The Power of Ideas: IMF Surveillance and Natural Resource Sector Reform

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Abstract

Can international organizations improve natural resource governance? The International Monetary Fund (IMF) is most noted for its role in crisis lending, where it can wield the "teeth" of loan suspensions to push for reforms. But IMF officials also spend a large amount of time conducting routine surveillance through Article IV consultations, which assess a country's economic developments and provide non-binding recommendations. Do governments follow this "toothless" advice? We use text analysis to analyze the content of all Article IV staff appraisals published between 2004 and 2019, finding that resource-rich developing countries are more likely to adopt legislation reforming the oil, gas, and mining sectors when their corresponding Article IV appraisal places more emphasis on natural resource governance. Our results suggest that technocratic consultation — a tool often overlooked in international organization scholarship — can lead to the adoption of policies that ameliorate the resource curse.

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Introduction

Can international organizations (IOs) help alleviate the resource curse? The potential downsides of natural resource dependence are well known. An abundance of oil, natural gas, and minerals can lead to high economic volatility, weak fiscal capacity, low levels of government accountability, and political unrest (Ross, 2015). Yet natural resource wealth also harbors the potential for economic growth: if properly managed, theses resources can be used to increase public investment in human capital and infrastructure (Venables, 2016). Multilateral economic organizations, such as the World Bank and International Monetary Fund (IMF), routinely provide consultation and non-binding guidance to developing countries seeking to accomplish this. Does this advice improve natural resource governance?

Existing research tends to focus on the IMF's role in crisis lending, including its practice of conditioning loan disbursement on policy reforms (e.g. Vreeland, 2003; Dreher, 2009; Chapman et al., 2017). But a large portion of its time is devoted to routine surveillance, as the staff conducts regular "health checks" (IMF, 2020) of economic and financial practices in its 190 member countries. Despite the amount of time and effort devoted to such health checks (which are formally called Article IV consultations), we know relatively little about what — if anything — they achieve.[1] Perhaps this is because unlike crisis lending, where the IMF has the "teeth" to push policy reforms in the form of loan suspensions or withholding future tranches, Article IV consultations are purely advisory: countries are not punished if they fail to follow IMF advice. At the same time, many have argued that IOs can influence government policy through advice and standard setting, including technical assistance from the World Trade Organization (Shaffer, 2005), "positive complementarity" from the the International Criminal Court (Dancy and Montal, 2017), or socialization to human rights norms (Greenhill, 2015). Yet the surveillance function of the IMF remains understudied. If one way IOs matter is through disseminating ideas and best practices, Article IV consultations are one obvious place to look.

Given the "toothlessness" of Article IV consultations, there are many reasons why politically constrained governments might fail to implement well-meaning advice in the face of special interest pressure or public demands for expensive programs and benefits. Even a 2005 report commissioned by the IMF suggests that Article IV surveillance has mixed results, at best (Ostry and Zettelmeyer, 2005). Still, governments may see virtue in shoring up their financial house as a preventive measure, rather than waiting for a costly crisis. We argue that expert advice from IMF economists is one source of ideas for doing just that.

Though states often receive conflicting advice from different IOs (Breen et al., 2020), this is unlikely to be the case when it comes to natural resource management, as different IOs largely promote similar practices

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[1] For an prominent exception, see Edwards (2018).

in this sector. For example, the IMF, World Bank, European Union, G8, G20, and United Nations have all endorsed the Extractive Industries Transparency Initiative, or EITI (Sovacool et al., 2016). Such initiatives are important because oil, gas, and minerals are a crucial source of revenue for many developing countries. Given the large informal sector and the prevalence of small-scale firms, these countries typically have a narrow tax base and collect less revenue (Besley and Persson, 2014). This, coupled with their limited access to capital markets in times of need (Wibbels, 2006), means they often turn to natural resources to fund their expenditures. On the one hand, governments are well aware of the danger of the resource curse and seek out expertise from IOs, especially after new natural resource windfalls. On the other hand, the lure of using resource rents for political purposes and the high cost of institutional development suggest that the natural resource sector might be especially resistant to large scale reform.

IO bureaucracies attain autonomy and legitimacy by developing specialized expertise (Barnett and Finnemore, 2004a; Johnson, 2014). The IMF is no exception. Its staff consists of highly trained economists and development experts who closely scrutinize the structural conditions of countries' economies. During the Article IV process, government officials meet with a team from the IMF to discuss a range of economic policies (a process we describe below). Since 2004, the IMF has consistently publicized Article IV reports in an effort to pressure countries to adopt recommendations. We argue that the content of these reports is a good reflection of discussions between host governments and an IMF delegation. If governments take IMF advice to heart, they should be more likely to implement reforms in areas highlighted in public Article IV reports. In particular, when Article IV reports place special emphasis on the natural resource sector, we predict that countries will be more likely to see the adoption of legislation aimed at reforming the sector.

To test this argument, we examine the content of all 700 Article IV consultations conducted in 80 resource-rich developing countries and published between 2004 and 2019. These reports are the best available record of the discussions between governments and the IMF. First, we use text analysis to assess how much these published documents cover the natural resource sector and what factors drive variation in content; after all, government officials have at least some power to set the agenda and can influence the topics covered during these discussions. Second, we investigate whether countries are more likely to adopt new natural resource legislation in the aftermath of these consultations, conditional on variation in content. Throughout the analysis, we provide qualitative evidence of the Fund's considerations in drafting Article IV reports, and discuss several cases in which IMF recommendations did, or did not, lead to reform.

Our analysis speaks not only to a growing body of literature focusing on the linguistic content of IO reports and statements (Busch and Pelc, 2019; Terman and Voeten, 2018), but also to larger debates about the ability of IOs to influence domestic politics. Scholars have examined the role of IOs in democratization (Pevehouse, 2002), trade policy (Allee and Scalera, 2012), climate policy (McLean and Stone, 2012), human

rights practices and legal reform (Simmons, 2009), among other areas. Some of this work focuses on the role of IOs in disseminating knowledge, promoting ideas, and influencing common understandings of best practices (e.g. Barnett and Finnemore, 2004b; Park, 2006; Simmons et al., 2006; Park and Vetterlein, 2010; Haas, 2018). Our contribution is, first, to examine whether IOs can influence domestic politics when they have no explicit financial leverage, and second, to assess whether such technical assistance matters in a particularly challenging issue area: natural resource governance.

1   Article IV Consultations

When the IMF was first created in 1944, its member countries consented to 33 Articles of Agreement outlining the Fund's purposes, membership, and operational structure. Article IV, in particular, stipulated that each member country should "collaborate with the Fund to promote exchange stability, to maintain orderly exchange arrangements with other members, and to avoid competitive exchange alterations" (IMF, 1969, 189). After the collapse of the Bretton Woods monetary system of fixed exchange rates in 1971, Article IV was rewritten to accommodate the new role of the IMF: to "exercise firm surveillance" over a wide array of macroeconomic fundamentals, like fiscal policy, capital mobility, labor regulation, and trade, with member countries providing "the information necessary for such surveillance" (IMF, 2016, 6). This regular surveillance, called an Article IV consultation, is supposed to take place every 12 to 24 months. It is the IMF's attempt at "preventive medicine" — addressing the source of crises before they hit.

Figure 1: Outline of the Consultation Process
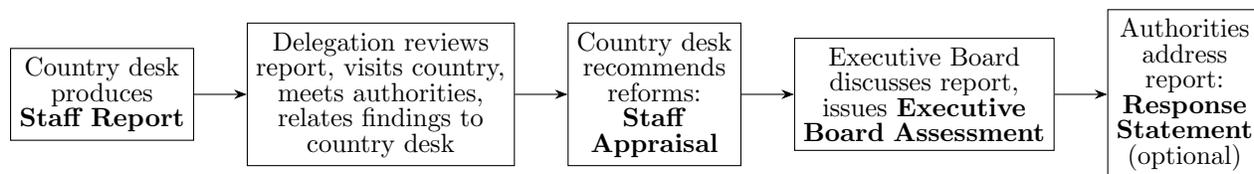
As outlined by Figure 1, Article IV consultations typically begin with a country desk within the IMF producing a Staff Report that assesses the state of a country's economy. This report is internally reviewed prior to a visit by an IMF delegation. This visit normally lasts one or two weeks and the delegation meets with the finance minister, the central bank governor, and other senior government officials. After the visit, the delegation reports its conclusions to the country desk, which in turn produces a document connecting these findings to the state of the country's economy, recommending reforms, and proposing a time frame for the next consultation (in the so-called Staff Appraisal). This appraisal is discussed by the Executive Board, which represents all member countries. The Executive Board does not vote on the report and, in

fact, sometimes expresses competing opinions on the recommendations (Schäfer, 2006). The final document, consisting of the Staff Report, Staff Appraisal, and Executive Board Assessment, is sent to the Executive Director representing the country under appraisal, which in turn might issue a response statement. In this response statement, authorities are free to disagree with the assessment of the Executive Board, but they tend to agree 75 percent of the time (Fayad et al., 2020).

The consultation process has undergone several changes over the history of the Fund. As mentioned above, the process evolved from a form of exchange rate surveillance to a broader assessment of a country's economic fundamentals. Global financial events, like the debt crises of the 1980s, have also prompted rethinking of the surveillance process. Some reforms have been internal and bureaucratic. For instance, the Fund improved its analytical and diagnostic approaches to focus on particular vulnerabilities in the financial sector (Ostry and Zettelmeyer, 2005). Other reforms aimed to alter the incentives of countries to adopt the Fund's recommendations. Various proposals were put forth that would tie crisis borrowing to compliance with past implementation of Article IV recommendations, but these proposals were never adopted: Article IV consultations continue to be only suggestive in nature, and countries are not required to comply with the appraisal of the IMF.[2]

In an attempt to increase transparency, the Executive Board initiated a pilot program for voluntary release of Article IV consultations in March 1999. Since 2004, all consultations are automatically made public, unless the country under surveillance objects. And few countries seem to object: while 47 percent of all reports conducted between July 1999 and June 2001 were published, this number jumped to 82 percent for the period between November 2007 and December 2008 (Edwards et al., 2011, 11), and 95 percent for the 2014–2015 period (Mihalyi and Mate, 2018). The idea of transparency in Article IV consultations was not entirely novel. As Rodrik (1995) argues, part of the IMF's role has always been to provide a "seal of approval" for international financial markets. One of the goals of publishing Article IV consultations is to increase transparency for these and other actors (Edwards, 2018).

We do know, at least anecdotally, that the IMF takes Article IV consultations with resource–rich countries very seriously, adjusting recommendations accordingly. For example, prior to the 2015 discovery of oil deposits in Guyana, the IMF limited its recommendations to medium-term fiscal reform. The IMF recognized Guyana as a less developed country and recommended the development of low-carbon, sustainable sectors and practices. Staff also advised Guyana to focus on debt relief and maintaining tariffs to protect lower income groups.

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[2]In addition to participating in Article IV consultations, countries can also request a Staff Monitored Program (SMP), a voluntary and informal initiative to showcase the government's ability to make progress on economic reforms prior to asking for a loan. SMP progress is monitored under Article IV consultations, and thus may be considered in future loan decisions, but neither compliance with SMPs nor acceptance of Article IV recommendations is a prerequisite for entering a loan program.

Figure 2: Terms Mentioned in IMF Article IV Consultations with Guyana, 2009–2019
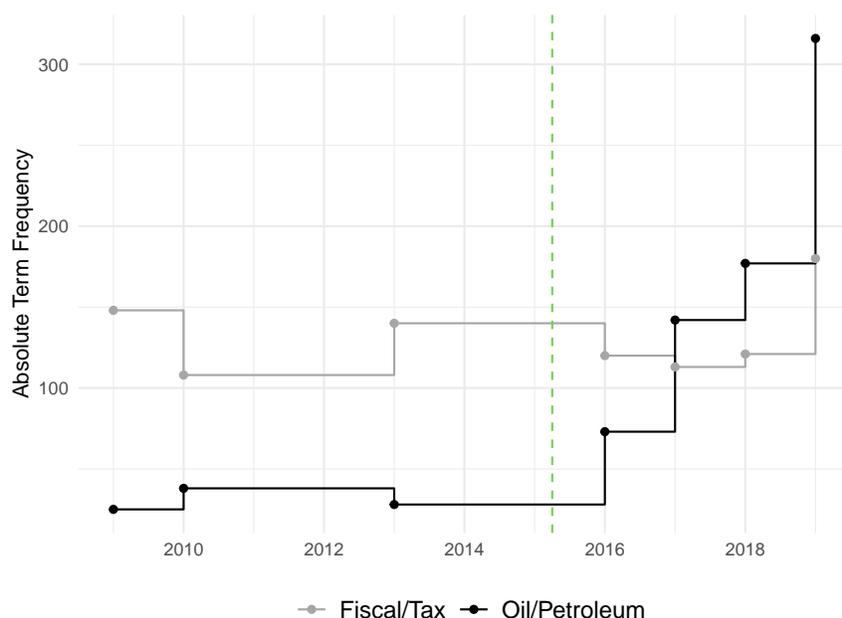
This figure shows the absolute frequency of the terms *fiscal/tax* and *oil/petroleum* (or variations thereof) in all seven available Article IV Consultations with Guyana. Following the discovery of offshore oil in May 2015 (as indicated by the dashed vertical line), IMF recommendations to Guyana shifted from medium-term fiscal reform to specific resource sector reforms.

But after ExxonMobil discovered high-quality, oil-bearing sandstone reservoirs off the Guyanese coast in May 2015, the IMF began to recommend more specific resource sector reforms, as Figure 2 shows. The 2017 Article IV consultation advised authorities to establish a fiscal framework for managing oil wealth, preferably before 2020, when oil production was scheduled to begin: "As a new oil producer starting from scratch, Guyana is in a good position to put in place a framework that limits procyclical spending and attenuates the impact of oil price volatility on the budget and the economy."[3] The report was accompanied by an annex titled "Best Practices in Managing Oil Wealth," which noted that a clear resource management framework would "contribute to building confidence in the general public and financial markets."

Guyanese officials seemed eager to incorporate the Fund's advice, even though they were not obliged to do so; after all, the country was not under a loan agreement mandating reforms in exchange for financial support.[4] Still, authorities developed and adjusted legislation to protect their revenue and retain external financing. According to the 2017 consultation, upon the IMF's suggestion to strengthen the fiscal framework, "the authorities reiterated their plans to anchor future oil wealth management in a comprehensive legal framework. They sought the Fund's advice on the recently drafted Natural Resource Fund legislation. The

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[3]These and other quotes are drawn from the main dataset used in our study, as described in more detail in subsequent sections.

[4]Guyana's last agreement with the IMF ended in 2006.

authorities informed that they are also working on other key elements of the fiscal regime, including drafting the Petroleum Law and establishing a Petroleum Commission." Guyana became a candidate member of the Extractive Industries Transparency Initiative (EITI) in October 2017 and passed the Act No. 12 – Natural Resource Fund Act in January 2019, incorporating the resource management framework proposed by the IMF.

The case of Guyana suggests that Article IV consultations might promote natural resource governance, but we lack systematic evidence about this effect across countries.[5] And there is reason for skepticism. Compliance with loan conditionality is quite mixed (Babb and Carruthers, 2008), as countries are often unwilling or unable to implement many reforms. This is, in part, because countries that are strategically important to key principals — especially the United States — tend to receive favorable treatment from the IMF. In these cases, the IMF is less able to credibly threaten to enforce compliance by suspending loans, which means that these borrowers are less likely to comply with conditionality in the first place (Dreher and Jensen, 2007; Stone, 2008; Copelovitch, 2010). But other countries fail to comply with reforms due to domestic politics — for example, compliance often breaks down ahead of elections (Dreher, 2003). And sometimes countries simply lack the technical or bureaucratic capacity to follow through reforms. As a result, only 35% of all IMF programs between 1973 and 1997 were fully completed; the remaining 65% were interrupted due to non-compliance with loan conditions (Bird, 2001). If countries struggle to adopt IMF-mandated reforms when money is on the line, why would they adopt these recommendations when they lack "teeth?" We turn to this question next.

