

# Farmers Unite! Political Mobilization and Africa's Rural Producer Organizations

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## Abstract

How do African farmers engage in the political process? I argue rural producer organizations (RPOs), civil society organizations bringing together farmers, mobilize their membership to engage in the political process. I use a mixed-methods approach in developing and considering my argument. First, I draw on qualitative evidence from a prominent case, Côte d'Ivoire, to outline several mechanisms by which RPOs engage in politics. Specifically, I show evidence of RPOs mobilizing members through their use of public statements, their incorporation into political coalitions, and by organizing protests and demonstrations. These qualitative insights inform a second, quantitative analysis of nearly 25,000 individual Afrobarometer survey responses from 18 countries. RPO members are more likely to vote, be approached with vote-buying offers, demonstrate, and join others in raising issues, even after controlling for potential selection criteria. Finally, consistent with my argument and available qualitative evidence, RPOs are more likely to mobilize their members in both incumbent strongholds and regions of higher RPO membership density, and engage in demonstrations in parts of the country less friendly to the incumbent government. Increasing democratic reforms in Africa give organizations like RPOs new opportunities to advocate for their members by making use of political strategies.

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\*All errors are my own.

With just over a month remaining until Côte d'Ivoire's October 2020 presidential election Hamed Bakayoko, Prime Minister and leading campaign surrogate for incumbent president Alassane Ouattara, attended an annual meeting of 500 rural producer organizations in Yamoussoukro. This year's meeting had clear goals: celebrate Ouattara's agricultural record and voice support for his re-election (CICG-Côte d'Ivoire, 2020). "Soon, we will go to the polls. You can count on the farmers," declared Soro Pégouétirgué, leader of a large national producer organization (Célestin, 2020).<sup>1</sup> At the meeting, Bakayoko announced that the government would give out 20 million CFA francs and other gifts to producer organizations. Across the country, there are nearly 4,000 RPOs, helping farmers of cash crops and food crops alike secure inputs and market their agricultural products, and over 42 percent of Ivoirians live in a community with at least one active RPO.

I argue these organizations do more than provide agricultural support. They also mobilize farmers into the political process. This mobilization helps RPO members access benefits allocated through political channels. Although this point may seem obvious, little research has considered these organizations' political impacts. In this paper, I show that RPOs are large, present across Africa, and that their members are more likely to vote, be approached with vote buying offers, demonstrate, and join others in raising issues.

Despite the central role agriculture continues to play in African life, and the powerful position of RPOs within this influential sector, contemporary accounts of African politics largely ignore organizations organizing agricultural producers. Instead, when observers consider the institutional roots of rural Africa, they often focus on the organizing ability of traditional chiefs, ethnic groups, religious organizations, and political parties. However, these accounts overlook that the median African lives in a rural community working in agriculture, and a dense web of organizations exist to support them in this work.

Across Africa, RPOs organize farmers. They recruit members, provide goods and services, and use political strategies to extract benefits from governments. They exist in many

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<sup>1</sup>Literally, «Bientôt, nous irons aux élections. Vous pouvez compter sur les agriculteurs.»

settings, attract a diverse membership, and grow every type of crop. I begin by reviewing the literature on salient political groups in Africa. I then outline RPOs as a distinct class of actors, describing their structure, activities, and other salient organizational features. Next, I draw on qualitative evidence from Côte d'Ivoire to describe how RPOs can interact with the political process. This includes public statements by Ivorian RPO leaders supporting candidates, political coalitions incorporating RPO leaders, and public demonstrations organized by RPOs targeting political institutions. Highlighting the strategic nature of these interactions, I also show that RPO leaders are willing to switch political coalitions. These qualitative insights inform a theory of RPO political behavior, in which RPOs mobilize their members during elections and in acts of collective political action to pressure governments.

Empirically I test for several observable implications of this theory using 25,000 Afro-barometer survey responses from 18 countries. I begin with an inductive analysis of the covariates associated with RPO membership to begin unpacking potential selection effects. Next, controlling for country fixed-effects and variables associated with membership, I show that members are more likely to vote, say they were approached with a vote-buying offer, demonstrate, and join others in raising issues. These results are robust to alternative specifications, and a sensitivity analysis suggests they are unlikely to result from unobserved confounds. I extend these results in several ways to substantiate a political mobilization mechanism. First, RPO members in areas with greater RPO density are most likely both to receive vote-buying offers and say they will vote in blocs for or against the incumbent executive. Second, RPO membership interacts with incumbent and opposition electoral strength in patterning how RPO members are mobilized. Among RPO members, an increasing share of the incumbent vote in the previous election is associated with a higher likelihood of vote-buying offers, while the opposite relationship holds among non-members. When it comes to organizing protests and demonstrations, however, a different pattern emerges. Instead, increasing incumbent vote shares are associated with decreasing likelihood of demonstrating among RPO members, while having no effect among non-members. These results suggest

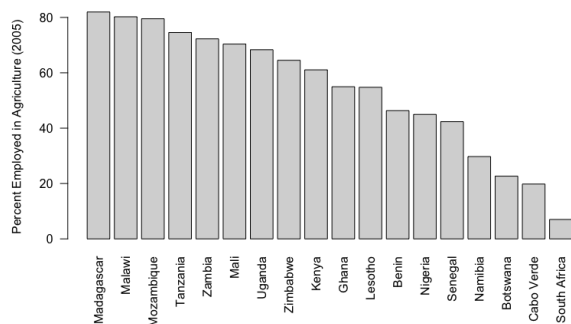


Figure 1: Percentage Workforce Employed in Agriculture, 2005 (WDI)

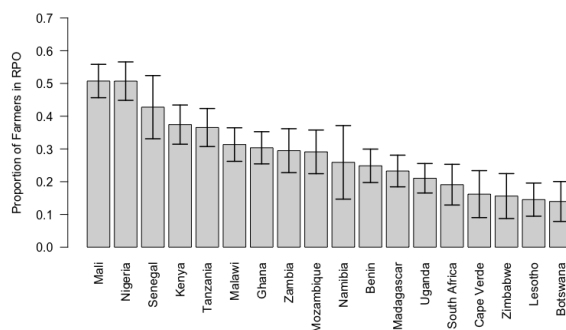


Figure 2: RPO Membership by Country, Afrobarometer Round 3

not only that RPOs mobilize their members, but that when, where, and how they do so is contingent on local social and electoral geography.

This article makes several contributions. I provide evidence of specific processes used by a particular kind of civil society organization to engage in the political process. This is important given the belief that a vibrant civil society can contribute to democratic consolidation across the continent (Bleck and Walle, 2018; LeVan, 2011; Lynch and Crawford, 2011). Next, I conceptually develop RPOs as distinct actors deserving attention in the study of contemporary African politics. While scholars problematize these organizations in more developed democracies, accounts of African politics largely ignore their contributions to political life. Finally, this is the first paper to systematically combine quantitative and qualitative evidence to show empirically the political significance of RPOs across Africa. This pushes forward a literature largely reliant on qualitative observations from select cases.

## 1 Politically Salient Groups in sub-Saharan Africa

The median African household lives in a rural community and works in agricultural production (see Figure 1). Given the considerable share of Africa’s population engaged in agricultural production and the presence of RPOs throughout the continent (see Figure 2), it is surprising that scholars give so little attention to the potential political role of RPOs. In-

stead, Africanist scholars typically emphasize the role of ethnic groups, political parties, and traditional institutions in shaping political behavior, giving less attention to the potential role of groups with membership based on economic or employment criteria. Although other politically salient groups are undoubtedly relevant to understanding contemporary African politics, by ignoring RPOs we are left with an incomplete picture.

Ethnic groups are the most commonly studied political group in contemporary African politics. A rich empirical tradition outlines how ethnicity influences the decisions of both political elites and the general public for both expressive (Horowitz, 1985) and instrumental reasons. Experimental evidence suggests African voters prefer co-ethnic politicians (Adida, 2015; Long and Gibson, 2012), while observational studies suggest that politicians favor co-ethnics with distributive benefits (Ejdemyr, Kramon and Robinson, 2017; Ichino and Nathan, 2013). Ethnic groups are not always a good foundation for political coalitions, however. Politicians are constrained in their ability to manipulate ethnicity, particularly when competing elites are of the same ethnicity. Ethnic groups themselves may be unorganized, diffuse, or have fuzzy boundaries. Finally, a country's ethnic landscape may frustrate attempts at constructing ethnic coalitions due to ethnic fractionalization or fragmentation.

In addition to ethnic groups, researchers also focus on political parties. Historically, academic debates focused on the role of dominant political parties and the transition towards multi-party politics (Mozaffar, Scarritt and Galaich, 2003). However, today there is considerable variation in African party systems, and party systems interact with a country's demographic composition and electoral institutions (Elischer, 2013; Wahman, 2017). As a result, debates on African political parties have, in part, shifted to how individuals interact with parties and how partisanship motivates individual political decisions (Bratton, 2012).

Recently scholars have given more attention to traditional institutions as political actors. Some, such as Mamdani (1996) consider them "decentralized despots" who can capture economic rents at the local level (Acemoglu, Reed and Robinson, 2014). Others, such as Baldwin (2016), strike a more optimistic tone, labeling traditional chiefs "development brokers" who

can work with local politicians in the coproduction of public goods. Traditional chiefs are often embedded in clientelist webs, mobilizing voters to the polls (de Kadt and Larreguy, 2018; Koter, 2013). Still, the existence of traditional institutions varies across sub-Saharan Africa, and political elites may prefer not to deal with traditional institutions that can play a role in mediating between state and society.

Researchers less frequently consider the political role of other organizations structuring African economic and social life. Early work often described African civil society as weak and dependent on the state (see Bratton, 1989, for a summary), although some challenge this view (e.g. Tripp, 1998). Other organizations, such as women's groups or trade unions, receive attention only in particular cases or contexts. In Zambia, well-organized union branches advocated for their members' material well-being (Bates, 1971), and unions have influenced the development of opposition parties (LeBas, 2011).

Agriculture and producer organizations once played a prominent role in political analyses of sub-Saharan Africa. Bates's (1981) seminal work describing how agricultural marketing boards extracted surpluses from rural communities is one well-known example of this tradition, but Bates's (1976) earlier work outlining the inefficiency of government attempts to build market-institutions in rural communities also exemplifies this approach. Elsewhere, Bratton (1980) explored the creation, capture, and inefficiencies of Zambian local development institutions, and Barkan and Holmquist (1989) argued Kenyan self-help organizations played an essential role in patterning political competition. Unfortunately, contemporary accounts of African politics often fail to build on these earlier insights. This paper revisits this earlier tradition in a more modern context, where civil society organizations experience greater independence from government interference.

## **1.1 Anatomy of an African Rural Producer Organization**

RPOs are formal, member-controlled organizations consisting of agricultural producers. They exist across the continent and go by different names depending on the local context

(Wanyama, Develtere and Pollet, 2009).<sup>2</sup> They focus on economic issues, with a primary goal of increasing their membership's returns from farming (Carson, 1977).

These organizations provide their members with a variety of goods and services to realize this goal. These activities help stabilize or increase crop prices, increase yields, and reduce input costs. RPOs improve producer prices by communicating market prices (Bernard and Spielman, 2009), directly purchasing products (Bernard and Spielman, 2009; Mojo, Fischer and Degefa, 2017), and providing marketing services (Barham and Chitemi, 2009; Fischer and Qaim, 2012; Orsi et al., 2017; Ragasa and Golan, 2014). They can lower production costs by facilitating access to fertilizer, pesticide, and seed markets, lowering costs through bulk purchases (Bernard and Spielman, 2009; Mojo, Fischer and Degefa, 2017; Orsi et al., 2017; Ragasa and Golan, 2014). Some RPOs even provide financial services, giving access to credit and reducing lending costs (Orsi et al., 2017; Ragasa and Golan, 2014).

While influencing prices is a major RPO activity, they also provide other services. These include disseminating information such as weather forecasts, which allow farmers to time planting to maximize yields, and training on best practices (Bernard and Spielman, 2009; Fischer and Qaim, 2012; Orsi et al., 2017; Ragasa and Golan, 2014). In addition, some RPOs manage common-pool resources (Orsi et al., 2017) or invest in public goods like schools and local markets (Mojo, Fischer and Degefa, 2017). RPOs may also engage in other non-agricultural activities, either economic, educational, or social in nature, but these activities are not essential to the organization.

Governments supply some of the goods and services RPOs provide their members. This includes subsidized inputs (Bates, 1989; Murisa, 2011; Verhofstadt and Maertens, 2014), extension agents (Abebaw and Haile, 2013; Bratton, 1986; Negri and Porto, 2016), access to public land or more secure land rights (Murisa, 2011; Verhofstadt and Maertens, 2014), and privileged access to regulated markets (Bratton, 1986; Negri and Porto, 2016). At times RPOs are depicted as organized interests lobbying or engaging in policy advocacy (Latynskiy

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<sup>2</sup>These names include agricultural cooperatives, farmers' associations, farmers' organizations, farmers' unions, farming clubs, groupements, and related translations.

and Berger, 2016; Orsi et al., 2017) similar to organized interests in older democracies. However, these accounts mainly build on anecdotal observations from single cases.

Farmers join RPOs for several reasons (Soboh et al., 2009). Membership is voluntary and typically not restricted due to age, sex, or ethnicity. However, organizations may exclude members for financial reasons (e.g., being unable to or refusing to pay dues or make other financial contributions to the organization) or for reasons directly related to agricultural production (e.g., only producers of specific crops or a certain size may join certain organizations). Farmers may choose to join RPOs in a belief that members can get better prices for crops and inputs, that membership grants access to services farmers might find difficult to get elsewhere, or that RPOs help reduce uncertainty and manage risk.<sup>3</sup>

There is disagreement over which variables predict RPO membership. For example, single-country studies in Kenya (Fischer and Qaim, 2012) and Ethiopia (Bernard and Spielman, 2009; Mojo, Fischer and Degefa, 2017) find individual-level factors like wealth, age, education, family size, property value, and social network size correlate with membership. On the other hand, Fischer and Qaim (2014) find individual-level characteristics are largely irrelevant, instead finding that RPO-level variation matters much more.

