidance statements also carry risks, notably with respect to central bank credibility,[20] de-anchoring of inflation expectations, and fiscal dominance. When their aim is to commit to keeping monetary conditions loose in future, IRG may risk conveying the idea that the central bank does not sufficiently care about fighting inflation. This could de-anchor inflation expectations (Hofman and Kamber, 2020). Consistent with addressing such concerns, all IRG statements in our sample made a point of bringing inflation or inflation expectations back to its target; or, in the case of India, reviving growth while ensuring that inflation remained within target.

Concerns about fiscal dominance may also preclude the central bank from fighting inflation (see Filardo and Hoffmann, 2014 and Mishkin, 2017 for a discussion).[21] In countries with high levels of government debt, the central bank may face pressure to keep interest rates low for long to keep public debt service costs down. Investors' concerns about such risks may trigger hikes in CDS spreads and currency depreciations (see eg Zoli, 2005).

Market reactions following IRG statements suggest that market participants were not concerned about these risks. Following the IRG statements in our baseline sample, market-based measures of expectations of inflation stayed basically unchanged, remaining in all cases at or below central banks' target bands (Figure 6).[22] CDS spreads on sovereign bonds stayed flat or fell in Brazil, Chile and Israel, and increased in India and Peru (Figure 7). These increases, however, were quite small, in the range of 5 points when the levels of CDS the day before the IRG statement were 94 and 104 for India and Peru, respectively. Exchange rates also remained quite stable, with very mild depreciation of up to 2% by day five after the IRG announcement in India (and smaller for Peru).

One may argue that these risks may materialise if the interest rate guidance is for a long period,

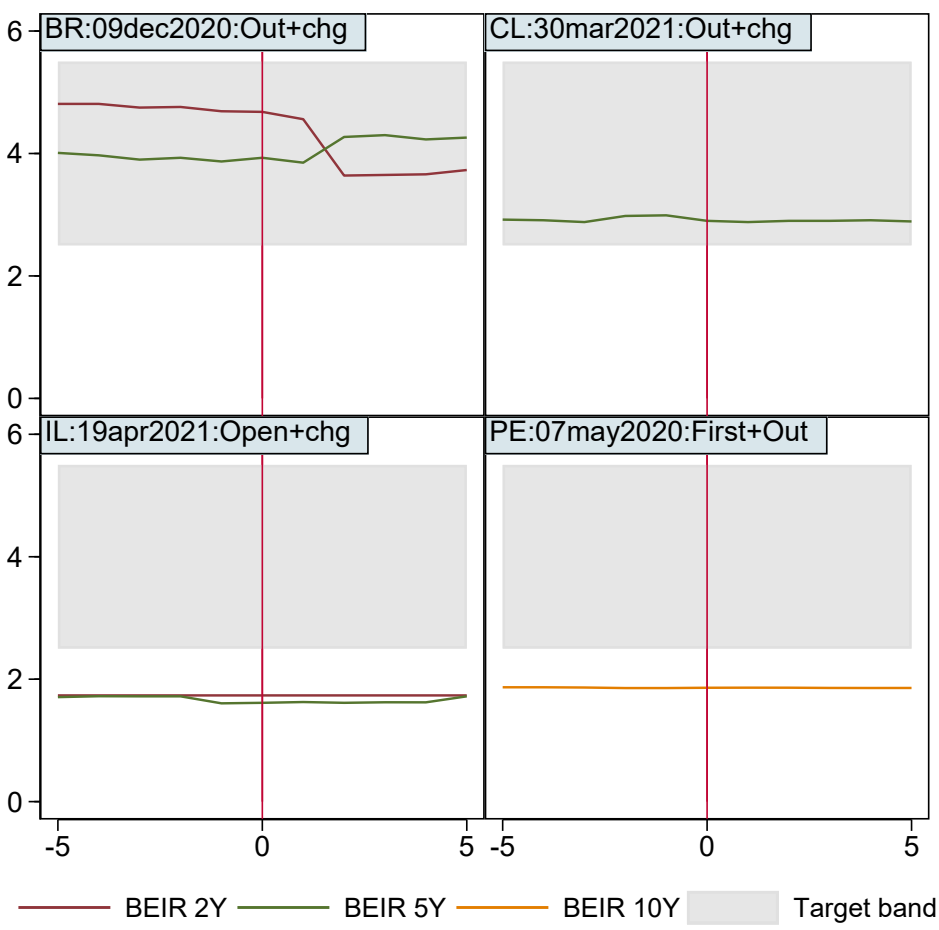
[20] Since the early 2000s, EME central banks have established credibility and anchored inflation expectations, thanks to the adoption of inflation targeting and legal frameworks that enshrined their independence (see eg Bank for International Settlements, 2019 and Pordeli, Schofer and Sutton, 2021). Jašová, Moessner and Takáts (2018) provide evidence that the exchange rate pass-through of emerging market economies has decreased since the Global Financial Crisis and converged towards that of advanced economies, which they interpret as an increase in EME central banks' credibility. Bordo and Siklos (2019) provide empirical evidence (including data from Brazil, Chile, India, Israel and Peru) that the credibility of EME central banks has been comparable to that of advanced economies since the 2000s (in fact, it suffered a smaller loss during the GFC).

[21] EME central banks adopting IRG were quite aware of this risk. For example, IRG statements in Brazil were "*conditional on the maintenance of the current fiscal regime and on the anchoring of long-term inflation expectations*," while statements in Israel made references to monitoring "*developments in fiscal policy*."

[22] We proxy markets' inflation expectations by break-even rates derived from inflation-linked bonds at 2-, 5-, and 10-year horizons sourced from Bloomberg (BEIRs, for short). Data availability varies, and there is none for India.

and may not be identified when looking only at the IRG statements in our baseline sample. Also, if small increases in CDS or depreciation are the norm after IRG statements, this could be seen as troublesome. However, similar patterns of no systematic negative market reactions were present when looking at all IRG statements (Figures A.3 and A.4 in the Appendix).

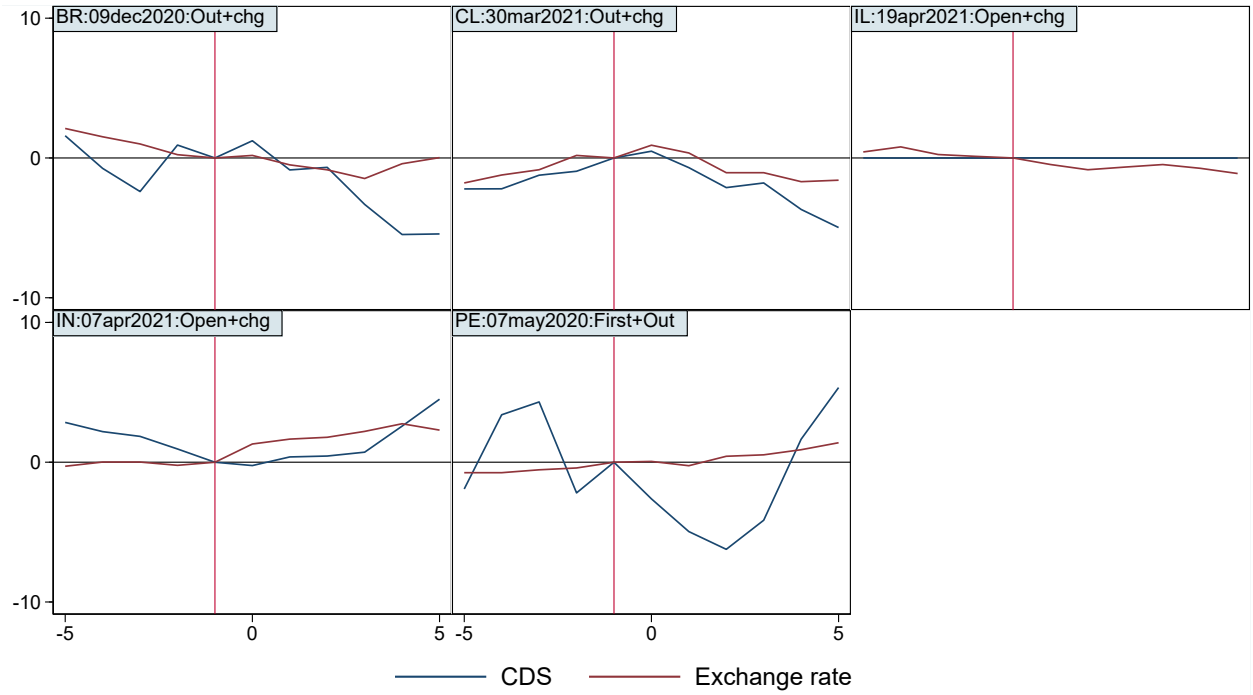
Figure 6: Inflation expectations around baseline IRG statements (in percentage points)



This figure shows the *level* of markets' inflation expectations five days before and after the baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Inflation expectations are proxied by break-even rates derived from inflation-linked bonds at 2-, 5-, and 10-year horizons. Day zero is the day of the IRG statement. The plots also show the inflation target band in each country.

Similar results for both subsamples of IRG statements – baseline and all statements – are found based on OLS local projections à la Jordà (2005) (Tables A.4, A.5, A.6 and A.7 in the Appendix). While the regressions for the baseline IRG statements indicate that 5-year inflation expectations for Brazil and Israel increased, the increment was relatively small and kept inflation expectations well

Figure 7: Changes in sovereign CDS and exchange rates around baseline IRG statements (in units for CDS and percentage points for exchange rates)



This figure shows the cumulative change in CDSs and nominal exchange rates five days before and after interest rate guidance statements in the baseline sample of five baseline IRG statements listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in units for CDS and percentage points for exchange rates relative to the day prior to the IRG statement. Day zero is the day of the IRG statement. An increase in the exchange rate denotes a depreciation of the local currency against the US dollar.

anchored within the central banks' target bands (the increases were in the range of between 5 and 40 bps; Table A.4). Short-term inflation expectations at a 2-year horizon fell or kept flat. The results also indicate that sovereign CDS increased and nominal exchange rates depreciated moderately in India and Peru. These increments were relatively small, up to 4 units for sovereign CDS and up to 1% depreciation (Table A.5).

Importantly, in the full sample of IRG statements, both the changes in inflation expectations (Table A.6) and in CDS and the nominal exchange rate (Table A.7) are statistically not different from zero. This suggests that there was no systematic negative market reaction in EMEs when IRG statements were adopted. All in all, changes in sovereign CDS and exchange rates after IRG statements were negligible, while inflation expectations remained well anchored.