2   The Power of Ideas and Technical Advice

As a rule, technocratic reforms in the natural resource sector are unpopular. Since citizens have exaggerated expectations of what natural resource revenue can accomplish, they often misinterpret such reforms as an attempt by political elites to seize rents for private benefits at the expense of public goods provision (Collier, 2017). In limiting governments' discretion over natural resource revenue, these reforms also deprive politicians of important funds for political survival (Wiens, 2014). Institutional development is costly for developing countries, which have weak institutions, fragmented polities, and low administrative capacity (Besley and Persson, 2014). Thus, from the perspective of the incumbent, there are few political incentives to reform the natural resource sector.

At the same time, the idea that natural resources can pose problems for countries is also now well understood amongst economic planners, creating incentives to seek out technical advice from international

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[5]With the exception of Edwards (2018), to our knowledge there remain no cross-national studies of the effectiveness of Article IV surveillance.

financial institutions. For instance, upon discovering new sources of rare earth metals, Mongolia's economic advisors sought advice from the World Bank to learn from the experience of other resource rich countries.[6] Guinea similarly requested technical assistance from several sources, including the the IMF, the African Development Bank, and the US-based nonprofit Natural Resource Governance Institute, when it instituted wide scale reforms in its mining sector.[7] These cases are not isolated; the recognition of both the promise and perils of natural resource wealth has increasingly prompted countries to seek out advice on how to best structure their extractive sectors.

2.1 Who Talks About the Natural Resource Sector?

The examples of Mongolia, Guinea, and Guyana suggest that developing country governments may themselves play some agenda setting role during Article IV consultations. While IMF staff members are well-equipped to assess the state of the natural resource sector and its relationship to the overall economy, government leaders may also raise this issue during consultations. This suggests that before investigating the effect of Article IV consultations on reform, it is worthwhile to examine the determinants of the *content* of the public staff reports. These reports are not a direct transcript of discussions, but should reflect the overall tenor of the consultation, especially since governments have the opportunity to comment on the staff report prior to its publication.

There are at least two prominent reasons why governments might initiate discussion about the natural resource sector. First, reforming the natural resource is likely to seem more salient when resources constitute a great portion of the economy. For countries that rely more heavily on natural resources, prudent management is critical. A shock to world prices will have a larger impact on these economies, and they may be more subject to the types of perverse incentives that characterize countries suffering from the resource curse. Thus, we expect countries with a larger resource sector to be more likely to raise these topics. Under these circumstances, we expect IMF staff to be more likely to make natural resources a central focus of Article IV discussions.

>   **Hypothesis 1:** *A higher portion of IMF staff report content will be devoted to natural resources when natural resource rents are a larger part of the economy.*

IMF advice about natural resource management also tends to follow a certain orthodoxy that is influenced by research on the resource curse.[8] One example is the recommendation to create natural resource

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[6]Michael Forthsythe. "Mongolian Harvard Elites Aim for Wealth without Dutch Disease." *Bloomberg*. 15 February 2010.

[7]Thomas Lassourd and Patrick Heller. "Guinea's Mining Reforms: A Time to Act for a 'Government of Action.' " *Natural Resource Governance Institute*. 14 February 2014. Also: IMF. "IMF Survey: Policy Reforms, Mining Boom Power Guinea's Recover." IMF *News*. 6 April 2012.

[8]See Clift (2018) for a good discussion of how ideas develop within the IMF.

funds, a common tool for managing revenue from resources that are prone to price volatility (Chwieroth, 2014). Resource-rich governments often know what to expect, but seek out the practical advice about how to implement specific reforms. Some governments may be more receptive to this orthodoxy than others, especially if prominent government officials share similar training as those recommending orthodox policies.

Nelson (2014, 2017), Chwieroth (2007, 2013), Adolph (2013), Heinzel et al. (2020), and several others argue that the professional training of key economic policymakers can influence not only the types of policies they pursue, but also how they interact with international organizations; Krcmaric et al. (2020) call this "the personal biography approach." In particular, Nelson (2014, 2017) shows that the IMF gives preferential treatment to governments with economic advisors who earned graduate degrees from mainstream economics departments in the US. Since IMF staff members typically attend these same institutions, they tend to offer better loan conditions to policymakers who share the same set of "neoliberal beliefs" and who are more likely to "see the wisdom of their advice." In line with this research, we expect governments composed of technocrats with "neoliberal beliefs" to be more likely to raise the issue of natural resource reform during Article IV consultations. This shared ideology facilitates the request for technical advice.

> **Hypothesis 2:** *Staff reports produced after consultations with technocratic governments will have more content devoted to natural resource reform.*

2.2 Who Reforms?

Though we argue that the agenda of discussions, and subsequent report, can be shaped by events and interests in the home country, our ultimate outcome of interest is why and when developing countries adopt advice from the IMF. As a start, we argue that governments are more likely to reform the natural resource sector in response to *expert* advice. A larger goal of Article IV consultation is to provide such advice and technical assistance. Governments might be more open to reform when an expert source — such as the IMF — advises them to. Lombardi and Woods (2008) review theoretical expectations about IMF surveillance, noting that the IMF is positioned to provide perhaps the most comprehensive and highest quality data to its member governments. In direct consultation with governments, the IMF can leverage its expertise to present public officials with policy reforms backed by research across countries, based on years of meticulously-collected data. This may be of particular interest to developing nations that lack the human capital, statistical capacity, and bureaucratic structures to conduct such research on their own.

Framing reforms as recommended by IO experts may also help politicians "sell" reform to their constituents when they would otherwise face stiff opposition to new policies. According to Vreeland (2003), entering an IMF agreement allows politicians to credibly tell opponents and the wider population that their

hands are tied: they must implement reforms or forfeit much-needed injections of capital. Although Article IV advice comes with no such penalty if not implemented, the IMF's "seal of approval" may help convince reluctant citizens and officials. IOs like the IMF derive legitimacy from "rational legal authority" and policy expertise (Barnett and Finnemore, 2004a). When citizens see IO advice as legitimate and based in the most up-to-date best practices, they are less likely to oppose change, even if it results in some short-term pain. And organizations like the IMF actively invest in their legitimacy through their hiring, transparency, and consultative practices.

To be sure, the IMF has faced its share of blows to its legitimacy (cf. Seabrooke, 2007), ranging from criticisms of the Washington Consensus to perceived failures during the Asian financial crisis and beyond. But one response adopted by the IMF is to foster more domestic ownership from governments (Best, 2007), where ownership is defined as "a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IMF involvement" (Khan and Sharma, 2003, 235). Article IV consultations explicitly do this through collaborative meetings that involve back and forth with country representatives. This involvement in the consultative process may produce a sense of procedural legitimacy, in addition to the legitimacy afforded the IMF because of the expertise of its bureaucrats.

More generally, Article IV consultations are an understudied example of the power and influence of IO bureaucracies. Many recent studies draw on principal-agent theory to assess when important principals are likely to influence the Fund's lending decisions (e.g. Stone, 2002, 2011). While powerful principals no doubt matter due to the Fund's quota-based voting system, the Fund staff exerts more influence in less salient cases or when important principals are split on a lending decision (Copelovitch, 2010). Like actors in any bureaucracy, IO bureaucrats develop organizational procedures and practices in order to increase their legitimacy and power (Barnett and Finnemore, 2004a). And bureaucrats have played important roles in IO design and reform (Johnson, 2014). Since Article IV consultations involve lower stakes than loan programs, they are an obvious channel through which IMF staff may influence policy and leave their mark in developing countries, without the need to take geopolitical dynamics into consideration.

The anecdotal evidence and the resources invested by the Fund in country surveillance suggest that such surveillance matters for real policy. If the IMF is perceived — on average — as an authority on macroeconomic and fiscal policy, we should observe more movement toward reform after Article IV consultations. Even if reform-minded governments seek out technical advice, the process of receiving such advice can put tip countries over the edge to adopting real reform.

Still, consultations focus on a variety of topics. We argue that the *content* of an Article IV report matters: when consultations emphasize reform of the natural resource sector, countries are more likely to adopt such reforms. Since these reports are efforts to persuade government officials to devote attention to meaningful

policy reform, there is reason to focus on how much a report dwells on particular issue areas. Moreover, in the absence of direct transcripts of meetings during Article IV consultations, the published reports are the next best evidence of what topics were discussed. When a consultation occurs with a country like Guyana, one that seeks advice about natural resource sector management and that — in the absence of reform — is a good candidate for developing the "resource curse," much of the discussion focuses on natural resource reforms. The published Staff Appraisal will reflect the tenor of that discussion.

If these reports are meant to influence authorities' behavior through peer pressure or through providing transparency to market actors, substantive content should matter. If a report discusses a particular topic at more length than others, policymakers may be more likely to take note and consider steps to address such topic. After all, Article IV reports are expert assessments of a country's economy. They rarely dwell on non-issues, or elements of economic performance that do not need attention, instead highlighting areas of underperformance or that need structural reform. Highlighting and emphasizing a specific issue often is an indicator of the urgency the IMF delegation places on the issue. Moreover, as noted above, special emphasis on topics may also be driven by government officials who want to reform, but need technical advice. Article IV consultations can therefore catalyze nascent or stalled reform efforts. For these reasons, we expect governments to be more likely to adopt legislation addressing the natural resource sector if Article IV reports discuss this sector more frequently.

> **Hypothesis 3:** *Governments are more likely to adopt natural resource reforms the more the content of its Article IV consultation emphasizes the natural resource sector.*

2.3 Conditional Hypotheses

Admittedly, officials' views of the usefulness of IMF advice is bound to vary. Neoliberal beliefs might facilitate not only the request for technical advice, as we predicted in the previous section, but also the receptiveness to it. For example, Heinzel et al. (2020) find that similarity in economic policy beliefs determines perceptions of impartiality of the IMF and World Bank, and hence receptiveness to their recommendations. Building on these findings, it is possible that technocratic policymakers, who share the training and the economic beliefs of IMF staffers, are more responsive to their peers' advice: when Article IV consultations discuss the natural resource sector more frequently, these individuals should be more likely to respond to such discussions with natural resource reforms.

> **Hypothesis 4:** *The content of an Article IV consultation is more likely to lead to natural resource sector reform when the government is composed of technocrats.*

We examine two additional explanations for the impact of Article IV consultations: (1) that publication of Article IV reports puts market actors on alert, thereby creating pressure for countries that rely heavily on inward capital flows to adopt recommended reforms, and (2) that recidivist borrowers may be especially eager to adopt recommended reforms because they wish to stay in the "good graces" of the Fund. The literature provides arguments both for and against these mechanisms, so we proceed with some agnosticism.

Regarding the first point, Article IV reports might be published since 2004 because increased transparency puts pressure on countries to reform when they otherwise would not. This increased pressure may come from diffuse market actors, who see the IMF's "stamp of approval" as an important determinant of the quality of an investment environment. Multinational corporations, for instance, may be reluctant to invest in a country that has discovered new oil fields if they expect government graft or inefficiency in managing windfalls. While new discoveries might improve a country's balance of payments and macroeconomic health in the medium to long run (Arezki et al., 2017), potential creditors, wary of the resource curse, may view these discoveries with skepticism at first.

If international actors — including creditors — gain access to information about a country's economic woes, they are likely to pay closer attention to issues that are raised more frequently. If a report dwells on some issues much more than others, market actors are likely to consider the implications of that issue and might be less willing to invest in the country in the future. Therefore, policymakers should face a greater incentive to address heavily emphasized issues in order to assuage market actors, preventing a decline in future inflows. One way to forestall such decline is to announce reforms that address the IMF's criticisms. If it is the diffuse pressure of markets that explains reform, rather than simply the advice provided in an Article IV reports, we should expect the effect of Article IV consultation on the likelihood of policy adoption to be stronger for those countries that rely on inward investment flows. Such countries would have more to lose from a negative Article IV assessment.

> **Hypothesis 5:** *The content of an Article IV consultation is more likely to lead to natural resource sector reform when governments rely heavily on inward finance.*

Still, a survey of IMF staff investigating the perceived audience of Article IV consultations concluded that "market participants find little new market-related information in the report" — in part because these reports are "too complicated and difficult to interpret" (Lombardi and Woods, 2008, 721). Relatedly, in a survey of 1,784 government officials, Masaki and Parks (2020, 393) found that "credibility signaling to investors and donors appears to be, at best, a secondary consideration" when governments implement policies in response to external performance assessments.[9] Moreover, extant research suggests that market

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[9]The main consideration is whether these performance assessments provide "practical solutions to help address critical issues facing the country" (Masaki and Parks, 2020, 393).

actors tend to use a few macroeconomic indicators as cognitive "shortcuts" (Mosley, 2000), and Article IV reports may not contain much information that is not already available through other sources, such as the ratings of sovereign risk agencies. If anything, these reports are confirmatory: they strengthen market actors' pre-existing beliefs about the economic circumstances of a country. In one of the few empirical investigations into IMF surveillance, Edwards (2018) finds little evidence that surveillance affects developing country financial markets. Thus, there is reason for skepticism that Article IV reports substantially move the priors of multinational corporations or international creditors.

The last alternative explanation suggests that although Article IV consultations lack the "teeth" of conditions attached to loan tranches, the IMF may take into consideration compliance with these recommendations when negotiating future loan programs. After all, there is a high rate of recidivism in IMF borrowing (Bird, 1996, 2001; Bird et al., 2004). Countries that borrowed regularly in the past and expect to do so in the future may be more likely to comply with Article IV consultations in order to remain in the IMF's "good graces." Even if implementation of Article IV advice is not formally linked to access to crisis borrowing, negotiations over IMF bailout packages involve bargaining between governments and the Fund (Stone, 2002). The IMF may be more willing to lend, and with less stringent terms, if a country has previously shown to be both able and willing to address macroeconomic and fiscal policy issues prior to a crisis. This may be especially true for governments that have adopted policies directly recommended by the IMF itself.

Hypothesis 6: *The content of an Article IV consultation is more likely to lead to natural resource sector reform when the government has borrowed more often from the IMF.*

Indeed, Article IV consultations frequently reference progress made since previous consultations. For instance, in its 2014 report on Mexico, the Fund wrote: "with the political environment highly unsettled, there was no progress on most of the critical issues discussed in the 2004 Article IV consultation. The elimination of the oil stabilization fund and changes to the fiscal responsibility law and pension system have weakened the macroeconomic policy framework." Despite identifying political instability as an obstacle to reform, there is a notable reference to the lack of progress made by the Mexican government in implementing sound fiscal policy as well as the backward slide of eliminating the oil stabilization fund. But given that progress on Article IV recommendations is not formally tied to access to future loan tranches, the IMF is unlikely to deny funding to an economy in crisis solely because it did not implement suggestions from a non-binding consultation. Recidivist borrowers may be the ones least able to act upon the advice of Article IV consultations, since they tend to suffer from deeper structural and political challenges — like weaker governance, lower investment rates, and higher debt — that make it difficult to adopt sweeping reforms (Bird et al., 2004). Nonetheless, we test this argument below. Since the best predictor of future behavior

is past behavior, governments who have participated in past loan programs might be most likely to take up Article IV advice. We turn next to the content of Article IV consultations and our research design for assessing our core and conditional hypotheses.