While their genesis may be tied to governments or other NGOs, RPOs are themselves member-controlled (LeVay, 1983). In theory, elected leadership or professional staff accountable to leadership governs the organization, with leadership elections being democratic affairs. In practice, “big men” and other local elites may dominate organizations. RPOs may be affiliated with one another or with organizations occupying different parts of the value chain.<sup>4</sup> Often, RPOs are legally required to register with an appropriate governing body and are subject to any relevant government regulations or national laws.<sup>5</sup>

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<sup>3</sup>Farming is a risky endeavor, mainly when farmers are dependent on uncertain seasonal rainfall or when they must make specific investments in crops that may not bear any product for months or years (Hendrikse and Veerman, 2001). RPOs internalize some of this uncertainty by giving out benefits tied to overall group production (Valentinov, 2007).

<sup>4</sup>For example, an organization of cashew farmers may affiliate with an organization of cashew processors in an interprofessional organization.

<sup>5</sup>These may include limits on financial dues, limits on sanctions leadership are allowed to impose on membership, regulations over how leadership can be selected, etc.



Recently RPOs have received attention from the development community as a potentially important actor in improving agricultural value chains (Orsi et al., 2017; Wedig and Wiegratz, 2018). Research from Ethiopia (Getnet and Anullo, 2012; Mojo, Fischer and Degefa, 2017), Kenya (Fischer and Qaim, 2012), Rwanda (Verhofstadt and Maertens, 2014), Uganda (Latynskiy and Berger, 2016) and Zambia (Bratton, 1986) suggest RPOs improve livelihoods by increasing incomes and savings, while also reducing input costs and improving access to agricultural services. Others show that RPO members are more likely to adopt improved agricultural technologies (Abebaw and Haile, 2013; Fischer and Qaim, 2012).

## 2 RPOs and Ivorian Politics

To better understand how RPOs mobilize their members and influence political outcomes, I draw on qualitative evidence from Côte d'Ivoire. Côte d'Ivoire is one of Africa's largest producers of cashews, cocoa, cotton, rubber, and other agricultural commodities.<sup>6</sup> At independence in 1960, over 80 percent of Ivorians lived in rural communities, and half of the GDP came from the agricultural sector.

RPOs have a rich political history in Côte d'Ivoire. In 1944, to weaken pro-Vichy France settlers, Côte d'Ivoire's newly appointed colonial governor André Latrille legalized one of the first formal organizations for African farmers in sub-Saharan Africa, the Syndicat Agricole Africain (SAA). In 1945 Félix Houphouët-Boigny, who later became the country's first president, was elected to the French Assembly by employing the SAA's machinery to coordinate Ivoirian voters, even using SAA membership lists to mobilize supporters (Zolberg, 1964). Eventually, the Parti Démocratique de la Côte d'Ivoire (PDCI) formed as an outgrowth of the SAA and ruled Côte d'Ivoire as a single-party state until the early 1990s. Since Houphouët-Boigny's death in 1993 the three most important political actors in the country have been Henri Konan Bédié and the PDCI, Laurent Gbagbo and

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<sup>6</sup>The country also grows fruits such as bananas and pineapples for export and various food crops primarily for domestic consumption.

the Front Populaire Ivoirien (FPI), and Alassane Ouattara and the Rassemblement des Républicains/Rassemblement des Houphouëtistes pour la Démocratie et la Paix (RDR/RHDP).

Following independence, the Houphouët-Boigny government passed laws in 1966, 1972, and 1977 providing a legal framework for RPOs, most notably so-called *Groupements de Vocation Coopérative* (GVCs). Participation in these organizations was voluntary, and most farmers who did not feel they would benefit chose not to join (Boone, 1995, 456). The government gave some help and encouragement to RPOs. However, a confusing institutional environment prevented effective government action, and instead, government action in the countryside often worked through parastatal organizations (Woods, 1999, 493-4).

After economic restructuring in the 1990s, new legislation liberalized regulations on producer organizations. As a result, government support for existing RPOs disappeared. However, new organizations flourished as taxes levied on producer organization surpluses and other regulations disappeared (N’Goran, 2012; Woods, 1999). These new organizations often had implicit or explicit ties to different political parties (Bassett, 2001; Woods, 1999)<sup>7</sup>, or as a means for local elites to organize networks of support (Boone, 2003). Today RPOs exist throughout Côte d’Ivoire, typically organized at the local level around specific crops. The *Répertoire des Sociétés Coopératives* published by the Ivoirian Ministry of Agriculture lists over 3,800 organizations across the country (See Figure 3). They perform various services, including marketing, processing, storing, and transporting agricultural goods.

To demonstrate political mobilization by RPOs, I consider the following evidence: public pronouncements by RPO leadership, the formal incorporation of RPOs and RPO leaders into political coalitions, and public protests or demonstrations organized by RPOs targeting political actors. To highlight the strategic nature of these actions, I also provide examples of leaders switching political coalitions.

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<sup>7</sup>Woods (1999), for example, describes how in the 1990s RPOs in Côte d’Ivoire competed with one another to become the voice of rural interests and were popularly perceived as allies of different political parties, most notably between the opposition FPI and the Syndicat National des Agriculteurs de Côte d’Ivoire.

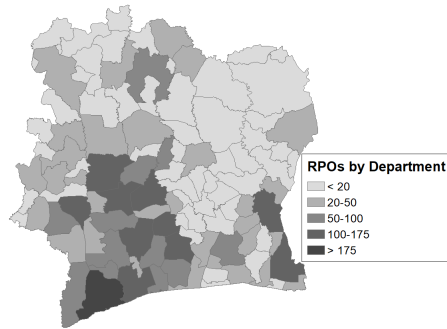


Figure 3: Number of RPOs by Ivorian Department



Figure 4: Ouattara Tweeting RPO Leader Support

## 2.1 Public Pronouncements by RPO Leaders

The strongest evidence of RPOs mobilizing their members are public pronouncements by RPO leadership. These statements provide guidance on how leadership wants RPO members to act, and their public nature suggests it is not cheap talk. Moreover, they make statements galvanizing their members in several contexts, most notably during electoral campaigns.

In the run-up to Côte d'Ivoire's 2010 election, several prominent RPOs declared their support for leading candidates. A pivotal election following years of conflict and instability, for the first time Bédié, Gbagbo, and Ouattara would all compete in the same poll.<sup>8</sup> After Bédié came in third place in the first round, with Gbagbo and Ouattara advancing to the run-off, RPO leaders such as N'Gouan Aka Mathias (see Figure 4), who supported Bédié in the first round (Diarrassouba, 2009), came out in support of Ouattara in the run-off. “The time for procrastination is over, let’s all vote for [Ouattara],” declared Mathias.<sup>9</sup>

In 2015, after striking a deal with Bédié and the PDCI, Ouattara ran for re-election largely unopposed.<sup>10</sup> Some RPO leaders who traditionally supported the PDCI were dissat-

<sup>8</sup>Ivorian presidential elections are conducted under a two-round majoritarian system.

<sup>9</sup>At the time Mathias was leader of both the Organisation Centrale des Producteurs d'Ananas et de Bananes (OCAB) and the Association Nationale des Organisations Professionnelles de Côte d'Ivoire (ANOPACI), an organization bringing together producers of several crops and commodities.

<sup>10</sup>The so-called «L'appel de Daoukro » or call of Daoukro after Bédié's hometown, an agreement between the two leaders in which Bédié agreed not to contest the election, and that they would present a joint list of candidates for the 2016 Ivorian parliamentary election.

ified with this deal and attempted to recruit former Ivorian diplomat Amara Essy as their presidential candidate (BBC News, 2014). Two of the most outspoken of these RPO leaders were Christophe Douka, leader of the Syndicat National des Producteurs Individuels de Café et Cacao en Côte d’Ivoire (SNAPRICC-CI), and Bilé Bilé, leader of the Coordination Nationale des Planteurs de Côte d’Ivoire (CNPCI), who had supported Ouattara in the 2010 campaign (Kouassi, 2015*b*). In a statement five months ahead of the 2015 election Douka (2015) stated, “...the Ivorian agricultural world will present an organization which will bring together all the agricultural associations worthy of their name for the benefit of the election of Essy Amara...”<sup>11</sup> In October, after Essy dropped out, Bilé Bilé and his allies switched back to supporting Ouattara’s re-election, “dear colleagues, in this decisive choice, we urge you and your families to go to the polls and overwhelmingly give your vote to the RHDP candidate Alassane Ouattara.” (Bilé, 2015)<sup>12</sup> Other leaders remained steadfast in their support of Ouattara’s re-election, such as Boti Bi Zoua of the Association Nationale des Producteurs de Café-Cacao de Côte d’Ivoire (ANAPROCI) (Kouassi, 2015*a*).

## 2.2 Organizing Demonstrations

Ivorian RPO leaders also make public demands and mobilize their members outside of elections. This can be seen in RPOs organizing demonstrations, protests, and strikes targeting political institutions. Cocoa farmers have the most extensive history of organizing strikes or demonstrations, shutting down the Ivorian ports of Abidjan and San Pedro on several occasions. During these demonstrations, leaders had clear and addressable demands.

For example, in early 2017, Ivorian cocoa farmers were upset over cocoa prices and perceived mismanagement of the government body overseeing coffee and cocoa producers.

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<sup>11</sup>Literally, «Pour joindre l’acte à la parole, dans les prochains jours le monde agricole ivoirien va vous présenter l’organisation qui va fédérer toutes les associations agricoles dignes de ce nom au profit de l’élection du ministre ESSY AMARA à la prochaine élection présidentielle.»

<sup>12</sup>Literally, «Chers collègues, dans ce choix décisif, nous vous invitons instamment, vous et vos familles à vous présenter aux urnes afin d’accorder massivement votre suffrage au candidat du RHDP, Son Excellence, Le président Alassane Ouattara.»

As a result, cocoa farmers including Douka, Bilé Bilé, and Koné Moussa of the Syndicat National Agricole pour le Progrès en Côte d’Ivoire (SYNAP-CI) led a strike which blocked nearly 20,000 tons of cocoa from leaving Côte d’Ivoire (Douka, 2017; Shaban, 2017). In January 2021, Cocoa farmers again went on strike to protest lower-than-expected producer prices, calling for the director-general of the Ivorian Conseil du Café-Cacao (CCC) to be fired. ANAPROCI, an umbrella organization that claims nearly 600,000 members, took a leading role in organizing the protests and was joined by other RPOs with claimed membership exceeding 80,000 members (de Bassompierre, 2021). Striking farmers held demonstrations outside of government offices in several cities throughout Côte d’Ivoire, with ANAPROCI chairman Koffi Kanga declaring, “the strike...will intensify in the coming days in all the growing regions. In a few days, we plan to stop all commercial activities in the interior of the country and prevent cocoa deliveries to the ports” (Aboa, 2021). After calling off the strike, RPOs traveled through cocoa regions to inform farmers of their progress and prepare them for future action (Kaunan, 2021).

Cocoa farmers are not alone in organizing protests. In 2001 cotton growers, organized by cotton farming cooperatives, went on struck after a dispute with the government over the construction of a cotton-gin in Korhogo (Africa Confidential, 2002). Notably, cotton farming is concentrated in northern Côte d’Ivoire, which at the time was the heart of opposition to the Gbagbo government. Similarly, the more recent protests by cocoa farmers have been concentrated in regions historically associated with support for the PDCI, and led by figures such as Bilé Bilé who have been more reticent in their support for Ouattara.

### **2.3 Incorporation into Political Coalitions**

Beyond mobilizing members to the polls and participating in strikes and demonstrations, RPOs and their leaders also play important roles in building political coalitions. There are many examples of RPO leaders taking more active, partisan roles. This includes running for office in their own right, assuming campaign or party positions, and even being appointed

to government positions. All three of Côte d'Ivoire's leading contemporary political figures have incorporated RPO leaders into their political coalitions.

For example, in 2013, N'Gouan Aka Mathias ran for and won the mayoral election in the Abidjan neighborhood of Cocody. During the 2018 local and regional elections, Boti Bi Zoua was a PDCI candidate in the Marahoué region (Do, 2018). In those same elections, Tuo Lacina, leader of the Organisation Interprofessionnelle Agricole de la Filière Coton de Côte d'Ivoire (INTERCOTON) ran for office as a member of Ouattara's RHDP.

In addition to directly entering the political space as a candidate, RPO leaders also fill less public roles during political campaigns. For instance, during the 2010 election Seydou Soro, the former leader of the Union Régionale des Entreprises Coopératives de la Zone des Savanes de Côte d'Ivoire (URECOS-CI), was an official member of Gbagbo's re-election campaign (Abidjan.net, 2010). In addition to being a local politician, N'Gouan Aka Mathias was a regional coordinator for Ouattara's 2015 and 2020 campaigns (Diomandé, 2015; Talha, 2020). Both Christophe Douka and Bilé Bilé have held leadership positions within the PDCI as members of the political bureau (Abidjan.net, 2021*a*) and leaders of an internal party committee responsible for reaching out to farmers (Val, 2015). Finally, RPO leaders sometimes fill appointed positions in the government. After his time as Cocody mayor, Ouattara appointed N'Gouan Aka Mathias to a position in the Ivorian postal service, and Seydou Soro was a senior Gbagbo adviser who briefly served as Minister for Agriculture.

## 2.4 Coalition Switching

RPOs act strategically in choosing how and for whom they mobilize their membership. This is apparent in the coalition switches that some RPOs make. For example, N'Gouan Aka Mathias' switch from being a Bedié supporter before the 2010 election to his continued support of Ouattara since, and Douka and Bilé Bilé's attempt to recruit a rival presidential candidate in 2015 and subsequent support for Ouattara's re-election after those attempts failed, exemplify this point. Switches can also happen at an institutional level between

leaders. For example, while Boti Bi Zoua was a Ouattara supporter in 2015 and a PDCI candidate for local office, his predecessor as leader of ANAPROCI, Henri Amouzou, had been a close Gbagbo supporter and member of the FPI political bureau (Abidjan.net, 2021*b*).

