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# The IMF as a global monitor: surveillance, information, and financial markets

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## ABSTRACT

What are the effects of the International Monetary Fund's (IMF) monitoring activities? We argue that IMF surveillance exercises – known as Article IV consultations – move financial markets. Our argument is based on the design of the IMF's surveillance function, which is a relatively strong form of monitoring by the standards of most international organizations (IOs). We test this argument using an event study analysis of 428 IMF Article IV consultations. We find that the average surveillance mission has a substantial impact on sovereign debt with much greater impacts in emerging than high income economies. Interviews with market participants support and help to contextualize these findings. By illustrating the effects of surveillance, this article contributes to our understanding of whether, and to what extent, international institutions are a source of vital public information.

## KEYWORDS

IMF; surveillance; Article IV consultations; international institutions; international organizations; monitoring; financial markets

## Introduction

In January 2009, the International Monetary Fund (IMF) published its assessment of the German economy as part of its annual surveillance exercise. The press release, which received considerable media attention, predicted a large fall in economic growth. Within a few days, the interest rate on German bonds increased by 3.81 per cent. Similarly, in November 2010, the IMF published a report on the United Kingdom's economy. The press release noted that the UK was vulnerable to the European sovereign debt crisis and again, within a few days, the interest rate increased by 4.68 per cent. These developments are a reminder that international institutions have an important role in monitoring states and providing information, and that such information has the potential to change behavior.

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In this article, we test the impact of IMF monitoring by studying market reactions to its bilateral surveillance exercises, known as Article IV consultations. Drawing on theories from international relations and finance, we argue that IMF monitoring is a most-likely case for influencing market prices in both emerging and high income economies because it is strong by the standard of most international organizations (IO). Strong monitoring is underpinned by authority and resources, and as such, is more likely to yield new information. As investors demand new information, we should observe large market reactions to average Article IV consultations. If we fail to observe large reactions, this would call into question the monitoring activities of IOs, suggesting that even strong IO monitoring has been seriously undermined by bureaucratic dysfunction or capture by powerful states.

The conventional wisdom is that financial market participants value Article IV consultation reports but are otherwise indifferent to IMF surveillance (Lombardi & Woods, 2008, 722, 733). This is understandable, given that the main users of IMF surveillance are national policy makers and public sector analysts (Lombardi & Woods, 2008, 722). However, the market effects of surveillance, specifically of Article IV consultations, have been insufficiently understood. While a handful of studies do consider the link between surveillance and emerging market prices, these studies focus primarily on the effects of transparency rather than the effects of surveillance as IMF-produced information (Edwards, 2019; Glennerster & Shin, 2008). Other studies consider surveillance market effects but only insofar as these effects would then influence state behavior. As a result, the effects of IMF monitoring, and whether it matters at all for market participants and high income economies, is still not fully understood.

This article provides the first systematic test of IMF monitoring across both emerging and high income economies during the surveillance process, from the disclosure of preliminary results to the publication of the final Article IV report. Since IMF surveillance is a continuous process which may yield a range of positive and negative signals about the trajectory of an economy, we focus primarily on the scale of the market's response. A focus on scale helps us to understand how much, and to whom, monitoring matters - a subject of considerable relevance to research on institutions, cooperation, and information in world politics (Axelrod & Hamilton, 1981; Keohane, 1984; Koremenos et al., 2001).

Using an event study analysis of 428 surveillance exercises from 1997 to 2013, we find that Article IV consultations have large impacts on sovereign debt prices in the days around their public disclosure. The IMF's initial mission concluding, released just before a surveillance mission team departs from a country under surveillance, typically prompts a significant reaction. Likewise, Article IV reports prompt large reactions, with significant effects in high income economies but even greater impacts in emerging markets. Some of the largest reactions we observe are in cases where no mission concluding statement was released in advance of the final report. Interviews with market participants support these findings, and help us to understand how and why market participants react to IMF information. Lastly, we conduct a probe of the release of positive and negative IMF information related to real GDP growth, and find little evidence that the market reacts systematically in one direction or the other.

## Why monitoring matters

Today, most economies are simultaneously monitored by several international institutions. The G20, the G7, the IMF, the World Trade Organization, the World Bank, the OECD, and the European Union are just some of the bodies that regularly monitor economic policies. The monitoring activity of these institutions consists of information gathering, dissemination, and policy advice. If monitoring works it should be informative, and if it is informative it should prompt action. However, international institutions have been criticized for failing to sound alarm bells before major economic catastrophes, including the global financial crisis and the European debt crisis (Bossone, 2008; Momani & Hibben, 2018; Pisani-Ferry et al., 2011). Even when IOs send clear signals, there are reasons why some might be skeptical of their policy advice; a large literature, for example, shows that IMF decision-making is heavily politicized (Dreher et al., 2009; Thacker, 1999).<sup>1</sup> Moreover, the existence of multiple institutions monitoring the same economic policies adds a further layer of complexity, generating new conflicts of interest as well as incoherent and sometimes contradictory policy advice.<sup>2</sup>

Has politics fatally undermined global monitoring, or are its occasional failures merely symptomatic of the difficulty of the task? One way to address this question is to study public reactions to monitoring. If governments, the media, and financial markets react to monitoring then it suggests that the information provided by international institutions is meaningful to important stakeholders. Related research shows that membership of international institutions is rewarded with lower interest rates and improved access to credit (Ferguson & Schularick, 2006; Gray, 2009, 2013; Obstfeld & Taylor, 2003). We also know that some countries use international institutions to signal their commitment to liberal economic policies, to enhance their reputation, and to lock in reform (Baccini, 2019, 83). However, we do not know if day-to-day monitoring activities carry the same weight. Monitoring is a repeated process which may yield a range of different signals, both positive and negative. As a repeated process its impact could be substantial, yet there are precious few studies that examine monitoring as a source of public information. While canonical work asserts that international institutions help to reduce uncertainty by gathering and disseminating information (Axelrod & Hamilton, 1981; Keohane, 1984; Koremenos et al., 2001), the role of monitoring in world politics is still not fully understood.

Nonetheless, the literature provides some key insights into which monitoring institutions should exert the most influence in world politics. According to Dai (2007, 50), only a few treaty organizations such as the IMF and the Non-Proliferation of Nuclear Weapons (NPT) have the resources and authority to carry out the entire monitoring procedure, particularly in detecting noncompliance with international obligations. Indeed, the ability of UN monitoring to challenge state power was demonstrated before the 2003 invasion of Iraq when chief UN weapons inspector Hans Blix contradicted the claims of the George W. Bush administration, finding that 'there were about 700 inspections, and in no case did we find weapons of mass destruction' (Azab Powell, 2004). Unlike the IMF and the NPT, some IOs only manage information systems, collating and organizing the information provided by national agencies. Many human rights organizations, for example, rarely do more than collect governmental self-reports. While the IMF performs a similar

function and depends in part on self-reporting, its ability to inspect and verify the accuracy of information gives it considerable influence in world politics.