6 Robustness and sensitivity checks

6.1 A placebo test: Randomization inference

As discussed above, a problem that we cannot easily solve is ascertaining that the effects we are estimating for IRG statements are well identified and not due to the policy being implemented simultaneously with other measures or other confounding factors that would make our baseline estimates spurious. While our baseline results are obtained in a sample of IRG announcements that are not concurrent with policy rate cuts or LSAPs announcements and include a number of daily covariates, we cannot totally rule out that our estimates are due to other confounders or pure random variation. We address this issue in this section based on randomization inference.[23]

The idea is to compare the observed test statistic $\hat{T}$ obtained from model 1 with the empirical distribution of test statistic T_k^* for $k = 1 \dots K$ placebo regressions after randomizing IRG announcements. To compute each of the T_k^*, we will randomly assign IRG announcement days to the pool of twenty EMEs in the sample. If $\hat{T}$ is in the tails of the empirical distribution of T_k^*, then this is evidence *against* the null hypothesis of no effect of IRG statements. We refer the reader to MacKinnon and Webb (2016a) for further discussion of randomization inference.

Figure 8 presents the distribution of the estimated β_k^h for $h = 2, 4$ from running $K = 3,000$ randomized regressions for both 5- and 10-year yields. The figure shows the empirical distribution of the estimated β_k^h coefficients, along with reference lines for the 0.5^{th}, 2.5^{th}, and 5^{th} percentiles, which correspond to confidence levels of 1%, 5%, and 10% to reject the null of $\hat{\beta}^h = 0$. In all cases, the $\hat{\beta}_k^h$ are centered around zero and the benchmark $\hat{\beta}^h$ lies in the tail of the distribution (benchmark estimates from Figure 3). These results indicate that the estimated effect of IRG statements from the baseline model is not driven by spurious correlation.[24]

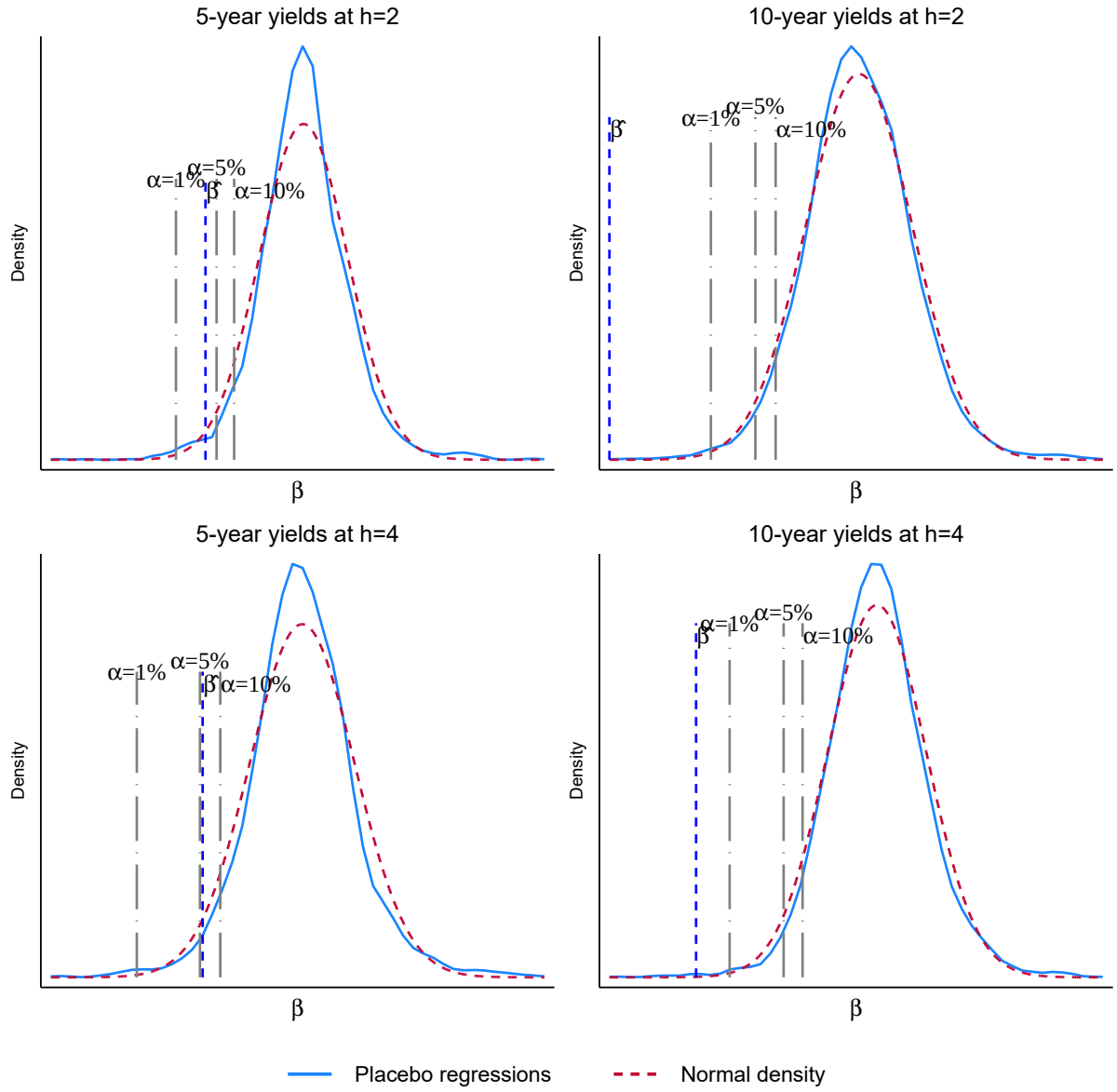
6.2 Checking for balance of covariates across IRG- and non-IRG adopting groups

Inference based on a panel of IRG- and non-IRG adopting countries is valid if adoption of the

[23] Randomization inference is widely used in statistics (see eg Rosenbaum, 1996) and recently has gained attention in economics and finance (see eg Bertrand, Duflo and Mullainathan 2004; Conley and Taber, 2011; MacKinnon and Webb, 2016b; Caballero, 2021).

[24] For completeness, Figures A.5 and A.6 in the Appendix show the results of these randomization tests for all horizons for 5- and 10-year yields, respectively. As in the baseline results, the response of yields take a couple of days to materialise. The statistical significance of the estimated baseline effect holds well for time horizons $h = 3, 4, 5$ (with the exception of $h = 5$ for 5-year yields).

Figure 8: Randomization inference. Distribution of estimated changes in local currency yields after randomizing IRG announcements across EMEs



This figure shows the distribution of estimates of model 1 after running 3,000 randomized regressions. In each regression, we randomly assigned an IRG announcement date in each of the twenty EMEs in our sample. Benchmark $\hat{\beta}^h$ are those presented in Figure 3. Randomized regressions include country and day fixed effects and an identical set of daily covariates as in the benchmark model.

policy, conditional on the covariates, is as good as randomly assigned (see eg Jordà (2023)). In the previous section we showed that our results are in the tail of the distribution after randomizing IRG announcements, which allays concerns about spurious correlation. However, this assumption also implies that the probability density function for the covariates included in the model is similar

across the sub-samples of IRG- and non-IRG adopting countries. That is, the distribution of the covariates is balanced across the two groups. In this subsection we explore this, following the tests proposed by Austin (2009).

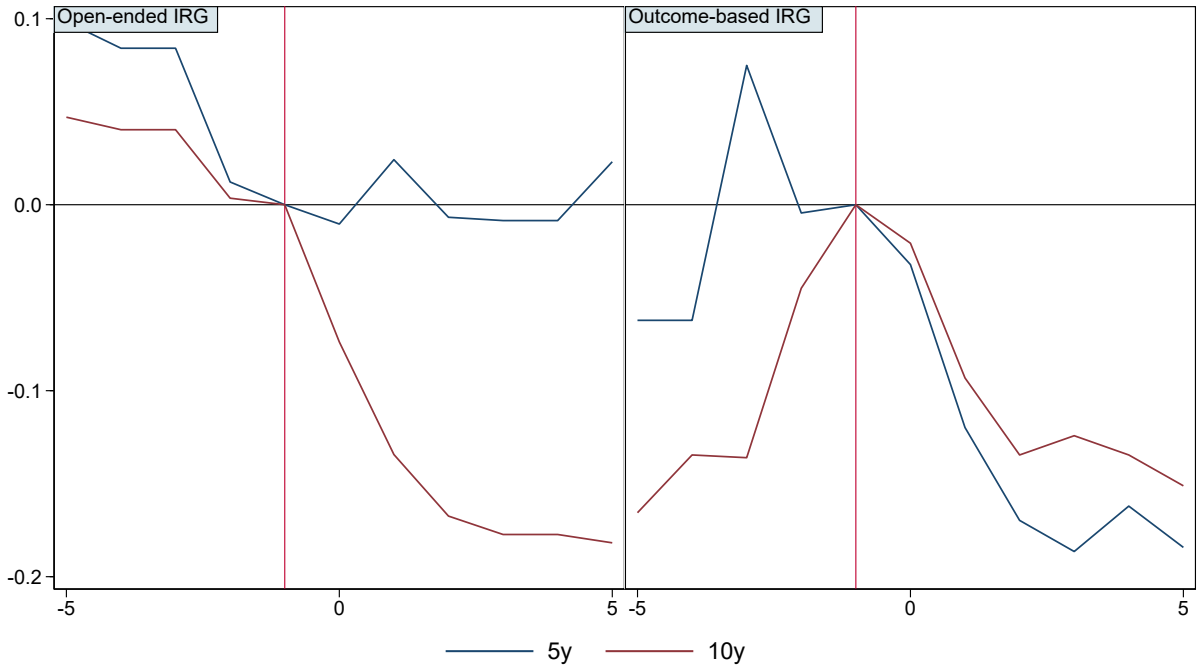
A balanced covariate is one whose distribution does not vary over the two groups (policy and non-policy adopting). A perfectly balanced covariate has a standardized difference of zero and variance ratio of one, as well as similar distributions for different percentiles and similar cumulative distribution functions.[25] Table A.8 in the Appendix shows the absolute standardized differences in means for the covariates in our baseline panel regressions, as well as the ratio of their variances. Figures A.7 and A.8 in the Appendix further explore the whole distribution of the covariates via box plots, cumulative distribution function plots, and quantile-quantile plots. While we cannot claim that the distributions of the covariates among the two groups are perfectly balanced, the absolute differences in means and the variance ratios are quite close to perfectly balanced covariates (perhaps with the exception of changes in monetary policy rate). The distributions also look quite close across the two groups, including their inter-quartile ranges in the box plots, their cumulative distribution functions, and their quantiles.

[25] Standardized differences in means is a preferable measure of similarity of distributions over a t-test of difference in means because the latter is a metric influenced by sample size. Austin (2009) also proposes graphical analyses to shed light on the whole distribution, not only the central moments.