### 3 Theoretical Expectations, Hypotheses, and Mechanisms

RPOs attempt to maximize their membership's returns from farming. To achieve this goal, they provide members with goods and services, including politically allocated benefits from the state. These benefits could be tangible goods and services (e.g., subsidized inputs or agricultural extension agents) or other favorable policies (e.g., political manipulation of producer prices). The qualitative evidence from Côte d'Ivoire suggests several potential political strategies RPOs might use to achieve this goal. This includes mobilizing their members around elections to support politicians believed to be supportive of RPOs, and organizing demonstrations to press governments for better policies. This could be part of a political bargain struck between RPOs and politicians, but could also be a genuine expression of support for politicians believed to be sympathetic to RPO goals. If RPOs are mobilizing their members, one observable implication would be that members are more likely to participate in the political process than otherwise similar non-members who do not experience the mobilizing effect of RPOs.

**H1:** RPO membership is associated with more participation in the political process.

In this paper, I consider four individual behaviors: voting, being given a vote-buying offer, attending a demonstration or protest, and joining others to raise an issue. These choices are motivated by data availability and the qualitative evidence, which suggests RPOs mobilize members around elections and in acts of collective political action such as demonstrations.

The qualitative evidence suggests three other potential implications. First, RPOs may have a greater ability to mobilize their members in RPO-dense areas, as the organization

has a greater ability to organize collective action and sanction free-riders, and because the support of RPOs may play a more decisive role in patterning election outcomes.

**H2:** The mobilizing effect of RPOs during elections is greater in higher RPO-dense regions.

Second, ties to dominant political parties may, in part, motivate RPOs to engage in the political process, particularly during elections. If so, the mobilizing effect of RPOs may be stronger in areas that supported the incumbent executive.

**H3:** The mobilizing effect of RPOs during elections is greater in incumbent strongholds.

Finally, RPO-organized demonstrations and protests, which are a source of conflict with the government, should be less common in incumbent strongholds.

**H4:** The mobilizing effect of RPOs during demonstrations and protests is lower in incumbent strongholds.

In addition to a political mobilization mechanism, there could also be potential selection mechanisms. Factors leading individuals to join RPOs could also cause them to engage in political processes. This paper does not argue that selection mechanisms do not exist. It is likely that pro-social attitudes, for example, lead individuals to join RPOs and vote. Instead, I argue that a political mobilization mechanism exists alongside and in addition to any selection effects.

## 4 Empirical Approach and Methods

I begin my empirical analysis by considering the variables associated with RPO membership. This helps untangle the selection process behind why some join while others do not. Next, I see if RPO members are more likely to engage in political activities than non-members. Specifically, I estimate the relationship between membership and voting, vote-buying, demonstrating, and group petitions. Finally, I extend my quantitative analysis to see how RPO



density, the proportion of people in an area who are RPO members, and electoral geography interact with membership to predict these political behaviors.

#### 4.1 Description of Quantitative Data and Statistical Approach

This paper's primary data source is the third round of the Afrobarometer survey. The Afrobarometer is an independent, non-partisan organization studying African public opinion. Since 1999 the Afrobarometer periodically conducts public opinion surveys, asking a standard set of questions to a representative sample from each country. Surveys are nationally representative with a clustered, stratified, multi-stage, area probability sample.<sup>13</sup>

One challenge researchers interested in civil society organizations face is the relative lack of data on membership in these organizations, particularly individual-level membership measures. I overcome this challenge by combining responses to two questions asked on the Afrobarometer: first, the occupation of the respondent, and second, whether the respondent is a member of a union or farmers association. If a respondent answers an agricultural occupation to the first question and is a member of such an organization to the second, I classify them as RPO members. Unfortunately, only the Afrobarometer's third-round surveys ask these questions. Therefore, this paper relies exclusively on responses from this round. Table 1 shows the survey year and sample size for each surveyed country. The Afrobarometer aims to survey 1200 or 2400 respondents per country. In my analysis, I weigh all responses according to Afrobarometer guidelines. There are 25,397 survey responses from 18 countries spread out across sub-Saharan Africa.

This measure of RPO membership is not without drawbacks. Respondents are only allowed to select a single occupation. People may work in agriculture in addition to other occupations. My measure can not classify such respondents as members. Table 1 compares agricultural occupations according to the Afrobarometer and agricultural employment ac-

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<sup>13</sup>Additional details on Afrobarometer sampling procedures can be found on their website [afrobarometer.org](http://afrobarometer.org)

Table 1: Comparing Afrobarometer and World Bank Statistics

| Country      | Afrobarometer |      |         |               |                 | World Development Indicators (2005) |                           |                         |                       |
|--------------|---------------|------|---------|---------------|-----------------|-------------------------------------|---------------------------|-------------------------|-----------------------|
|              | Year          | N    | % Rural | % Agriculture | % RPO (Farmers) | % GDP from Agriculture              | % Employed in Agriculture | % Exports (Agriculture) | Food Production Index |
| Benin        | 2005          | 1198 | 58.10%  | 41.81%        | 24.85%          | 26.69%                              | 46.32%                    | 64.33%                  | 66.24                 |
| Botswana     | 2005          | 1200 | 56.67%  | 7.17%         | 13.95%          | 1.83%                               | 22.66%                    | 0.16%                   | 101                   |
| Cape Verde   | 2005          | 1256 | 52.68%  | 16.19%        | 16.20%          | 9.00%                               | 19.81%                    | 0.00%                   | 106.46                |
| Ghana        | 2005          | 1197 | 53.47%  | 36.74%        | 30.35%          | 37.45%                              | 54.96%                    | 5.18%                   | 66.5                  |
| Kenya        | 2005          | 1278 | 80.72%  | 37.57%        | 37.43%          | 24.24%                              | 61.06%                    | 9.99%                   | 79.33                 |
| Lesotho      | 2005          | 1161 | 66.67%  | 15.45%        | 14.52%          | 5.67%                               | 54.76%                    | N/A                     | 99.77                 |
| Madagascar   | 2005          | 1350 | 84.01%  | 57.61%        | 23.26%          | 32.91%                              | 80.23%                    | 3.79%                   | 46.84                 |
| Malawi       | 2005          | 1200 | 86.00%  | 59.50%        | 31.34%          | 30.76%                              | 81.96%                    | 6.88%                   | 85.59                 |
| Mali         | 2005          | 1244 | 73.16%  | 35.10%        | 50.74%          | 32.38%                              | 70.38%                    | 24.47%                  | 58.1                  |
| Mozambique   | 2005          | 1198 | 56.59%  | 48.90%        | 29.10%          | 22.77%                              | 79.51%                    | 5.10%                   | 66.99                 |
| Namibia      | 2006          | 1200 | 60.00%  | 16.44%        | 25.91%          | 26.09%                              | 44.95%                    | N/A                     | 82.84                 |
| Nigeria      | 2005          | 2363 | 51.45%  | 17.06%        | 50.71%          | 10.37%                              | 29.74%                    | 0.71%                   | 94.36                 |
| Senegal      | 2005          | 1200 | 58.67%  | 25.65%        | 42.76%          | 15.10%                              | 42.34%                    | 2.11%                   | 73.75                 |
| South Africa | 2006          | 2400 | 42.24%  | 7.57%         | 19.09%          | 2.39%                               | 7.02%                     | 2.67%                   | 79.48                 |
| Tanzania     | 2005          | 1304 | 76.92%  | 64.82%        | 36.54%          | 24.65%                              | 74.55%                    | 10.19%                  | 51.47                 |
| Uganda       | 2005          | 2400 | 87.63%  | 48.21%        | 21.04%          | 25.07%                              | 68.34%                    | 11.87%                  | 114.88                |
| Zambia       | 2005          | 1200 | 62.67%  | 26.81%        | 29.47%          | 17.15%                              | 64.51%                    | 12.34%                  | 101.88                |
| Zimbabwe     | 2005          | 1048 | 67.94%  | 30.09%        | 15.61%          | 14.59%                              | 72.26%                    | 4.63%                   | 52.95                 |

according to the World Bank. In almost every country sampled, the Afrobarometer reports fewer people working in agriculture than similar World Bank statistics.<sup>14</sup>

I begin with an inductive analysis of the variables associated with RPO membership, using RPO membership as the dependent variable. I see if various individual and regional-level variables suggested by the literature predict RPO membership. From the Afrobarometer this includes measures of enumerator-reported respondent gender, head of household status, household location (rural/urban), age in years, education level, respondent's self-reported living conditions, how often they discuss politics, their interest in public affairs, and whether they generally trust other people. These variables are selected to try and capture a respondent's material condition, orientation towards their community, and pro-social attitudes.<sup>15</sup>

These variables may explain participation in associational life more broadly than RPOs specifically. Unfortunately, the Afrobarometer does not ask about agricultural production, crops cultivated, or the amount of land under cultivation. I remedy this problem by pairing the geographic coordinates of Afrobarometer clusters with several geospatial datasets. I use regional estimates of agricultural production from You et al. (2014), which models yields

<sup>14</sup>This could also be because occupations in the Afrobarometer include categories such as retired and student, which would not be considered employment by the World Bank.

<sup>15</sup>Variable descriptions and data sources available in the Appendix.

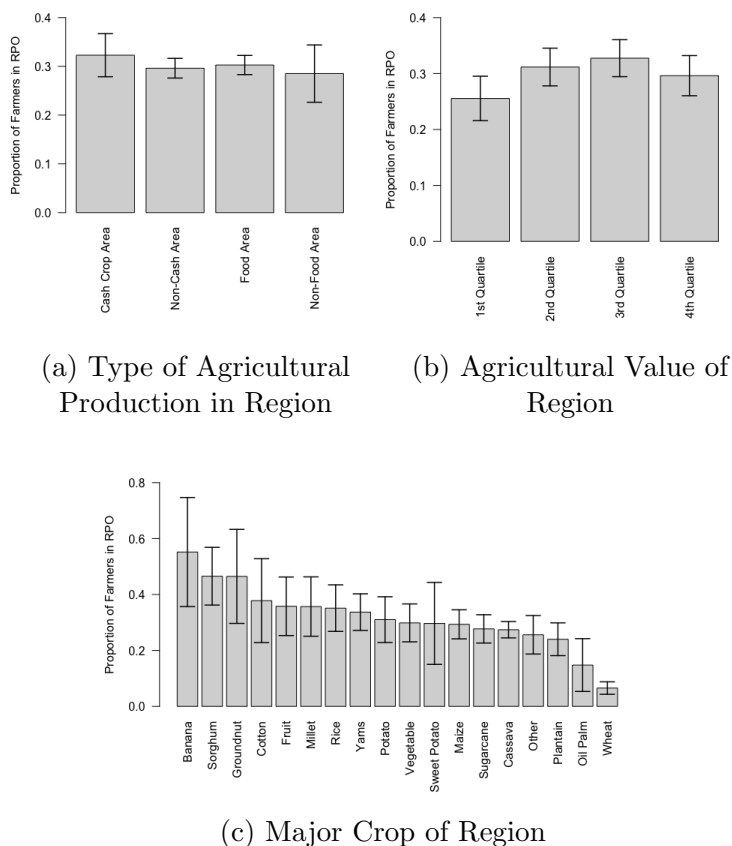


Figure 5: Agricultural Conditions and RPO Membership

for over 40 crops at a 5-arc minute resolution (approximately 10x10km at the equator), as well as estimates of the total value of agricultural production.<sup>16</sup> For each cluster, I find the most produced crop, which I term the major crop, and classify whether it is a food-crop, and whether it is a cash crop.<sup>17</sup> Additionally, I use their estimate of the total value of all crops grown in the area, which I split into quartiles for ease of interpretation. I also combine the Afrobarometer data with geospatial measures of agricultural conditions available from other sources at the cluster-level. These include measures of elevation, average yearly rainfall, the variation in growing season length, and distance to the nearest port and the capital city.

<sup>16</sup>To join these measures with individual respondents, I use points shapefile of sampling units made available from the Afrobarometer on request. Although not reported here, I have also estimated models, including growing season length and soil properties with no observable effects.

<sup>17</sup>I use their estimates for the 2005 in this paper. Unfortunately nearly a quarter of Afrobarometer clusters are missing this crop production data.

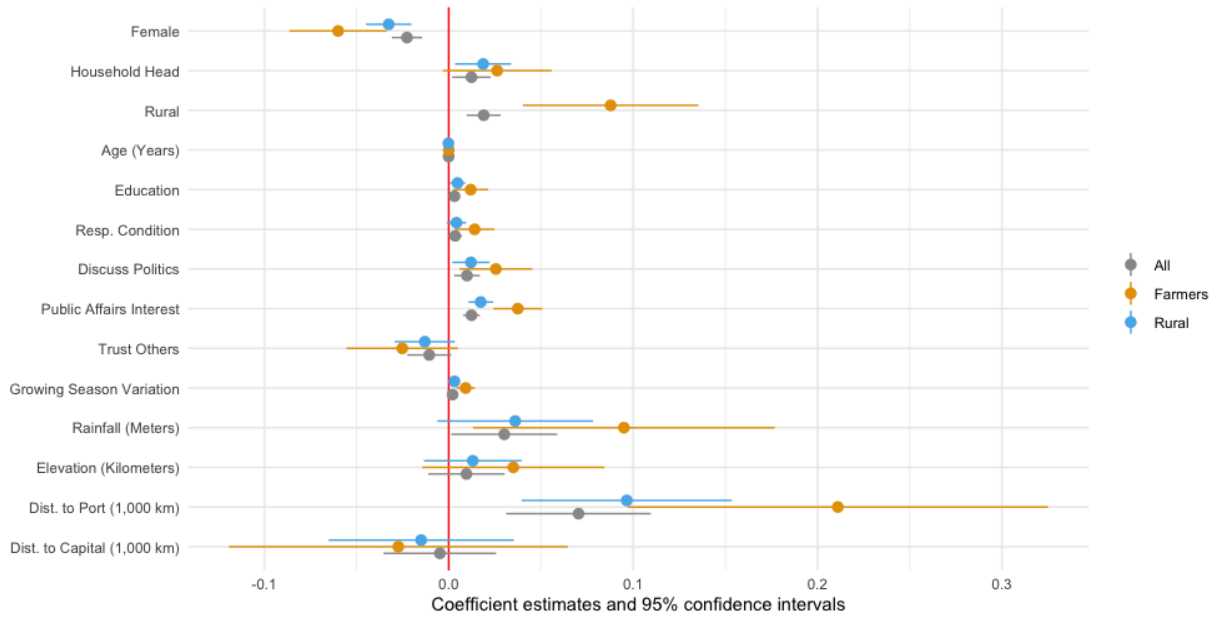


Figure 6: Correlates of RPO Membership - LPM Coefficients

## 4.2 Who Joins? Correlates of RPO Membership

Figure 5 shows the relationship between cluster-level measures of agricultural production and RPO membership. These descriptive statistics suggest that the type of crop grown, and the local economic value of agriculture are largely unrelated to the proportion of farmers belonging to an RPO. Farmers living in areas where the major crop is a cash crop or food crop are no more likely to be members. Farmers living in areas where agriculture provides more economic value similarly seem no more likely to be members. While there are some differences in membership by major crop, it is hard to pick out discernible trends that are not simply due to chance.