3   The Language of IMF Surveillance

3.1   Data

Figure 3: Number of Publicly Available Reports, by Country, 2004–2019
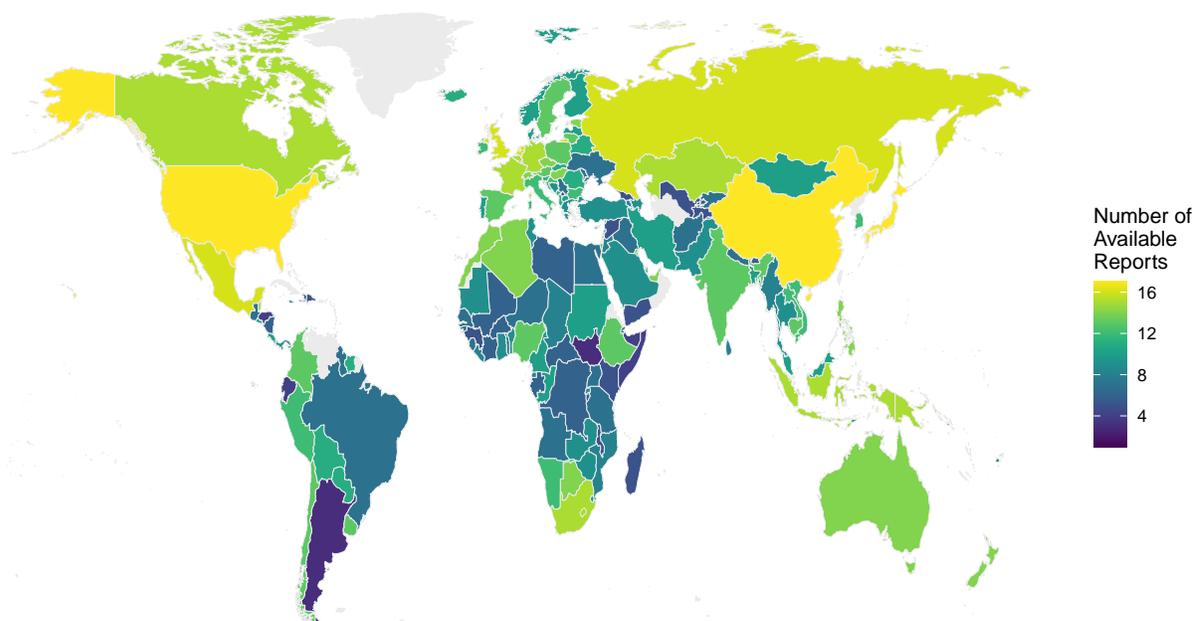

This figure shows the number of Article IV consultations that were conducted and made publicly available for each country between 2004 and 2019. No reports are available for Eritrea, Oman, Turkmenistan, or Venezuela.

We examine all Article IV consultations conducted and published between 1 January 2004 and 31 December 2019. This dataset was compiled by Mihalyi and Mate (2018) for 2004–2018; we extend it until 2019.[10] There is substantial variation in data availability across countries and regions, as confirmed by Figure 3, in particular during the early years (2004–2005), when only four out of five countries tended to agree with the full publication of reports. At the time, democracies were more likely to agree with publication, while Latin American governments were less likely to do so (Edwards et al., 2011). By 2014–16, this figure had

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[10]Our dataset also includes some consultations for the 2004–2018 period that had not been published at the time of Mihalyi and Mate's data collection. Though some information is available for 2020, most Article IV consultations that year were suspended due to the COVID-19 pandemic, which is why our analysis ends in December 2019.

improved considerably, as 95% of all reports were made public (Mihalyi and Mate, 2018). Given our interest in natural resource governance, we focus on all consultations for 80 resource-rich developing nations. Figure 4 summarizes the types of observations included in our sample.[11]

Figure 4: Types of Observations
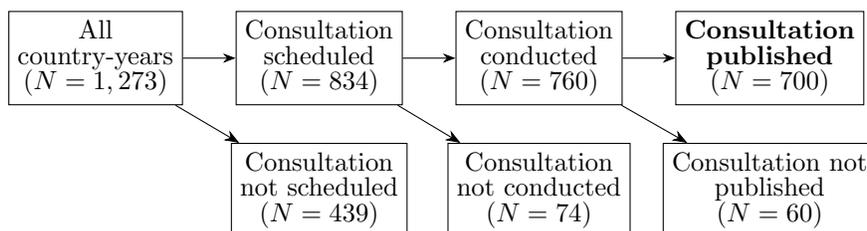
We identify 834 country-years for which consultations were scheduled and 439 country-years for which consultations were not. Some countries are monitored in more detail and more frequently than others, depending on their regional importance, size of outstanding loans, and perceived macroeconomic risk,[12] but for most countries, Article IV consultations take place every 12 to 24 months.

Though a consultation was scheduled for 834 country-years, these scheduled consultations did not always happen, due to political unrest or because authorities and staff could not agree on a date to meet. Since 2012, the IMF publishes a yearly list of such consultation delays (e.g. IMF, 2017). While this list likely underestimates the number of delayed reports before 2012, it allows us to make general inferences about 74 consultations that *should have happened and did not* (see appendix for full list). For example, Venezuela's last consultation was completed in September 2004; the subsequent consultation was scheduled for September 2005, but President Hugo Chávez did not grant access to IMF staff and severed ties with the Fund (at least symbolically) in 2007.[13] Thus, Venezuela is "behind" on 15 consultations that would otherwise have happened after 2004. Argentina, Libya, Syria, and others similarly missed scheduled consultations.

A scheduled consultation was successfully conducted in 760 cases, but sometimes the country under appraisal opposed the publication of the resulting report. For instance, we know that Turkmenistan took part in regular consultations: even though the IMF did not publish the full reports, it released short summaries, in the form of Public Information Notices or Press Releases. This is the case for a total of 56 country-year pairs, like Argentina in 2006 and Angola in 2008.

Lastly, there are 700 country-years for which consultations were scheduled, conducted, and published. These are the observations that interest us most. At least one report was published for each of the 80 countries, with the exception of Eritrea, Turkmenistan, and Venezuela. The number of available reports by

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[11]We examine 80 countries over 16 years, but only eight years are available for South Sudan, which became independent in 2011; hence, $N = 1,273$.

[12]For instance, during the period under study, a report was produced for China, Japan, and the US every single year.

[13]Saul Hudson. "Venezuela to quit IMF, World Bank." *Reuters*. 1 May 2007.

country ranges from two (Nauru) to 16 (Russia), with an average of 9.09.

Recall that every published Article IV consultation consists of at least three parts, as shown in Figure 1: a press release that condenses the views of the IMF Executive Board; a Staff Report that provides key information about the country in question; and an Informational Annex that summarizes the country's history with the IMF, in addition to identifying potential statistical issues with the data provided by the local authorities. We focus on the Staff Report, specifically the subsection *Staff Appraisal*. This section is arguably formal and technocratic, whereas the assessment of the Executive Board is more susceptible to informal governance.[14] On average, these appraisals are 956 words long, ranging from 385 (Senegal 2010) to 2,789 (China 2010).

3.2 The Latent Content of Staff Appraisals

Our goal is to quantify the extent to which Staff Appraisals mention the natural resource sector as a prevailing economic concern. To do so, one could generate a binary variable indicating the presence or absence of bullet point recommendations related to this sector, a strategy several researchers already adopt when studying the effects of IMF conditionality (e.g. Kentikelenis et al., 2016; Rickard and Caraway, 2019). However, this would mask important qualitative variation; after all, some Staff Appraisals mention natural resource revenue far more frequently and in far more depth than others. An alternative strategy is that of Edwards (2018), who read the most recent Article IV report for a random stratified sample of 50 countries and coded each report according to its policy content. But this approach would be far too labor intensive for a sample of 700 reports.

To capture textual nuances in a cost-effective manner and identify latent patterns that might not be immediately evident to human coders, we employ automated text analysis, allowing the 700 available documents to "speak for themselves" (Bagozzi and Berliner, 2018). In the pre-processing stage, we discard punctuation, symbols, capitalization, numbers, and stop words (like articles, pronouns or prepositions), in addition to the expressions "International Monetary Fund" and "World Bank," which have little information value on their own. We also simplify the vocabulary by stemming the words, such that *investment*, *investor*, and *investing* are all reduced to *invest*, for example. Finally, we restrict the corpus to terms with three or more characters. These are common — if sometimes contested — practices in text analysis (Grimmer and Stewart, 2013; Denny and Spirling, 2018).

Figure 5 shows the 15 most frequent terms in the 700 available Staff Appraisals. In writing these reports,

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[14]For example, 5 of the 24 members of the Executive Board are appointed by the IMF's largest shareholders (France, Germany, Japan, the United Kingdom, and the US). Stone (2011, 56) shows that "the Executive Board ratifies whatever the IMF management proposes" — and, given that the management is controlled by the largest shareholders, the assessment of the Executive Board is likely influenced by their political preferences.

Figure 5: 15 Most Frequent Terms in Staff Appraisals
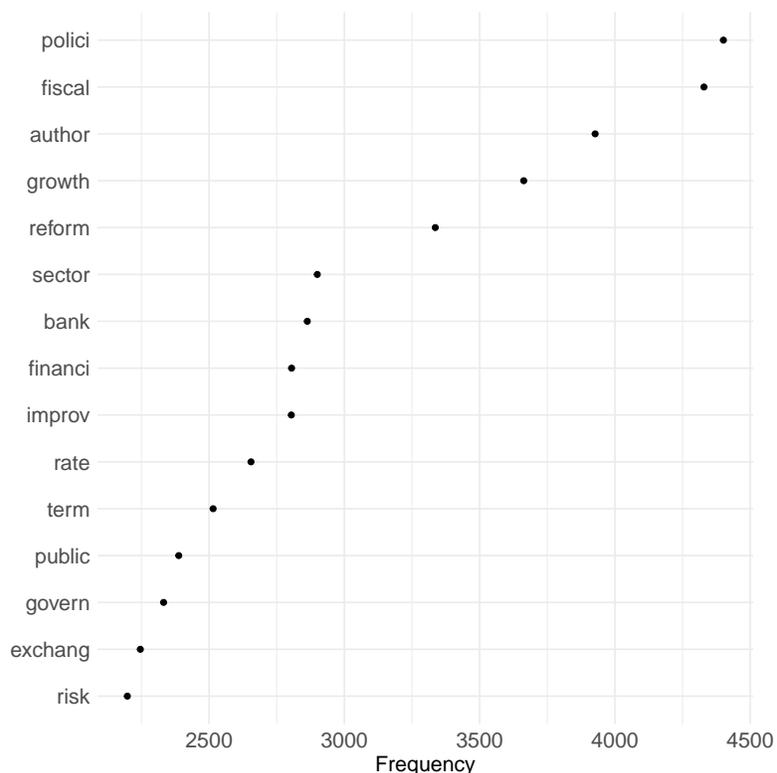
This figure displays the 15 most frequent terms in the Staff Appraisals of 700 IMF Article IV Consultations.

the staff draws from a limited vocabulary addressing the Fund's primary concerns: economic growth and fiscal policy reform. These priorities are reflected by the five most frequent terms in our corpus: *polici*, *fiscal*, *author* (the stem of *authority* or *authorities*), *growth*, and *reform*. At the same time, Article IV consultations incorporate specific information provided by government and central bank officials in each country. For example, the 2016 consultation report with Sierra Leone took place "in the context of a fragile economic recovery from Ebola, [and] the authorities cited the political cost of removing the [fuel] subsidy in an environment of declining global oil prices as the key reason" why the government was unable to meet its revenue forecast. In its appraisal, the IMF staff is correspondingly nuanced: it "welcomes the relatively strong performance of the Sierra Leone government ... under extremely difficult circumstances." At least to some extent, the IMF must tailor its diagnostics and recommendations to the individual circumstances of each country, taking political instability, state capacity, and local exogenous shocks into account, as well as recognizing that some reforms are not politically feasible — even if they are desirable.

Following Eshima et al. (2020), we use keyword assisted topic models to classify the content of staff appraisals into four macroeconomic categories — natural resource policy, fiscal policy, monetary policy, and external issues — and one residual category. As with fully automated models (like the structural topic model

developed by Roberts et al. 2019), our model assumes that each document — that is, each Staff Appraisal — consists of mixture of these five correlated topics; each topic, in turn, has its own characteristic terms and its own prior distribution. For example, the topic "natural resource policy" is associated with the terms *oil*, *gas*, and *petroleum*, whereas the topic "fiscal policy" is associated with the topics *fiscal*, *revenue*, and *tax*. The goal of the model is to identify the proportion of each document that uses terms related to a specific topic.

Unlike fully automated models, Eshima et al.'s approach has the advantage of allowing researchers to incorporate information about categories of interest in advance by specifying a list of keywords related to each category (see appendix for full list).[15] In specifying these keywords, researchers can ensure that the resulting topics are interpretable and distinct from another; there is less concern that a single topic will combine different themes, which is a frequent issue with fully automated models. Table 1 presents the ten most frequent terms for each topic. The pre-specified keywords used to generate each topic appear in bold, while the asterisks indicate keywords originally specified for another topic.

Table 1: Ten Most Frequent Terms Per Topic

Natural Resources	Fiscal Policy	Monetary Policy	External Issues	Residual Category
oil	**fiscal**	**bank**	growth	author
price	improv	rate	risk	program
author	public	polici	term	govern
exchang*	strengthen	**financi**	**current**	econom
develop	sector	**monetari**	**import**	implement
data	**extern**	**inflat**	**capit**	structur
sector	support	**exchang**	policy	**financ**
fund	**debt**	market	year	perform
manag	**revenu**	reform	target	encourag
term	**tax**	system	expect	reform

The outcome of interest for topic models is the document-topic distribution θ, which represents the proportion of every Staff Appraisal that covers a given topic, from 0 to 1. For ease of interpretation, we convert these proportions to percentages, generating the variable *Natural Resource Topic*. Equatorial Guinea's 2005 consultation is one of the documents with the highest prevalence for the natural resource topic (25.1 percent). In this appraisal, the IMF staff "urges the authorities to establish an appropriate policy to manage the country's oil wealth. It welcomes the authorities' decision to deposit all government oil

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[15]We use unigrams, rather than bigrams (two-word sequences, like *natural resources*) or trigrams (three-word sequences, like *natural resource revenue*), because n-grams are computationally intensive and do little to improve performance (Grimmer and Stewart, 2013).

receipts in the BEAC [the Bank of Central African States] and encourages them to seek a lasting solution at the regional level for the remuneration of government deposits." Equatorial Guinea passed its Hydrocarbon Law — which created the Fund for Future Generations — in the subsequent year. In contrast, only 0.3 percent of the 2010 consultation with the Philippines makes use of the vocabulary associated with natural resources; according to the IMF, the country's main challenge "remains to preserve macroeconomic stability while enhancing medium-term growth."

3.3 Explaining Variation in Content

Hypothesis 1 predicts that staff reports will have higher natural resource topic proportions when the natural resource sector is larger. We operationalize this using a World Bank measure of resource wealth (total natural resource rents, as a percentage of the GDP).

We also include other indicators of the salience of natural resources. First, as some of the aforementioned examples indicate, natural resources may be mentioned more frequently in the aftermath of windfalls, such as the discovery of a giant, supergiant, or megagiant oil and gas field (with over 500 million recoverable barrels of oil or over 3 trillion cubic feet of gas, using data from Horn 2014)[16]. Second, natural resources might become more salient when commodity prices increase, as indicated by the crude oil price index, which is a simple average of three crude oil spot prices (Dated Brent, West Texas Intermediate, and Dubai Fateh), calculated using 2016 as the base year and reported by the IMF Primary Commodity Prices Database. The price of oil is correlated with other commodity prices, making it a good proxy for the salience of natural resource revenue (Harri et al., 2009; Saghaian, 2010).

Though there are no direct transcripts of meetings during Article IV consultations, each government has at least some power to set the agenda and the tone of its Staff Appraisal: it can grant the IMF delegation access to some senior officials, but not others, and it might request advice on specific issues at the expense of others. According to Hypothesis 2, policymakers' education is likely to play a role in this agenda-setting process: individuals with graduate training from US economics departments might be more attuned to the resource curse, placing a higher value on technocratic recommendations pertaining to this sector. To test this proposition, we focus on the professional training of the Finance Minister, who is regularly involved in Article IV consultation visits. For example, during Guyana's four last consultations (2016, 2017, 2018, and 2019), the IMF delegation always met with Finance Minister Winston Jordan and Central Bank Governor Gobind Ganga, but only met with Natural Resources Minister Raphael Trotman once, in 2018. As a Finance Minister, Winston Jordan not only has more authority to promote reforms in the natural resource sector, he

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[16]Horn's coverage ends in 2014. We thank James Cust and Alexis Rivera Ballesteros from the World Bank for sharing data extending this coverage until 2019.

is also more susceptible to direct IMF influence, having met the IMF delegation several times.[17]

Following Chwieroth (2013) and Nelson (2017), we use the CIA Chiefs of State and Cabinet Members of Foreign Governments directory to identify all finance ministers and then collect individuals' educational backgrounds using newspapers and government websites. The resulting variable, *Technocratic Minister*, takes the value of one if the finance minister in question attended graduate school in an economics department in the US, and zero otherwise. We expect this variable to have a positive effect on *Natural Resource Topic*, in line with Hypothesis 2.