6.3 Different types of IRG: outcome-based statements had the largest effects

One factor explaining the cross-country heterogeneity of the effects of IRG observed in Figure 2 may be the type of statement. We explore this in Figure 9, where we present the cumulative changes in local currency yields for two different types of IRG statements. The left panel shows the median change in yields in the two open-ended statements in our baseline sample (IL 19.Apr.2021 and IN 07.Apr.2021). The right panel shows the median change in the other three statements in the baseline sample, which were all outcome-based statements (BR 09.Dec.2020, CL 30.Mar.2021, and PE 07.May.2020). Because the different levels in yields across EMEs, these plots show cumulative changes in standardised yields. These event studies indicate that outcome-based statements had the most robust effect, affecting both 5- and 10-yields. The size of the effect for 10-year yields is about the same in the two types of IRG statements.

Figure 9: Changes in local yields by type of interest rate guidance statement (in standardised yields)



The left panel shows the median cumulative change in 5- and 10-year local currency yields five days before and five days after the two baseline open-ended IRG statements: IL 19.Apr.2021 and IN 07.Apr.2021. The right panel shows the median change for baseline outcome-based statements: BR 09.Dec.2020, CL 30.Mar.2021, and PE 07.May.2020. Changes are calculated as the cumulative differences in 5- and 10-year yields relative to the day prior to the IRG statement using standardised yields.

6.4 Adding lags of all explanatory variables

In the baseline specification of model 1 we included the first lag of the dependent variable. This, following Montiel-Olea and Plagborg-Møller (2021) who show that inference based on lag-augmented local projections models is more robust. In this robustness check we further add the first lags of all explanatory variables. Table A.9 shows the results of this exercise for the country specific regressions and Figure A.9 for the panel specification pooling all twenty EMEs. In both cases the baseline findings hold.

6.5 Were non-first, no-wording change IRG statements truly inconsequential?

Our baseline sample only includes policy statements in which IRG was introduced for the first time or the statement's wording was materially changed. We did this under the premise that the only consequential statements for markets should be those providing new information. In this robustness check we double check this presumption. Table A.10 in the Appendix shows results of OLS local projections regressions when only considering non-first, no-wording change IRG statements. They corroborate the presumption that these statements were inconsequential.

6.6 Accounting for the cross-country synchrony of policies and financial conditions

Given that central banks conducted IRG with a view to influencing domestic financial and macroeconomic conditions, so far we have modelled the effects of guidance on local currency bond yields separately for each country (employing OLS). But IRG occurred during a broadly similar time frame across countries in response to the common shock caused by the Covid pandemic. During this period, our control variables – such as exchange rates, stock market prices and their volatilities – were also exposed to common shocks, notably to changes in international investor risk aversion. Because of this, the residuals from our OLS estimates may be correlated across countries. In this subsection, we correct for the potential bias by re-estimating our country-specific regressions of local currency bond yields as a system of seemingly unrelated regressions (SUREG). We follow the approach developed by Zellner (1962) and use robust standard errors.[26] Table A.11 in the Ap-

[26] In a system of N countries, a SUREG performs the estimation for each country $i = 1, ..., N$ by Generalised Least Squares (GLS) and corrects the estimators by using the results of an auxiliary regression of the GLS errors from all coun-

pendix reports the results, which are largely consistent with the baseline results obtained via OLS (Table 3). The sings of the coefficients and their statistical significance, and the order of magnitude of the estimated effects are similar regardless of the estimating strategy.

7 Concluding remarks

In this paper we provided evidence that the adoption of explicit statements on the future path of interest rates in Brazil, Chile, India, Israel and Peru in 2020-2021 appear to have succeeded in providing additional monetary accommodation. When made for the first time or with significant changes to their wording, IRG statements were followed by reductions in local currency yields, term spreads and expected policy rates. These effects are found when the nominal interest rate hit its historical minimum (ie was at the effective lower bound) and were not driven by simultaneous announcements of LSAP programmes or interest rate cuts. This confirms the usefulness of IRG not only as a policy tool to complement policy rates when policy space has decreased, but also as a means of influencing long-term yields. Importantly, we did not observe a systematic negative market reaction reflecting concerns that may be associated with IRG, such as threats to central bank credibility in keeping inflation within target, rises in sovereign CDS spreads or depreciation pressures.

That said, communication regarding the future path of interest rates in EMEs is still in its infancy and it is unclear whether the experience during the Covid-19 pandemic may be replicated, and what its overall economic impact is.

We highlight a few caveats. First, the results in this paper are based on a small number of countries that made IRG statements during extraordinary times, and the evidence so far is insufficient to predict whether under different circumstances a similar easing of financial conditions may be obtained without undesirable side effects. Indeed, major emerging market central banks are giving careful thought to the use of this policy tool, going forward.[27]

Second, the analysis of negative side effects was limited to market reactions immediately following IRG statements, and such effects may take time to materialise. This paper also does not explore

tries other than i on the regressors for country i. Note that we excluded Israel from the SUREG because of collinearity, given the closeness of the timing of its interest rate guidance announcement in April 2021 to that of India.

[27] See for instance, "Explicit policy guidance 'fraught with risks' - RBI's Das", *Central Banking*, 13 June 2023, https://www.centralbanking.com/central-banks/7959008/explicit-policy-guidance-fraught-with-risks-rbis-das, or "Bank of Korea considering forward guidance reform", *Central Banking*, 18 April 2024, https://www.centralbanking.com/central-banks/monetary-policy/7961153/bank-of-korea-considering-forward-guidance-reform.

up to what extent the market response to IRG depends on the state of the economy. For example, the potential negative effects of fiscal dominance could be more pronounced in countries with high government debt or higher political risk. The risk of de-anchoring of inflation expectations could also be higher in countries with already high and unstable inflation expectations (in the sample of analysis in this paper, inflation expectations were quite stable and were already within target at the moment of IRG adoption). As many more and more diverse EMEs experiment with the policy in the next years, future research will be able to shed light on whether the risks stemming from IRG actually materialise and what factors could exacerbate them.

Third, the economic effects on growth in EMEs – not studied in this paper – may differ from the positive experience reported in AEs (see CGFS, 2019 and Bernanke, 2020). Some structural features of EMEs, such as a generally greater importance of bank credit relative to market-based finance, and a greater share of loans with short maturities and/or with indexed or variable rates, may render the observed fall in long-term yields less effective than in AEs. Again, more experimentation by EMEs with the policy and time will tell whether the economic effects on growth of IRG would also materialise in EMEs.

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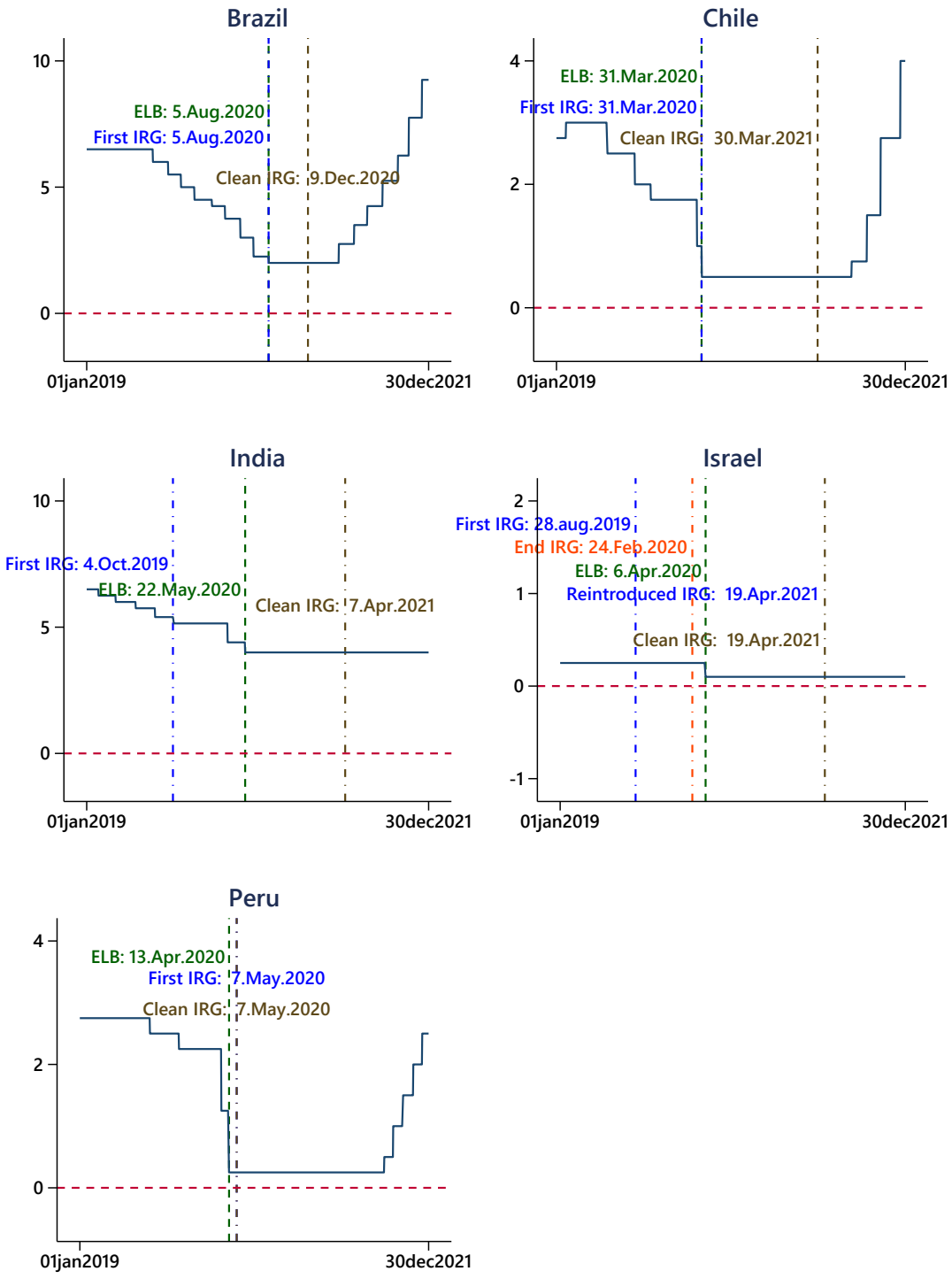
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Online appendix with additional tables and figures [NOT FOR PRINTING]