To better understand how individual-level factors correlate with membership, I estimate three linear probability models predicting RPO membership:

$$Y_{ij} = \alpha_j + \beta_1 X_{ij} + \epsilon_{ij} \quad (1)$$

where  $Y_{ij}$  is a dummy variable indicating RPO membership,  $\alpha_j$  are country fixed-effects,

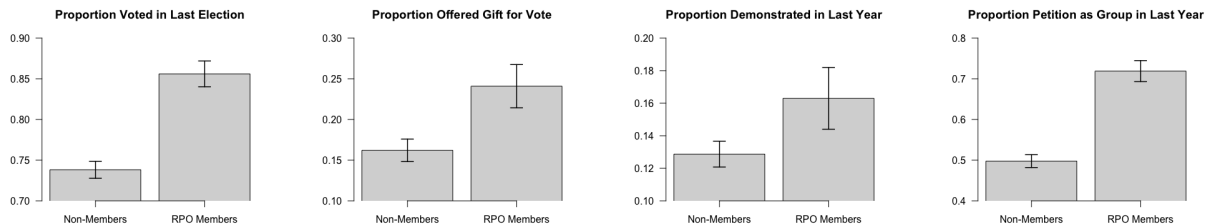


Figure 7: RPO Membership and Political Outcomes

$X_{ij}$  is a vector of covariates predicting membership measured at the individual level for survey-based measures or PSU-level for geospatial variables.<sup>18</sup> The first model includes all respondents, the second is limited to only rural respondents, and the third to only farmers.<sup>19</sup> I cluster standard errors by primary sampling unit.

Figure 6 plots coefficient estimates from these models. Women are less likely to be members than men, more educated and better-off respondents are more likely to join, and those who discuss and are more interested in political issues are more likely to join. Among geospatial measures, respondents with more variable or uncertain growing conditions, more rainfall, and those who live further away from major ports are more likely to be members.

These results are broadly consistent with prior research showing that men and wealthier or more educated households are more likely to join RPOs. Additionally, they are consistent with arguments linking pro-social attitudes and an interest in public affairs to civil society participation. Interestingly, these results could also suggest that households exposed to higher risk, those with more variable or uncertain growing seasons, and those living in more remote communities away from ports are more likely to join RPOs. Finally, it is consistent with a view of RPOs as vehicles to pool risk and guard against shocks.

<sup>18</sup>All models include country fixed-effects to soak up cross-national variation in legal environments, agricultural production, and other potential sources of omitted variable bias. I also re-estimate each model using logistic and probit regressions, with nearly identical results. Full results are available in the Appendix.

<sup>19</sup>This is to see if estimates are consistent across different sub-samples and to eliminate potential confounds related to these sub-samples. An urban shopkeeper may not join an RPO because it is not a realistic option for them. Limiting to only farmers helps account for these differences, while the model of rural respondents helps account for potential measurement errors in my agricultural worker measure.

Table 2: RPOs and Political Outcomes - Linear Probability Models

|             | Voted    |          | Vote Buy |          | Demonstrate |          | Group Petitions |          |
|-------------|----------|----------|----------|----------|-------------|----------|-----------------|----------|
|             | All      | Farmers  | All      | Farmers  | All         | Farmers  | All             | Farmers  |
| RPO Member  | 0.022*   | 0.027**  | 0.047*** | 0.047*** | 0.043***    | 0.048*** | 0.159***        | 0.165*** |
|             | (0.010)  | (0.010)  | (0.013)  | (0.014)  | (0.010)     | (0.010)  | (0.013)         | (0.014)  |
| Constant    | 0.692*** | 0.759*** | 0.356*** | 0.369*** | -0.038      | -0.050   | 0.102**         | 0.274*** |
|             | (0.029)  | (0.046)  | (0.042)  | (0.062)  | (0.027)     | (0.044)  | (0.040)         | (0.061)  |
| N           | 22600    | 7031     | 22459    | 6987     | 22121       | 6847     | 22509           | 7010     |
| Controls    | Yes      | Yes      | Yes      | Yes      | Yes         | Yes      | Yes             | Yes      |
| Country FEs | Yes      | Yes      | Yes      | Yes      | Yes         | Yes      | Yes             | Yes      |
| AIC         | 3738.2   | 930.4    | 2896.3   | 1049.3   | 2399.7      | 679.1    | 4804.8          | 1446.0   |
| BIC         | 4015.6   | 1169.7   | 3167.7   | 1281.8   | 2678.9      | 918.8    | 5071.6          | 1678.3   |

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Full Model Results with controls in the Appendix

### 4.3 Political Outcomes and RPO Membership

This paper focuses on RPOs and political mobilization. To consider this, I analyze the relationship between RPO membership and several political behaviors. From the Afrobarometer, I create four dependent variables indicating whether a respondent voted in the last election, was approached with a vote-buying offer in the previous election, demonstrated or protested in the last year, and whether they joined others in raising an issue.<sup>20</sup>

Figure 7 shows the proportion of RPO members and non-members who engaged in these behaviors across all Afrobarometer respondents. I adjust these estimates for survey effects but not covariates. Members are more likely to say they voted, were approached with vote-buying offers, demonstrated, and joined others to raise an issue than non-members. While these differences are stark, they are likely due partly to confounds such as education.

Like in my analysis of RPO membership, I estimate a series of linear probability models:

$$Y_{ij} + \alpha_j + \beta_1 X_{ij} + \beta_2 Z_{ij} + \epsilon_{ij} \quad (2)$$

<sup>20</sup>While these variables are likely to be subject to various biases in their measurement, most notably social desirability bias, these biases should apply equally to both RPO members and non-members, particularly after conditioning on education, gender, and measures of political interest.

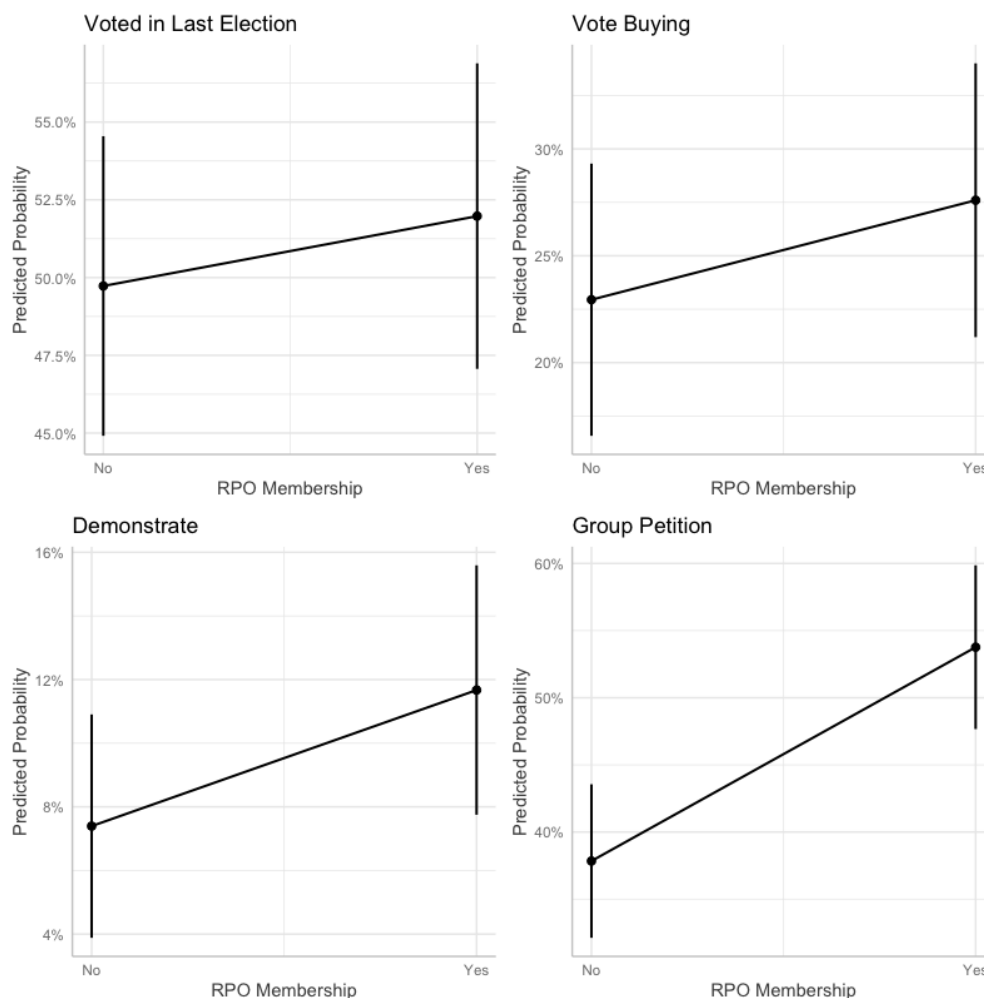


Figure 8: RPO Membership and Political Outcomes, Predicted Probabilities

where  $Y_{ij}$  is a dummy variable indicating whether the respondent engaged in political activity,  $\alpha_j$  are country fixed-effects,  $X_{ij}$  is a dummy variable indicating whether the respondent is an RPO member, and  $Z_{ij}$  is a vector of control variables. Models include standard errors clustered by PSU. I control for gender, heads of households, rural/urban location, education, living conditions, interest in public affairs, how often a respondent discusses politics, growing season variation, rainfall, and distance to the nearest port. All models include country-fixed effects to help account for unobserved national-level confounds. Finally, I estimate each model both among all respondents and among farmers.<sup>21</sup> Full results are available in the Appendix, where I also re-estimate models using logistic and probit regressions.

<sup>21</sup>This is done because farming non-members may be better counterfactual cases than all non-members.

Table 2 shows coefficient estimates from these models. After controlling for possible confounds and including country-fixed effects, there is still a consistent association between RPO membership and political outcomes. Members are over two percent more likely to vote, almost five percent more likely to be approached with vote-buying offers, nearly five percent more likely demonstrate, and, most significantly, 16 percent more likely to join others in raising issues. Figure 8 shows predicted probabilities from models including all respondents.<sup>22</sup> These models illustrate a consistent relationship linking RPO membership to various political outcomes, which is significant statistically and often substantively as well.

#### 4.3.1 Alternative Specifications, Robustness, and Sensitivity

I consider four potential critiques to this analysis. First, using four different outcome measures increases the risk of multiple comparisons problems, in which a null hypothesis is incorrectly rejected. Second, specific modeling decisions could bias these results. Third, the detected relationships could be the effect of participation in civil society more generally. Finally, unobserved confounds may explain both membership and outcome responses.

One potential critique centers on using four measures of a single hypothesized outcome. This opens the possibility of multiple comparisons problems, in which the number of tests leads to erroneous rejections of the null hypothesis. In the Appendix, I report adjusted p-values using two different methods: the Benjamini-Hochberg procedure and the Bonferroni correction. After applying the Benjamini-Hochberg procedure, all relationships remain significant. At the same time, in some specifications, the far more punishing Bonferroni correction reduces the significance of the relationship between RPO membership and voting.

I also report the results from several different model specifications in the Appendix. First, I re-estimate each model using logistic and probit regressions, with no substantive difference in observed relationships. Next, I re-estimate my results using linear probability models and

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<sup>22</sup>The hypothetical case considered here is a male farmer from rural Zambia with all other values held constant at their median.



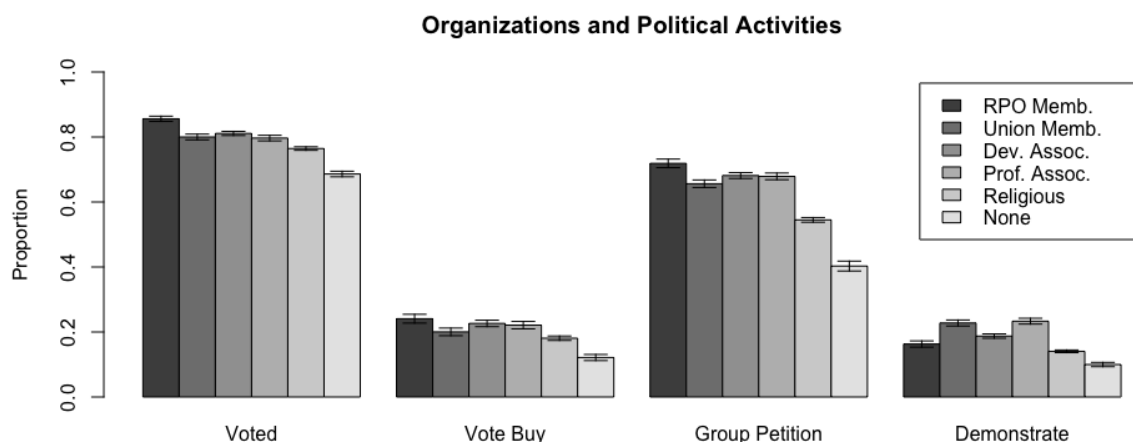


Figure 9: Comparison of Civil Society Organizations

including subnational-unit fixed-effects and country-fixed effects.<sup>23</sup> Results indicate that a statistically significant relationship exists between RPO membership and measured political behaviors even after including subnational-unit fixed effects.