We control for several economic variables that plausibly explain variation in *Natural Resource Topic*. The content of Staff Appraisals might be driven by the government's ability to attract private capital, as indicated by UNCTAD's Inward FDI Performance Index, which divides a country's share in global FDI inflows by its share in global GDP (Harrison, 2011, 94). Larger values for the Performance Index — that is, larger shares of global FDI relative to global GDP — indicate that the country in question is more attractive to foreign investors. Relatedly, to quantify a country's ability (or need) to attract future loans, we look at previous borrowing patterns, since prior program participation is the best predictor of future program participation (Bird et al., 2004; Stubbs et al., 2020). In particular, we tally the number of years each government has been under an IMF program since 1978, the earliest year for which detailed records are available (Kentikelenis et al., 2016). Models also include a dichotomous variable indicating whether the country was under an IMF program each year, as well as two measures of economic performance more generally (GDP per capita, in logged constant 2010 US dollars, and annual GDP growth, in percent).

Political determinants include regime type, measured by Marshall and Gurr's (2020) Polity2 index (ranging from –10 to +10, from hereditary monarchy to consolidated democracy), as well as the number of protests recorded by the Mass Mobilization Project every year, which serves as a proxy for political instability (Clark and Regan, 2020). As Stone (2004) and others argue, implementation of structural economic reforms is less likely during periods of political unrest. Lastly, we examine whether a country's ideological proximity to the US affects the content of its Staff Appraisal. Using an ideal point model, Bailey et al. (2015) estimate the absolute difference between the votes of two states in the United Nations General Assembly, multiplying this difference by −1 so that larger values represent closer positions. The resulting variable, *Ideal Point Similarity with US*, ranges from –5 to 0.

Table 2: Predictors of Topic Proportions, 2004–2019 (Tobit Regressions)

	Dependent variable:
	Natural Resource Topic (%)
Technocratic Minister = 1	1.435**
	(0.684)
FDI Performance Index	−0.123
	(0.111)
Years Under IMF Program	−0.098**
	(0.045)
IMF Program = 1	−3.157***
	(0.750)
Oil Price Index	0.001
	(0.008)
Field Discovery = 1	1.415
	(1.262)
Resource Rents (% GDP)	0.139***
	(0.030)
GDP per Capita (log)	−0.242
	(0.373)
GDP Growth (%)	0.068
	(0.043)
Polity2	−0.006
	(0.056)
Protest Count	−0.047
	(0.050)
Ideal Point Similarity w/ US	0.881
	(0.604)
Constant	7.483
	(4.578)
Observations	1,047
Log Likelihood	−2,506.589
Wald Test	90.816*** (df = 15)

This table reports the results of tobit regressions with cubic polynomials and standard errors clustered by country. Country fixed effects are omitted due to collinearity. *p<0.1; **p<0.05; ***p<0.01

3.4   Results

If an Article IV consultation takes place in a given country and year, what explains the proportion of its Staff Appraisal that is devoted to natural resources? Table 2 answers this question using a tobit regression, which allows us to account for the censored nature of the dependent variable — after all, we can only observe the value of *Natural Resource Topic* for country-year pairs with consultations. To minimize simultaneity bias, all independent variables are lagged by one year.

Consistent with Hypothesis 1, higher natural resource rents are associated with higher natural resource topic proportions. Specifically, a one percentage point increase in the proportion of the GDP coming from resource rents significantly increases the dependent variable by 0.139 percentage points. Countries that rely more heavily on natural resources are more likely to have Article IV consultations that focus on natural resources, as one would expect.

All else equal, the presence of a Finance Minister trained in a US economic department increases the proportion of *Natural Resource Topic* by 1.4 percentage points. This change is not only statistically significant, but also substantively meaningful, given that *Natural Resource Topic* ranges from 0.3 to 25.1 percent. These results — which support Hypothesis 2 — suggest that IMF technical assistance does not pursue a one-size-fits-all approach. Rather, country-specific characteristics matter: the government under appraisal does have a say in the content of discussions with IMF staff and the topics covered by each Article IV consultation. Given that individuals trained in US economics department are more likely to worry about the resource curse, it is intuitive that they, too, are more likely to bring up natural resource reform during discussions with the IMF staff.

As Table 2 further shows, contemporaneous participation in an IMF program decreases the proportion of a Staff Appraisal that is devoted to natural resources, as does previous participation, though to a lesser extent. Oil prices do not have a significant effect, nor do field discoveries, GDP per capita, GDP growth, or any of the other control variables.

Having examined what predicts variation in topic proportions, we now investigate what effect, if any, these topic proportions have on policymakers' decision to reform the natural resource sector.

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[17]This appears to be the case in other resource-rich countries as well. For example, a US cable about the government of Sudan states that "the position at the Ministry of Finance is more important than the position at the Ministry of Energy and Mining" because the former is "responsible for all of the [government's] finances, rather than only oil revenues." See `https://wikileaks.org/plusd/cables/08KHARTOUM241_a.html`

4 The Effect of IMF Surveillance on Natural Resource Reform

4.1 The Emergence of Natural Resource Funds

In its appraisal, the IMF staff frequently recommends the adoption of one policy tool: a natural resource fund. According to the IMF, these funds can "support the implementation of sound fiscal policies" and "enhance the transparency and credibility of fiscal policy" (Baunsgaard et al., 2012, 20). Correspondingly, we examine whether variation in the content of Staff Appraisals — as identified in the previous section — increases the odds that a country will pass any legal document (that is, a law, statute, act, code, or executive decree) related to a natural resource fund in the subsequent year. Goes (2021) collected these legal documents from Official Gazettes, based on information provided by the Natural Resource Governance Institute (2017). We opt for this dependent variable, rather than more general fiscal rules, in order to maximize comparability across countries in policies adopted.

During the period under study, 32 of the 80 governments passed a total of 51 such legal documents (which we call "natural resource policy" in brief).[18] Ecuador leads the list, with four organic laws (passed in 2005, 2006, 2008, and 2018) creating or regulating three different oil funds to stabilize the economy and reduce the size of the public debt. Figure 6 showcases the distribution of such documents over time, from 2004 until 2019.

Figure 6: Distribution of Legal Documents Over Time, 2004–2019
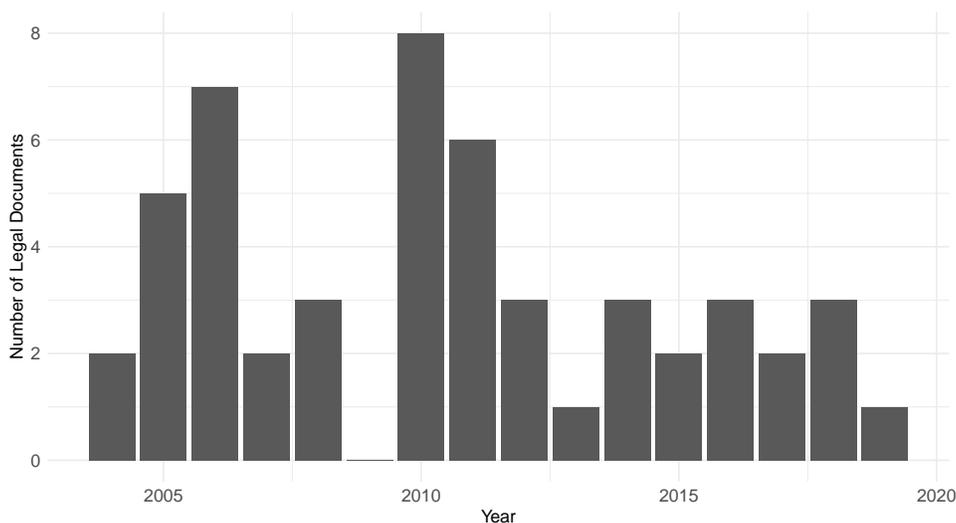
This figure shows the number of legal documents passed on every year from 2004 until 2019. At least one legal document was passed every year, with the exception of 2009.

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[18]This includes Venezuela (2005) and Turkmenistan (2014 and 2018), though we are unable to observe the effect of IMF surveillance on these two countries; as previously mentioned, Venezuela refused to participate in Article IV consultations and Turkmenistan opposed publication of its reports.

Though these legal documents vary in length, their content is typically similar: they outline the purpose of the fund, appoint a committee to manage the fund's assets, delimit what assets the fund can invest in, and stipulate annual deposit as well as withdrawal limits (that is, what percentage of resource revenue must be deposited into the fund and how much of this revenue can enter the public budget every fiscal year). Guyana's aforementioned Act No. 12 – Natural Resource Fund Act begins by outlining the purpose of the Natural Resource Fund: "to manage the natural resource wealth of Guyana for the present and future benefit of the people." Then, it assigns overall management duties to the Minister of Finance, but also creates the Public Accountability and Oversight Committee to monitor and evaluate "whether the Fund has been managed in accordance with the principles of transparency, good governance and international best practices." The Fund must be invested in safe assets, including treasury bills issued by countries with a sovereign credit rating of A or above and equities included in the MSCI World Index. According to the Act No. 12, all oil royalties, profits from production sharing agreements, and taxes levied on the profits of oil-producing companies must be deposited into the Fund. Finally, the Act determines that all withdrawals must be approved by parliament and cannot exceed the Economically and Fiscally Sustainable Amount, calculated according to annual inflation, exchange, debt, and growth rates. All these measures align with the best practices identified by the IMF (e.g. IMF, 2008).

For every country-year, our outcome of interest is a dichotomous indicator of *Policy Passage*. Of course, this variable says little about policy outcomes — we do not know if Guyana's Natural Resource Fund is actually managed according to international best practices or if all withdrawals are truly approved by parliament. But passing a legal document like Guyana's Act No. 12 is a good indicator that countries follow IMF advice. Even if governments are not always institutionally equipped to implement this advice, their willingness to promote *de jure* reforms is a necessary condition to promote *de facto* reforms (Amick et al., 2020). In fact, IOs often encourage *de jure* institutional reforms — which are easier to measure and accomplish — as the first practical step toward enacting concrete changes (Buntaine et al., 2017). Thus, our outcome of interest is a policy input (rules, institutions, and procedures), rather than a policy outcome, which is often beyond government control and difficult to operationalize across countries (Masaki and Parks, 2020).

4.2   Endogenous Policy Passage

Nearly all extant studies examine the role of IMF advice in the context of loan conditionality, which means that they must grapple with the issue of endogeneity (Stubbs et al., 2020). Given that countries self-select into loan agreements, borrowers tend to be intrinsically different from non-borrowers. This is less of a concern

in a study of Article IV consultations. It is true that Venezuela has consistently refused to participate, and other governments, like Turkmenistan or Eritrea, have opposed the publication of reports. But participation is the norm, as Figure 4 shows: consultations are scheduled ahead of time, and most countries agree to surveillance on a regular basis. Therefore, unlike entrance into a loan agreement (which commits them on paper to specific reforms), governments do not seem to strategically select into (or out of) Article IV consultations, except in rare circumstances.

While endogeneity in Article IV *participation* is less of a concern, we do worry about endogeneity in the *content* of Staff Appraisals. Loan agreements, for instance, are the product of a negotiation between government officials and the IMF, so borrowing governments might negotiate specific conditions that are politically convenient or that they know in advance they will be able to meet (Vreeland, 2003; Rickard and Caraway, 2014). A similar issue might exist with Article IV consultations: policymakers that already *want* to create natural resource funds might be more likely to bring up the oil, gas, and mining sector during conversations with the IMF staff, thereby increasing the proportion of *Natural Resource Topic* in each Staff Appraisal. Indeed, Table 2 provides support for this intuition. Even governments that do create natural resource funds in response to IMF demands may not be willing to admit it.[19]

In the context of IMF loans, Beazer and Woo (2016), Chapman et al. (2017), Lang (2020), Stubbs et al. (2020), and several others use instrumental variables estimation to address these endogeneity issues. But given the paucity of research on Article IV consultations, there is — to our knowledge — no widely accepted instrument that predicts variation in the content of such reports without having an independent effect on the outcome of interest. Though the clear structure of these consultations allows us to isolate the evaluation of IMF technocrats (Staff Appraisals) from the preferences of government officials (Response Statements), we are realistic about the limitations of our study: we cannot quantify a country's underlying willingness to reform. In light of these limitations, the following sections examine variation both within and across countries to understand under what circumstances higher topic proportions are associated with higher odds of reform. In the appendix, we also use sensitivity analysis to ensure the robustness of our results.

4.3   Within-Country Variation

Between 2004 and 2019, seven of the 80 countries included in our analysis discovered oil or gas for the first time: Ghana, Mozambique, Sierra Leone, Ethiopia, Tanzania, Senegal, and Guyana. We examine these cases

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[19]For example, Timor-Leste received technical assistance from the IMF in order to set up a Petroleum Fund and improve its governance structure. In a 2013 press release, the government explicitly sought to highlight its active role in the process, writing that the IMF provided such assistance "[a]t the request of the Timor-Leste authorities" in order to "support the Ministry of Finance and the Central Bank of Timor-Leste on the governance structure and the management of the Petroleum Fund, including capacity building." `https://www.mof.gov.tl/international-monetary-fund-imf-led-a-technical-assistance-mission-to-dili-timor-leste/?lang=en`

in more detail because oil and gas field discoveries allow us to pinpoint the exact moment when governments become "at risk" of passing natural resource policy. After all, countries that discovered their first field prior to 2004 might have already passed natural resource policy before entering our sample, or they might pass such policy for reasons that predate IMF advice. By focusing on nations that discovered oil for the first time after 2004, we are able to analyze the moment of preference formation, and the extent to which the IMF influences the formation of such preferences.[20]

Figure 7: Topic Proportions, Field Discoveries, and Policy Passage in Ghana, 2004–2019
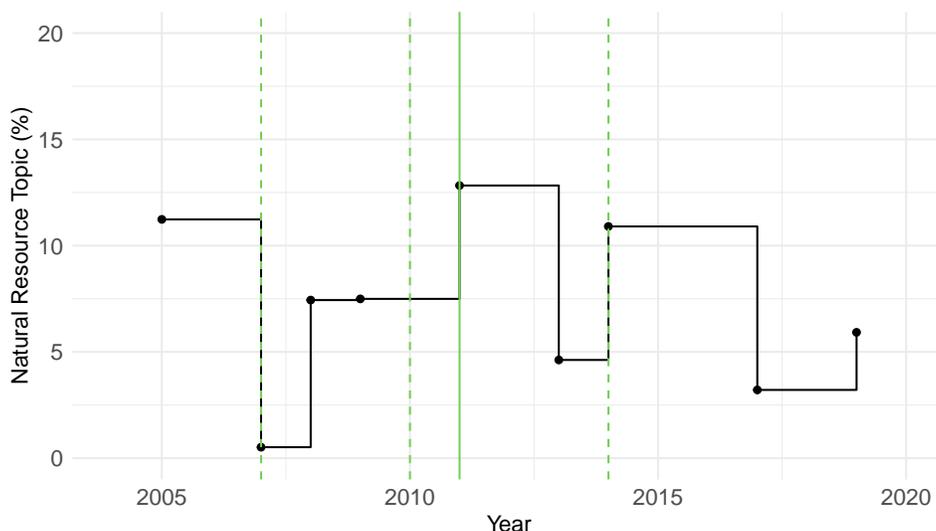
This figure shows the value of *Natural Resource Topic* for Ghana between 2004 and 2019. Dashed vertical lines indicate years of field discovery (2007, 2010, and 2014), whereas the solid vertical line indicates the year of natural resource policy passage (2011).