Edwards (2019) considers the role of market forces in IO-provided information, arguing that the impact of IO information depends critically on the competition among and between IOs and other sources of information. Another strand of research suggests that the identity and preferences of monitoring institutions may also add weight to their policy advice. Theoretical studies of information transmission, for example, show that actors with similar preferences can send more informative signals to each other (Crawford & Sobel, 1982; Lupia, 1992; Lupia & McCubbins, 1994, 368). Thus the IMF, with its clear mandate to exercise surveillance and its pro-market reputation should be a strong monitor and source of trusted information for investors. Indeed, scholars of international political economy have done much to uncover the material, normative, and ideational roots of the IMF's influence and authority (See for example, Chwieroth 2009; Clift, 2018; Dreher & Jensen, 2007; Nelson, 2017; Stone, 2011; Woods, 2006). Few would dispute that it is taken seriously, and is capable of wielding considerable influence in public life.

### ***Existing research on IMF surveillance***

The majority of research on IMF surveillance treats it as a dialogue taking place among elites, rather than a source of public information. The studies which take this approach see it as an opportunity for learning, socialization, and the legitimization of economic ideas (Broome, 2015; Clift, 2018; Momani, 2006; Moschella, 2011). These studies do much to unpack economic surveillance, showing how the IMF's policy advice has evolved and how its political logic is often cloaked, purposefully or otherwise, in the language of impartial economic analysis. Clift (2018, 88-111), for example, argues that the IMF's surveillance mandate enables it to speak with authority to high income economies, and that it gains meaningful traction over their policies by defining 'what is going on' rather than simply insisting on 'what must be done'.

Other strands of research have leveraged the content of Article IV consultations and other IMF documents to provide new insights into the ideas and ideational frameworks that motivate IMF behavior on issues such as austerity (Ban & Gallagher, 2015) and capital account liberalization (Chwieroth, 2009; Moschella, 2010). Kaya and Reay (2019) analyze 12,000 IMF documents from 1982–2011 to examine shifts in the IMF's discourse on the Washington Consensus, illustrating fragmentation and variability over-time. Lang and Presbitero (2018) consider the IMF's surveillance activities in the context of its debt sustainability analyses, finding considerable room for discretion. Aldenhoff (2007) finds evidence of bias in IMF growth forecasts arising from its surveillance and data gathering activities. Further studies have compared the design and performance of IMF surveillance with other international institutions, again demonstrating significant variability (Breen et al., 2020; Hodson, 2015; Moschella, 2014; Schäfer, 2006).

Only a handful of studies treat surveillance as a source of public information.<sup>3</sup> The nearest to ours examine IMF surveillance through the lens of transparency, finding that emerging markets which permit the IMF to disclose their surveillance reports are rewarded with lower borrowing costs (Edwards, 2019; Glennerster &

Shin, 2008).<sup>4</sup> Edwards (2019) offers the most detailed account of the potential impact of IO surveillance but sees less of a role for high income economy debt than we do. The next closest is Fratzscher and Reynaud (2011), who examine the effect of 157 IMF Article IV PINs (press releases) on sovereign spreads in 36 emerging markets. They manually code the ‘favorableness’ of reports on a five-point scale and find that countries that hold greater political power and linkages to the IMF receive more favorable reports that reduce borrowing costs. While these studies are sophisticated they focus only on emerging markets and use panel data techniques to isolate the effect of relatively slow-moving political economy variables.<sup>5</sup> Our event study technique is better suited to testing the immediate effect of IMF information on fast-moving markets in the days around the public disclosure of surveillance. For one, it allows us to disaggregate the surveillance process, starting with the initial disclosure of information in the staff’s mission concluding statement and finishing with the publication of the Article IV report, a document which provides a detailed economic analysis along with input from the IMF’s board and senior management. Recent work by Kersting and Kilby (2019) applies the event study approach to World Bank loans, finding a large positive short run impact on local stock market returns and demonstrating its utility in exploring the impacts of international organizations.

To date, no study has examined surveillance in high income economies, the scale as distinct from the direction of market reaction, nor viewed surveillance as a process consisting of multiple stages. Addressing these gaps is important because it can help us to establish whether IMF monitoring is considered a source of useful information or whether it is considered a toothless exercise that is disregarded by important stakeholders. Moreover, the scale of the market’s reaction has consequences for the liquidity and the volatility of government bonds. Volatility is a central concern in economics and finance, as it affects levels of investment, security valuation, and is an important indicator for policy-makers. That said, if surveillance were to always prompt extreme volatility, governments would eventually become unwilling to tolerate it. Conversely, if it were to have little effect on behavior, then it should rightfully be considered a waste of time and resources. This dilemma motivates the IMF to treat surveillance information carefully, releasing it at appropriate intervals and facilitating members to delay or withhold information if it would destabilize their economy.<sup>6</sup> Despite these measures, we expect to observe large reactions to new information provided by the IMF. If we do, it suggests that surveillance matters in more situations than is presently understood. If we do not, it suggests that the IMF does not convey information that is highly valued by financial markets. In sum, there is much room for further research to establish the effects of typical surveillance releases on markets, in both emerging and high income economies.

## **IMF surveillance and financial markets**

We argue that markets are likely to react to many surveillance reports with changes in asset prices in both emerging and high income economies. This argument rests on two strands of research. Firstly, theories of market behavior suggest that when meaningful information is released to the public about a particular asset, financial markets should react in some capacity. Secondly, the literature in the discipline of

International Relations and on IOs more specifically has made strong arguments that public communications from these institutions fulfill this criterion of 'meaningful' information for a range of stakeholders.

From the finance literature, multiple strands of thought suggest that asset prices should immediately adjust to newly released information.<sup>7</sup> However, it is important to question whether economic surveillance provides new information for market participants. Not all news releases, data updates, or public commentaries are 'information' releases that have price implications for financial markets. When examining the case of IMF surveillance, there are many reasons that annual appraisals by the IMF should represent new information for financial market participants. As an institution, the IMF holds a mandate like few others in the global economy: its surveillance activities, ability to act as a lender of last resort, and research capabilities, coupled with an unrivaled geographical scope of influence afford the organization a unique intellectual and practical position in finance. The surveillance exercise itself illustrates these traits, where teams of expert economists have the ability to not only access data and policy makers directly, but can also demand information on particular areas of the economy and issue requests for specific data to be collected by national authorities. These abilities are demonstrated during the economic surveillance procedure when a mission team of expert economists visits the member state, meeting with the key figures in the government and economic authorities like the central bank. During these meetings, both parties exchange data and evaluate strengths and weaknesses in the economy, along with the progress a government has taken toward enacting economic reforms.

IMF staff benefit from a high level of access to both quantitative and qualitative information during economic surveillance exercises. The ability to access and demand raw data affords the IMF staff<sup>8</sup> immediate supremacy over other institutions<sup>9</sup> in the global economy. This is supplemented further with the qualitative overlay of direct and regular access to policymakers and key stakeholders in the economy, providing the IMF's staff with insights into the 'head of the finance minister'<sup>10</sup> and other government officials (Mosley, 2003, 129). No other international organization or outside agency has the same level of access to the source of economic information and decisional power. These factors illustrate the arguments made in the literature that one of the strongest advantages IOs have is their ability to collect, communicate and disseminate accurate and credible information to a range of audiences (Keohane, 1984). Crucially, research that has focused on the staff at IOs such as the IMF has noted that a prevalence of shared normative orientations between these agents and their market-oriented counterparts in government (Chwioroth, 2013) can influence the operations of IOs.