It is also possible the relationships observed here reflect civil society organizations promoting participation in democratic politics more broadly. RPOs may promote democratic norms among their members, similarly to other civil society organizations. This mechanism may exist alongside membership mobilization in pursuit of organizational goals.<sup>24</sup> I compare RPOs to other civil society organizations with membership information found in the Afrobarometer to get an idea of whether similar relationships exist for other organizations (Figure 9). Like RPOs, membership in other organizations does appear to increase the likelihood of participating in the political process. However, generally, RPO membership seems to be more strongly associated with forms of democratic participation.

Finally, given the observational nature of this analysis, the possibility remains that even

<sup>23</sup>I do not re-estimate logistic or probit regressions in this way due to concerns over incidental parameters and because subnational-unit fixed effects are often collinear with geospatial measures.

<sup>24</sup>Similarly, other civil society organizations (e.g., trade unions, development associations, etc.) with goals that can be satisfied through the political process may engage in mobilization, similar to how I describe in this paper. RPOs are not unique in this regard.

after including controls and fixed effects, some unobserved confound explains both RPO membership and the considered political behaviors. While it is impossible to definitively rule out all unobserved confounds, through a sensitivity analysis, we can get some idea of how strong such confounds would have to be to overturn the results (Cinelli and Hazlett, 2020). For example, unobserved confounds would have to account for nearly six percent of the remaining variation in voting and RPO membership, nine percent of the remaining variation in vote-buying and RPO membership, 10 percent of the remaining variation in demonstrating and RPO membership, and over 26 percent of the remaining variation in group petitions and RPO membership to overturn these results.<sup>25</sup> Put differently, unobserved confounds need to be at least three times stronger than the effect of gender, one of the strongest, most consistent predictors of membership, to overturn any of these results. Thus, although impossible to rule out, omitted variables are unlikely to drive the relationship between RPO membership and political behaviors.

#### **4.4 Extension: Density, Electoral Competition, and Mobilization**

While the foregoing analysis provides strong evidence of a relationship between membership and participation in the political process, it does not necessarily illustrate mobilization by RPOs. Here I provide indirect evidence of a political mobilization mechanism by looking at variation among RPO members. Not all RPOs are equally likely to mobilize their membership, and may mobilize their members to engage in different types of political behavior. I expect mobilization to be more likely when RPOs are more likely to be decisive, and able to incentive their members to act. I argue that decisiveness can be proxied by RPO membership density. In areas where most of the population belongs to an RPO, successful mobilization of RPOs is more likely to occur. Second, I expect the types of political behavior members engage in to vary by electoral geography. Mobilizing around election should be more likely in incumbent strongholds, as incumbents likely have more resources to secure RPO support,

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<sup>25</sup>See the Appendix for more details on sensitivity analyses.

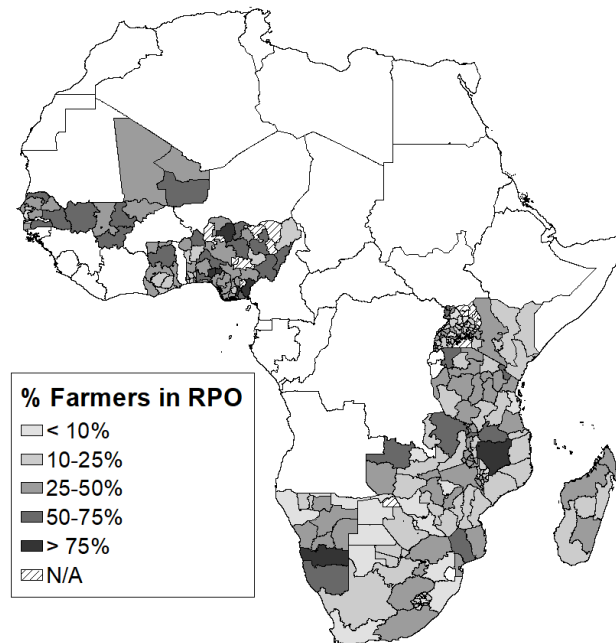


Figure 10: RPO Membership by Subnational Unit

and the qualitative evidence suggests ties between RPOs and dominant political parties like those frequently supporting incumbents. On the other hand, the qualitative evidence points to RPOs organizing demonstrations and protests, more conflictual political behaviors, in areas opposing the incumbent government.

Figure 10 shows RPO density by subnational administrative unit. I generate this measure by calculating the proportion of farmers belonging to an RPO by unit. After generating this RPO density measure, I use it to test for mobilization in two ways. First, I see if offers to buy RPO member votes are more common in RPO majority areas. Second, I stratify respondents according to RPO density and calculate the intraclass correlation (ICC) of intent to vote for the incumbent executive in the next election by strata for RPO members and non-members. Finally, I consider how electoral dynamics interact with membership using a measure of the incumbent's share of the vote in the administrative unit during the last election.<sup>26</sup>

<sup>26</sup>Countries with subnational election data include Benin, Ghana, Kenya, Madagascar, Malawi, Mali,

Table 3: Interaction Extensions

|                          | Vote Buy             |                     | Demonstrate        |
|--------------------------|----------------------|---------------------|--------------------|
| RPO Member               | 0.008<br>(0.019)     | -0.013<br>(0.033)   | 0.076**<br>(0.025) |
| RPO Density              | -0.018<br>(0.029)    |                     |                    |
| RPO Member X RPO Density | 0.121**<br>(0.046)   |                     |                    |
| Incumbent Share          | -0.101***<br>(0.030) |                     | 0.001<br>(0.021)   |
| RPO Member X Inc. Share  | 0.114*<br>(0.057)    |                     | -0.070+<br>(0.041) |
| Constant                 | 0.371***<br>(0.042)  | 0.448***<br>(0.049) | -0.035<br>(0.032)  |
| N                        | 22626                | 18924               | 18660              |
| Controls                 | Yes                  | Yes                 | Yes                |
| Country FEs              | Yes                  | Yes                 | Yes                |

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses  
Complete Estimates with Controls in the Appendix

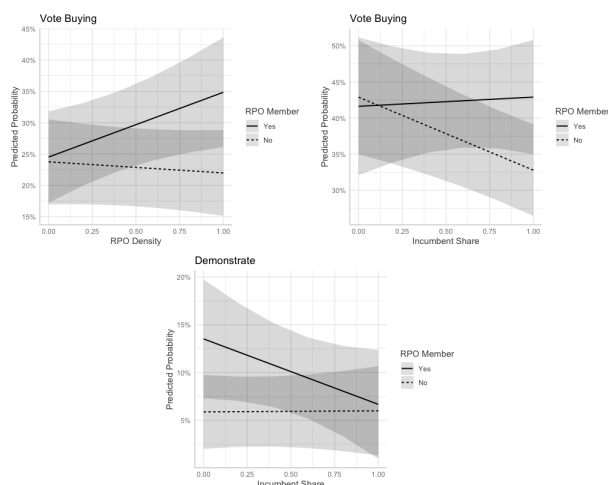


Figure 11: Predicted Probabilities - Extensions

Table 3 shows coefficient estimates from linear probability models interacting RPO membership with RPO density and incumbent vote share. RPO members in majority RPO regions are more likely to receive a vote-buying offer, while non-members are no more likely. Additionally, among RPO members, the likelihood of receiving a vote-buying offer increases with incumbent vote share during the most recent election, while the opposite is true among non-members. On the other hand, the likelihood of an RPO member participating in a demonstration or protest decreases with an incumbent's vote share, while no trend is evident among non-members.

Finally, in Table 4 I break respondents into four groups depending on the RPO density of their home region and calculate the ICC of a respondent's intent to vote for the incumbent executive. The ICC is a measure of how similar observations within a group are. In this case, a higher ICC means that respondents in a group, the Afrobarometer primary sampling unit, have more similar responses. In this context, one way of thinking of the ICC is as a bloc or potential coordinated group voting. These results suggest that in RPO-dense regions, Mozambique, Namibia, Nigeria, Senegal, South Africa, Uganda, Zambia, and Zimbabwe. No data is available for Botswana, Lesotho, and Tanzania.

Table 4: Incumbent Vote - ICC by RPO Density Quartile

|             | Q1    | Q2    | Q3    | Q4    |
|-------------|-------|-------|-------|-------|
| RPO Members | 0.236 | 0.375 | 0.512 | 0.573 |
| Non-Members | 0.247 | 0.250 | 0.257 | 0.320 |

members within a community are more likely to vote like one another than in less-dense communities. No similar trend is seen among non-members. These results suggest that RPO members are more likely to vote like one another than the general public and that this homophily increases with density. We would expect to see this if incumbents mobilize RPOs as blocs of supporters in RPO-dense communities.

## 5 Conclusion

Africa’s agricultural producers play a central yet under-appreciated role in African politics. This paper begins to remedy this deficiency by considering the political role of RPOs in mobilizing agrarian households. I provide evidence of RPOs mobilizing their members for political goals. This is seen in both individual-level Afrobarometer survey evidence, which suggests that RPO members are more likely to vote, receive vote-buying offers, demonstrate, and join others in raising an issue in diverse cases across the continent. Moreover, this effect persists after controlling for potential selection mechanisms, and a sensitivity analysis suggests it is unlikely this effect results from unobserved confounds.

My analysis does not rule out potential selection effects explaining an individual’s decision to join an RPO and political behaviors. Instead, it substantiates the existence of a political mobilization mechanism in addition to any selection effects in which RPOs mobilize their members to achieve organizational goals. I provide evidence of this political mobilization mechanism in two ways. First, I use qualitative evidence from Côte d’Ivoire to show examples of prominent RPOs and their leaders mobilizing members, receiving politically allocated benefits, and engaging in the political process through their public statements, demonstrations, and incorporation into political coalitions. Second, using indirect quanti-

tative evidence from the Afrobarometer, I show that RPO membership interacts with RPO density and electoral geography. Members living in regions with a higher concentration of RPO members, or those living in incumbent strongholds, are particularly likely to receive vote-buying offers and vote in blocs for or against the incumbent executive. Demonstrations by RPO members, however, are more likely to occur in areas with weak support for the incumbent.

This paper contributes to our understanding of contemporary African political life by considering an overlooked yet critical group: the rural producer organization. Studies of African politics should push beyond considerations of ethnic groups and traditional institutions to consider overlooked institutions organizing economic, social, and political life across the continent. Future research can build on these findings in several ways. First, future research should exploit variation among RPOs and RPO behavior over time to understand better which organizations are most likely to mobilize their members, how they do it, and why. Second, they should explore how RPOs influence other political outcomes such as clientelism, distributive politics, and political socialization.

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## Appendix A: Variable Descriptions

Below I list all the variables included in this paper, along with a short description, and the data source. Please refer to source materials for more exact definitions and measurement information. Geospatial variables were created by joining raster data to a points layer of Afrobarometer Primary Sampling Units, made available from Afrobarometer.

Table A1: Variable Descriptions

| Variable                  | Description  | Source   |
|---------------------------|--|--|
| RPO Member                | Respondent reports being a member of a RPO.  | Afrobarometer R3, Q28B and Q95                     |
| RPO Majority              | Majority of farming respondents from a region belong to RPO.                               | Afrobarometer R3, Q28B and Q95                     |
| Voted                     | Respondent reports voting in the last election.  | Afrobarometer R3, Q30                              |
| Vote Buy                  | Respondent was approached with offer to buy their vote in last election.                   | Afrobarometer R3, Q57F                             |
| Demonstrate               | Respondent attended a protest or demonstration in the last year.                           | Afrobarometer R3, Q31C                             |
| Group Petition            | Respondent joined others to raise an issue in the last year.                               | Afrobarometer R3, Q31B                             |
| Female                    | Enumerator codes respondent as female.   | Afrobarometer R3, Q101                             |
| Household Head            | Respondent says they are household head.   | Afrobarometer R3, Q2                               |
| Rural                     | Respondent lives in rural community.   | Afrobarometer R3                                   |
| Age (Years)               | Respondent's self-reported age in years.   | Afrobarometer R3, Q1                               |
| Education                 | Respondent's self-reported education level.  | Afrobarometer R3, Q90                              |
| Discuss Politics          | Respondent's self-reported frequency of discussing politics with friends and family.       | Afrobarometer R3, Q17                              |
| Public Affairs Interest   | Respondent's self-reported interest in public affairs.                                     | Afrobarometer R3, Q16                              |
| Trust Others              | Respondent's belief that others can be trusted.  | Afrobarometer R3, Q83                              |
| Growing Season Variation  | Variation in Length of Growing Period (c.v., percent, 1960-1995).                          | HarvestChoice, University of Minnesota             |
| Rainfall                  | Long-run average annual rainfall for Afrobarometer PSU coordinates. Converted in meters.   | Climactic Research Unit, University of East Anglia |
| Elevation                 | Afrobarometer PSU coordinates elevation in kms.  | US Geological Survey                               |
| Distance to Port          | Distance from Afrobarometer PSU coordinates to nearest port. Converted 1,000s of kms.      | Made with ArcGIS                                   |
| Distance to Capital       | Distance from Afrobarometer PSU coordinates to country's capital. Converted 1,000s of kms. | Made with ArcGIS                                   |
| % Employed in Agriculture | Proportion of workforce employed in Agriculture.   | World Bank, World Development Indicators           |
| % GDP from Agriculture    | Proportion of GDP from agriculture sector.   | World Bank, World Development Indicators           |
| % Exports Raw Agriculture | Proportion of exports that are raw (unprocessed) Agricultural Commodities.                 | World Bank, World Development Indicators           |
| Food Production Index     | Aggregate production of food commodities.  | World Bank, World Development Indicators           |

## Appendix B: Additional Statistics

Below I report several additional statistics, models, and analyses to illustrate the robustness and strength of this paper's main findings, and provide important context on key measures. First, I report summary statistics for all non-categorical variables used in my analyses. For measurement details, see previous section or refer to underlying source materials. Next, I report the full statistical models of my main results reported in text. I estimate each set of models three ways: using Linear Probability Models, Logistic regressions, and Probit regressions. Consistent results illustrate that modeling assumptions are unlikely to be driving key relationships. I similarly estimate models among different populations, including the full sample, rural respondents, and farming respondents. This is done in part to account for potential selection effects, as potential outcomes may diverge as you move towards larger groups. Put differently, the best counterfactual to RPO members may be non-RPO farmers, rather than the general public.