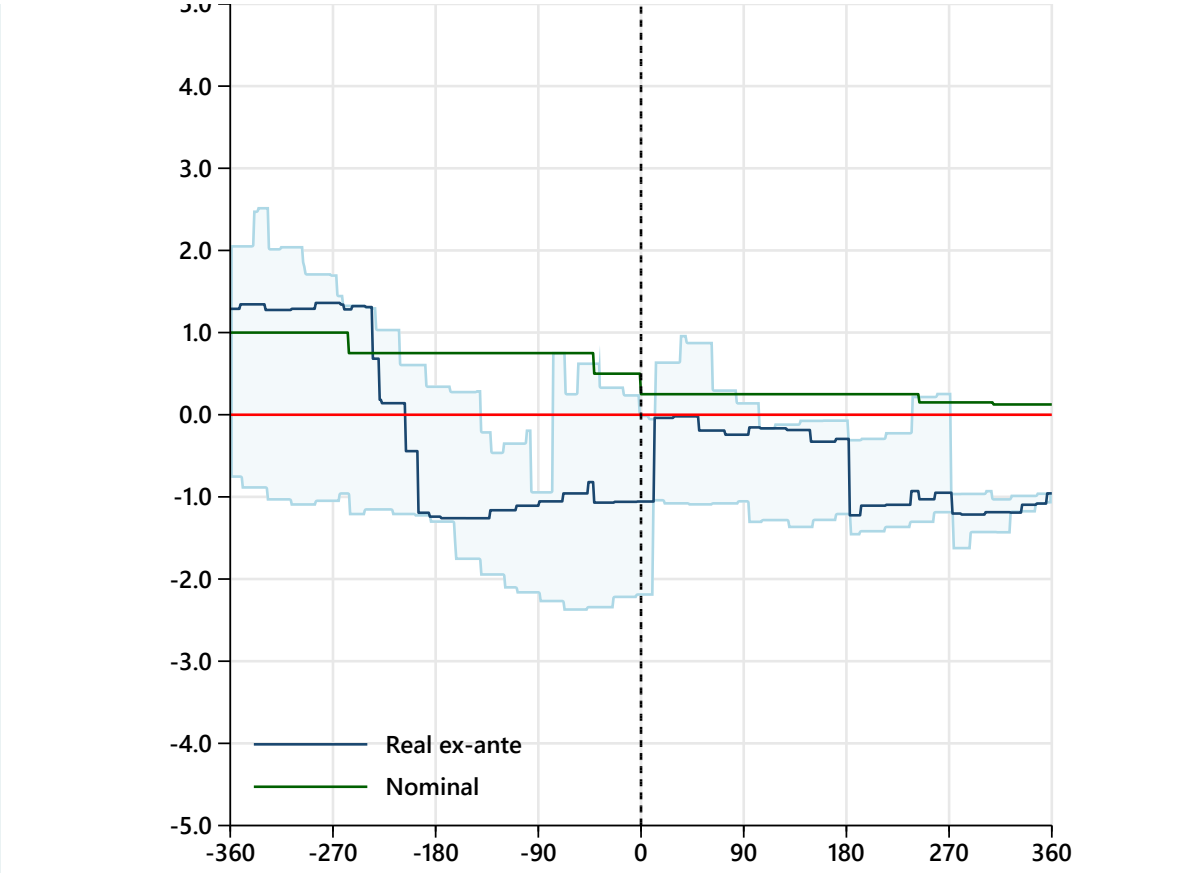
- Figures
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  - A.3: Changes in inflation expectations around all IRG statements
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    - A.8: Box plots, CDFs, and quantile-quantile plots of covariates
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- Tables
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    - A.10: Non-baseline IRG statements. Changes in local currency yields
    - A.11: Seemingly unrelated regression. Changes in local currency yields

Figure A.1: Nominal interest rates and adoption of IRG in Brazil, Chile, India, Israel and Peru



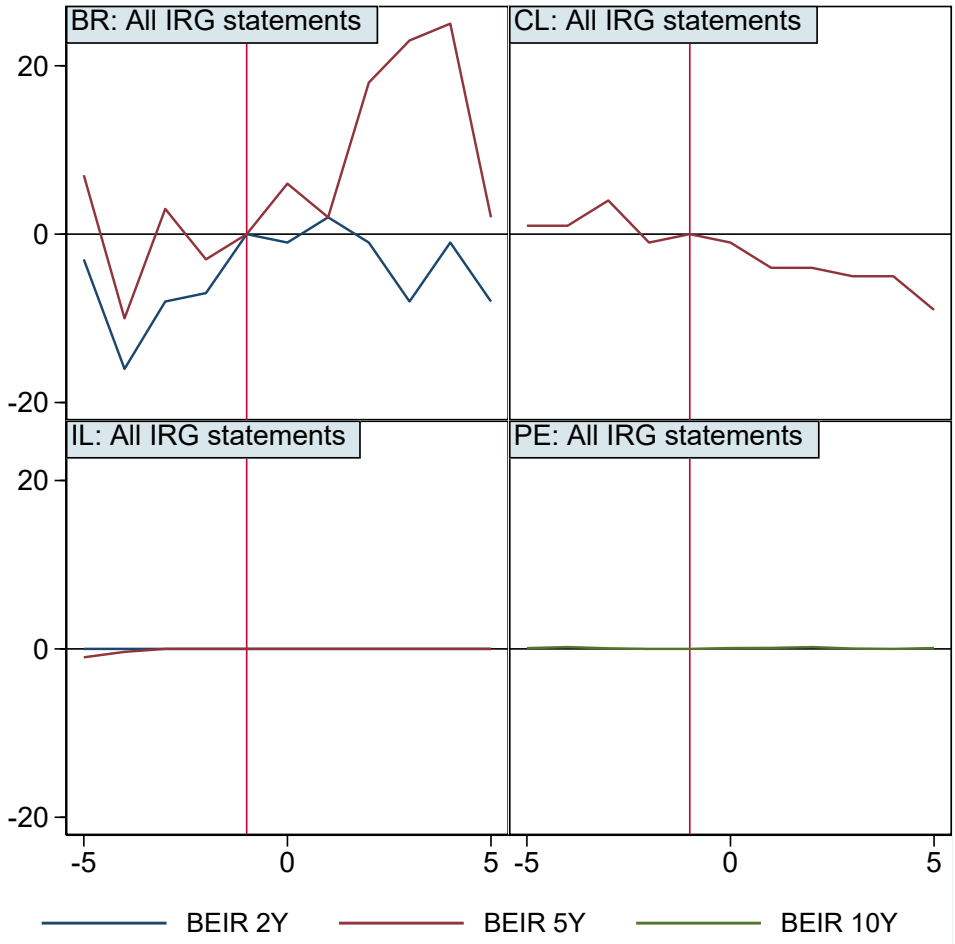
This graph shows the level of nominal interest rates in period January 2019 – December 2021, the date in which a country hit its historical minimum nominal rate (green line), the date of adoption of IRG for the first time (blue line), and the "clean" or baseline IRG statement we study in our baseline results (brown line). See Section 3 for a detailed definition of baseline IRG statements.

Figure A.2: Real ex-ante monetary policy rates at the time IRG was introduced in AEs



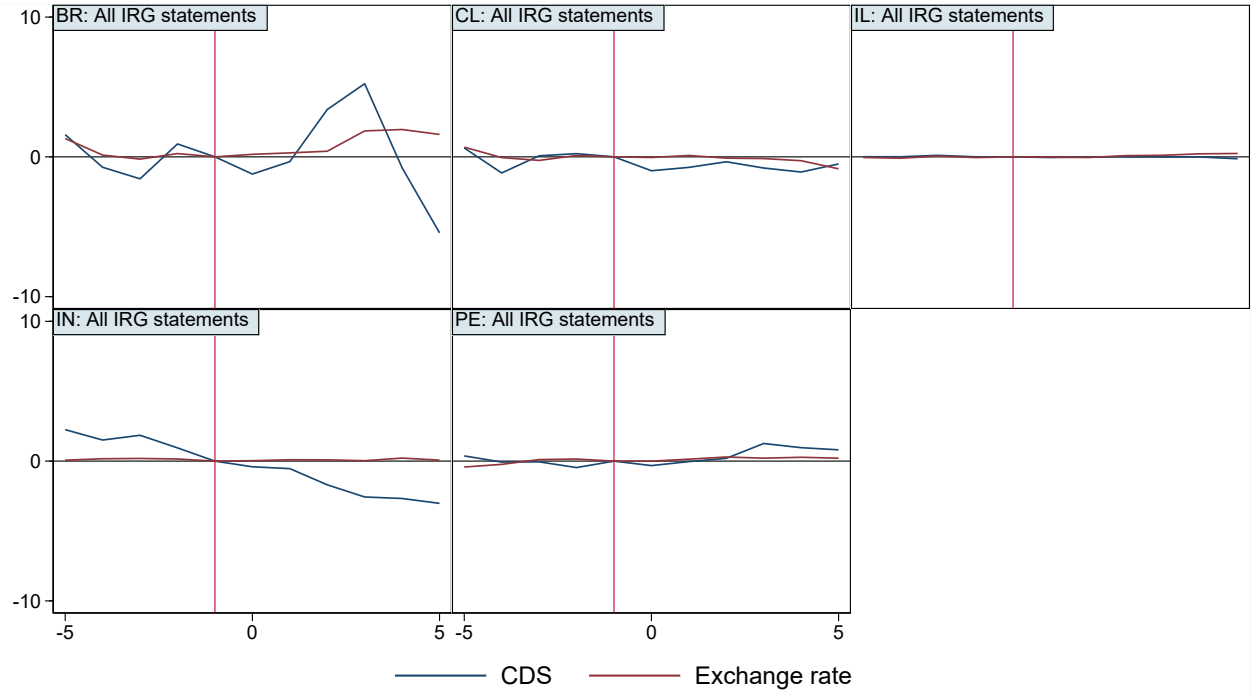
This graph shows the level of interest rates in advanced economies at adoption of IRG for the first time after the Global Financial Crisis. The horizontal axis indicates the number of days before and after the first interest rate guidance statement. The band shows the inter-quartile range of the real ex-ante interest policy rates, and the dark blue line the medians. The green line stands for the median nominal policy rates. The dates of first adoption of IRG are as follows: US 16.Dec.2008, CA 21.Apr.2009, JP 05.Oct.2010, EA 04.Jul.2013, GB 07.Aug.2013.