Scholars argue that IMF surveillance is far more than the collection and dissemination of information. In a major anthropological study of surveillance, Richard H. R. Harper (1997) accompanied a surveillance mission and documented the entire process over the course of several months. His findings reveal an exceptional level of access to information. In Harper's study, an IMF team visited pseudonymous 'Arcadia', a country still suffering from the crippling effects of what William Easterly (2001) describes as the 'Lost Decades' in the developing world. Accompanying an IMF official on meetings with different government agencies, Harper notes that a senior Arcadian official was not able to provide the IMF official with new information on revenues paid to the government. The official was



only able to give the IMF staff member an admittedly flawed estimate. Approaching another government department, the IMF official was able to gather an alternative estimate of revenue paid to the government. The different estimates held by each government department had individual strengths and weaknesses, and neither department was fully aware of the information held by the other. The IMF staff member was able to reconcile both estimates to produce the best estimate of tax revenue at that point in time (pp. 196-200). This is one of several examples where the mission team played a role in creating and interpreting new information, as well as generating a sense of shared understanding regarding economic data.

Economic surveillance texts are eventually released to the public following an internal process. At the end of an official staff visit, a concluding statement is released, often before the team has departed, followed by a Staff Report which contains a lengthy economic appraisal. Key indicators in these reports can differ, as the IMF analyzes the data it has gathered on the mission. Typically, Staff Reports contain a section that discusses the views of the IMF's executive board on the country being surveyed. This section can be particularly insightful, as it represents the broad international consensus regarding a country's economic policies and satisfaction with its executive. This renders IMF surveillance as both an exercise in economic analysis and political judgement among its members. Collectively, these are compelling arguments as to why economic surveillance should not only be of interest to market participants, but also contain new information that moves asset prices. As a result, the content of a typical IMF Article IV reports should influence market prices. Article IV reports vary along multiple dimensions – changes in any of these dimensions might prompt changes in market behavior. On the whole, what matters for our argument is that IMF-produced information is responsible for a substantial reaction. Our interview subjects provide further meaning to the reactions we observe, suggesting that context is essential.

A criticism of this position is that markets operate efficiently, and therefore investors should anticipate political events like elections, G7 summits, or IMF surveillance missions. Taking this view of how markets process information, the findings from an event study like ours can only be spurious or, alternatively, evidence that markets do not process information efficiently. But this criticism misses the point that IMF surveillance missions are almost never perfectly predictable. For one, they are political events, in addition to technical and information gathering exercises. As Harper (1997) illustrates in detail, these meetings can go well or they can go badly; they can unearth new information, and sometimes they involve considerable tension and conflict among the officials involved. The birth of new economic information is often a painful and uncertain exercise that is likely to be sensitive to context. Even highly rational and efficient investors cannot be entirely certain what will happen.

H1. On average, markets react to economic surveillance releases

While surveillance will contain some level of new information on all economies, it's likely that reports that survey emerging market economies will contain more information that can be used by investors. One important reason for this is that the IMF is a *de facto* lender of last resort for many of these economies. Despite its loans to some high income economies in recent years, its voice carries added weight in emerging markets who have previously borrowed, as the IMF literature



has documented the unfortunate tendency for many of its borrowers to become serial borrowers. Another reason for this is the limited availability and suspect reliability of the economic data that is collected by some emerging market governments or central banks. In often large geographical areas with dense populations, weaker institutions, and poorer infrastructure, governments and central banks often do not have the capacity to gather accurate financial data, which can result in irregular data releases on key indicators for market participants. A product of fewer data is more uncertainty, as investors face greater risks that the economy will have deteriorated by the time the data is next updated, likely resulting in heightened market volatility. Additionally, weaker data collection procedures allow for the possibility that a certain section of an economy can become unstable with investors or policymakers being unaware. Capacity issues likely represent the most common reason for an absence of data collection, yet in some cases there is no political will to reform such processes. As discussed, the IMF has the ability not only to access private data from agents in the country, but can also request that additional data is collected by national authorities. The training and support provided by IMF staff to civil servants in member economies can also help to increase data collection capabilities.

Data availability and reliability form part of the reason that emerging market debt is considered riskier than that of high income economies<sup>11</sup>. However, an additional factor is the sometimes opaque and volatile nature of the political economy environment in emerging economies. While political uncertainty in high income economies has risen in recent years, 'core' industrial economy bond yields contained, and still contain, very little of this risk premium. Strong and stable institutions provide a bulwark against significant deterioration in the policy environment, reducing the likelihood of strong reversals following elections in high income economies. Yet politics in emerging markets are more difficult to predict. Weaker institutions result in greater uncertainty regarding who will be elected and what they will do when in office. Taken together, these factors echo the findings of research on the determinants of government bond interest rates that have indicated that emerging market assets are viewed as having distinctly different risk profiles than high income economy assets (Mosley, 2003).<sup>12</sup> If we return to our discussion of economic surveillance being a process whereby expert economists are afforded access to policy makers and previously unreleased data, reports on emerging markets should provide more information on both the political and economic environment of the country being surveyed.

With this in mind, emerging markets represent an ideal test of the information content contained in an economic surveillance release: if surveillance does contain genuinely new information on emerging markets, the result should be stronger reactions than those for high income economies.

H2. Markets react more to emerging market than high income economy surveillance.

## Data and method

We are interested in examining the impact of economic surveillance on financial markets. As our unit of analysis, we choose government bonds with maturities of 10 years for 40 emerging and high income economies. This results in a sample of 428 events over a 17-year window, from 1997, when economic surveillance releases