Finally, to probe the robustness of my main findings linking RPO membership to several different political behaviors, I extend my analysis in two ways. First, I conduct a sensitivity analysis of models linking RPO membership to each type of outcome. Second, since I am measuring political behaviors in four different ways, I report adjusted p-values using two popular multiple hypothesis testing adjustments.

## B.1 Summary Statistics

Table B1: Summary Statistics

| Statistic                   | N      | Mean   | St. Dev. | Min     | Pctl(25) | Pctl(75) | Max     |
|-----------------------------|--------|--------|----------|---------|----------|----------|---------|
| RPO Member                  | 25,028 | 0.090  | 0.287    | 0.000   | 0.000    | 0.000    | 1.000   |
| RPO Majority                | 25,397 | 0.113  | 0.317    | 0       | 0        | 0        | 1       |
| Voted                       | 25,278 | 0.747  | 0.435    | 0.000   | 0.000    | 1.000    | 1.000   |
| Vote Buy                    | 25,113 | 0.179  | 0.384    | 0.000   | 0.000    | 0.000    | 1.000   |
| Demonstrate                 | 24,692 | 0.140  | 0.347    | 0.000   | 0.000    | 0.000    | 1.000   |
| Group Petition              | 25,133 | 0.520  | 0.500    | 0.000   | 0.000    | 1.000    | 1.000   |
| Age                         | 25,110 | 36.623 | 14.816   | 18.000  | 25.000   | 45.000   | 130.000 |
| Farmer                      | 25,214 | 0.307  | 0.461    | 0.000   | 0.000    | 1.000    | 1.000   |
| Rural                       | 25,397 | 0.618  | 0.486    | 0       | 0        | 1        | 1       |
| Female                      | 25,397 | 0.500  | 0.500    | 0       | 0        | 1        | 1       |
| Head of Household           | 25,244 | 0.502  | 0.500    | 0.000   | 0.000    | 1.000    | 1.000   |
| Education                   | 25,305 | 3.118  | 1.995    | 0.000   | 2.000    | 4.000    | 9.000   |
| Resp. Condition             | 25,308 | 1.606  | 1.190    | 0.000   | 1.000    | 3.000    | 4.000   |
| Public Affairs Interest     | 25,114 | 1.888  | 1.072    | 0.000   | 1.000    | 3.000    | 3.000   |
| Discuss Politics            | 25,085 | 0.928  | 0.727    | 0.000   | 0.000    | 1.000    | 2.000   |
| Trust Others                | 23,810 | 0.167  | 0.373    | 0.000   | 0.000    | 0.000    | 1.000   |
| Growing Season Variation    | 23,779 | 16.481 | 11.710   | 3.000   | 9.000    | 23.000   | 100.000 |
| Rainfall (meters)           | 25,397 | 0.961  | 0.454    | 0.000   | 0.613    | 1.224    | 3.067   |
| Elevation (km)              | 25,397 | 0.773  | 0.621    | 0.000   | 0.152    | 1.225    | 2.764   |
| Dist. to Capital (1,000 km) | 25,397 | 0.302  | 0.301    | 0.000   | 0.075    | 0.428    | 1.803   |
| Dist. to Port (1,000 km)    | 25,397 | 0.453  | 0.327    | 0.00000 | 0.174    | 0.712    | 1.453   |

## B.2 Selection Models

Below I show full models predicting RPO membership. The first three models correspond with Figure 6, and I similarly create coefficient plots for the Logit and Probitregression models. Although there is some variation in terms of which estimates reach significance, the coefficient sizes are largely consistent across models.

Table B2: Selection into RPOs

|                             | Linear Probability Models |                      |                      | Logit Regressions    |                       |                       | Probit Regressions   |                      |                      |
|-----------------------------|---------------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|
| Female                      | -0.060***<br>(0.013)      | -0.033***<br>(0.006) | -0.023***<br>(0.004) | -0.306***<br>(0.070) | -0.306***<br>(0.073)  | -0.306***<br>(0.070)  | -0.184***<br>(0.041) | -0.184***<br>(0.043) | -0.184***<br>(0.041) |
| Household Head              | 0.026+<br>(0.015)         | 0.019*<br>(0.008)    | 0.012*<br>(0.005)    | 0.133+<br>(0.078)    | 0.168*<br>(0.082)     | 0.133+<br>(0.078)     | 0.077+<br>(0.047)    | 0.099*<br>(0.049)    | 0.077+<br>(0.047)    |
| Rural                       | 0.088***<br>(0.024)       |                      | 0.019***<br>(0.005)  | 0.473***<br>(0.140)  |                       | 0.473***<br>(0.140)   | 0.273***<br>(0.082)  |                      | 0.273***<br>(0.082)  |
| Age (Years)                 | 0.000<br>(0.000)          | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.002)     | -0.002<br>(0.003)     | 0.000<br>(0.002)      | 0.000<br>(0.001)     | -0.001<br>(0.002)    | 0.000<br>(0.001)     |
| Education                   | 0.012*<br>(0.005)         | 0.005*<br>(0.002)    | 0.003*<br>(0.001)    | 0.061*<br>(0.025)    | 0.059*<br>(0.026)     | 0.061*<br>(0.025)     | 0.039**<br>(0.015)   | 0.038*<br>(0.016)    | 0.039**<br>(0.015)   |
| Resp. Condition             | 0.014*<br>(0.005)         | 0.004<br>(0.003)     | 0.003+<br>(0.002)    | 0.073**<br>(0.028)   | 0.069*<br>(0.029)     | 0.073**<br>(0.028)    | 0.044**<br>(0.017)   | 0.042*<br>(0.018)    | 0.044**<br>(0.017)   |
| Discuss Politics            | 0.026*<br>(0.010)         | 0.012*<br>(0.005)    | 0.010**<br>(0.004)   | 0.127*<br>(0.049)    | 0.118*<br>(0.052)     | 0.127*<br>(0.049)     | 0.075*<br>(0.030)    | 0.070*<br>(0.031)    | 0.075*<br>(0.030)    |
| Public Affairs Interest     | 0.037***<br>(0.007)       | 0.017***<br>(0.003)  | 0.012***<br>(0.002)  | 0.198***<br>(0.035)  | 0.197***<br>(0.037)   | 0.198***<br>(0.035)   | 0.117***<br>(0.021)  | 0.117***<br>(0.022)  | 0.117***<br>(0.021)  |
| Trust Others                | -0.025<br>(0.015)         | -0.013<br>(0.008)    | -0.011+<br>(0.006)   | -0.127<br>(0.081)    | -0.116<br>(0.085)     | -0.127<br>(0.081)     | -0.076<br>(0.048)    | -0.069<br>(0.050)    | -0.076<br>(0.048)    |
| Growing Season Variation    | 0.009***<br>(0.003)       | 0.003*<br>(0.001)    | 0.002***<br>(0.001)  | 0.045***<br>(0.012)  | 0.044**<br>(0.014)    | 0.045***<br>(0.012)   | 0.027***<br>(0.007)  | 0.026**<br>(0.009)   | 0.027***<br>(0.007)  |
| Rainfall (Meters)           | 0.095*<br>(0.042)         | 0.036+<br>(0.022)    | 0.030*<br>(0.015)    | 0.485*<br>(0.206)    | 0.440*<br>(0.220)     | 0.485*<br>(0.206)     | 0.281*<br>(0.124)    | 0.257+<br>(0.132)    | 0.281*<br>(0.124)    |
| Elevation (Kilometers)      | 0.035<br>(0.025)          | 0.013<br>(0.014)     | 0.010<br>(0.011)     | 0.175<br>(0.129)     | 0.161<br>(0.133)      | 0.175<br>(0.129)      | 0.102<br>(0.078)     | 0.093<br>(0.080)     | 0.102<br>(0.078)     |
| Dist. to Port (1,000 km)    | 0.211***<br>(0.058)       | 0.097***<br>(0.029)  | 0.070***<br>(0.020)  | 1.079***<br>(0.306)  | 0.975**<br>(0.321)    | 1.079***<br>(0.306)   | 0.639***<br>(0.184)  | 0.580**<br>(0.193)   | 0.639***<br>(0.184)  |
| Dist. to Capital (1,000 km) | -0.027<br>(0.047)         | -0.015<br>(0.026)    | -0.005<br>(0.016)    | -0.208<br>(0.247)    | -0.167<br>(0.273)     | -0.208<br>(0.247)     | -0.110<br>(0.148)    | -0.090<br>(0.165)    | -0.110<br>(0.148)    |
| Constant                    | -0.164*<br>(0.082)        | -0.144***<br>(0.041) | -0.130***<br>(0.028) | -3.272***<br>(0.419) | -22.387***<br>(0.444) | -22.924***<br>(0.427) | -1.955***<br>(0.249) | -7.392***<br>(0.297) | -7.871***<br>(0.288) |
| N                           | 6488                      | 13083                | 21011                | 6488                 | 13083                 | 21011                 | 6488                 | 13083                | 21011                |
| Country FEs                 | Yes                       | Yes                  | Yes                  | Yes                  | Yes                   | Yes                   | Yes                  | Yes                  | Yes                  |
| AIC                         | 1274.5                    | 1245.0               | 1434.1               | 7465.7               | 6982.5                | 8010.6                | 7466.3               | 6982.2               | 8011.2               |
| BIC                         | 1517.9                    | 1518.1               | 1733.2               | 7628.2               | 7166.8                | 8210.9                | 7628.6               | 7166.3               | 8211.3               |

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

+ p < 0.1, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

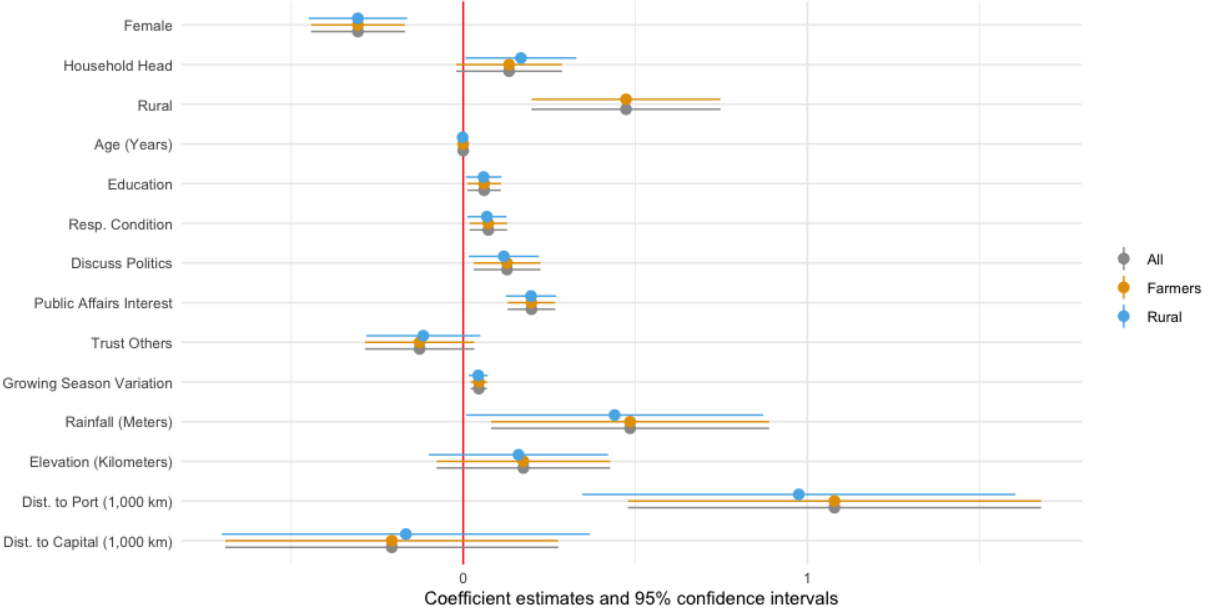


Figure B1: Correlates of RPO Membership - Logit

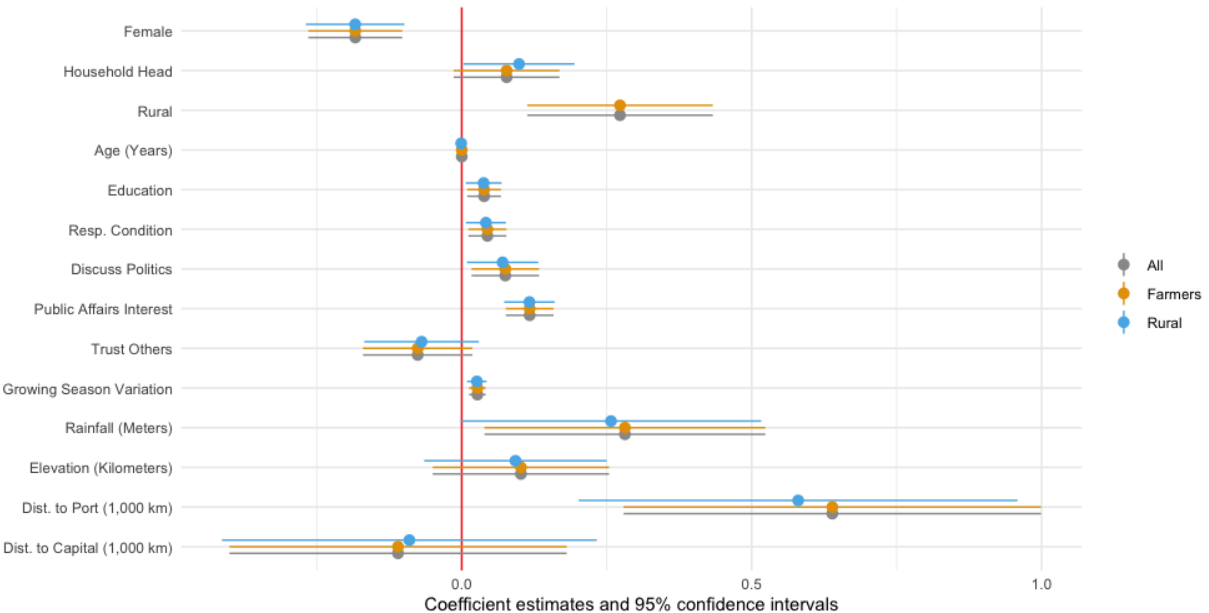


Figure B2: Correlates of RPO Membership - Probit



### B.3 Political Outcome Models

Below I report full models analyzing the relationship between RPO membership and four political outcomes: voting, vote buying, demonstrating, and group petitions. I repeat each model among two different populations: all Afrobarometer survey respondents, and just those respondents who say their occupation is in agriculture, and estimate each model as Linear Probability Model, a Logistic regression, and a Probit regression. Each model includes controls for variables identified as potentially predicting RPO membership, as well as country fixed-effects for unobserved confounds at the national level. Finally, I include a set of linear probability models including subnational-unit fixed-effects in addition to country fixed-effects.