Figure 7 displays the value of *Natural Resource Topic* for Ghana between 2004 and 2019. Before 2007, Ghana was predominantly an exporter of gold and — to a lesser extent — diamonds and manganese. Indeed, the Staff Appraisal for the 2005 Article IV consultation identified the country's main economic weakness: "Economic prospects are still largely driven by the export of a few commodities. This narrow economic base, together with high world oil prices, contributes to the vulnerability of the economy." This assessment did not change in the subsequent consultation. Following a series of meetings with Ghanaian authorities in January, February, and March 2007, the IMF staff released its assessment in June 2007 and said virtually nothing about natural resources: the value of *Natural Resource Topic* for the Staff Appraisal of the 2007

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[20]Ghana, Mozambique, Sierra Leone, Ethiopia, and Senegal agreed to the publication of every Article IV report since 2004. Guyana's first available report is from 2009; the four prior consultations (in 2004, 2006, 2007, and 2008) were not published, though a Public Information Notice is available for each of them. Tanzania's last available report is from 2016. The subsequent consultation was conducted in 2019, but the government did not consent to the publication of the report or the corresponding press release. According to journalists with access to the report, the IMF criticized the "unpredictable economic policies and unreliable statistics" under President John Magufuli, who in turn opposed publication. See Joseph Cotterill. "Tanzania President Blocks Critical IMF Report on Economy." *Financial Times.* 18 April 2019.

Article IV consultation was just 0.5 percent. However, that same month, Kosmos Energy discovered the giant oil field Jubilee about 60 km offshore. When the IMF returned to Accra in the following year, between 23 March and 8 April 2008, its advice shifted. The value of *Natural Resource Topic* in the 2008 consultation increased to around 7.5 percent, driven by passages like the following: "Oil prospects can materially improve Ghana's medium-term outlook for growth and poverty reduction if it avoids the 'oil curse' of rent-seeking and boom-bust cycles ... the Ghanaian authorities are to be commended for already having begun a nationwide consultation on the use of oil resources."

The IMF insisted on the importance of natural resource reform in subsequent consultations — for example, in 2009 (when the value for *Natural Resource Topic* was again close to 7.5 percent): "Reforms are likely to be resisted by pressure groups, particularly as oil production approaches. However, without reform, Ghana risks dissipating its oil revenues with little long-term benefit for growth and poverty reduction." Following a staff visit to Accra in February and March 2011, 12.8 percent of the Staff Appraisal in the 2011 consultation used words related to natural resources, reiterating: "Clear and transparent management of oil revenues is a priority ... It will be important that incomes, expenditures, and savings associated with oil wealth be transparently and comprehensively recorded for dissemination, analysis, and audit purposes."

Ghana's Act 815 – Petroleum Revenue Management Act was passed by Parliament and assented to by the President on 11 April 2011, aiming to "regulate the collection, allocation, and management by government of petroleum revenue derived from upstream and midstream petroleum operations." After this law was passed, the value of *Natural Resource Topic* declined from 12.8 percent in 2011 to 4.6 percent in 2013; in the latter consultation, the IMF staff only addressed natural resources in one sentence: "Ghana's strong democratic credentials and favorable prospects for oil and gas production continue to attract significant FDI." In the following consultations, the IMF continued to praise Ghana's commitment to fiscal discipline, but the focus of its advice shifted away from the natural resource sector and towards broader improvements in financial management and banking supervision.

Figure 8 tells a similar story for six other countries that discovered their first oil and gas field between 2009 and 2015. Following the first discovery, the percentage of *Natural Resource Topic* for the three countries on the left — Mozambique, Ethiopia, and Senegal — *declined* relative to previous years. As of 2020, these countries do not have natural resource funds, suggesting that policymakers and the IMF did not consider this topic more worthy of discussion than before just because oil or gas reservoirs had been recently discovered. Given that discussions did not cover this topic, authorities likely did not feel the urge to reform.

In contrast, the percentage of *Natural Resource Topic* for the three countries on the right — Sierra Leone, Tanzania, and Guyana — *increased* in the wake of field discoveries. In other words, natural resources became more salient: Staff Appraisals began to devote a higher proportion of their vocabulary to words like *oil*, *gas*,

and *petroleum*, indicating that policymakers and the IMF began to discuss this sector more extensively and considered it worthy of reform. All three countries passed natural resource policy — in 2016, 2015, and 2019, respectively. In all three cases, as with Ghana, the value of *Natural Resource Topic* declined after policy passage, denoting that this issue was "settled" and that the staff could "move on," offering advice on other issues it considered more pressing.

Figure 8: Topic Proportions, Field Discoveries, and Policy Passage, 2004–2019
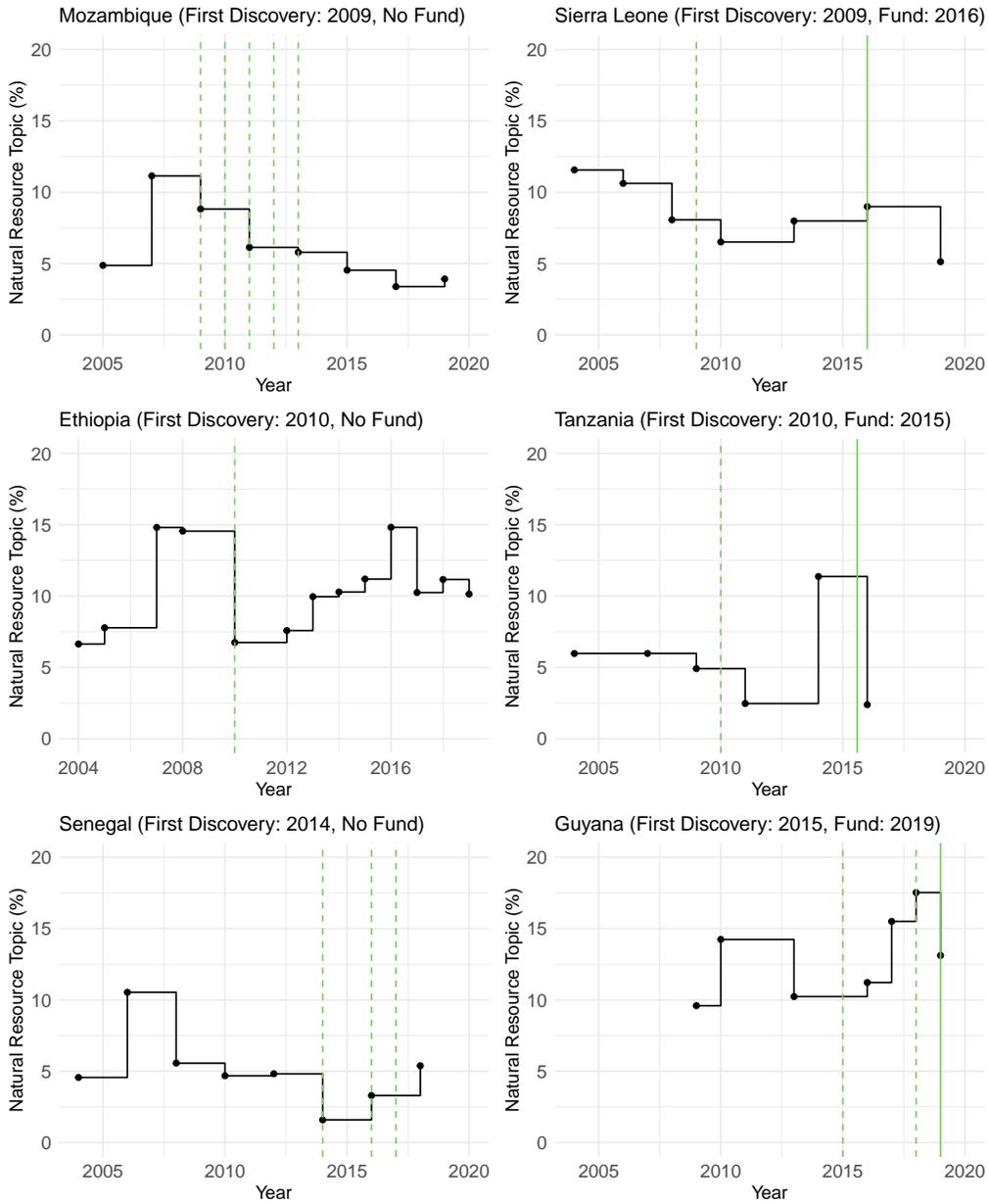
This figure shows the value of *Natural Resource Topic* for Mozambique, Sierra Leone, Ethiopia, Tanzania, Senegal, and Guyana between 2004 and 2019. Dashed vertical lines indicate years of field discovery, whereas the solid vertical lines indicate the year of natural resource policy passage (if applicable).

4.4 Between-Country Variation

Having examined the relationship between *Natural Resource Topic* and *Policy Passage* within countries, we now test the argument quantitatively, estimating logistic regressions for all 700 country-year pairs with Article IV consultations. Like Dreher and Vaubel (2004), Woo (2013), Beazer and Woo (2016), Rickard and Caraway (2019), and several others, we focus on the country-years of "treatment" (in their case, country-years under IMF programs; in our case, country-years with Article IV consultations) because this allows us to estimate the average treatment effect on the treated, or ATET, as opposed to the overall average treatment effect, or ATE (see Stubbs et al. 2020, 39–40 for an extensive discussion of this effect). This choice limits the generalizability of our findings, since we can only identify the mean effect of topic proportions for country-years that actually participate in Article IV consultations and publish them. But it also means that our findings are intuitive and easier to interpret.[21]

These regressions include fixed effects to control for heterogeneity between countries and cubic polynomials to account for time dependence (Carter and Signorino, 2010), in addition to a dichotomous indicator of whether or not the country in question has passed natural resource policy in the past. In Table 3, *Natural Resource Topic* is no longer the outcome of interest, but the main explanatory variable. All independent variables, including the topic proportions, are lagged by one year. Policy passage is a rare event that did not occur every year, as indicated by Figure 6. Since our models include country fixed effects, a traditional logistic regression would drop these years, which are "homogeneous units:" they are perfect predictors of the dependent variable because they did not experience the event under study (Beck, 2020). To prevent the loss of these "homogeneous units," we follow Cook et al. (2020) and estimate these logistic regressions with penalized maximum likelihood.

Table 3 shows that governments tend to follow IMF advice pertaining to the natural resource sector, even when this advice lacks "teeth." Model 1 examines the effect of *Natural Resource Topic* in isolation, finding support for Hypothesis 3: the more a Staff Appraisal emphasizes the natural resource sector, the higher the odds that the country under appraisal will pass natural resource policy in the subsequent year. Specifically, a one percentage-point increase in the use of words associated with the natural resource topic — like *author*, *oil*, *govern*, *develop*, and *fund*, as identified by the keyword assisted topic model and reported in Table 1 — is associated with a significant 16 percent increase in the odds of passing natural resource policy in the subsequent year ($e^{0.149} = 1.160$). Passing natural resource policy is a rare event, but IMF advice makes this event exceedingly less rare.

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[21]In the appendix, we also examine the separate effects of scheduling, conducting, and publishing a consultation, finding that they are not significant predictors of natural resource policy passage. This supports our decision to focus on consultation content.

Table 3: Predictors of Policy Passage, 2004–2019 (Logistic Regressions)

	Dependent variable:				
	Policy Passage				
	(1)	(2)	(3)	(4)	(5)
Natural Resource Topic (%)	0.149***	0.066***	0.091***	0.029**	−0.119***
	(0.028)	(0.014)	(0.013)	(0.014)	(0.018)
Natural Resource Topic × Technocratic Minister			−0.175***		
			(0.037)		
Natural Resource Topic × FDI Performance Index				0.007***	
				(0.002)	
Natural Resource Topic × Years Under IMF Program					0.011***
					(0.001)
Technocratic Minister = 1		−0.203	1.556***	−0.279	−0.056
		(0.233)	(0.289)	(0.228)	(0.232)
FDI Performance Index		0.113***	0.107***	0.033**	0.098***
		(0.011)	(0.010)	(0.016)	(0.010)
Years Under IMF Program		0.085***	0.079***	0.098***	−0.029*
		(0.026)	(0.025)	(0.025)	(0.016)
Previous Policy = 1		−2.345***	−2.357***	−2.157***	−2.220***
		(0.269)	(0.271)	(0.265)	(0.258)
IMF Program = 1		0.165	0.224	0.221	0.245*
		(0.138)	(0.138)	(0.135)	(0.134)
Oil Price Index		−0.001	0.00003	−0.0003	−0.0004
		(0.001)	(0.001)	(0.001)	(0.001)
Field Discovery = 1		0.302*	0.453***	0.172	0.456***
		(0.161)	(0.128)	(0.161)	(0.135)
Resource Rents (% GDP)		−0.031***	−0.023***	−0.019***	−0.015**
		(0.006)	(0.006)	(0.006)	(0.006)
GDP per Capita (log)		0.842***	0.958***	1.372***	0.439**
		(0.234)	(0.237)	(0.251)	(0.217)
GDP Growth (%)		−0.074***	−0.078***	−0.070***	−0.073***
		(0.012)	(0.013)	(0.012)	(0.012)
Polity2		−0.080***	−0.073***	−0.074***	−0.084***
		(0.015)	(0.015)	(0.014)	(0.013)
Protest Count		−0.008	−0.013*	−0.009	−0.001
		(0.008)	(0.007)	(0.008)	(0.007)
Ideal Point Similarity w/ US		0.587***	0.456***	0.423**	0.796***
		(0.189)	(0.173)	(0.183)	(0.174)
Constant	−4.051***	−5.894***	−7.285***	−9.763***	−1.308
	(0.246)	(1.978)	(1.942)	(2.032)	(1.711)
Observations	700	529	529	529	529
Log Likelihood	−59.389	−42.913	−42.451	−43.056	−42.569

This table reports the results of penalized likelihood models with third-order polynomials, country fixed effects, and standard errors clustered by country. Coefficients represent log odds. *p<0.1; **p<0.05; ***p<0.01

Recall that we previously identified the two main predictors of variation in topic proportions: the GDP share of resource rents and the presence of a finance minister trained in a US economics department. One might be concerned that these variables drive both the topic proportion devoted to natural resources in a given report *and* the adoption of resource sector reforms; in other words, there might be a "backdoor path" from *Natural Resource Topic* to *Policy Passage*. To address this concern, Model 2 in Table 3 controls for all these factors,[22] finding that the effect of *Natural Resource Topic* is robust to their inclusion. This suggests that even though natural resource topic proportions tend to be higher when the GDP share of resource rents is high or when there is a US-trained finance minister, Article IV consultations have a standalone effect that cannot be explained just by a government's ex-ante willingness to reform.

Table 3 provides mixed evidence that responsiveness to IMF advice is conditioned by the Finance Minister's education, as Hypothesis 4 suggests. According to Model 3, as the proportion of an Article IV consultation covering the natural resource topic increases, US-trained finance ministers are significantly *less* likely to pass natural resource policy (as indicated by the coefficient for *Technocratic Minister* × *Natural Resource Topic*), but the individual effects of these variables go in the opposite direction.

As for the desire to attract and retain external capital (Hypotheses 5 and 6), recall that we measure a country's ability to attract private capital using UNCTAD's Inward FDI Performance Index and its ability to attract multilateral loans using the number of years under an IMF program since 1978. According to Model 4, the interactive effect between the variables *Natural Resource Topic* and *FDI Performance Index* is statistically significant, but substantively small. According to Model 5, frequent participation in IMF programs has a significant positive effect a country's responsiveness to IMF advice, as denoted by the coefficient for the interaction between *Years Under IMF Program* and *Natural Resource Topic*, but the individual coefficients for the component variables go in the opposite direction. Overall, given the small effect sizes and mixed directions, we hesitate to apply any strong substantive interpretation to these conditional effects.

As a robustness check, we use event history analysis to understand how the content of Article IV consultations influences the *initial* passage of natural resource policy across countries. This modeling strategy captures a series of binary outcomes, indicating whether or not an event occurred at a given point in time. It includes all country-years from 2004 until event occurrence; once a country experiences the event in question (that is, once it passes the first legal document creating a natural resource fund), it drops out of the dataset, as it is no longer considered to be at risk of passing new policy. Countries that did not experience the event until December 2019 are included and considered right-censored; their contribution to the dataset is

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[22]This follows Pearl's (2000) advice that the effect of the independent variable on the dependent variable can be correctly identified, as long as measured covariates block all backdoor paths.