**Table 1.** Absolute abnormal returns – surveillance release.

Country	Coverage	N	Min.	Max.	Mean	Std. Deviation
Australia	1998, 2000-2012	14	0.018	0.246	0.120	0.064
Austria	1997-2005, 2007-2012	15	0.003	0.245	0.041	0.061
Belgium	1998-2013	16	0.003	0.140	0.049	0.046
Brazil	1999, 2003, 2005, 2007, 2009, 2010, 2011, 2012	8	0.121	1.009	0.393	0.305
Canada	1998-2011, 2013	15	0.013	0.180	0.077	0.048
Switzerland	1998-2013	16	0.004	0.159	0.064	0.050
Colombia	2003, 2006, 2008, 2009, 2011, 2013	6	0.109	0.407	0.217	0.142
Czech Republic	2000, 2002-2005, 2007-2012	11	0.007	0.205	0.101	0.059
Denmark	1999, 2002, 2004, 2006, 2008, 2010, 2013	7	0.026	0.111	0.058	0.028
Spain	1998-2000, 2002-2007, 2009-2012	13	0.001	0.234	0.057	0.080
Finland	1997-2002, 2005-2007, 2009, 2010, 2012	13	0.001	0.130	0.038	0.041
France	1997-2006, 2008-2012	15	0.002	0.128	0.033	0.043
United Kingdom	1997, 2000, 2002-2012	13	0.011	0.151	0.055	0.045
Greece	1999, 2001-2003, 2005-2009	9	0.008	0.191	0.039	0.059
Hong Kong	1999-2003, 2005-2011, 2013	14	0.021	0.730	0.207	0.182
Hungary	2000-2008, 2011-2012	11	0.079	0.346	0.148	0.074
Indonesia	2005-2012	8	0.021	0.347	0.123	0.107
Ireland	1997-2007, 2009, 2010, 2012	14	0.001	0.276	0.061	0.089
Italy	1999-2003, 2005-2007, 2009-2012	12	0.002	0.376	0.095	0.121
Japan	1997-2003, 2005-2012	15	0.008	0.159	0.061	0.039
Korea	2001-2004, 2006, 2010-2012	8	0.007	0.182	0.085	0.066
Sri Lanka	2008, 2010, 2013	3	0.036	0.331	0.218	0.159
Mexico	2002-2007, 2009-2012	10	0.028	0.360	0.172	0.125
Malaysia	2002, 2004-2007, 2009-2010, 2012-2013	9	0.009	0.175	0.051	0.055
Netherlands	1997-2008, 2010, 2011, 2013	15	0.002	0.186	0.035	0.048
Norway	1998-2005, 2007, 2010, 2012	11	0.017	0.282	0.091	0.072
New Zealand	1998-2000, 2002-2013	15	0.008	0.304	0.134	0.092
Pakistan	2002, 2004-2006, 2009, 2012	6	0.009	0.260	0.132	0.113
Philippines	1999, 2001, 2002, 2004, 2006, 2007, 2009-2012	10	0.023	0.220	0.104	0.074
Poland	2000-2006, 2008-2012	12	0.012	0.916	0.141	0.248
Portugal	1997-2000, 2002-2008, 2010, 2013	13	0.003	0.268	0.065	0.086
Romania	2008, 2010, 2012	3	0.067	1.403	0.566	0.729
Russia	2004-2012	9	0.033	0.662	0.189	0.193
Singapore	1999, 2000, 2003-2006, 2008-2010, 2012	12	0.024	0.133	0.073	0.038
Slovakia	2009	1	0.067	0.067	0.067	
Sweden	1997-2005, 2007-2012	15	0.017	0.119	0.057	0.033
Thailand	2001-2005, 2007-2010, 2012	10	0.019	0.257	0.125	0.094
Turkey	2010-2012	3	0.053	0.292	0.157	0.123
South Africa	1997, 1998, 2000-2002, 2004-2011	14	0.058	0.658	0.204	0.161
Vietnam	2009-2012	4	0.055	0.859	0.377	0.358
<b>Total</b>		428	0.001	1.403	0.105	0.140
<b>High income Economies</b>		282	0.000	0.730	0.072	0.081
<b>Emerging Economies</b>		146	0.006	1.403	0.169	0.196

were first declassified, until 2013. Full details of this coverage can be found in [Table 1](#). We classify a government as an emerging market if their bond is traded on one of the three main exchanges for emerging market bonds.<sup>13</sup> We choose the 10-year bond as it is the benchmark government debt instrument. Benchmark bonds are more frequently traded than issues with durations at either end of the distribution, allowing us to capture a more representative measure of ‘impact’. This is in contrast with illiquid assets, where large single trades can have significant price implications, or rather, where buyers and sellers do not meet, and no price change occurs. In some countries, or during certain periods of the business cycle, sovereigns in our sample may have either favored issuing bonds with a different

maturity to 10 years or may have been excluded from borrowing on capital markets altogether. However, the broad scope of our sample size, covering both emerging and high income economies over two full global business cycles, means we can comfortably discount any idiosyncrasies of this kind. Our data therefore consist of daily interest rate observations of 10-year bonds traded on the secondary market, we source all available data of this kind from Refinitiv's economic and financial database; Datastream.<sup>14</sup>

We use the event study methodology, usually found within the literature from the field of finance, but also within political science and international relations (e.g. Bechtel & Schneider, 2010; Bernhard & Leblang, 2006; McMenamin et al., 2015; 2020; Sattler, 2013). Researchers that have used an event study in the past have been interested in examining the impact of particular events on asset prices. Some examples of events analyzed in previous research have been mergers and acquisitions (Moeller & Schlingemann, 2005), stock splits (Lamoureux & Poon, 1987), and celebrity endorsements (Agrawal & Kamakura, 1995). Studies like these employed the event study technique as a more robust way to measure the real time impact of events on asset prices relative to changes in yields, which have been used in similar studies to our own. The event study method therefore posits the counterfactual: how the asset would have performed had the event not occurred.

In order to estimate this, we make three key decisions associated with the event study method. Firstly, we use the US and German 10-year benchmark bonds as the predictors for each country's interest rate. For the high income economies in our sample, we regress the respective 10-year rate on both the US and German benchmarks. The combination of both is designed to account for both global economic conditions, which are captured primarily by the US rate, and Eurozone specific factors, which are represented by the German rate. For emerging markets, we use the US interest rate alone to estimate 'normal' returns for each country's bond. The US rate alone is chosen for emerging markets on account of the extent of influence held by US monetary policy (and by extension bond yields) over capital flows to these markets. We do not add additional regressors, as MacKinlay (1997, 18) shows that little explanatory power is added in general when further regressors are added to event study estimations. Our approach follows this guidance and has the added value of allowing us to use the same modeling strategy in a very large number of emerging and high income economies by comparison with similar event studies.

Secondly, we choose an estimation window of 120 trading days prior to each surveillance event as the period over which the 'normal' return is predicted by linear regression. We also exclude the 21 days immediately before the surveillance report is released to account for any potential information leakages or anticipation by market participants, leaving an estimation window of 99 days. This specification means that our Article IV (AIV) estimates incorporate or 'price-in' the information contained in mission concluding statements (MCS) – short statements which are typically released 120 to 20 days before the final Article IV report. In our results section we compare the impact of MCS and AIV releases to understand the relationship between them.