Table B3: RPOs and Political Outcomes - Linear Probability Models

|                          | Voted     |          | Vote Buy  |           | Demonstrate |          | Group Petitions |           |
|--------------------------|-----------|----------|-----------|-----------|-------------|----------|-----------------|-----------|
|                          | All       | Farmers  | All       | Farmers   | All         | Farmers  | All             | Farmers   |
| RPO Member               | 0.022*    | 0.027**  | 0.047***  | 0.047***  | 0.043***    | 0.048*** | 0.159***        | 0.165***  |
|                          | (0.010)   | (0.010)  | (0.013)   | (0.014)   | (0.010)     | (0.010)  | (0.013)         | (0.014)   |
| Female                   | 0.030***  | 0.019+   | -0.015**  | -0.023*   | -0.030***   | -0.024*  | -0.058***       | -0.047*** |
|                          | (0.007)   | (0.011)  | (0.005)   | (0.011)   | (0.005)     | (0.010)  | (0.007)         | (0.014)   |
| Household Head           | 0.185***  | 0.143*** | -0.005    | -0.027*   | 0.008       | 0.002    | 0.092***        | 0.073***  |
|                          | (0.007)   | (0.012)  | (0.006)   | (0.012)   | (0.006)     | (0.010)  | (0.008)         | (0.014)   |
| Rural                    | 0.034***  | 0.020    | -0.005    | -0.007    | 0.000       | 0.000    | 0.060***        | 0.018     |
|                          | (0.008)   | (0.016)  | (0.009)   | (0.019)   | (0.008)     | (0.015)  | (0.011)         | (0.023)   |
| Farmer                   | 0.051***  |          | 0.004     |           | -0.017**    |          | 0.003           |           |
|                          | (0.008)   |          | (0.009)   |           | (0.006)     |          | (0.010)         |           |
| Education                | 0.002     | 0.004    | 0.006**   | 0.008+    | 0.009***    | 0.005    | 0.011***        | 0.016***  |
|                          | (0.002)   | (0.003)  | (0.002)   | (0.004)   | (0.002)     | (0.003)  | (0.002)         | (0.004)   |
| Resp. Condition          | -0.014*** | -0.003   | -0.022*** | -0.024*** | 0.001       | 0.007*   | 0.001           | 0.003     |
|                          | (0.003)   | (0.004)  | (0.003)   | (0.005)   | (0.002)     | (0.003)  | (0.003)         | (0.006)   |
| Public Affairs Interest  | 0.026***  | 0.021*** | -0.007*   | -0.012*   | 0.020***    | 0.018*** | 0.044***        | 0.025***  |
|                          | (0.003)   | (0.005)  | (0.003)   | (0.006)   | (0.003)     | (0.005)  | (0.004)         | (0.007)   |
| Discuss Politics         | 0.044***  | 0.024**  | 0.034***  | 0.045***  | 0.040***    | 0.032*** | 0.076***        | 0.077***  |
|                          | (0.005)   | (0.007)  | (0.005)   | (0.008)   | (0.005)     | (0.007)  | (0.006)         | (0.010)   |
| Growing Season Variation | 0.001     | 0.000    | -0.001    | -0.003*   | 0.000       | -0.001   | 0.000           | -0.004**  |
|                          | (0.001)   | (0.001)  | (0.001)   | (0.002)   | (0.001)     | (0.001)  | (0.001)         | (0.002)   |
| Rainfall (kilometers)    | -0.033*   | -0.004   | -0.015    | -0.015    | 0.070***    | 0.091*** | 0.042*          | -0.009    |
|                          | (0.016)   | (0.027)  | (0.019)   | (0.033)   | (0.014)     | (0.026)  | (0.021)         | (0.034)   |
| Dist. to Port (1,000 km) | 0.037+    | 0.049+   | -0.007    | -0.013    | 0.050**     | 0.022    | 0.068*          | 0.151***  |
|                          | (0.019)   | (0.028)  | (0.026)   | (0.044)   | (0.019)     | (0.027)  | (0.028)         | (0.040)   |
| Constant                 | 0.692***  | 0.759*** | 0.356***  | 0.369***  | -0.038      | -0.050   | 0.102**         | 0.274***  |
|                          | (0.029)   | (0.046)  | (0.042)   | (0.062)   | (0.027)     | (0.044)  | (0.040)         | (0.061)   |
| N                        | 22600     | 7031     | 22459     | 6987      | 22121       | 6847     | 22509           | 7010      |
| Country FEs              | Yes       | Yes      | Yes       | Yes       | Yes         | Yes      | Yes             | Yes       |
| AIC                      | 3738.2    | 930.4    | 2896.3    | 1049.3    | 2399.7      | 679.1    | 4804.8          | 1446.0    |
| BIC                      | 4015.6    | 1169.7   | 3167.7    | 1281.8    | 2678.9      | 918.8    | 5071.6          | 1678.3    |

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

+ p &lt; 0.1, \* p &lt; 0.05, \*\* p &lt; 0.01, \*\*\* p &lt; 0.001

Table B4: RPOs and Political Outcomes - Logistic Regressions

|                          | Voted                |                     | Vote Buy             |                      | Demonstrate          |                      | Group Petitions      |                      |
|--------------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                          | All                  | Farmers             | All                  | Farmers              | All                  | Farmers              | All                  | Farmers              |
| RPO Member               | 0.211**<br>(0.081)   | 0.218**<br>(0.082)  | 0.305***<br>(0.086)  | 0.307***<br>(0.087)  | 0.410***<br>(0.086)  | 0.452***<br>(0.089)  | 0.805***<br>(0.071)  | 0.825***<br>(0.072)  |
| Female                   | 0.154***<br>(0.042)  | 0.114<br>(0.085)    | -0.112*<br>(0.045)   | -0.158*<br>(0.078)   | -0.282***<br>(0.048) | -0.263*<br>(0.107)   | -0.267***<br>(0.031) | -0.225***<br>(0.065) |
| Household Head           | 1.091***<br>(0.043)  | 1.007***<br>(0.084) | -0.053<br>(0.050)    | -0.183*<br>(0.082)   | 0.066<br>(0.052)     | 0.003<br>(0.103)     | 0.423***<br>(0.035)  | 0.352***<br>(0.067)  |
| Rural                    | 0.194***<br>(0.046)  | 0.160<br>(0.127)    | -0.047<br>(0.071)    | -0.054<br>(0.148)    | 0.004<br>(0.067)     | 0.019<br>(0.135)     | 0.274***<br>(0.050)  | 0.079<br>(0.112)     |
| Farmer                   | 0.329***<br>(0.054)  |                     | 0.033<br>(0.065)     |                      | -0.178**<br>(0.067)  |                      | 0.004<br>(0.045)     |                      |
| Education                | 0.016<br>(0.012)     | 0.032<br>(0.026)    | 0.042**<br>(0.015)   | 0.047+<br>(0.026)    | 0.081***<br>(0.015)  | 0.053+<br>(0.030)    | 0.051***<br>(0.010)  | 0.079***<br>(0.021)  |
| Resp. Condition          | -0.084***<br>(0.016) | -0.022<br>(0.032)   | -0.174***<br>(0.023) | -0.164***<br>(0.036) | 0.005<br>(0.020)     | 0.070*<br>(0.035)    | 0.004<br>(0.016)     | 0.011<br>(0.029)     |
| Public Affairs Interest  | 0.148***<br>(0.018)  | 0.145***<br>(0.037) | -0.071**<br>(0.025)  | -0.091*<br>(0.041)   | 0.209***<br>(0.032)  | 0.227***<br>(0.059)  | 0.199***<br>(0.020)  | 0.115***<br>(0.032)  |
| Discuss Politics         | 0.271***<br>(0.030)  | 0.194***<br>(0.059) | 0.286***<br>(0.037)  | 0.327***<br>(0.059)  | 0.350***<br>(0.041)  | 0.302***<br>(0.066)  | 0.352***<br>(0.027)  | 0.371***<br>(0.048)  |
| Growing Season Variation | 0.004<br>(0.004)     | -0.002<br>(0.010)   | -0.008<br>(0.007)    | -0.029+<br>(0.016)   | 0.003<br>(0.005)     | -0.009<br>(0.010)    | -0.002<br>(0.004)    | -0.020*<br>(0.008)   |
| Rainfall (kilometers)    | -0.185*<br>(0.094)   | -0.023<br>(0.189)   | -0.116<br>(0.124)    | -0.165<br>(0.215)    | 0.575***<br>(0.109)  | 0.830***<br>(0.212)  | 0.207*<br>(0.100)    | -0.029<br>(0.176)    |
| Dist. to Port (1,000 km) | 0.221+<br>(0.118)    | 0.375+<br>(0.214)   | -0.034<br>(0.186)    | -0.077<br>(0.296)    | 0.383*<br>(0.165)    | 0.125<br>(0.277)     | 0.316*<br>(0.129)    | 0.743***<br>(0.193)  |
| Constant                 | 1.061***<br>(0.213)  | 1.549***<br>(0.370) | -0.481+<br>(0.264)   | -0.253<br>(0.440)    | -3.495***<br>(0.234) | -3.782***<br>(0.406) | -1.830***<br>(0.187) | -1.081***<br>(0.304) |
| N                        | 22600                | 7031                | 22459                | 6987                 | 22121                | 6847                 | 22509                | 7010                 |
| Country FEs              | Yes                  | Yes                 | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| AIC                      | 22621.9              | 5967.4              | 18167.5              | 6448.2               | 15981.7              | 4616.1               | 27624.9              | 8382.2               |
| BIC                      | 22830.6              | 6152.1              | 18330.6              | 6598.6               | 16175.8              | 4789.2               | 27804.7              | 8554.6               |

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

+ p &lt; 0.1, \* p &lt; 0.05, \*\* p &lt; 0.01, \*\*\* p &lt; 0.001

Table B5: RPOs and Political Outcomes - Probit Regressions

|                          | Voted     |          | Vote Buy  |           | Demonstrate |           | Group Petitions |           |
|--------------------------|-----------|----------|-----------|-----------|-------------|-----------|-----------------|-----------|
|                          | All       | Farmers  | All       | Farmers   | All         | Farmers   | All             | Farmers   |
| RPO Member               | 0.113*    | 0.119**  | 0.179***  | 0.181***  | 0.224***    | 0.250***  | 0.483***        | 0.497***  |
|                          | (0.045)   | (0.045)  | (0.049)   | (0.050)   | (0.047)     | (0.049)   | (0.042)         | (0.043)   |
| Female                   | 0.084***  | 0.056    | -0.061*   | -0.097*   | -0.155***   | -0.140*   | -0.163***       | -0.136*** |
|                          | (0.024)   | (0.047)  | (0.026)   | (0.044)   | (0.026)     | (0.057)   | (0.019)         | (0.040)   |
| Household Head           | 0.628***  | 0.560*** | -0.029    | -0.105*   | 0.035       | 0.006     | 0.258***        | 0.215***  |
|                          | (0.024)   | (0.047)  | (0.028)   | (0.047)   | (0.028)     | (0.054)   | (0.022)         | (0.040)   |
| Rural                    | 0.114***  | 0.102    | -0.026    | -0.039    | 0.000       | 0.006     | 0.167***        | 0.048     |
|                          | (0.027)   | (0.071)  | (0.040)   | (0.083)   | (0.036)     | (0.074)   | (0.030)         | (0.068)   |
| Farmer                   | 0.186***  |          | 0.023     |           | -0.097**    |           | 0.003           |           |
|                          | (0.031)   |          | (0.037)   |           | (0.035)     |           | (0.028)         |           |
| Education                | 0.009     | 0.018    | 0.025**   | 0.029+    | 0.045***    | 0.029+    | 0.031***        | 0.049***  |
|                          | (0.007)   | (0.014)  | (0.008)   | (0.015)   | (0.008)     | (0.016)   | (0.006)         | (0.013)   |
| Resp. Condition          | -0.047*** | -0.012   | -0.095*** | -0.090*** | 0.004       | 0.041*    | 0.002           | 0.006     |
|                          | (0.009)   | (0.018)  | (0.013)   | (0.021)   | (0.011)     | (0.018)   | (0.009)         | (0.017)   |
| Public Affairs Interest  | 0.087***  | 0.086*** | -0.038**  | -0.054*   | 0.107***    | 0.105***  | 0.121***        | 0.070***  |
|                          | (0.011)   | (0.021)  | (0.014)   | (0.024)   | (0.017)     | (0.031)   | (0.012)         | (0.020)   |
| Discuss Politics         | 0.157***  | 0.107**  | 0.156***  | 0.182***  | 0.190***    | 0.166***  | 0.215***        | 0.225***  |
|                          | (0.017)   | (0.032)  | (0.021)   | (0.033)   | (0.022)     | (0.035)   | (0.017)         | (0.029)   |
| Growing Season Variation | 0.002     | -0.001   | -0.003    | -0.013    | 0.001       | -0.004    | -0.001          | -0.012**  |
|                          | (0.002)   | (0.005)  | (0.004)   | (0.009)   | (0.003)     | (0.006)   | (0.002)         | (0.005)   |
| Rainfall (kilometers)    | -0.103+   | -0.008   | -0.048    | -0.070    | 0.317***    | 0.452***  | 0.125*          | -0.023    |
|                          | (0.055)   | (0.106)  | (0.071)   | (0.124)   | (0.061)     | (0.116)   | (0.061)         | (0.105)   |
| Dist. to Port (1,000 km) | 0.147*    | 0.221+   | -0.011    | -0.040    | 0.206*      | 0.073     | 0.199*          | 0.461***  |
|                          | (0.069)   | (0.119)  | (0.104)   | (0.165)   | (0.090)     | (0.149)   | (0.078)         | (0.116)   |
| Constant                 | 0.610***  | 0.869*** | -0.356*   | -0.234    | -1.975***   | -2.116*** | -1.116***       | -0.657*** |
|                          | (0.117)   | (0.201)  | (0.151)   | (0.249)   | (0.128)     | (0.218)   | (0.114)         | (0.183)   |
| N                        | 22600     | 7031     | 22459     | 6987      | 22121       | 6847      | 22509           | 7010      |
| Country FEs              | Yes       | Yes      | Yes       | Yes       | Yes         | Yes       | Yes             | Yes       |
| AIC                      | 22638.7   | 5966.2   | 18177.3   | 6455.5    | 15979.0     | 4617.7    | 27627.0         | 8378.5    |
| BIC                      | 22847.0   | 6150.9   | 18340.6   | 6604.6    | 16173.2     | 4791.0    | 27806.9         | 8551.2    |