Figure A.3: Changes in inflation expectations around all IRG statements (in basis points)



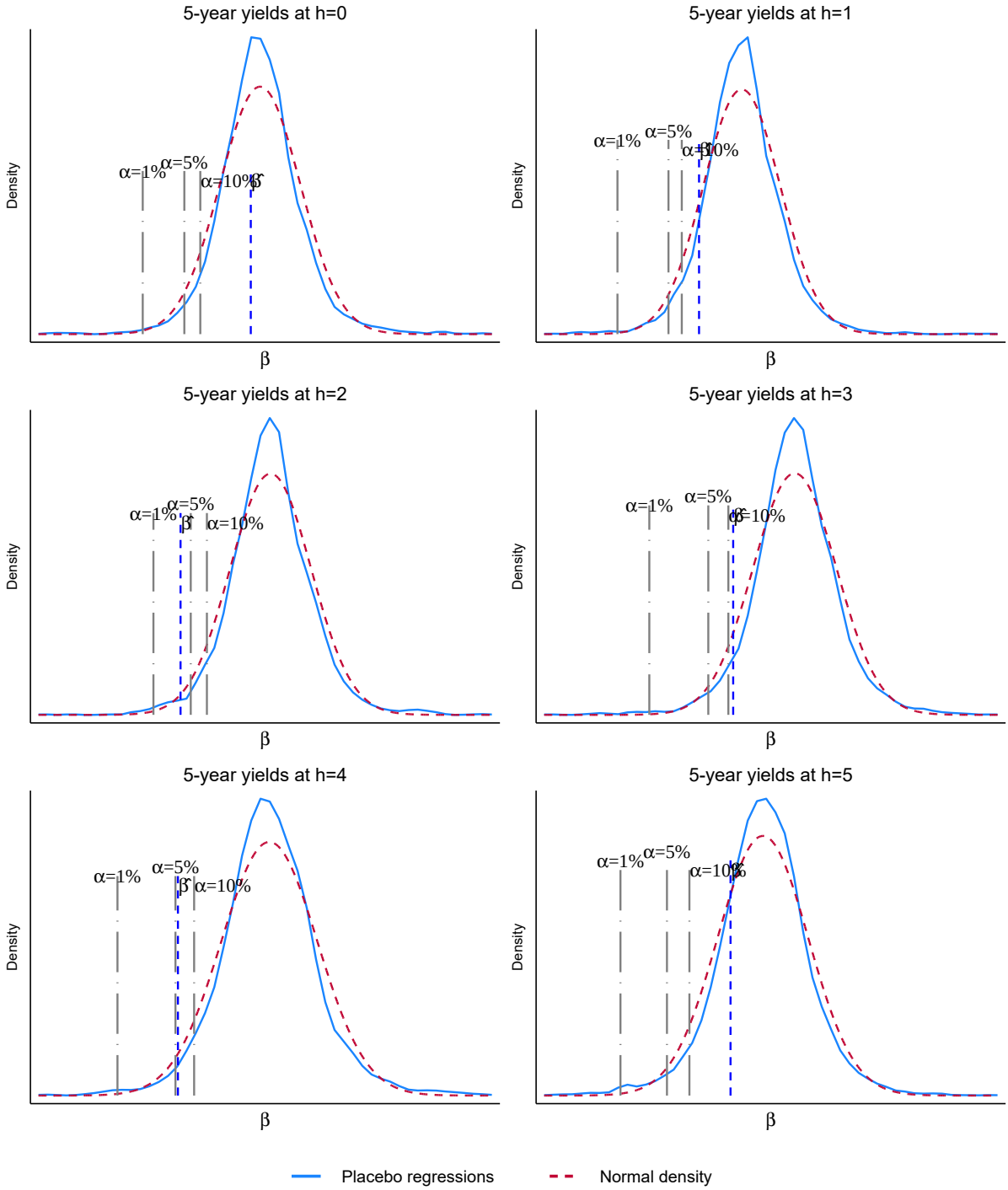
This figure shows the cumulative change in markets' inflation expectations five days before and after interest rate guidance statements in the full sample of fifty IRG statements listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in inflation expectations in basis points relative to the day prior to the IRG statement. Day zero is the day of the IRG statement. Inflation expectations are proxied by break-even rates derived from inflation-linked bonds at 2-, 5-, and 10-year horizons.

Figure A.4: Changes in sovereign CDS and nominal exchange rates around all IRG statements (in units for CDS and percentage points for exchange rates)



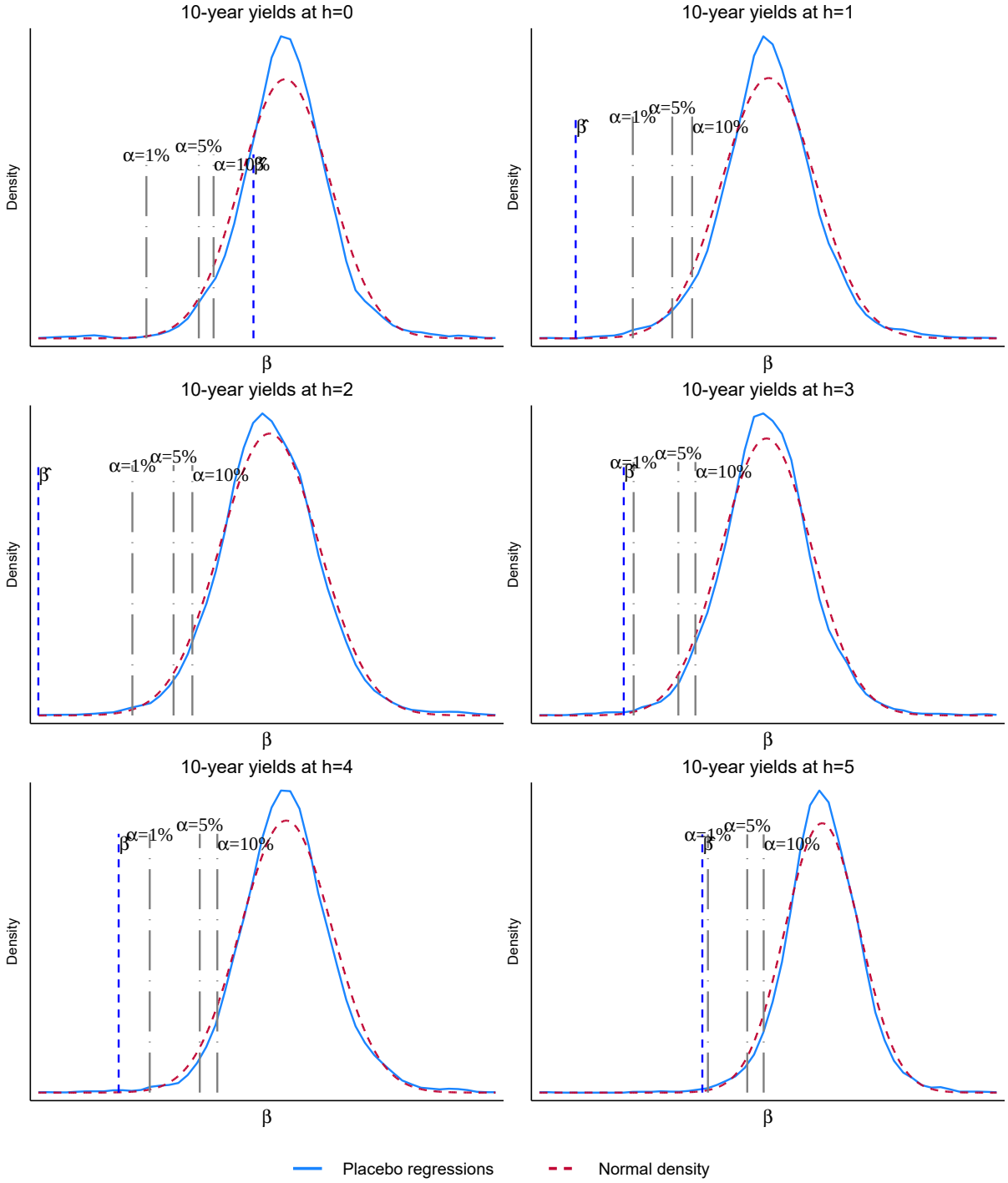
This figure shows the cumulative change in CDSs and nominal exchange rates five days before and after interest rate guidance statements in the full sample of fifty IRG statements listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in units for CDS and percentage points for exchange rates relative to the day prior to the IRG statement. Day zero is the day of the IRG statement. An increase in the exchange rate denotes a depreciation of the local currency against the US dollar.

Figure A.5: Randomization inference for 5-year yields



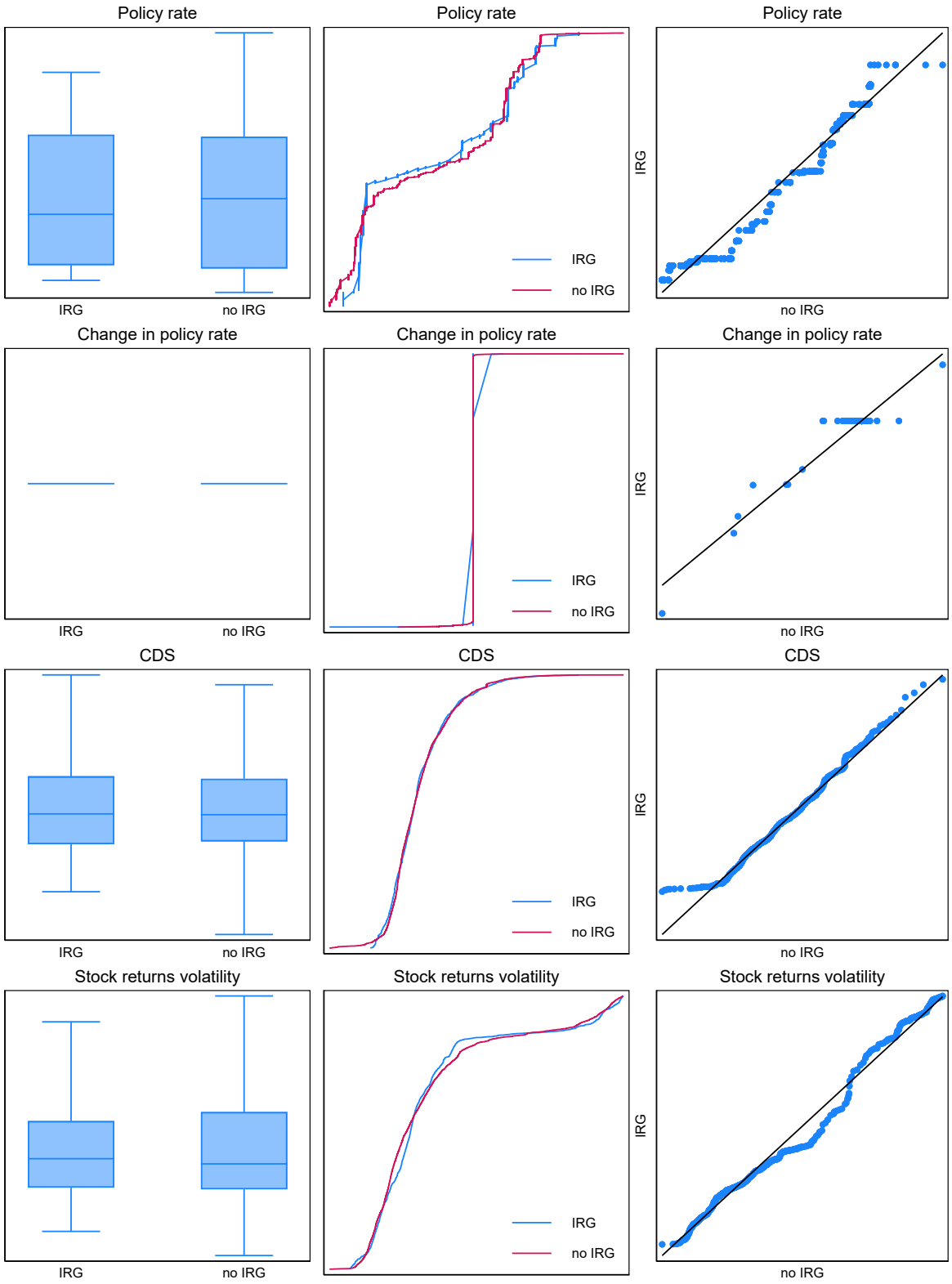
This figure shows the distribution of estimates of model 1 after running 3,000 randomized regressions. In each regression, we randomly assigned an IRG announcement date in each of the twenty EMEs in our sample. Benchmark $\hat{\beta}^h$ are those presented in Figure 3. Randomized regressions include country and day fixed effects and an identical set of daily covariates as in the benchmark model.