Over these observations, we regress the daily difference of the interest rate in question on the benchmark rates to generate the normal return around the period of each report being released. We use the daily difference to account for the fact that the data are both non-stationary and serially-autocorrelated (as confirmed by unit root tests). Lastly, we choose an event window of three days following the

release of each report as the period over which the ‘impact’ will be measured. While we expect the ramifications of the report to be immediately incorporated into the decisions of market participants, we expect the price action to evolve over several days. For example, if a surveillance report on the UK economy is released at the close of business hours in Washington, DC, trading of UK securities will be more muted in the immediacy of the report being released, as European trading hours will have ended by this time.<sup>15</sup> Furthermore, it is important to note that the impact of a surveillance report has the potential to extend into the days following our specified event window, as the media may provide additional coverage and exposure of the report’s contents, prompting further interest and commentary from stakeholders. In this sense, our three-day event window is rather a conservative estimate of the potential that surveillance has to impact markets.<sup>16</sup>

The abnormal return (AR) therefore is the difference between the predicted return and the actual return on the days after the report was released. We turn the signs on each day of abnormal returns to positive values and aggregate over the three days to calculate the absolute abnormal return (AAR), which serves as the outcome of interest in this study. The intuition behind stripping the directional effects from the abnormal return is in attempting to capture the total impact on the price of the asset. In general, aggregate AR calculations serve as excellent indicators of the net movement on the yield of a country’s debt. Yet they do not provide a full account of how markets reacted to the release of a surveillance report. For example, markets might be pulled in both directions as to how a report should be interpreted, leading to broader trading ranges following a surveillance release; the absolute AR score is one way in which these movements can be captured. The absolute ARs are particularly useful therefore in examining how markets reacted to surveillance of economies where information availability is a key concern, primarily emerging markets, and when economic uncertainty is prevalent.

The estimation technique for high income economies in our sample is given by the equation below:

$$\Delta R_{it} = \alpha_i + \beta_{1i}\Delta R_{us_t} + \beta_{2i}\Delta R_{ger_t} + \varepsilon_{it}$$

Where the predicted return for country  $i$  at time  $t$ , is estimated by exploiting the daily change in both the US and German 10-year bond yields over the estimation window of 99 trading days prior to each event. For emerging markets, the equation is identical, save for the fact that the German benchmark is excluded.

$$\Delta R_{it} = \alpha_i + \beta_i\Delta R_{us_t} + \varepsilon_{it}$$

The abnormal return therefore is given by:

$$AR_{it} = \Delta R_{it} - E(\Delta R_{it}|X_t)$$

Each country’s abnormal return within the event window is equal to the difference between the return at time  $t$  and the expected return conditional on the benchmarks used.

$$AAR_{it} = \sum_{it=1}^3 |AR_{it}|$$

The absolute abnormal return, our dependent variable in this study, is outlined in the equation above. Where the abnormal return for each country  $i$  at time  $t$  is

turned to its absolute value and summed over the 3-day event window to generate one event observation.<sup>17</sup>

## Findings/discussion

Our results, presented in [Table 1](#), show market reaction to the disclosure of 428 surveillance reports. We find that on average, each release results in an absolute abnormal return of 10.5 basis points over the three days following the release of the document. Essentially, this figure represents the aggregated deviation between the predicted interest rate yield in our model and the actual return on the days following the report's release. This provides evidence of the impact, on average, that a surveillance release has on the borrowing costs borne by a government and is support for our first hypothesis.

Our second hypothesis contends that reactions to surveillance for emerging markets will be greater than for high income economies. The findings of our model indicate support for this hypothesis too. Economic surveillance releases for emerging market economies result, on average, in absolute abnormal returns of 16.9 basis points over the days following the release of the report. This is in contrast to the average figure for high income economies alone, which stands at 7.2 basis points, leaving reactions to emerging market economies more than 2.3 times greater.<sup>18</sup> Additionally, the standard deviation of reactions to surveillance is greater for emerging market sovereign debt than that for high income economies. While [Table 1](#) shows that the strongest event abnormal return in our sample is for Romania in 2010 at 140 basis points, many surveillance reports of emerging market economies resulted in some of the largest abnormal returns in our sample.

[Figure 1](#) illustrates average AARs in basis points by country, with horizontal lines indicating the range. There are clear differences by economic status, with emerging markets typically exhibiting the strongest reactions. Romania, Brazil, and Vietnam, Sri Lanka, Colombia have the largest average reactions. However, the reaction of some high income economies including New Zealand and Australia is close to that experienced by emerging markets like Indonesia and Thailand. Likewise, emerging markets like Malaysia exhibit reactions that we see more typically among high income economies. France, the Netherlands, Finland, Greece, and Austria show some of the smallest reactions. The small reaction to surveillance episodes in Greece may seem counterintuitive given bond market interest in IMF information. However, it reflects the fact that we have no episodes in our sample after 2009, as normal Article IV exercises were abandoned for program and post-program monitoring exercises. In this way, our estimates are conservative as they do not include cases of IMF program monitoring.

In [Figure 2](#) we repeated our specification using a series of rolling event windows from  $t$  to  $t+4$ . These alternative specifications relax assumptions about the time it takes the media to assimilate new information, providing an illustration or impulse response function of the surveillance event. The figure shows that surveillance has no discernable impact in high income economies by  $t+3$ . In emerging markets, the effect persists until  $t+4$  and there is a steeper decline from a much higher level. Overall, the Figure suggests that surveillance has a large impact in both emerging and high income economies, and that this impact is concentrated around its initial disclosure.

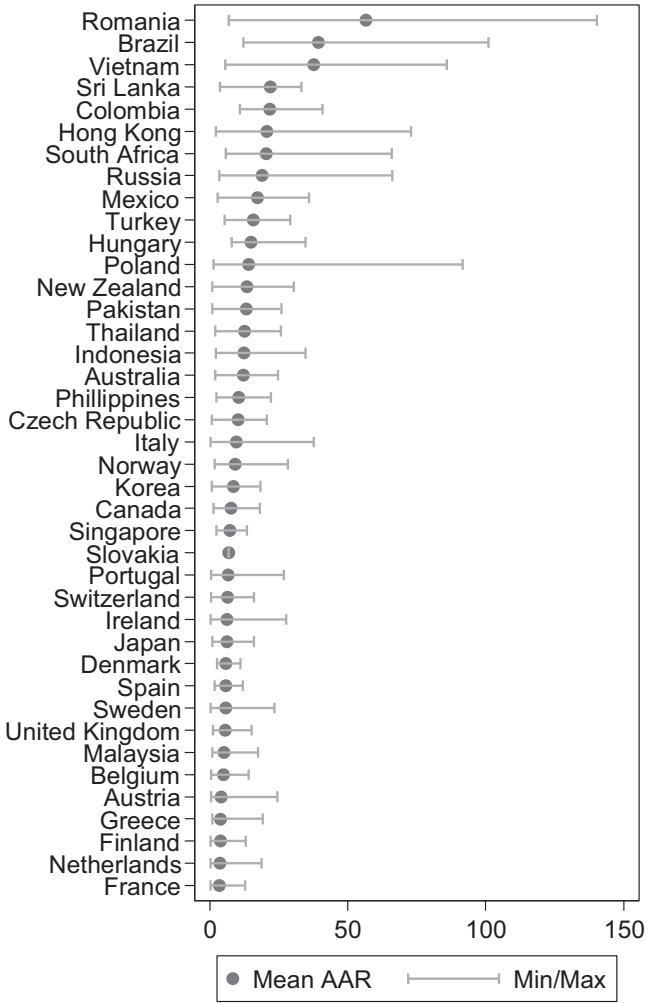


Figure 1. Absolute abnormal returns, 1997-2013 (basis points).