Table 4: Predictors of Policy Passage, 2004–2019 (Event History Analysis)

	Dependent variable:			
	Policy Passage			
	Cox Prop. Hazards		*Penalized GLM*	
	(1)	(2)	(3)	(4)
Natural Resource Topic (%)	0.125***	0.174**	0.127***	0.138**
	(0.039)	(0.073)	(0.035)	(0.054)
Technocratic Minister = 1		1.614*		1.492**
		(0.872)		(0.671)
FDI Performance Index		−0.0001		0.015
		(0.090)		(0.062)
Years Under IMF Program		0.072		0.061*
		(0.046)		(0.036)
IMF Program = 1		1.284		1.040*
		(0.783)		(0.577)
Field Discovery = 1		−0.031		0.200
		(1.162)		(0.891)
Resource Rents (% GDP)		0.031		0.028
		(0.030)		(0.023)
GDP per Capita (log)		0.484		0.445
		(0.418)		(0.316)
GDP Growth (%)		0.121		0.101
		(0.082)		(0.062)
Polity2		0.027		0.015
		(0.085)		(0.057)
Protest Count		−0.252*		−0.156
		(0.139)		(0.103)
Ideal Point Similarity w/ US		−0.415		−0.300
		(0.733)		(0.546)
Constant			−5.780***	−12.323***
			(1.555)	(3.981)
Observations	732	610	732	610
Log Likelihood	−64.388	−37.314	−70.601	−44.259

This table reports the results of two Cox proportional hazard models (coefficients represent hazards) and two penalized likelihood models (coefficients represent log odds). *p<0.1; **p<0.05; ***p<0.01

a vector of zeroes (Box-Steffensmeier and Jones, 2004). Admittedly, governments are constantly at risk of passing new policy; they can, and do, create several different natural resource funds over time (Ecuador, for instance, passed four resource-related organic laws during the period under study). In addition, our analysis begins in 2004 for reasons of data availability (after all, Article IV consultations were not published in a systematic manner until then), but 16 countries[23] suffer from "unobserved histories" (Box-Steffensmeier and Jones, 1997, 1422): they experienced the event before the 2004. Since we cannot observe the effect of Article IV consultations on initial policy passage for these countries, we omit them from this analysis. Even though this modeling strategy is imperfect, it allows us to examine the effects of Article IV consultations from yet another angle, providing support for our hypothesis that such consultations influence natural resource policy passage.

In Table 4, *Natural Resource Topic* now represents the percentage of the *most recent* Staff Appraisal that covers the natural resource topic, allowing us to capture the cumulative effect of IMF advice. After all, topic proportions at time t might affect policy passage not only at time t, but also in subsequent years. Beyond that, models include same control variables as before, excluding the oil price index, which is constant across countries and therefore drops out of the analysis. Models 1 and 2 are Cox proportional hazards models with time-varying covariates, whereas Models 3 and 4 are logistic regressions estimated with penalized maximum likelihood, with duration-dependent dummy variables that capture the changing baseline hazard. Both modeling approaches lead to results that are similar in substance and statistical significance; since logit coefficients are more intuitive to interpret, we focus on the coefficients for Models 3 and 4.

According to Model 3, a one percentage-point increase in the use of words associated with the natural resource topic is associated with a significant 13.5 percent increase in the odds of passing the *first* natural resource policy — an effect that, again, is robust to the inclusion of covariates. Overall, seen through the lens of the descriptive analysis in the previous section, Tables 3 and 4 suggest that the content of Article IV consultations matters. When a higher proportion of the Staff Appraisal dwells on the natural resource sector, legal reforms related to natural resource governance tend to follow.

Conclusion

Since implementation of recommendations made during Article IV surveillance is not tied to loans, one might expect these consultations to amount to "much ado about nothing." Yet more recent literature has noted the ways in which IO bureaucrats can shape outcomes, independent of powerful state principals. Article

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[23]The 16 countries and corresponding years of first law passage are: Algeria (2000), Azerbaijan (1999), Botswana (1997), Chad (1999), Chile, (1981), Ecuador (2000), Gabon (1998), Iran (2000), Kazakhstan (2000), Malaysia (1988), Mexico (2000), Namibia (1996), Papua New Guinea (2000), Peru (1999), Russia (2003), and Venezuela (1999).

IV consultations are a good example of this phenomenon, but they are understudied, despite occupying considerable time and resources of the Fund. Our study, along with Edwards (2018), is one of the first ones to examine not only the *content* of public Article IV reports, but also the extent to which such reports influence legal reform.

We argue that Article IV surveillance is an opportunity for IO bureaucrats — in this case, IMF staff — to shape policies in the developing world through disseminating best practices and providing technical assistance. Although these consultations lack "teeth," IMF staff can offer expert advice and help persuade authorities to adopt policies aimed at improving fiscal and monetary governance. As such, the emphasis reports place on different topics should matter. When reports are crafted to call attention to the natural resource sector and suggest specific reforms, governments are more likely to take heed and act. Of course, these reforms are often difficult and politically costly. We do not claim that Article IV reports are the largest or most important determinant of the creation of natural resource funds and related resource management rules. Still, our analysis indicates that such reforms are more likely when Article IV consultations make the case for them, even after controlling for other common determinants of reform.

Our results further suggest that reform may be more likely when natural resource wealth is particularly salient (as indicated by oil prices and resource rents) or when technocratic ministers are involved in Article IV consultations. But the impact of Article IV topic proportions cannot be attributed entirely to these other factors, nor is it primarily a function of a country's ability to attract private capital or multilateral loans. Instead, Article IV advice seems to have an independent effect on adoption of new rules for managing resource revenue.

Incumbents are often loathe to forfeit control of resource rents, despite knowing the likely consequences of the resource curse. Their time horizons are too often incompatible with reform. But we show that technical or purely advisory consultations from IOs can make a difference, especially under the right circumstances. The IMF has come under criticism, on the one hand, for the high rate of recidivism among borrowers and low compliance with conditionality, and on the other hand, for imposing harsh austerity measures on struggling economies. But apart from these debates about conditionality and the efficacy of crisis lending, our analysis suggests that the IMF can nudge countries toward improved fiscal management in non-crisis moments. This slow but steady progress might not be as high profile as large-scale lending programs, but can nonetheless help build the fiscal foundations to help resource-rich nations avoid crises in the first place.

References

Christopher Adolph. *Bankers, Bureaucrats, and Central Bank Politics: The Myth of Neutrality.* Cambridge University Press, Cambridge, 2013.

Todd L. Allee and Jamie E. Scalera. The Divergent Effects of Joining International Organizations: Trade Gains and the Rigors of WTO Accession. *International Organization*, 66(2):243–276, 2012. doi: 10.1017/S0020818312000082.

Joe Amick, Terrence Chapman, and Zachary Elkins. On Constitutionalizing a Balanced Budget. *Journal of Politics*, 82(3):1078–1096, 2020. doi: 10.1086/707618.

Rabah Arezki, Valerie A. Ramey, and Liugang Sheng. News Shocks in Open Economies: Evidence from Giant Oil Discoveries. *Quarterly Journal of Economics*, 132(1):103–155, 2017. doi: 10.1093/qje/qjw030.

Sarah L. Babb and Bruce G. Carruthers. Conditionality: Forms, Function, and History. *Annual Review of Law and Social Science*, 4(1):13–29, 2008. doi: 10.1146/annurev.lawsocsci.4.110707.172254.

Benjamin E. Bagozzi and Daniel Berliner. The Politics of Scrutiny in Human Rights Monitoring: Evidence from Structural Topic Models of US State Department Human Rights Reports. *Political Science Research and Methods*, 6(4):661–677, 2018. doi: 10.1017/psrm.2016.44.

Michael A. Bailey, Anton Strezhnev, and Erik Voeten. Estimating Dynamic State Preferences from United Nations Voting Data. *Journal of Conflict Resolution*, 61(2):1–27, 2015. doi: 10.1177/0022002715595700.

Michael Barnett and Martha Finnemore. *Rules for the World: International Organizations in Global Politics.* Cornell University Press, Ithaca and London, 2004a.

Michael Barnett and Martha Finnemore. The Power of Liberal International Organizations. In Michael Barnett and Raymond Duvall, editors, *Power in Global Governance*, pages 163–71. Cambridge University Press, Cambridge, 2004b.

Thomas Baunsgaard, Mauricio Villafuerte, Marcos Poplawski-Ribeiro, and Christine Richmond. Fiscal Frameworks for Resource Rich Developing Countries. *IMF Staff Discussion Notes*, 12(4), 2012. doi: 10.5089/9781475510065.006.

Quintin H. Beazer and Byungwon Woo. IMF Conditionally, Government Partisanship, and the Progress of Economic Reforms. *American Journal of Political Science*, 60(2):304–321, 2016. doi: 10.1111/ajps.12200.

Nathaniel Beck. Estimating Grouped Data Models with a Binary-Dependent Variable and Fixed Effects via a Logit versus a Linear Probability Model: The Impact of Dropped Units. *Political Analysis*, 28:139–145, 2020. doi: 10.1017/pan.2019.20.

Timothy Besley and Torsten Persson. Why Do Developing Countries Tax So Little? *Journal of Economic Perspectives*, 28(4):99–120, 2014. doi: 10.1257/jep.28.4.99.

Jacqueline Best. Legitimacy Dilemmas: The IMF's Pursuit of Country Ownership. *Third World Quarterly*, 28(3):469–488, 2007. doi: 10.1080/01436590701192231.

Graham Bird. Borrowing from the IMF: The Policy Implications of Recent Empirical Research. *World Development*, 24(11):1753–1760, 1996. doi: 10.1016/0305-750X(96)00153-2.

Graham Bird. IMF Programs: Do They Work? Can They be Made to Work Better? *World Development*, 29(11):1849–1865, 2001. doi: 10.1016/S0305-750X(01)00077-8.

Graham Bird, Mumtaz Hussain, and Joseph P. Joyce. Many Happy Returns? Recidivism and the IMF. *Journal of International Money and Finance*, 23(2):231–251, 2004. doi: 10.1016/j.jimonfin.2003.12.002.

Janet M. Box-Steffensmeier and Bradford S. Jones. Time is of the Essence: Event History Models in Political Science. *American Journal of Political Science*, 41(4):1414–1461, 1997. doi: 10.2307/2960496.

Janet M. Box-Steffensmeier and Bradford S. Jones. *Event History Modeling: A Guide for Social Scientists*. Cambridge University Press, Cambridge, 2004.

Michael Breen, Dermot Hodson, and Manuela Moschella. Incoherence in Regime Complexes: A Sentiment Analysis of EU-IMF Surveillance. *Journal of Common Market Studies*, 58(2):419–437, 2020. doi: 10.1111/jcms.12924.

Mark T. Buntaine, Bradley C. Parks, and Benjamin P. Buch. Aiming at the Wrong Targets: The Domestic Consequences of International Efforts to Build Institutions. *International Studies Quarterly*, 61(2):471–488, 2017. doi: 10.1093/isq/sqx013.

Marc L. Busch and Krzysztof J. Pelc. Words Matter: How WTO Rulings Handle Controversy. *International Studies Quarterly*, 63(3):464–476, 2019. doi: 10.1093/isq/sqz025.

David B. Carter and Curtis S. Signorino. Back to the Future: Modeling Time Dependence in Binary Data. *Political Analysis*, 18(3):271–292, 2010. doi: 10.1093/pan/mpq013.

Terrence Chapman, Songying Fang, Xin Li, and Randall W. Stone. Mixed Signals: IMF Lending and Capital Markets. *British Journal of Political Science*, 47(2):329–349, 2017. doi: 10.1017/S0007123415000216.

Jeffrey Chwieroth. Neoliberal Economists and Capital Account Liberalization in Emerging Markets. *International Organization*, 61(2):443–463, 2007. doi: 10.1017/S0020818307070154.

Jeffrey M. Chwieroth. 'The Silent Revolution:' How the Staff Exercise Informal Governance over IMF Lending. *Review of International Organizations*, 8(2):265–290, 2013. doi: 10.1007/s11558-012-9154-9.

Jeffrey M. Chwieroth. Fashions and Fads in Finance: The Political Foundations of Sovereign Wealth Fund Creation. *International Studies Quarterly*, 58(4):752–763, 2014. doi: 10.1111/isqu.12140.

Carlos Cinelli and Chad Hazlett. Making Sense of Sensitivity: Extending Omitted Variable Bias. *Journal of the Royal Statistical Society, Series B*, 82(1):39–67, 2020. doi: 10.1111/rssb.12348.

David Clark and Patrick Regan. *Mass Mobilization Protest Data*. 2020. doi: 10.7910/DVN/HTTWYL.

Ben Clift. *The IMF and the Politics of Austerity in the Wake of the Global Financial Crisis*. Oxford University Press, Oxford, 2018.

Paul Collier. The Institutional and Psychological Foundations of Natural Resource Policies. *Journal of Development Studies*, 53(2):217–228, 2017. doi: 10.1080/00220388.2016.1160067.

Scott J. Cook, Jude C. Hays, and Robert J. Franzese. Fixed Effects in Rare Events Data: A Penalized Maximum Likelihood Solution. *Political Science Research and Methods*, 8(1):92–105, 2020. doi: 10.1017/psrm.2018.40.

Mark S. Copelovitch. *The International Monetary Fund in the Global Economy: Banks, Bonds, and Bailouts*. Cambridge University Press, Cambridge, 2010.

Geoff Dancy and Florencia Montal. From Law Versus Politics To Law In Politics: A Pragmatist Assessment Of The ICC's Impact. *American University International Law Review*, 32(3):4, 2017.

Matthew J. Denny and Arthur Spirling. Text Preprocessing for Unsupervised Learning: Why It Matters, When It Misleads, and What to Do About It. *Political Analysis*, 26(2):168–189, 2018. doi: 10.1017/pan.2017.44.

Axel Dreher. The Influence of Elections on IMF Programme Interruptions. *Journal of Development Studies*, 39(6):101–120, 2003. doi: 10.1080/00220380312331293597.

Axel Dreher. IMF Conditionality: Theory and Evidence. *Public Choice*, 141(1-2):233–267, 2009. doi: 10.1007/s11127-009-9486-z.

Axel Dreher and Nathan M. Jensen. Independent Actor or Agent? An Empirical Analysis of the Impact of US Interests on International Monetary Fund Conditions. *Journal of Law and Economics*, 50(1):105–124, 2007. doi: 10.1086/508311.

Axel Dreher and Roland Vaubel. Do IMF and IBRD Cause Moral Hazard and Political Business Cycles? Evidence from Panel Data. *Open Economies Review*, 15(1):5–22, 2004. doi: 10.1023/B:OPEN.0000009422. 66952.4b.

Martin S. Edwards. *The IMF, the WTO, and the Politics of Economic Surveillance*. Routledge, London, 2018.

Martin S. Edwards, Kelsey A. Coolidge, and Daria A. Preston. Who Reveals? Transparency and the IMF's Article IV Consultations. *SSRN Electronic Journal*, 2011. doi: 10.2139/ssrn.1850026.

Shusei Eshima, Kosuke Imai, and Tomoya Sasaki. Keyword Assisted Topic Models. *Working Paper*, 2020. URL https://arxiv.org/abs/2004.05964.

Ghada Fayad, Chengyu Huang, Yoko Shibuya, and Peng Zhao. How Do Member Countries Receive IMF Policy Advice: Results from a State-of-the-Art Sentiment Index. *IMF Working Paper*, 20(7), 2020. doi: 10.5089/9781513526010.001.

Iasmin Goes. Examining the Effect of IMF Conditionality on Natural Resource Policy. *Working Paper*, 2021.

Brian Greenhill. *Transmitting Rights: International Organizations and the Diffusion of Human Rights Practices*. Oxford University Press, Oxford, 2015.

Justin Grimmer and Brandon M. Stewart. Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts. *Political Analysis*, 21(3):267–297, 2013. doi: 10.1093/pan/mps028.

Ernst B. Haas. *When Knowledge is Power: Three Models of Change in International Organizations*. University of California Press, Berkeley, 2018.