Figure A.6: Randomization inference for 10-year yields



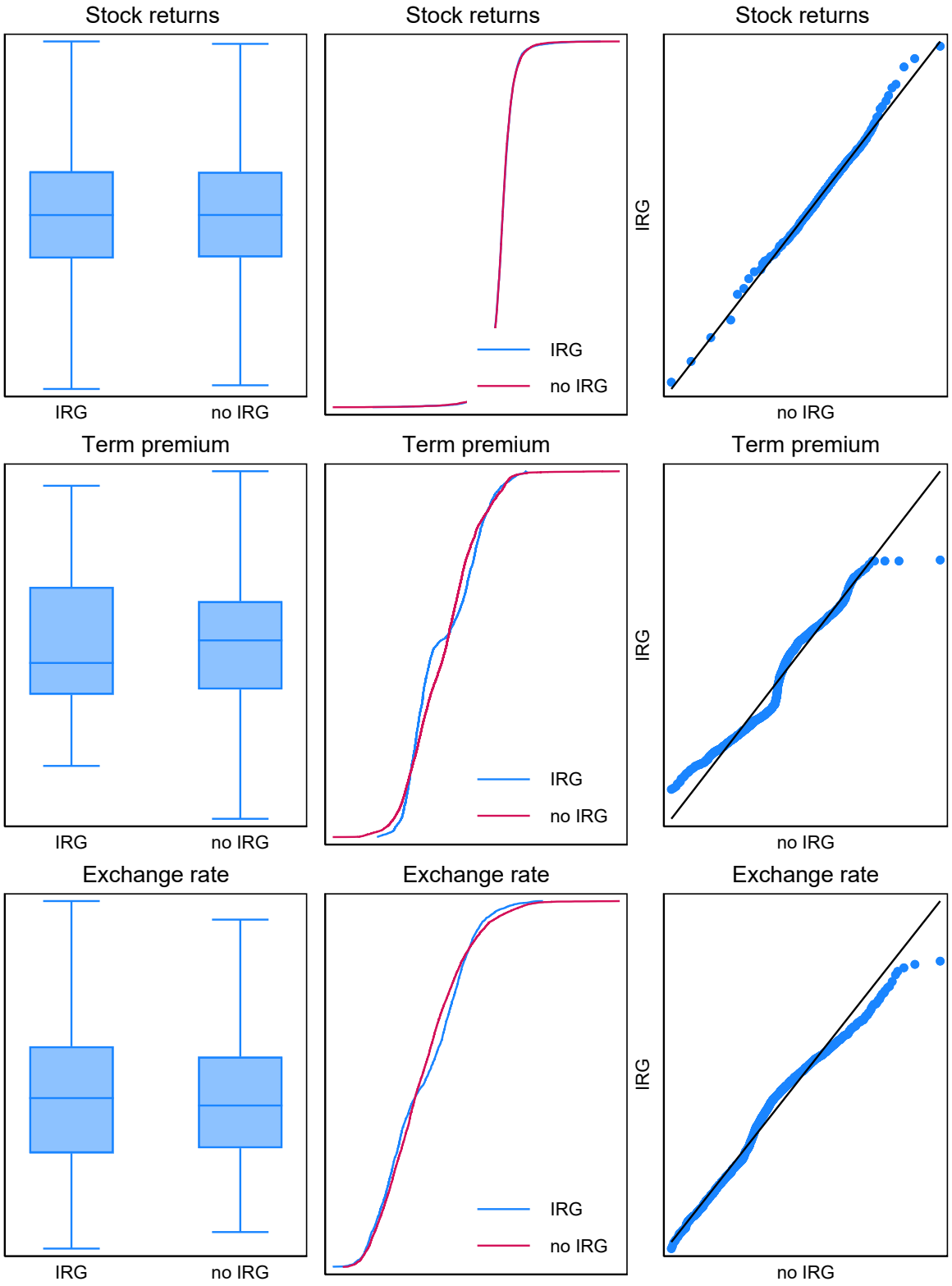
This figure shows the distribution of estimates of model 1 after running 3,000 randomized regressions. In each regression, we randomly assigned an IRG announcement date in each of the twenty EMEs in our sample. Benchmark $\hat{\beta}^h$ are those presented in Figure 3. Randomized regressions include country and day fixed effects and an identical set of daily covariates as in the benchmark model.

Figure A.7: Box plots, CDFs, and quantile-quantile plots of covariates



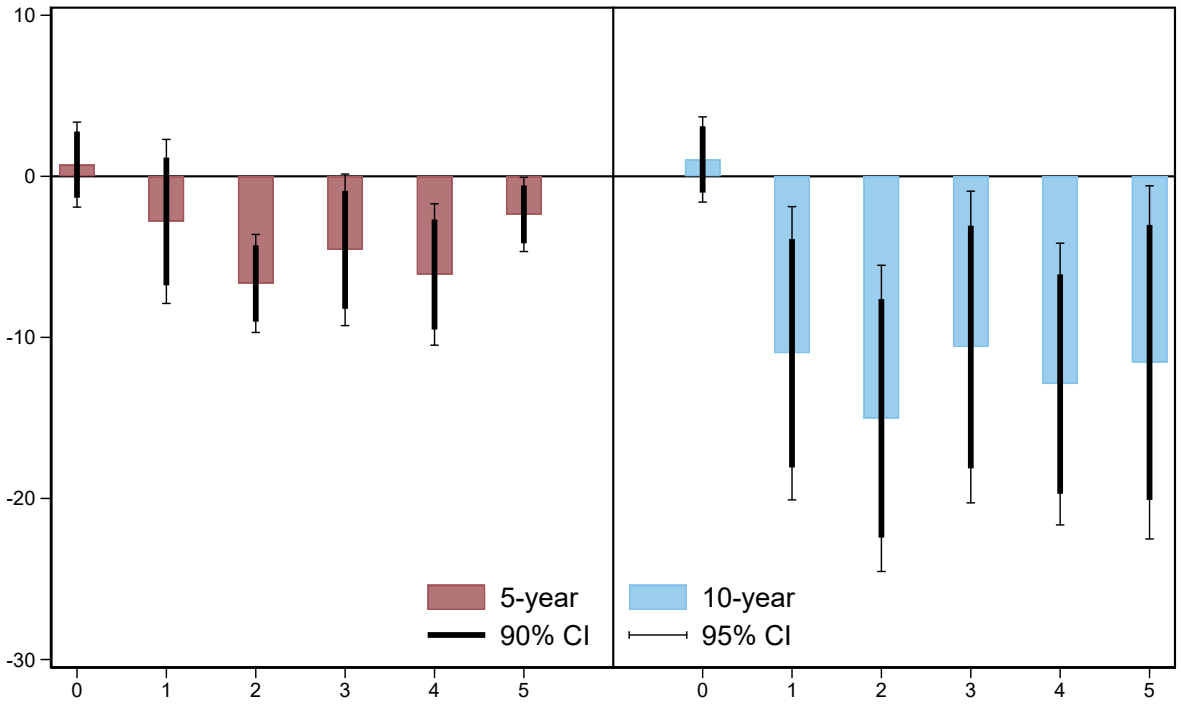
This figure shows box plots, cumulative distribution function plots, and quantile-quantile regressions for covariates in model 1 and for the two groups of countries (IRG- and non-IRG adopting economies). The covariates are those used in estimating the panel model of 3, which use standardised values.

Figure A.8: Box plots, CDFs, and quantile-quantile plots of covariates



This figure shows box plots, cumulative distribution function plots, and quantile-quantile regressions for covariates in model 1 and for the two groups of countries (IRG- and non-IRG adopting economies). The covariates are those used in estimating the panel model of 3, which use standardised values.

Figure A.9: Adding lags of all explanatory variables. Changes in local yields after IRG statements. Panel regression with IRG and non-IRG adopting countries



This figure shows a robustness check of Figure 3 but adding lags of all explanatory variables, not only those of the dependent variable. Confidence intervals are constructed based on Driscoll and Kraay (1998) standard errors.

Table A.1: Data sources and definitions

- **Interest rate guidance (IRG) statements:** Authors' construction based on monetary policy announcements sourced from websites of national central banks. The information was cross-checked against the database on unconventional monetary policies of Cantú *et al.* (2021).
- **Local currency yields:** Local currency yields of sovereign bonds with 5- and 10-year tenors. Source: Bloomberg (complemented by Refinitiv in case the series in Bloomberg was absent).
- **Monetary policy rate:** Reference policy rate. Source: Bloomberg.
- **Sovereign CDS:** 5-year credit default swaps on local currency sovereign bonds. Source: Bloomberg.
- **Returns of domestic stock exchange index:** Returns of domestic stock exchange index. Source: Bloomberg.
- **Volatility of returns of the domestic stock exchange index:** Volatility of returns of the domestic stock exchange index. Source: Bloomberg.
- **Term spread:** Difference between 5- or 10-year local currency yields and 1-year local currency yields. Source: Bloomberg.
- **Exchange rate:** Nominal bilateral exchange rate against the USD. Source: Bloomberg.
- **Markets' inflation expectations:** Break-even rates derived from inflation-linked bonds at 2-, 5-, and 10-year horizons (BEIRs). Source: Bloomberg.
- **Markets' rate expectations:** Market implied policy interest rates at 1-, 2-, and 5-years. Source: Bloomberg.
- **Expected average short-term interest rate (or risk-neutral rate) and term premium:** Decomposition of 10-year local currency yields into expected average short-term interest rate (or risk-neutral rate) and term premium. Source: CEMLA (Association of Central Banks of Latin America and the Caribbean).
- **Announcements of large-scale asset purchase programme:** Dummy indicator that takes the value 1 if the central bank announced a large-scale asset purchase programme on a given date. Authors' construction based on monetary policy announcements sourced from websites of national central banks. The information was cross-checked against the database on unconventional monetary policies of Cantú *et al.* (2021).
- **Dummy indicator for monetary policy decision:** Dummy indicator that takes the value 1 on the date of a monetary policy decision. For the IRG-adopting countries, this dummy takes value zero on the dates of the baseline five "clean" IRG statements. Source: Bloomberg.