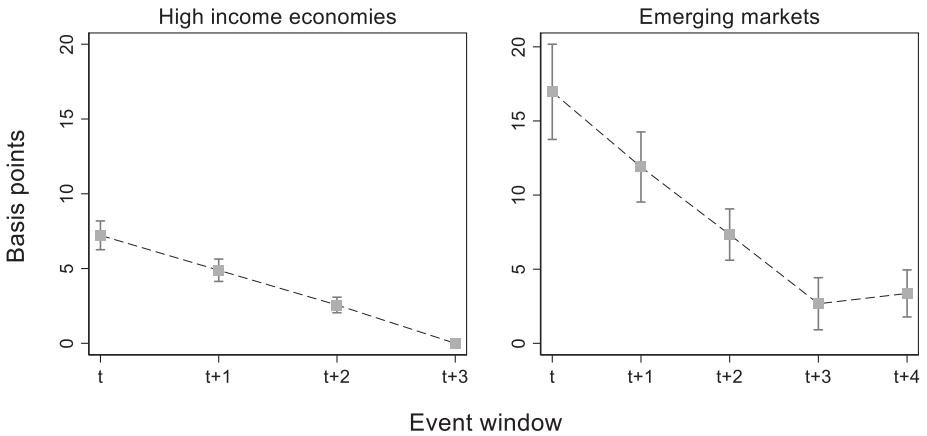


Figure 2. Rolling event windows.

**Table 2.** Mission concluding statements – absolute abnormal returns.

Type	N	Min.	Max.	Mean	Std. Dev.
MCS	225	0.002	1.304	0.085	0.130
MCS High income economies	169	0.002	0.823	0.066	0.086
MCS Emerging markets	56	0.003	1.304	0.143	0.204
AIV AAR with MCS	225	0.001	0.662	0.080	0.085
AIV AAR without MCS	203	0.001	1.403	0.134	0.179

Note: MCS refers to mission concluding statements and AIV refers to the final Article IV report.

### **Mission concluding statements**

Before an IMF team departs from a country under surveillance it releases a mission concluding statement (MCS). While concluding statements are only a few pages long, they should be of considerable interest to market participants as they give investors a taste of what is likely to appear in the eventual report. We were able to match 225 concluding statements to their corresponding surveillance mission in our sample of 428 events. We were not able to determine why no MCS was published in the 203 other missions we analyzed. On average, we find that an MCS is released 83 days before the final staff report. The estimates presented in Table 2 show that the average MCS has a substantial impact – 8.5 basis points. Like the full surveillance report, the effect of an MCS is usually much greater in emerging markets than high income economies at 14.3 basis points.<sup>19</sup>

Recall that in 203 of our 428 surveillance missions there is no published MCS. In these cases, investors may have had no, or less advance warning of the content of the report. Thus, we expect the disclosure of the final report to carry more weight in these instances. Table 2 supports this assertion: the AAR for final reports with no prior MCS is 13.4 basis points on average, while the impact of the final report for surveillance missions with an MCS is 8 basis points. The difference suggests that MCS may be an effective tool in managing expectations and dampening speculation across a substantial number of emerging and high income economies.

### **Probing the market's response to surveillance information**

We have argued that IMF surveillance is a source of vital public information about many aspects of the economy. In this section, we isolate a single dimension of IMF information in order to probe the direction of the market's reaction to new surveillance information. In this instance, we focus specifically on the IMF's own estimate of real GDP growth, arguably the single most important economic indicator among the many gathered in the surveillance process. New growth estimates are typically published in the Staff Report, but sometimes also appear in the MCS. In the first step of our analysis, we identified MCS documents that contain new real GDP estimates. This exercise yielded 38 cases out of our 225 concluding statements. In these cases, we measured the difference between the new estimate and the already existing estimate in the previous edition of the World Economic Outlook. We used this variable as a proxy to capture the direction of surveillance information, and repeated this exercise for the remaining 187 Staff Reports where real GDP data was not already published in the MCS.

We then regressed the direction of information on the direction of the market's reaction to surveillance, or Cumulative Abnormal Returns (CAR). Our findings



**Table 3.** Direction of information - cumulative abnormal returns.

	(1) MCS	(2) MCS	(3) AIV	(6) AIV
MCS GDP direction	-0.03 (0.047)			
MCS GDP favorable		-0.12* (0.065)		
AIV GDP direction			-0.01 (0.012)	
AIV GDP favorable				0.01 (0.008)
Observations	38	38	187	187
R-squared	0.812	0.924	0.322	0.334

Country and time dummies included in all specification – not displayed.

Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

from regression analysis are presented in [Table 3](#). The first two columns present estimates related only to the MCS – column one includes the direction of information regarding real GDP and column two includes the overall percentage change in real GDP in order to capture the overall favorableness of economic information in the report. Columns three and four repeat these specifications for the Staff Report (AIV). The findings show that the direction of information is not strongly correlated with the bond market's reaction to surveillance. Column 2 suggests that there is some evidence that markets react systematically to the release of favorable real GDP updates with a 12 basis point reduction in the CAR but this result is relatively weak at  $p < .1$  and pertains only to the sample of 38 MCS cases. What we conclude from our tests is that surveillance causes a large market response on average but there is no evidence that it moves systematically in one direction or the other, at least when one focuses specifically on the change and direction of real GDP growth in a country under surveillance. We performed a series of additional checks, available as part of our replication materials and explained in the [Supplementary Material](#) file, which reinforce the robustness of our findings.

### **The substantive effect of surveillance releases**

Our results show that economic surveillance releases affect the price that a government pays to borrow on global capital markets. What is this cost in substantive terms for a sovereign? By using both the absolute and cumulative abnormal returns generated in this study, we can provide some generalized cases that illustrate the potential impact surveillance can have for a government's cost of borrowing. Consider first the average absolute abnormal return in our study as a starting point at the observational level (rather than averaging bond issues over our sample); some examples serve as indicative guides to the nominal cost of a survey release.

On January 16<sup>th</sup> 2019, the Turkish government issued \$2 billion worth of Eurobonds with a maturity of 10 years (Republic of Turkey Ministry of Treasury & Finance, 2019). Assuming that the impact of an IMF surveillance release is to simply add the average abnormal return from our results to the next issuance, meaning a 10.5 basis points of additional country risk on top of the coupon rate, the Turkish sovereign therefore pays an extra \$2.45 million for each year of the bond's duration, totaling \$24.5 million over the life of the bond.<sup>20</sup> This would come in

addition to whatever impact would be felt on other government bonds with different maturities across the yield curve. As noted, the extra cost associated with surveillance releases is proportionate to the size of the bond issue. Following Argentina's return to the bond market, it issued \$6.5 billion worth of 10-year debt (Bronstein & Marsh, 2016) as part of a record issuance. A typical surveillance release would have a \$79 million impact on the bond price (over 10 years). Adding the average cost borne by an emerging market, the fiscal burden would be even greater, at almost \$127 million over 10 years.