Ardian Harri, Lanier Nalley, and Darren Hudson. The Relationship between Oil, Exchange Rates, and Commodity Prices. *Journal of Agricultural and Applied Economics*, 41(2):501–510, 2009. doi: 10.1017/s1074070800002959.

Michael J. Harrison. Can Corrupt Countries Attract Foreign Direct Investment? A Comparison Of FDI Inflows Between Corrupt And Non-Corrupt Countries. *International Business & Economics Research Journal*, 2(9):93–100, 2011. doi: 10.19030/iber.v2i9.3844.

Mirko Heinzel, Jonas Richter, Per Olof Busch, Hauke Feil, Jana Herold, and Andrea Liese. Birds of a Feather? The Determinants of Impartiality Perceptions of the IMF and the World Bank. *Review of International Political Economy*, pages 1–25, 2020. doi: 10.1080/09692290.2020.1749711.

Myron K. Horn. *Giant Oil and Gas Fields of the World.* 2014. URL `https://edx.netl.doe.gov/dataset/aapg-datapages-giant-oil-and-gas-fields-of-the-world`.

IMF. *The International Monetary Fund 1945-1965: Twenty Years of International Monetary Cooperation. Volume III: Documents.* International Monetary Fund, Washington, DC, 1969.

IMF. Sovereign Wealth Funds – A Work Agenda. *IMF Policy Paper*, pages 1–38, 2008.

IMF. *Articles of Agreement of the International Monetary Fund.* International Monetary Fund, Washington D.C., 2016.

IMF. List of IMF Member Countries with Delays in Completion of Article IV Consultations or Mandatory Financial Stability Assessments over 18 Months. *Policy Papers*, 2017. doi: 10.5089/9781513524702.007.

IMF. *A Year Like No Other: IMF Annual Report.* Washington, DC, 2020.

Tana Johnson. *Organizational Progeny: Why Governments are Losing Control over the Proliferating Structures of Global Governance.* Oxford University Press, Oxford, 2014. doi: 10.1093/acprof:oso/9780198717799.001.0001.

Alexander E. Kentikelenis, Thomas H. Stubbs, and Lawrence P. King. IMF Conditionality and Development Policy Space, 1985–2014. *Review of International Political Economy*, 23(4):543–582, 2016. doi: 10.1080/09692290.2016.1174953.

Mohsin S. Khan and Sunil Sharma. IMF Conditionality and Country Ownership of Adjustment Programs. *World Bank Research Observer*, 18(2):227–248, 2003. doi: 10.1093/wbro/lkg007.

Daniel Krcmaric, Stephen C. Nelson, and Andrew Roberts. Studying Leaders and Elites: The Personal Biography Approach. *Annual Review of Political Science*, 23:133–151, 2020. doi: 10.1146/annurev-polisci-050718-032801.

Valentin Lang. The Economics of the Democratic Deficit: The Effect of IMF Programs on Inequality. *Review of International Organizations*, 2020. doi: 10.1007/s11558-020-09405-x.

Domenico Lombardi and Ngaire Woods. The Politics of Influence: An Analysis of IMF Surveillance. *Review of International Political Economy*, 15(5):711–739, 2008. doi: 10.1080/09692290802418724.

Monty G. Marshall and Ted Robert Gurr. *Polity5: Political Regime Characteristics and Transitions, 1800–2018*. 2020. URL `http://www.systemicpeace.org/inscrdata.html`.

Takaaki Masaki and Bradley C. Parks. When Do Performance Assessments Influence Policy Behavior? Micro-Evidence From the 2014 Reform Efforts Survey. *Review of International Organizations*, 15(2): 371–408, 2020. doi: 10.1007/s11558-018-9342-3.

Elena V. McLean and Randall W. Stone. The Kyoto Protocol: Two-Level Bargaining and European Integration. *International Studies Quarterly*, 56(1):99–113, 2012. doi: 10.1111/j.1468-2478.2011.00706.x.

David Mihalyi and Akos Mate. Text-Mining IMF Country Reports – An Original Dataset. *SSRN Electronic Journal*, 2018. doi: 10.2139/ssrn.3268934.

Layna Mosley. Room to Move: International Financial Markets and National Welfare States. *International Organization*, 54(4):737–773, 2000. doi: 10.1162/002081800551352.

Natural Resource Governance Institute. *Resource Governance Index*. 2017. URL `http://www.resourcegovernanceindex.org/`.

Stephen C. Nelson. Playing Favorites: How Shared Beliefs Shape the IMF's Lending Decisions. *International Organization*, 68(2):297–328, 2014. doi: 10.1017/S0020818313000477.

Stephen C. Nelson. *The Currency of Confidence: How Economic Beliefs Shape the IMF's Relationship with Its Borrowers*. Cornell University Press, Ithaca and London, 2017.

Jonathan David Ostry and Jeromin Zettelmeyer. Strengthening IMF Crisis Prevention. *IMF Working Paper*, 5(206), 2005. doi: 10.5089/9781451862256.001.

Susan Park. Theorizing Norm Diffusion Within International Organizations. *International Politics*, 43(3): 342–361, 2006. doi: 10.1057/palgrave.ip.8800149.

Susan Park and Antje Vetterlein. *Owning Development: Creating Policy Norms in the IMF and the World Bank*. Cambrdge University Press, Cambridge, 2010.

Judea Pearl. *Causality: Models, Reasoning, and Inference*. Cambridge University Press, Cambridge, 2000.

Jon C. Pevehouse. Democracy from the Outside-In? International Organizations and Democratization. *International Organization*, 56(3):515–549, 2002. doi: 10.1162/002081802760199872.

Stephanie J. Rickard and Teri L. Caraway. International Negotiations in the Shadow of National Elections. *International Organization*, 68(3):701–720, 2014. doi: 10.1017/S0020818314000058.

Stephanie J. Rickard and Teri L. Caraway. International Demands for Austerity: Examining the Impact of the IMF on the Public Sector. *Review of International Organizations*, 14(1):1–23, 2019. doi: 10.1007/s11558-017-9295-y.

Margaret E. Roberts, Brandon M. Stewart, and Dustin Tingley. stm: R Package for Structural Topic Models. *Journal of Statistical Software*, 91(2):1–40, 2019. doi: 10.18637/jss.v000.i00.

Dani Rodrik. Why Is There Multilateral Lending? *NBER Working Paper*, 5160:167–205, 1995. doi: 10.3386/w5160.

Michael L. Ross. What Have We Learned about the Resource Curse? *Annual Review of Political Science*, 18(1):239–259, 2015. doi: 10.1146/annurev-polisci-052213-040359.

Sayed H. Saghaian. The Impact of the Oil Sector on Commodity Prices: Correlation or Causation? *Journal of Agricultural and Applied Economics*, 42(3):477–485, 2010. doi: 10.1017/s1074070800003667.

Armin Schäfer. A New Form of Governance? Comparing the Open Method of Co-ordination to Multilateral Surveillance by the IMF and the OECD. *Journal of European Public Policy*, 13(1):70–88, 2006. doi: 10.1080/13501760500380742.

Leonard Seabrooke. Legitimacy Gaps in the World Economy: Explaining the Sources of the IMF's Legitimacy Crisis. *International Politics*, 44(2):250–268, 2007. doi: 10.1057/palgrave.ip.8800187.

Gregory Shaffer. Can WTO Technical Assistance and Capacity-Building Serve Developing Countries? In Ernst-Ulrich Petersmann and James Harrison, editors, *Reforming the World Trading System: Legitimacy, Efficiency, and Democratic Governance*, pages 245–274. Oxford University Press, Oxford, 2005.

Beth A. Simmons. *Mobilizing for Human Rights: International Law in Domestic Politics*. Cambridge University Press, New York, 2009.

Beth A. Simmons, Frank Dobbin, and Geoffrey Garrett. Introduction: The International Diffusion of Liberalism. *International Organization*, 60(4):781–810, 2006. doi: 10.1017/S0020818306060267.

Benjamin K. Sovacool, Götz Walter, Thijs Van de Graaf, and Nathan Andrews. Energy Governance, Transnational Rules, and the Resource Curse: Exploring the Effectiveness of the Extractive Industries Transparency Initiative (EITI). *World Development*, 83:179–192, 2016. doi: 10.1016/j.worlddev.2016.01.021.

Randall W. Stone. *Lending Credibility: The International Monetary Fund and the Post-Communist Transition*. Princeton University Press, Princeton, 2002.

Randall W. Stone. The Political Economy of IMF Lending in Africa. *American Political Science Review*, 98 (4):577–591, 2004. doi: 10.1017/S000305540404136X.

Randall W. Stone. The Scope of IMF Conditionality. *International Organization*, 62(4):589–620, 2008. doi: 10.1017/S0020818308080211.

Randall W. Stone. *Controlling Institutions: International Organizations and the Global Economy*. Cambridge University Press, Cambridge, 2011.

Thomas Stubbs, Lawrence King, Bernhard Reinsberg, Alexander Kentikelenis, and Lawrence King. How to Evaluate the Effects of IMF Conditionality: An Extension of Quantitative Approaches and an Empirical Application to Public Education Spending. *Review of International Organizations*, 15(1):29–73, 2020. doi: 10.1007/s11558-018-9332-5.

Rochelle Terman and Erik Voeten. The Relational Politics of Shame: Evidence From the Universal Periodic Review. *Review of International Organizations*, 13(1):1–23, 2018. doi: 10.1007/s11558-016-9264-x.

Anthony J. Venables. Using Natural Resources for Development: Why Has It Proven So Difficult? *Journal of Economic Perspectives*, 30(1):161–184, 2016. doi: 10.1257/jep.30.1.161.

James Raymond Vreeland. *The IMF and Economic Development*. Cambridge University Press, New York, 2003.

Erik Wibbels. Dependency Revisited: International Markets, Business Cycles, and Social Spending in the Developing World. *International Organization*, 60(2):433–468, 2006. doi: 10.1017/S0020818306060139.

David Wiens. Natural Resources and Institutional Development. *Journal of Theoretical Politics*, 26(2): 197–221, 2014. doi: 10.1177/0951629813493835.

Byungwon Woo. Conditional on Conditionality: IMF Program Design and Foreign Direct Investment. *International Interactions*, 39(3):292–315, 2013. doi: 10.1080/03050629.2013.782303.

Appendix

A   Countries included in the analysis

Afghanistan, Albania, Algeria, Angola, Argentina, Azerbaijan, Bangladesh, Bolivia, Botswana, Brazil, Burkina Faso, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Ecuador, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Ghana, Guatemala, Guinea, Guyana, India, Indonesia, Iran, Iraq, Kazakhstan, Kyrgyz Republic, Laos, Liberia, Libya, Malaysia, Mali, Mauritania, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nauru, Niger, Nigeria, Pakistan, Papua New Guinea, Peru, Philippines, Romania, Russia, São Tomé e Príncipe, Senegal, Sierra Leone, South Africa, South Sudan, Sudan, Suriname, Syria, Tanzania, Thailand, Timor Leste, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Uganda, Ukraine, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe.

B   Availability of Data by Country

Table B.1 indicates the country-years that are truly missing: they did not participate in Article IV consultations. Table B.2 indicates the country-years that participated, but opposed publication, whereas Table B.3 lists the country-years that participated *and* consented to the publication of results.

Table B.1: Article IV Consultations, Delayed (as of January 2020)

Country	Year Scheduled	Year Conducted	No. Delayed
Venezuela	2005	–	15
Argentina	2007	2016	9
Eritrea	2010	2019	9
Syria	2011	–	9
Libya	2014	–	6
Ecuador	2009	2014	5
Yemen	2015	–	5
Central African Republic	2013	2016	3
Democratic Republic of the Congo	2016	2019	3
Republic of the Congo	2016	2019	3
Egypt	2011	2014	3
Equatorial Guinea	2017	–	3

| Gabon | 2018 | 2019 | 1 |

Table B.2: Article IV Consultations, Not Published

Country	No. Consultations
Turkmenistan	9
Brazil	6
Myanmar	6
Guyana	5
Thailand	4
Uzbekistan	4
Ecuador	3
Eritrea	3
Malaysia	3
Azerbaijan	2
Guatemala	2
Angola	1
Argentina	1
Egypt	1
Gabon	1
Kyrgyzstan	1
Libya	1
Mauritania	1
Suriname	1
Tanzania	1
Timor-Leste	1
Venezuela	1
Yemen	1
Zimbabwe	1

Table B.3: Article IV Consultations, Published

Country	No. Consultations

Russia	16
Indonesia	15
Kazakhstan	15
Mexico	15
Papua New Guinea	15
South Africa	15
Algeria	14
Morocco	14
Philippines	14
Botswana	13
Chile	13
China	13
Colombia	13
Ethiopia	13
India	13
Nigeria	13
Laos	12
Namibia	12
Peru	12
Trinidad and Tobago	12
Vietnam	12
Bolivia	11
Suriname	11
Albania	10
Bangladesh	10
Cameroon	10
Iran	10
Malaysia	10
Mongolia	10
Timor-Leste	10
Zimbabwe	10
Azerbaijan	9

Congo	9
Ghana	9
Pakistan	9
Sudan	9
Thailand	9
Tunisia	9
Chad	8
Equatorial Guinea	8
Liberia	8
Mauritania	8
Mozambique	8
Myanmar	8
Senegal	8
Zambia	8
Afghanistan	7
Angola	7
Brazil	7
Democratic Republic of the Congo	7
Egypt	7
Guyana	7
Iraq	7
Kyrgyzstan	7
Niger	7
Sierra Leone	7
Togo	7
Uganda	7
Ukraine	7
Burkina Faso	6
Central African Republic	6
Côte d'Ivoire	6
Gabon	6
Guatemala	6

Libya	6
Mali	6
São Tomé e Príncipe	6
Tanzania	6
Guinea	5
Syria	5
Uzbekistan	5
Yemen	5
Ecuador	4
Argentina	3
South Sudan	3
Nauru	2
Eritrea	0
Turkmenistan	0
Venezuela	0

C   Topic Models

To describe variation in the content of Staff Appraisals, we use the keyword assisted topic model (keyATM) developed by Eshima et al. (2020). Like other topic models, the keyATM assumes that each document d (out of a total of D documents) contains N_d words, out of a total of V unique words, which in turn belong to K topics. We can observe the words, but not the topics: they are latent, and the goal of the model is to identify the distribution of the latent topics underlying each document.

Unlike other topic models, the keyATM allows us to distinguish between keyword topics, $\tilde{K}$, and no-keyword topics, $K - \tilde{K}$. For each keyword topic k, we provide L_k keywords; the remaining $K - \tilde{K}$ no-keywords topics are "residual" topics that the model identifies on its own. Table C.1 displays the keywords we use to generate our $\tilde{K}$ topics of interest.

Fo each word i in document d, each topic $z_{di} \in \{1, 2, ...K\}$ follows a categorical distribution

$$z_{di} \sim \text{Categorical}(\theta_d), \tag{1}$$

where θ_d is a K-dimensional vector, following a Dirichlet distribution with parameter α (discussed below), $\sum_{k=1}^{K} \theta_{dk} = 1$. The value of θ_d is the main outcome of interest: it is a document-topic distribution that represents the relative proportion of each topic for document d. If the sampled topic z_{di} is a no-keyword

Table C.1: Keywords Used to Generate Each Topic

Natural Resources	oil, gas, petroleum, miner, mine, extract, fuel, gasolin, refin, commod
Fiscal Policy	fiscal, revenu, custom, tax, expenditur, budget, budgetari, balanc, debt, arrear, liabil, indebted, extern, loan, credit, bond, borrow, spend
Monetary Policy	exchang, fix, float, peg, appreci, depreci, interest, inflat, devalu, cpi, financi, financ, bank, monetari
External Issues	import, export, exchang, current, capit, account, reserv

topic, each word w_{di} is distributed as follows:

$$w_{di}|z_{di} = k \sim \text{Categorical}(\phi_k) \text{ for } k \in \{\tilde{K}+1, \tilde{K}+2, ..., K\}, \tag{2}$$

where ϕ_k is a V-dimensional vector representing the relative frequency of each word within topic z_{di} (Eshima et al., 2020, 4). If, however, the sampled topic z_{di} is a keyword topic, the distribution of each word w_{di} follows two steps. First, we draw the random variable

$$s_{di}|z_{di} = k \sim \text{Bernoulli}(\pi_k) \text{ for } k \in \{1, 2, ..., \tilde{K}\}, \tag{3}$$

where π_k is the success probability for word w_{di} (that is, the probability that this word will be sampled). Second, if s_{di} equals 0, the word w_{di} is distributed as follows:

$$w_{di}|s_{di}, z_{di} = k \sim \text{Categorical}(\phi_k) \text{ for } k \in \{1, 2, ..., \tilde{K}\}. \tag{4}$$

If s_{di} equals 1, w_{di} is distributed as follows:

$$w_{di}|s_{di}, z_{di} = k \sim \text{Categorical}(\tilde{\phi}_k) \text{ for } k \in \{1, 2, ..., \tilde{K}\}. \tag{5}$$

where $\tilde{\phi}_{z_n}$ is a V-dimensional vector of probabilities for the keyword list V_k. This means that L_k elements (the keywords) have positive values, and the remaining elements in V are 0. A single word w_{di} can belong to multiple topics, since topics are not strictly independent from one another.