Table A.2: Interest rate guidance (IRG) statements in EMEs 2019-2021

Country	Date	IRG first	IRG type	IRG change	Simult. rate cut	Simult. BPP	Baseline IRG at ELB announcement
BR	05.Aug.20	Y	Outcome-based	0	Y		
BR	16.Sep.20		Outcome-based	0			
BR	28.Oct.20		Outcome-based	0			
BR	09.Dec.20		Outcome-based	1			Y
BR	20.Jan.21		Last	0			
CL	31.Mar.20	Y	Open-ended	0	Y	Y	
CL	06.May.20		Open-ended	0			
CL	16.Jun.20		Calendar-based	1		Y	
CL	15.Jul.20		Calendar-based	1			
CL	01.Sep.20		Calendar-based	0			
CL	15.Oct.20		Calendar-based	0			
CL	07.Dec.20		Calendar-based	0			
CL	27.Jan.21		Calendar-based	0		Y	
CL	30.Mar.21		Outcome-based	1			Y
CL	13.May.21		Outcome-based	0			
CL	08.Jun.21		Outcome-based	0			
IL	28.Aug.19	Y	Open-ended	0			N
IL	07.Oct.19		Open-ended	0			
IL	25.Nov.19		Open-ended	0			
IL	09.Jan.20		Open-ended	0			
IL	24.Feb.20		Open-ended	0			
IL	19.Apr.21		Open-ended	1			Y
IL	31.May.21		Open-ended	0			
IL	05.Jul.21		Open-ended	0			
IN	04.Oct.19	Y	Open-ended	0	Y		
IN	05.Dec.19		Open-ended	0			
IN	06.Feb.20		Open-ended	0			
IN	27.Mar.20		Open-ended	0	Y		
IN	22.May.20		Open-ended	0	Y		
IN	06.Aug.20		Open-ended	0			
IN	09.Oct.20		Calendar-based	1		Y	
IN	04.Dec.20		Calendar-based	0			
IN	05.Feb.21		Open-ended	0			
IN	07.Apr.21		Open-ended	1			Y
IN	04.Jun.21		Open-ended	0			
PE	07.May.20	Y	Outcome-based	0			Y
PE	11.Jun.20		Outcome-based	0			
PE	09.Jul.20		Outcome-based	0			
PE	13.Aug.20		Outcome-based	0			
PE	10.Sep.20		Outcome-based	0			
PE	07.Oct.20		Outcome-based	0			
PE	12.Nov.20		Outcome-based	0			
PE	10.Dec.20		Outcome-based	0			
PE	14.Jan.21		Outcome-based	0			
PE	11.Feb.21		Outcome-based	0			
PE	11.Mar.21		Outcome-based	0			
PE	08.Apr.21		Outcome-based	0			
PE	13.May.21		Outcome-based	0			
PE	10.Jun.21		Outcome-based	0			
PE	08.Jul.21		Outcome-based	0			

Table A.3: Changes in term spreads after baseline IRG statements

This table shows the estimated coefficients for the cumulative change in term spreads, defined as the difference between 5- and 10-year local currency yields with 1-year yields, after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in basis points in term spreads relative to the day preceding the IRG statement. Estimated coefficients are based on the regression model presented in Section 3. Control variables include the level of the local currency 10-year yield, a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the level of sovereign CDS, the returns of the domestic stock exchange index and their volatility, and the level of the exchange rate. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	5-year Term Spreads						10-year Term Spreads					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Country-specific regressions												
Brazil	-11.31***	-5.37	7.07*	4.42	7.40*	25.80***	-0.82	-13.87***	-7.83***	-7.82***	-7.26***	-4.45**
	(2.629)	(4.333)	(3.951)	(4.300)	(3.974)	(3.833)	(1.967)	(1.775)	(1.811)	(2.032)	(1.963)	(1.960)
Chile	-4.63***	-3.44***	-0.39	-0.02	-8.22***	-5.29***	0.09	2.19**	3.29***	3.54***	-5.35***	-1.97*
	(0.818)	(1.251)	(1.144)	(1.151)	(1.076)	(1.359)	(0.825)	(1.023)	(1.023)	(1.055)	(1.047)	(1.106)
India	-4.22***	14.15***	12.07***	7.82***	10.05***	10.58***	-9.35***	1.95	5.97***	-2.06**	4.87***	5.39***
	(0.765)	(1.091)	(0.684)	(0.628)	(0.691)	(0.722)	(0.702)	(1.539)	(1.101)	(1.013)	(1.343)	(1.180)
Israel	-2.33***	-0.43	-1.63***	-3.50***	-1.58***	0.65*	-5.09***	-3.19***	-3.49***	-2.76***	-1.71***	-1.94***
	(0.194)	(0.290)	(0.231)	(0.265)	(0.334)	(0.348)	(0.299)	(0.559)	(0.479)	(0.467)	(0.499)	(0.648)
Peru	-1.98**	-11.41***	-5.16***	-4.33***	0.03	-4.09***	-3.66**	-19.48***	-10.90***	-3.16	-5.96**	-3.27
	(0.799)	(0.886)	(1.364)	(1.151)	(1.398)	(1.428)	(1.725)	(1.979)	(2.600)	(1.947)	(2.572)	(2.389)
Obs	662	662	661	660	659	658	662	662	661	660	659	658

Table A.4: Changes in inflation expectations around baseline IRG statements

This table shows the estimated coefficients for the cumulative change in the market's 2- and 5-year inflation expectations after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Inflation expectations are proxied by break-even rates derived from inflation-linked bonds at 2- and 5-years horizons (10-years for Peru). Changes are calculated as the cumulative differences in basis points relative to the day preceding the IRG statement. Estimated coefficients are based on the regression model presented in Section 3. Control variables include the level of the local currency 10-year yield, a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the level of sovereign CDS, the returns of the domestic stock exchange index and their volatility, the level of the term spread, and the level of the exchange rate. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	2-year inflation expectations						5-year inflation expectations (10-year for Peru)					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	-1.39**	-10.04***	-93.62***	-32.70**	-25.81**	-16.51	5.12***	-2.15***	44.31***	21.93***	9.39***	17.24***
	(0.579)	(1.383)	(2.672)	(12.718)	(11.620)	(11.053)	(0.430)	(0.410)	(0.631)	(1.597)	(1.362)	(1.181)
Chile							-8.66***	-9.41***	-5.17***	-5.76***	-3.69***	-5.88***
							(0.440)	(0.738)	(0.896)	(0.784)	(0.700)	(0.806)
Israel	-0.33	-0.35	-0.34	-0.35	-0.32	-0.31	-0.27	6.84***	6.55***	9.03***	8.81***	19.30***
	(0.607)	(0.753)	(0.768)	(0.852)	(0.878)	(0.895)	(3.653)	(1.528)	(1.675)	(1.645)	(1.613)	(1.327)
Peru							0.52***	0.41***	0.18	-0.22	-0.01	0.12
							(0.134)	(0.155)	(0.164)	(0.169)	(0.179)	(0.182)
Obs BR, CL, PE	663	662	661	660	659	658	663	662	661	660	659	658
Obs IL	416	415	414	413	412	411	502	501	500	499	498	497

Table A.5: Changes in CDS and nominal exchange rates around baseline IRG statements

This table shows the estimated coefficients for the cumulative change in sovereign 5-year CDS and nominal exchange rates after the five baseline IRG statements referred in the text and listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in units for CDS and percentage points for exchange rates relative to the day preceding an IRG statement. Estimated coefficients are based on the regression model presented in Section 3. For both dependent variables, the model includes as control variables the level of the local currency 10-year yield, a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the returns of the domestic stock exchange index and their volatility, and the level of the term spread. The model for CDS in addition includes the level of the nominal exchange rate. The model for the exchange rate in addition includes the level of sovereign CDS. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	CDS						Exchange Rates					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	-1.01	-2.68**	-1.72	-4.80***	-5.00***	-4.34***	0.22**	-0.68***	-0.64***	-1.15***	0.58***	0.04
	(0.631)	(1.194)	(1.575)	(1.223)	(1.028)	(1.336)	(0.107)	(0.134)	(0.146)	(0.169)	(0.162)	(0.166)
Chile	0.44	-1.46***	-2.78***	-1.36**	-3.25***	-3.51***	0.92***	-0.08	-1.22***	-0.11	-0.69***	0.02
	(0.372)	(0.470)	(0.599)	(0.558)	(0.555)	(0.740)	(0.071)	(0.095)	(0.097)	(0.107)	(0.100)	(0.110)
India	0.65**	1.80***	1.54***	2.21***	3.37***	4.03***	1.39***	1.06***	0.73***	0.86***	0.99***	-0.01
	(0.256)	(0.280)	(0.330)	(0.419)	(0.400)	(0.447)	(0.024)	(0.077)	(0.085)	(0.076)	(0.091)	(0.092)
Israel	0.13**	0.09	0.08	0.05	0.05	0.03	-0.46***	-0.53***	0.00	0.13*	-0.25***	-0.39***
	(0.057)	(0.065)	(0.068)	(0.063)	(0.069)	(0.067)	(0.032)	(0.063)	(0.080)	(0.068)	(0.058)	(0.063)
Peru	-1.45**	-4.07***	-3.89***	-0.74	3.62***	3.03***	-0.03	-0.53***	0.30***	-0.16**	0.06	0.25***
	(0.672)	(0.865)	(0.849)	(0.887)	(0.913)	(1.025)	(0.050)	(0.062)	(0.059)	(0.068)	(0.069)	(0.070)
Obs	662	661	660	659	658	657	662	661	660	659	658	657