Consider an example from our dataset that draws upon the cumulative abnormal return as a measure of the market impact of surveillance. The release of Brazil's surveillance report in July 2009 led to one of the strongest market reactions seen in our results, returning a CAR of over a full percentage point over the three days following its release. The impact of the surveillance release on the \$2 billion fixed rate bond issue in December 2009 would raise its annual cost by around \$21 million. However, as mentioned, we measure market reactions at relatively high frequency intervals for individual bond releases. There are potential implications for other bond releases, the broader yield curve, and indeed other financial markets. In Brazil across 2009, there was a total of around \$80 billion of government bonds of fixed, floating and other bonds in a range of issuance sizes.

These cases provide some indication as to the potential costs associated with economic surveillance releases. As described, such figures do not capture the broader effects on a country's yield curve, or those that might be observed in other asset classes, and are as such, highly conservative. Furthermore, they do not capture the possibility that IMF criticism may prompt states to delay bond sales or reduce the scale and ambition of their market activity. Direct effects on market prices alone do not capture the total impact of surveillance on financial markets and governance finance.

## Interviews

Our argument – that IMF surveillance affects market prices – rests on several assumptions about investors. In particular, it assumes that investors are aware of surveillance, perceive the IMF as a source of credible information, and incorporate surveillance into real world decisions. Some of these assumptions are not amenable to quantitative measurement but we can explore their plausibility by interviewing financial market participants working in a range of different front office and market-facing roles. While not a formal test of our argument, it adds face validity as the experience of our participants should be aligned with our argument; if some of them strongly value surveillance we should question arguments in the IMF literature that claim they do not. The results of our interviews support the view that economic surveillance is as an important part of some investors' decision-making, particularly when investors operate in emerging market sovereign debt rather than other asset classes.

We conducted 10 interviews with market participants based in London, New York, and Dublin between January 2018 and March 2019.<sup>21</sup> Our subjects consisted of six market participants operating in a purely sovereign related role, with the remainder in FX and macro research and strategy roles. They covered a broad range of asset classes and geographies in both buy and sell-side institutions. Their

duties ranged from producing research to trading fixed income securities, foreign exchange, and equities. Those we interviewed on the buy-side were primarily research analysts and strategists for investment management funds, some of whom were engaged in proprietary trading for their firms. Sell-side participants included macro strategists and senior FX researchers.

### ***Are surveillance releases incorporated into investment decisions?***

Most of our ten subjects said that IMF surveillance is one of the most important sources they use in their decision-making.<sup>22</sup> Those we interviewed that operated exclusively in sovereign debt cited the IMF and its surveillance exercise as one of the leading sources of information of its kind. In several cases, the subjects referred to the Article IV reports as the ‘de-facto gold standard’, ‘benchmark’, and ‘cornerstone’ for surveillance provision. The others noted that they ‘watched closely’ for the release of surveillance reports, and that they were ‘extremely important’. Crucially, these quotes were attributed to those on the buy-side, who receive considerable amounts of sell-side research from industry experts, highlighting the ability of economic surveillance to draw the attention of stakeholders. From our interviews, it became clear that access to information was a particular concern for these participants, particularly those operating in emerging and frontier markets.

Interestingly, none of our interviewees were concerned with the IMF’s internal decision-making or potential conflicts of interest that might render its surveillance an unreliable source of information. In general, the consensus is that the staff are afforded independence to produce an objective report although one interviewee monitoring the case of Ukraine, where there was a genuine tug of war between the EU and Russia for the state, looked for this to be reflected in the Article IV at the time. The overall lack of interest in internal decision-making was an unexpected response, as decades of research and media coverage has questioned the IMF’s internal decision-making and pointed to the weight of factors such as US influence.

Rather than dwelling on its internal decision-making, the ability of the IMF to provide genuinely new, credible information to markets was cited continuously as a valuable attribute. Importantly, investors such as these are granted considerable access to information on their portfolio of credits. Buy-side firms receive the latest research from the sell-side on both the countries they cover, and also on global developments more generally. Regarding the factors that set the reports above other information providers, our interviewees discussed the different kinds of demands the IMF could place on a government, and how this translates into valuable information from an investment viewpoint. The most fundamental ability of the IO that differentiated it from other providers was that the IMF could demand data from a government. This was particularly important for investors operating in emerging and frontier markets, where access to data is more constrained. They conceded that there is very little that can be done if these data are not collected at all, but that the IMF has the best chance of acquiring this information and disseminating it publicly. If and when these new data are released in an Article IV report, our interviewees usually had two concerns in mind. The first was whether the updated data had deviated significantly from previous forecasts. One participant gave an example of a particular pressure point in an economy he was covering, maintaining

that he was specifically awaiting the upcoming Article IV on this country because the IMF was ‘really the only source’ for this information. Several subjects noted that it is common practice to directly contact the IMF desk economists responsible for producing the report. Though there are confidentiality arrangements that IMF staff are bound by, and in our experience such calls typically involve heavy referral to the Article IV anyway, some clarifications can still be attained through direct dialogue.

Importantly, our subjects stressed that these data could come from any number of sectors relating to the economy, for example the domestic banking sector, or on the external side. Several did note however that certain areas of the report were of particular interest in their analysis, one example being the debt sustainability portion of IMF reports. The second primary concern was whether these new data would ‘flag surprises’, and point to an entirely new area of concern within the economy. One participant gave the example of operating in a frontier economy where data was scarce, noting that an IMF report could draw attention to an entirely new area of risk in the country that had not previously been covered. Lastly, of the participants we interviewed that consumed economic surveillance by the IMF, each indicated regardless of a report containing a ‘bombshell’ on a particular country, the reports are used as one input in the ‘triangulation’ of data on an economy. One researcher noted an example of this in how the report could be used in conjunction with official forecasts from governments and central banks, offering a check on these projections, and highlighting potential ‘risks around these forecasts’.

Of the subjects who said they didn’t value surveillance, they characterized it as tending to lag market developments. A few of those who said they valued surveillance also agreed that it sometimes tended to lag market developments. Furthermore, those operating in asset classes outside of the sovereign space used reports far less than their counterparts. This was true of both buy-side and sell-side market participants operating in areas such as FX. Of these participants, the most commonly cited explanation as to why reading surveillance reports was not a key component of their investment process was that reports are not considered to be ‘market moving’. Multiple reasons were given for this, including the backward looking nature of the reports, the reputation of the IMF as ‘looking in the rear view mirror’, the irrelevance of certain sections and indicators used in Article IVs, and the fact that some portions of the content in a report were already known to the public before release. We had anticipated that our respondents might view surveillance as too slow to keep up with new developments. What we did not anticipate was how some pointed to the irrelevance of certain sections of the report and certain indicators while others highlighted those very details as being key pieces of analysis that they draw upon for making investment decisions. This suggests to us that context matters, particularly the country’s circumstances at the time the report is released.