The R package keyATM, developed by Eshima et al. (2020), uses the following default values:

$$\pi_k \sim \text{Beta}(1, 1) \text{ for } z_n = \{1, 2, ..., \tilde{K}\} \tag{6}$$

$$\phi_k \sim \text{Dirichlet}(0.01) \text{ for } z_n = \{1, 2, ..., \tilde{K}\} \tag{7}$$

$$\tilde{\phi}_k \sim \text{Dirichlet}(0.1) \text{ for } z_n = \{1, 2, ..., \tilde{K}\} \tag{8}$$

$$\theta_d \sim \text{Dirichlet}(\alpha) \text{ for } d = \{1, 2, ..., D\} \tag{9}$$

$$\alpha_k \sim \begin{cases} \text{Gamma}(1,1) & \text{for } k = \{1, 2, ..., \tilde{K}\} \\ \text{Gamma}(1,2) & \text{for } k = \{\tilde{K}+1, \tilde{K}+2, ..., K\} \end{cases} \tag{10}$$

As long as sample size is large, the choice of hyper parameters is not important — with the exception of π_{z_n}, which controls the weight of keywords and has a non-informative prior, Beta$(1,1)$.

D The Effects of Scheduling, Conducting, and Publishing Article IV Consultations

In line with the three stages identified by Figure 4, we examine how scheduling, conducting, or publishing an Article IV consultation at time $t-1$ affects the odds of passing natural resource policy at time t, across all country-year pairs. In Table D.1, the key independent variables are dichotomous indicators of whether a country scheduled, conducted, and published an Article IV consultation each year. Models 1 and 2 show that *scheduling* a consultation (which happened in 834 out of 1,273 country-years) does not in itself have a significant effect on the outcome of interest. Likewise, Models 3 and 4 show that *conducting* a consultation does not have a significant effect: all else equal, we are not significantly more likely to observe natural resource policy passage following the 760 country-years in which Article IV consultations took place. Lastly, publication does not appear to have a significant effect either (according to Models 5 and 6). Overall, we find these results to be encouraging: whatever it is that makes some countries agree to participation or publication and others oppose it, this is not meaningfully associated with the outcome we seek to explain.

Table D.1: Predictors of Policy Passage, 2004–2019 (Logistic Regressions)

	Dependent variable:					
	Policy Passage					
	(1)	(2)	(3)	(4)	(5)	(6)
Consultation Scheduled = 1	0.138	0.139				
	(0.155)	(0.141)				
Consultation Conducted = 1			0.212	0.174		
			(0.155)	(0.140)		
Consultation Published = 1					−0.059	−0.091
					(0.169)	(0.130)
Technocratic Minister = 1		0.690**		0.680**		0.766***
		(0.273)		(0.274)		(0.268)
FDI Performance Index		0.189***		0.189***		0.195***
		(0.015)		(0.015)		(0.016)
Years Under IMF Program		0.146***		0.146***		0.154***
		(0.036)		(0.036)		(0.037)
Previous Policy = 1		−4.551***		−4.532***		−4.571***
		(0.278)		(0.277)		(0.282)
IMF Program = 1		0.503***		0.513***		0.431***
		(0.150)		(0.147)		(0.147)
Oil Price Index		−0.006***		−0.006***		−0.006***
		(0.001)		(0.001)		(0.001)
Field Discovery = 1		0.298		0.303		0.262
		(0.243)		(0.244)		(0.241)
Resource Rents (% GDP)		−0.048***		−0.048***		−0.051***
		(0.008)		(0.008)		(0.008)
GDP per Capita (log)		1.481***		1.514***		1.629***
		(0.272)		(0.277)		(0.273)
GDP Growth (%)		−0.114***		−0.114***		−0.113***
		(0.010)		(0.010)		(0.010)
Polity2		−0.276***		−0.271***		−0.286***
		(0.024)		(0.023)		(0.025)
Protest Count		0.008**		0.008**		0.008**
		(0.003)		(0.003)		(0.003)
Ideal Point Similarity w/ US		0.219		0.215		0.164
		(0.222)		(0.223)		(0.220)
Constant	−3.586***	−12.592***	−3.620***	−12.816***	−3.501***	−13.642***
	(0.074)	(2.093)	(0.075)	(2.125)	(0.068)	(2.086)
Observations	1,273	912	1,273	912	1,273	912
Log Likelihood	−104.387	−55.390	−104.305	−55.438	−104.467	−55.461

This table reports the results of penalized likelihood models with third-order polynomials, country fixed effects, and standard errors clustered by country. Coefficients represent log odds. *p<0.1; **p<0.05; ***p<0.01

E Sensitivity Analysis

When examining the predictors of policy passage, as we do in Tables 3 and 4, endogeneity is our primary concern. After all, topic proportions might not have a direct effect on our outcome of interest; rather, governments might be more likely to talk about the natural resource sector *and* more likely to pass natural resource policy in years of oil field discovery, or when the incumbent Finance Minister is someone who received a graduate degree from a US economics department. Since we cannot quantify a country's ex ante willingness to reform, we cannot exclude the possibility that other factors predict both topic proportions and the choice to pass natural resource policy.

In the main text, we address this issue by examining variation within countries, since we believe that a closer look at recent cases of oil field discovery helps identify the mechanism at work. But we can also use sensitivity analysis to assess the robustness of the between-country results reported in Tables 3 and 4. In other words, we can quantify how sensitive the effect of *Natural Resource Topic* on *Policy Passage* is to unobserved confounding: how strong would confounders need to be for our main results to be disproved?

All available implementations of sensitivity analysis are designed for OLS. To perform a sensitivity analysis, then, we first convert our logistic regression with full controls and without interactions (Model 2 in Table 3) into a linear probability model estimated with OLS (Model 1 in Table E.1). This alternative estimation strategy supports our main conclusion: topic proportions have a positive and significant effect on the outcome of interest, though the coefficients are quite small (after all, our outcome of interest is a rare event).

Having re-estimated our main results, we use the R package `sensemakr`, developed by Cinelli and Hazlett (2020), to investigate how our estimate of the treatment variable *Natural Resource Topic* is sensitive to unobserved confounders. Table E.2 reports the estimated coefficient (0.003) for *Natural Resource Topic* as well as its standard error (0.002) and t-value (1.817). The table then presents three sensitivity statistics.

The first sensitivity statistic is the partial R^2 of the treatment with the outcome (0.8%). In an extreme scenario, an unobserved confounder that explains 100% of the residual variance in the outcome would need to explain at least 0.8% of the residual covariance of the treatment to fully account for the observed estimated effect.

The second sensitivity statistic is the robustness value ($RV_{q=1}$) required to reduce the estimate to zero, which corresponds to a bias of 100% of the original estimate. In order to explain away all the observed effect of the treatment *Natural Resource Topic* on the outcome *Policy Passage*, we would need unobserved confounders that explain at least 8.3% of the residual variance of both treatment and outcome.

The third sensitivity statistic is the robustness value for testing the null hypothesis that the coefficient

Table E.1: Predictors of Policy Passage, 2004–2019 (Ordinary Least Squares)

	Dependent variable:
	Policy Passage
Natural Resource Topic (%)	0.003*
	(0.002)
Technocratic Minister = 1	−0.013
	(0.021)
FDI Performance Index	0.008***
	(0.002)
Years Under IMF Program	0.004
	(0.003)
Previous Policy = 1	−0.136***
	(0.025)
IMF Program = 1	0.013
	(0.016)
Oil Price Index	0.001
	(0.001)
Field Discovery = 1	0.012
	(0.020)
Resource Rents (% GDP)	−0.001
	(0.001)
GDP per Capita (log)	0.048
	(0.053)
GDP Growth (%)	−0.002
	(0.001)
Polity2	−0.004
	(0.004)
Protest Count	−0.001
	(0.001)
Ideal Point Similarity w/ US	0.025
	(0.027)
Constant	−0.334
	(0.307)
Observations	529
R^2	0.239

This table reports the results of linear regressions with country and year fixed effects. *p<0.1; **p<0.05; ***p<0.01

of *Natural Resource Topic* is zero ($RV_{q=1,\alpha=0.05}$). If the unobserved confounder explains more than 0% of the residual variance of both the treatment and the outcome, it is strong enough to bring the estimate of *Natural Resource Topic* to a range where it is no longer statistically different from zero (at the significance level of $\alpha = 0.05$).

These values indicate what we would need to now in order to safely rule out confounders that could be problematic. We now contrast these values to the effect of the observed benchmark covariate *Resource Rents*. In other words, we investigate the maximum strength of an unobserved confounder that is once, twice, or three times as strong as *Resource Rents* in explaining outcome variation ($R^2_{Y\sim Z|\mathbf{X},D}$) and treatment variation ($R^2_{D\sim Z|\mathbf{X}}$). These values are below the RV, suggesting that even a very strong confounder would not be able to overturn our findings.

Table E.2: Minimal Reporting on Sensitivity to Unobserved Confounders, Benchmark: Resource Rents

		Outcome: *Policy Passage*				
Treatment	Est.	S.E.	t-value	$R^2_{Y\sim D|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
Natural Resource Topic	0.003	0.002	1.817	0.8%	8.3%	0%
df = 436; *Bound (1x Resource Rents)*: $R^2_{Y\sim Z|\mathbf{X},D} = 0.2\%$, $R^2_{D\sim Z|\mathbf{X}} = 0.1\%$						
df = 436; *Bound (2x Resource Rents)*: $R^2_{Y\sim Z|\mathbf{X},D} = 0.4\%$, $R^2_{D\sim Z|\mathbf{X}} = 0.3\%$						
df = 436; *Bound (3x Resource Rents)*: $R^2_{Y\sim Z|\mathbf{X},D} = 0.6\%$, $R^2_{D\sim Z|\mathbf{X}} = 0.4\%$						

Figure E.1: Sensitivity Contour Plots in the Partial R^2 Scale, Benchmark: Resource Rents
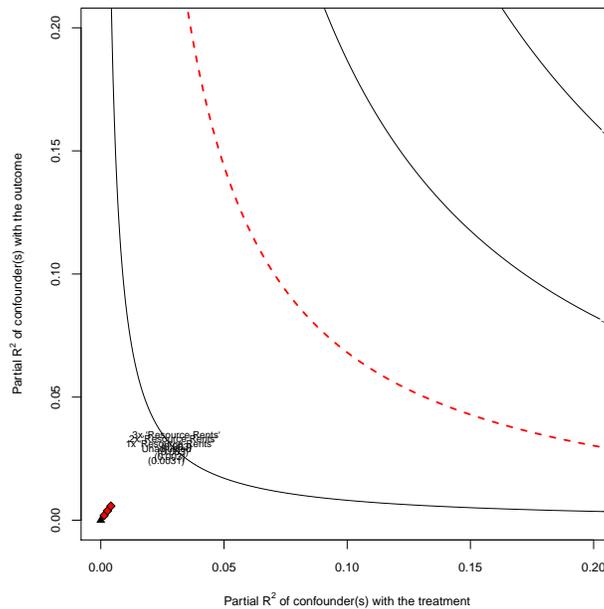
This figure shows the sensitivity contour plot of the point estimate for *Natural Resource Topic*, including unobserved confounders with the hypothetical strength of once, twice, or three times the value of *Resource Rents*. Note that these hypothetical estimates (in red) practically overlap with the unadjusted estimate (in black).

Figure E.1, also generated using R Cinelli and Hazlett's package, helps us grasp the meaning of these

results. The x-axis shows the hypothetical residual share of variation of the treatment explained by un-observed confounding ($R^2_{D \sim Z|\mathbf{X}}$), whereas the y-axis does the same for the residual share of variation of the outcome explained by unobserved confounding ($R^2_{Y \sim Z|\mathbf{X},D}$). The contours show what would be the estimates for *Natural Resource Topic* if we were to include unobserved confounders that have once, twice, or three times the strength *Resource Rents*. The dashed red line indicates combinations of values that would shrink the estimated effect of *Natural Resource Topic* to zero. Figure E.1 shows that the unadjusted effect of topic proportions is robust to the inclusion of unobserved confounders that are once, twice, or three times as strong *Resource Rents*, giving us more confidence that our findings are not a function of omitted variables.

In Table E.3 and Figure E.2, we repeat this analysis using *Technocratic Minister* (rather than *Resource Rents*) as a benchmark covariate, finding again that our results are robust to the inclusion of unobserved variables with effects that are one, two, or three times as strong as the effect of *Technocratic Minister.*

Table E.3: Minimal Reporting on Sensitivity to Unobserved Confounders, Benchmark: Technocratic Minister

			Outcome: *Policy Passage*			
Treatment	Est.	S.E.	t-value	$R^2_{Y \sim D|\mathbf{X}}$	$RV_{q=1}$	$RV_{q=1,\alpha=0.05}$
Natural Resource Topic	0.003	0.002	1.817	0.8%	8.3%	0%

df = 436; *Bound (1x Technocratic Minister)*: $R^2_{Y \sim Z|\mathbf{X},D} = 0.1\%$, $R^2_{D \sim Z|\mathbf{X}} = 0\%$
df = 436; *Bound (2x Technocratic Minister)*: $R^2_{Y \sim Z|\mathbf{X},D} = 0.2\%$, $R^2_{D \sim Z|\mathbf{X}} = 0\%$
df = 436; *Bound (3x Technocratic Minister)*: $R^2_{Y \sim Z|\mathbf{X},D} = 0.2\%$, $R^2_{D \sim Z|\mathbf{X}} = 0\%$

Figure E.2: Sensitivity Contour Plots in the Partial R^2 Scale, Benchmark: Technocratic Minister
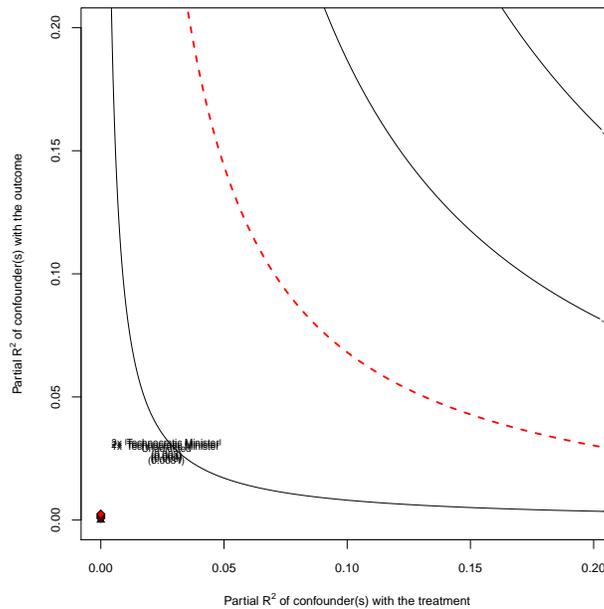
This figure shows the sensitivity contour plot of the point estimate for *Natural Resource Topic*, including unobserved confounders with the hypothetical strength of once, twice, or three times the value of *Technocratic Minister*. Note that these hypothetical estimates (in red) practically overlap with the unadjusted estimate (in black).