Table A.6: Changes in inflation expectations around all IRG statements

This table shows the estimated coefficients for the cumulative change in the market's 2- and 5-year inflation expectations following all fifty IRG statements listed in Table A.2 in the Appendix. Inflation expectations are proxied by break-even rates derived from inflation-linked bonds at 2- and 5-years horizons (10-years for Peru). Changes are calculated as the cumulative differences in basis points relative to the day preceding the IRG statement. Estimated coefficients are based on the regression model presented in Section 3. Control variables include the level of the local currency 10-year yield, a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the level of sovereign CDS, the returns of the domestic stock exchange index and their volatility, the level of the term spread, and the level of the exchange rate. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	2-year inflation expectations						5-year inflation expectations (10-year for Peru)					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	-2.06	-1.11	-20.92	-10.99*	-9.06	-7.22*	3.12	2.52	11.56	5.58	4.53**	-5.68
	(2.324)	(3.477)	(16.854)	(6.234)	(5.509)	(4.374)	(3.281)	(2.794)	(9.276)	(4.821)	(1.792)	(6.539)
Chile							-2.54	-0.65	-2.32	-0.09	0.20	-6.40
							(1.779)	(2.312)	(3.874)	(3.389)	(2.394)	(5.495)
Israel	-4.94	-2.33	-1.88	-3.22	-2.06	-1.51	-0.39	1.49	0.69	-0.79	0.23	2.37
	(3.456)	(1.666)	(1.611)	(2.948)	(1.617)	(1.479)	(1.757)	(1.924)	(1.591)	(1.866)	(1.608)	(2.515)
Peru							-0.13	-0.24	-0.49	-0.88	-1.42	-1.69
							(0.355)	(0.451)	(0.547)	(0.945)	(1.462)	(1.739)
Obs BR, CL, PE	663	662	661	660	659	658	663	662	661	660	659	658
Obs IL	416	415	414	413	412	411	502	501	500	499	498	497

Table A.7: Changes in CDS and nominal exchange rates around all IRG statements

This table shows the estimated coefficients for the cumulative change in sovereign 5-year CDS and nominal exchange rates following all the fifty IRG statements listed in Table A.2 in the Appendix. Changes are calculated as the cumulative differences in units for CDS and percentage points for exchange rates relative to the day preceding an IRG statement. Estimated coefficients are based on the regression model presented in Section 3. For both dependent variables, the model includes as control variables the level of the local currency 10-year yield, a dummy for announcement of large-scale asset purchase programme, the level of the monetary policy rate, the daily change in the monetary policy rate, the returns of the domestic stock exchange index and their volatility, and the level of the term spread. The model for CDS in addition includes the level of the nominal exchange rate. The model for the exchange rate in addition includes the level of sovereign CDS. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	CDS						Exchange Rates					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	-3.70**	-2.38*	-0.43	2.67	-2.69	2.34	0.07	0.29	0.56	1.12	0.26	0.34
	(1.839)	(1.400)	(2.037)	(5.491)	(3.530)	(5.738)	(0.376)	(0.321)	(0.624)	(0.969)	(0.344)	(0.734)
Chile	-1.37	-1.37**	0.16	-0.27	-0.20	0.60	0.06	0.05	-0.39*	-0.10	-0.24	-0.32**
	(1.096)	(0.619)	(1.016)	(0.968)	(1.335)	(1.809)	(0.206)	(0.140)	(0.202)	(0.273)	(0.148)	(0.156)
India	-0.15	0.10	-0.77	-1.16	-0.51	-0.15	0.12	0.24**	0.08	0.14	0.24*	0.08
	(0.364)	(0.396)	(1.068)	(0.964)	(0.994)	(0.955)	(0.172)	(0.122)	(0.123)	(0.116)	(0.127)	(0.083)
Israel	-0.10	0.14	0.11	-0.01	0.14	0.04	-0.02	-0.12	0.07	0.04	0.08	-0.08
	(0.345)	(0.386)	(0.238)	(0.212)	(0.248)	(0.186)	(0.099)	(0.130)	(0.073)	(0.096)	(0.164)	(0.199)
Peru	0.38	0.60	0.27	0.24	0.37	0.58	-0.08	0.16	0.34**	0.15	0.12	0.21
	(1.227)	(0.976)	(0.724)	(0.624)	(0.629)	(0.802)	(0.118)	(0.156)	(0.156)	(0.144)	(0.172)	(0.150)
Obs	662	661	660	659	658	657	662	661	660	659	658	657

Table A.8: Standardized differences in means and variance ratio of covariates

This table shows the absolute standardized difference in means and the ratio of variances for the two sub-samples of IRG and non-IRG countries. standardized differences is computed following Austin (2009).

Covariate	Standardized difference	Variance ratio
Policy rate	0.0000	1.0002
Change in policy rate	0.0033	1.1310
Sovereign CDS	0.0000	1.0002
Stock returns volatility	0.0000	1.0002
Stock returns	0.0000	1.0002
Term premium	0.0000	1.0002
Exchange rate	0.0000	1.0002

Table A.9: Adding lags of all explanatory variables. Changes in local currency yields after baseline IRG statements

This table shows a robustness check of Table 3 but adding lags of all explanatory variables, not only those of the dependent variable. Robust standard errors are in parenthesis, next to estimated coefficients. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	5-year LC yields						10-year LC yields					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	-4.80***	-11.84***	-14.52***	-13.43***	-17.36***	-4.95	0.58	-12.26***	-30.40***	-28.07***	-32.87***	-37.49***
	(1.745)	(2.179)	(2.402)	(2.915)	(2.904)	(3.068)	(2.103)	(3.882)	(2.485)	(2.398)	(2.517)	(2.261)
Chile	2.16**	-4.22***	-3.89***	-0.85	-9.22***	-7.87***	6.85***	2.42*	-0.01	1.86*	-6.26***	-5.73***
	(0.882)	(1.112)	(1.114)	(1.239)	(1.061)	(1.292)	(0.580)	(1.251)	(1.212)	(1.078)	(1.133)	(1.307)
India	2.00*	4.53***	2.60*	5.06***	2.33	4.40***	-1.20	-5.15***	-3.50***	-3.49***	-2.18	-0.62
	(1.059)	(1.406)	(1.469)	(1.337)	(1.529)	(1.472)	(0.784)	(1.034)	(1.232)	(1.139)	(1.379)	(1.327)
Israel	0.86***	1.93***	0.05	-0.86**	-0.18	1.76***	0.59***	0.46	-1.14	0.21	-0.15	-0.60
	(0.326)	(0.330)	(0.365)	(0.376)	(0.467)	(0.400)	(0.162)	(0.514)	(0.706)	(0.642)	(0.772)	(0.862)
Peru	-1.79***	-10.63***	-4.90***	-2.87**	0.78	-2.81*	-0.00	-15.71***	-9.84***	-2.70	-4.86**	-1.26
	(0.648)	(0.886)	(1.830)	(1.164)	(1.726)	(1.567)	(0.000)	(1.689)	(2.808)	(1.880)	(2.102)	(2.532)
Obs	662	662	661	660	659	658	662	662	661	660	659	658

Table A.10: Non-baseline IRG statements. Changes in local currency yields

This table shows a robustness check for all non-baseline IRG statements: those that did not introduce or materially change the interest rate guidance, did not take place at the effective lower bound, and/or were no simultaneous with an interest rate cut and/or an announcement of a large-scale asset purchase programme. IRG statements are listed in Table A.2 in the Appendix. The model and control variables are as in Table 3. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	5-year LC yields						10-year LC yields					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	2.66	-2.36	7.83	6.97	-2.09	3.39	-0.31	3.72	2.26	3.13	5.38	-0.10
	(4.022)	(3.905)	(7.520)	(6.715)	(5.578)	(10.721)	(6.782)	(6.764)	(4.403)	(4.289)	(7.576)	(14.075)
Chile	-3.63*	-1.24	1.31	-2.56	-1.32	-3.04*	0.19	-0.19	2.13	-1.41	-3.18***	-3.83**
	(1.925)	(1.739)	(2.619)	(3.072)	(2.443)	(1.663)	(2.054)	(1.408)	(3.405)	(2.623)	(1.113)	(1.570)
India	1.55	3.53	2.73	2.74	2.65	3.57*	2.17	1.49	2.08*	1.88	1.36	2.28
	(4.264)	(3.408)	(2.858)	(2.305)	(2.372)	(1.904)	(2.268)	(2.033)	(1.062)	(1.523)	(1.774)	(1.492)
Israel	-0.75	-0.62	1.24	-0.65	-0.19	0.63	-1.89	-0.20	-1.06	-0.36	-0.54	1.82**
	(0.582)	(0.487)	(1.108)	(0.473)	(0.291)	(0.391)	(1.251)	(1.108)	(0.807)	(1.642)	(0.487)	(0.894)
Peru	-0.75	-0.62	1.24	-0.65	-0.19	0.63	-1.89	-0.20	-1.06	-0.36	-0.54	1.82**
	(0.582)	(0.487)	(1.108)	(0.473)	(0.291)	(0.391)	(1.251)	(1.108)	(0.807)	(1.642)	(0.487)	(0.894)
Obs	660	660	659	658	657	656	660	660	659	658	657	656

Table A.11: Seemingly unrelated regression. Changes in local currency yields

This table shows the estimated coefficients for the cumulative change in 5- and 10-year local currency yields after the baseline IRG statements in Brazil, Chile, India and Peru as a system of seemingly unrelated regressions. Changes are calculated as the cumulative differences in basis points in 5- and 10-year yields relative to the day preceding the IRG statement. The model and control variables are as in Table 3, but instead of estimating the model country by country using OLS, the model is estimated for the four countries as a system of seemingly unrelated regressions. Robust standard errors are in parenthesis. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

	5-year LC yields						10-year LC yields					
	t=0	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*	*t=0*	*t=1*	*t=2*	*t=3*	*t=4*	*t=5*
Brazil	-6.37***	-12.17***	-16.87***	-14.60***	-16.08***	-5.60*	-1.88	-26.55***	-35.32***	-29.78***	-33.76***	-37.39***
	(2.341)	(2.642)	(2.689)	(2.993)	(3.412)	(3.231)	(4.101)	(3.498)	(2.437)	(2.610)	(2.668)	(2.272)
Chile	0.96	-3.13***	-3.46***	-0.81	-4.58***	-4.92***	5.47***	0.73	0.04	2.91***	-0.44	-2.65***
	(0.729)	(0.990)	(1.006)	(1.079)	(1.011)	(1.264)	(0.686)	(1.091)	(0.955)	(0.958)	(0.886)	(1.011)
India	1.42***	5.15***	-0.14	2.98***	1.10**	0.86	-3.69***	-6.69***	-4.68***	-3.80***	-3.17***	-3.16***
	(0.460)	(0.538)	(0.559)	(0.545)	(0.546)	(0.588)	(0.328)	(0.469)	(0.776)	(0.651)	(0.720)	(0.641)
Peru	-1.98**	-11.62***	-6.70***	-2.56**	1.50	-2.53*	-3.74*	-20.87***	-11.06***	-4.45*	-6.86**	-5.49**
	(0.863)	(0.948)	(1.510)	(1.275)	(1.713)	(1.460)	(2.193)	(1.870)	(3.217)	(2.452)	(3.063)	(2.736)
Obs	530	530	529	528	527	526	530	530	529	528	527	526