### ***How are surveillance releases incorporated into investment decisions?***

One of our primary concerns was understanding the mechanism that linked the market reactions observed in our study, and the participants in these markets. The event study methodology we have employed measures market reactions as

immediate revisions and repricing of risks in an asset. The obvious questions to ask market participants therefore is whether they subscribe to the theory that a surveillance report can generate this kind of reaction, whether they would act this way, and why. Firstly, it is important to note that most of the subjects we interviewed were mandated to research, rather than trade government bonds, currencies, or commodities. However, in each case our participants interact heavily with a range of stakeholders at their firms, including traders, portfolio managers, and members of other teams, such as those in corporate credit. Essentially, while our subjects for the most part did not have a direct role in executing trades, their recommendations play a key role in determining the action on the security in question. Regarding the question as to whether these participants would change their recommendations on an asset, the overwhelming answer was that contextual factors would determine this. The themes of uncertainty and market sensitivity have revealed themselves throughout this study, both in our quantitative analysis and again during the interviews we conducted. Our subjects were quick to outline that under times of heavy market scrutiny, a surveillance report that contained either new information, or information that might lead other participants to react, could trigger a change in recommendation. In one case, a sovereign analyst that held a simultaneous prop-trading role said that a particularly damning report on a country he is covering could prompt him to 'sell first, and ask questions later', but that in general the reports are one input into the overall research process. Naturally, information availability too was a factor that many of our participants alluded to as influencing the importance of economic surveillance on their positions. One analyst we interviewed noted that when a report had not been issued on a country for some time, surveillance took on greater salience. Of course, it is important to qualify that typically when this happens, it is too opaque - emerging market economies not only disseminate fewer data, but also are often prone to economic uncertainty in general. This would amplify the impact of any new information on the economy. It is important to note that information, for the purposes of investors, refers not only to economic data but also to the policy environment and direction more generally. One interviewee described how a significant political turnover of power to a relatively unknown government would result in an IMF report holding greater significance, demonstrating the broad range of factors that influence the demand for information.

## Conclusions

The role of international organizations as global monitors is a vital feature of international political economy, which has gained even greater prominence during the ongoing global pandemic and the economic crises of past decades. Yet, the question of whether international organizations are effective global monitors requires further attention. In this article, we considered the market's reaction to IMF information. We find that the scale of the market's response to the publication of Article IV documents is substantial, suggesting that it is considered an important source of public information about economic activity across both emerging and high income economies. Both our statistical tests and interviews with market participants suggest that IMF information is valued, despite the possibility of bureaucratic dysfunction and political meddling. We also conducted a probe to examine

the direction, in addition to the scale of the market's response, and found that while markets move, they do not move systematically in one direction or the other in response to changes in real GDP estimates. Taken together, our findings suggest that important stakeholders are listening to IMF surveillance, in line with our argument that the IMF is an influential global monitor and an important source of public information. However, our analysis contains some limitations and nuances: it focuses only on the bond market and is limited to those countries that trade frequently on this market.

Nonetheless, our findings contribute to a substantial literature in international relations which argues that international institutions have a role in reducing uncertainty by providing information (Axelrod & Hamilton, 1981; Keohane, 1984; Koremenos et al., 2001). While our findings are in line with this literature, the IMF will only continue to be a useful source of public information if surveillance retains its integrity. It must continue to be underpinned by a clear mandate, and be properly resourced and implemented. Though we find that strong monitoring prompts changes in market behavior, especially where it is highly valued by market participants, there are episodes from history where it has clearly failed to identify risks or been a toothless exercise. Much work remains to understand these successes and failures, particularly in a comparative and cross-institutional context.

Finally, though we have established that monitoring matters, much work remains to understand its complex and differentiated effects on capital markets, including the impact of different types of surveillance information on the direction of market prices. Recent developments in text mining and automatic content analysis could yield further insights into the IMF's surveillance activities. In particular, whether the IMF deploys stronger and more invasive forms of monitoring or signaling in some places, in order to achieve policy adoption is worthy of further investigation. Finally, empirical research is needed to understand the broader global economic surveillance regime, including its effects on society and how it interacts with the wider environment for information.

## Notes

1. Fang and Stone (2012) explore the conditions under which IOs can send warning signals that are more likely to be accepted.
2. The potential for conflicting policy advice has been examined in an emerging literature on regime complexity in global governance. See for example Henning (2017) and Breen et al. (2020).
3. By contrast, the literature on the impact of the IMF in capital markets is large, with many studies investigating its catalytic effect or ability to affect investor decisions (Edwards, 2006; Reinsberg et al., 2021; Shim, *forthcoming*). Recent scholarship in this literature has emphasized that IMF signaling is varied and simultaneous (Chapman et al., 2017) with differential effects by sector (Breen & Egan, 2019).
4. A related literature considers accuracy and political economy of the IMF's growth forecasts. See for example Dreher et al. (2008) and Frenkel et al. (2013).
5. While there are no large  $n$  studies of the association between surveillance and advanced economies, several studies conduct case studies. See for example Breen (2012), Edwards and Senger (2015), and Edwards (2019).
6. In some cases, members withhold information for other reasons; ultimately countries' authorities have the power to block publication if they please. However, lists of members that withhold information are published at [www.imf.org](http://www.imf.org).

7. There is much debate about how exactly markets process information but virtually all agree that information matters (see for example, Fama, 1965; Fama, 1970;).
8. Who themselves are regarded as one of most significant strengths of IOs (Martin, 2006).
9. While other agencies can access policy makers, the IMF has arguably the strongest ability to request data, and arguably, the strongest staff and fewest constraints to analyze these and other data.
10. Highlighted in Mosley's (2003) work as one of the most important sources of information for market participants.
11. Naturally, data availability can be both a symptom and a cause of uncertainty among investors.
12. Further research has explored how developing countries choose their creditors (See Bunte, 2019).
13. An extended discussion of our sample is available in the Supplemental Material.
14. Formerly a Thomson Reuters product.
15. Traders and analysts typically sit closely to the time zones of the sovereigns they are covering.
16. We performed additional tests using several alternative event window lengths – the results are available in Supplemental Material.
17. The Jarque-Bera test confirms that the CAR estimates from this procedure follow the normal distribution, a requirement of event studies of this kind.
18. We computed a standard error for each individual estimate, which is available in Table S6 and Table S7 in Supplemental Material. In almost all cases, the standard error is very close to zero. A one sample t-tests suggest our mean estimates of the impact of surveillance releases – both Article IV and Mission Concluding Statements – are significantly different than zero at  $p < 0.000$ .
19. MCS and Staff Report estimates are broadly similar in impact but are not strictly comparable, as our Staff Report estimates contain the MCS as prior information. Indeed, all but 2 of the 225 statements were released in the 100 trading days prior to the final report and thus come within our estimation window. Moreover, recall that our estimation window excludes the 21 days prior to the 428 surveillance episodes – again, only 2 MCS were released in this 21-day exclusion period. Thus, 221 of our AAR estimates 'price-in' MCS information.
20. Assuming annualized simple interest.
21. Subjects were recruited using the social networking site LinkedIn, which was used to locate individuals working in relevant roles covering most geographical locations.
22. One sell-side FX participant noted that in normal times, it would 'never' happen that his team would flag an Article IV release as grounds for altering their forecasts or recommendations.

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## Disclosure statement

The authors declare they have no conflict of interest.



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