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

+ p &lt; 0.1, \* p &lt; 0.05, \*\* p &lt; 0.01, \*\*\* p &lt; 0.001

Below are full results from the model interacting RPO membership with group density and incumbent vote share.

Table B6: Interactions Full

|                          | Vote Buy             |                      | Demonstrate          |
|--------------------------|----------------------|----------------------|----------------------|
| RPO Member               | 0.008<br>(0.019)     | -0.013<br>(0.033)    | 0.076**<br>(0.025)   |
| RPO Density              | -0.018<br>(0.029)    |                      |                      |
| RPO Member X RPO Density | 0.121**<br>(0.046)   |                      |                      |
| Incumbent Share          |                      | -0.101***<br>(0.030) | 0.001<br>(0.021)     |
| RPO Member X Inc. Share  |                      | 0.114*<br>(0.057)    | -0.070+<br>(0.041)   |
| Female                   | -0.019***<br>(0.005) | -0.023***<br>(0.007) | -0.037***<br>(0.006) |
| Household Head           | -0.004<br>(0.006)    | -0.006<br>(0.008)    | 0.006<br>(0.006)     |
| Rural                    | -0.006<br>(0.009)    | -0.007<br>(0.011)    | 0.000<br>(0.008)     |
| Farmer                   | 0.003<br>(0.009)     | 0.003<br>(0.011)     | -0.022**<br>(0.007)  |
| Education                | 0.008***<br>(0.002)  | 0.008***<br>(0.002)  | 0.009***<br>(0.002)  |
| Resp. Condition          | -0.022***<br>(0.003) | -0.027***<br>(0.004) | 0.000<br>(0.002)     |
| Public Affairs Interest  | 0.003<br>(0.003)     | 0.005<br>(0.003)     | 0.032***<br>(0.003)  |
| Growing Season Variation | -0.001<br>(0.001)    | -0.001<br>(0.001)    | 0.000<br>(0.001)     |
| Rainfall (Meters)        | -0.015<br>(0.020)    | -0.007<br>(0.022)    | 0.083***<br>(0.016)  |
| Dist. to Port (1,000 km) | -0.011<br>(0.026)    | -0.018<br>(0.030)    | 0.074***<br>(0.020)  |
| Constant                 | 0.371***<br>(0.042)  | 0.448***<br>(0.049)  | -0.035<br>(0.032)    |
| N                        | 22459                | 18785                | 18660                |
| Country FEs              | Yes                  | Yes                  | Yes                  |
| AIC                      | 137437.8             | 113726.5             | 99898.0              |
| BIC                      | 307289.8             | 236341.2             | 215839.7             |

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

Below are a set of Linear Probability Models including subnational-unit fixed-effects in addition to country fixed-effects.

Table B7: RPOs and Political Outcomes - LPM w/ Subnat. FEs

|                          | Voted                |                     | Vote Buy             |                     | Demonstrate          |                     | Group Petitions      |                      |
|--------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|----------------------|
|                          | All                  | Farmers             | All                  | Farmers             | All                  | Farmers             | All                  | Farmers              |
| RPO Member               | 0.030**<br>(0.010)   | 0.038***<br>(0.011) | 0.046***<br>(0.013)  | 0.047***<br>(0.013) | 0.045***<br>(0.010)  | 0.053***<br>(0.010) | 0.138***<br>(0.013)  | 0.149***<br>(0.014)  |
| Female                   | 0.030***<br>(0.007)  | 0.022+<br>(0.011)   | -0.012*<br>(0.005)   | -0.022*<br>(0.011)  | -0.029***<br>(0.005) | -0.023*<br>(0.010)  | -0.058***<br>(0.007) | -0.049***<br>(0.013) |
| Household Head           | 0.183***<br>(0.007)  | 0.139***<br>(0.013) | 0.000<br>(0.006)     | -0.014<br>(0.012)   | 0.008<br>(0.006)     | 0.000<br>(0.010)    | 0.094***<br>(0.007)  | 0.070***<br>(0.014)  |
| Rural                    | 0.023**<br>(0.007)   | -0.001<br>(0.015)   | -0.008<br>(0.007)    | -0.006<br>(0.017)   | 0.002<br>(0.007)     | 0.003<br>(0.014)    | 0.040***<br>(0.009)  | 0.025<br>(0.020)     |
| Farmer                   | 0.049***<br>(0.008)  |                     | 0.001<br>(0.008)     |                     | -0.020**<br>(0.006)  |                     | 0.003<br>(0.009)     |                      |
| Education                | 0.002<br>(0.002)     | 0.004<br>(0.003)    | 0.006***<br>(0.002)  | 0.006<br>(0.004)    | 0.009***<br>(0.002)  | 0.005<br>(0.003)    | 0.011***<br>(0.002)  | 0.018***<br>(0.004)  |
| Resp. Condition          | -0.016***<br>(0.003) | -0.006<br>(0.005)   | -0.018***<br>(0.003) | -0.015**<br>(0.005) | 0.000<br>(0.002)     | 0.008*<br>(0.004)   | 0.002<br>(0.003)     | 0.003<br>(0.006)     |
| Public Affairs Interest  | 0.026***<br>(0.003)  | 0.020***<br>(0.005) | -0.004<br>(0.003)    | -0.005<br>(0.006)   | 0.019***<br>(0.003)  | 0.016**<br>(0.005)  | 0.043***<br>(0.004)  | 0.022***<br>(0.007)  |
| Discuss Politics         | 0.044***<br>(0.005)  | 0.025**<br>(0.008)  | 0.032***<br>(0.004)  | 0.039***<br>(0.008) | 0.041***<br>(0.005)  | 0.034***<br>(0.007) | 0.076***<br>(0.006)  | 0.078***<br>(0.010)  |
| Growing Season Variation | 0.001<br>(0.001)     | -0.001<br>(0.002)   | -0.002+<br>(0.001)   | -0.006+<br>(0.003)  | 0.002+<br>(0.001)    | 0.004*<br>(0.002)   | 0.002+<br>(0.001)    | 0.001<br>(0.003)     |
| Rainfall (kilometers)    | 0.005<br>(0.024)     | 0.009<br>(0.034)    | -0.049+<br>(0.029)   | -0.061<br>(0.053)   | 0.007<br>(0.018)     | 0.059*<br>(0.027)   | -0.005<br>(0.027)    | 0.019<br>(0.039)     |
| Dist. to Port (1,000 km) | -0.055<br>(0.055)    | 0.105<br>(0.085)    | 0.027<br>(0.065)     | 0.111<br>(0.134)    | 0.028<br>(0.046)     | 0.152+<br>(0.082)   | -0.108+<br>(0.056)   | 0.030<br>(0.095)     |
| Constant                 | 0.619***<br>(0.049)  | 0.822***<br>(0.059) | 0.406***<br>(0.063)  | 0.416***<br>(0.097) | -0.041<br>(0.034)    | -0.136**<br>(0.049) | 0.063<br>(0.049)     | 0.115<br>(0.088)     |
| Num.Obs.                 | 22600                | 7031                | 22459                | 6987                | 22121                | 6847                | 22509                | 7010                 |
| R2                       | 0.121                | 0.106               | 0.185                | 0.192               | 0.092                | 0.128               | 0.175                | 0.204                |
| R2 Adj.                  | -13.788              | -5.633              | -12.624              | -4.963              | -13.947              | -5.351              | -12.834              | -4.891               |
| N                        | 22600                | 7031                | 22459                | 6987                | 22121                | 6847                | 22509                | 7010                 |
| Country FEs              | Yes                  | Yes                 | Yes                  | Yes                 | Yes                  | Yes                 | Yes                  | Yes                  |
| Subnat. FEs              | Yes                  | Yes                 | Yes                  | Yes                 | Yes                  | Yes                 | Yes                  | Yes                  |

Survey Weights Included, Standard Errors Clustered by PSU in Parentheses

+ p < 0.1, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

## B.4 Sensitivity Analysis

### B.4.1 Voted

To examine threats to inference from omitted variable bias I conduct a sensitivity analysis of this paper’s finding that RPO membership is associated with a higher likelihood of voting in the last election. Specifically, I conduct a sensitivity analysis of the full model found in Table 2. This analysis illustrates how vulnerable the effect of RPO membership is to unobserved confounds (Cinelli and Hazlett, 2020). Table B7 and Figure B3 present the results from this analysis. First, in order to eliminate the effect of RPO membership unobserved confounds that explains all of the residual variation in voting would also have to explain .34 percent of the variation in RPO membership. Alternatively, an unobserved confound explaining at least 5.7 percent of the variation in both voting and RPO membership would eliminate this effect, while an unobserved confound explaining at least .84 percent of the variation in both voting and RPO membership would drop the RPO membership coefficient below a p-value of .05. Put differently, unobserved confounds would have to be at least three times as strong as the effect observed on gender for the true effect of RPO membership to be 0.

Table B8: Sensitivity Analysis: Vote

| Outcome: <i>Voted</i> |   |      |         |                               |            |                         |
|-----------------------|---|------|---------|-------------------------------|------------|-------------------------|
| Treatment:            | Est.  | S.E. | t-value | $R^2_{Y \sim D   \mathbf{X}}$ | $RV_{q=1}$ | $RV_{q=1, \alpha=0.05}$ |
| <i>rpo</i>            | 0.022   | 0.01 | 2.291   | 0.3%                          | 5.7%       | 0.8%                    |
| df = 1524             | <i>Bound (1x female): <math>R^2_{Y \sim Z   \mathbf{X}, D} = 1.3\%</math>, <math>R^2_{D \sim Z   \mathbf{X}} = 1.8\%</math></i> |      |         |                               |            |                         |

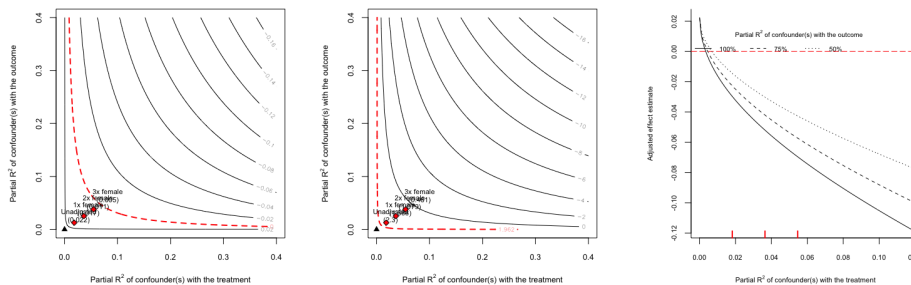


Figure B3: Sensitivity Analysis Plots: Vote

### B.4.2 Vote Buy

Next I consider this paper's finding that RPO membership is associated with a higher likelihood of being approached with an offer to buy a respondent's vote in the last election, again of the full model found in Table 2. Table B8 and Figure B4 present the results from this analysis. First, in order to eliminate the effect of RPO membership unobserved confounds that explains all of the residual variation in vote buying would also have to explain .8 percent of the variation in RPO membership. Alternatively, an unobserved confound explaining at least 8.6 percent of the variation in both vote buying and RPO membership would eliminate this effect, while an unobserved confound explaining at least 3.8 percent of the variation in both vote buying and RPO membership would drop the RPO membership coefficient below a p-value of .05. Put differently, an unobserved confound would have to be at least three times as strong as the effect observed on gender for the true effect of RPO membership to be 0.

Table B9: Sensitivity Analysis: Vote Buy

| Outcome: <i>Vote Buy</i> |  |       |         |                               |            |                         |
|--------------------------|--|-------|---------|-------------------------------|------------|-------------------------|
| Treatment:               | Est.   | S.E.  | t-value | $R^2_{Y \sim D   \mathbf{X}}$ | $RV_{q=1}$ | $RV_{q=1, \alpha=0.05}$ |
| <i>rpo</i>               | 0.047  | 0.013 | 3.491   | 0.8%                          | 8.6%       | 3.8%                    |
| df = 1524                | <i>Bound (1x female):</i> $R^2_{Y \sim Z   \mathbf{X}, D} = 0.5\%$ , $R^2_{D \sim Z   \mathbf{X}} = 1.8\%$ |       |         |                               |            |                         |

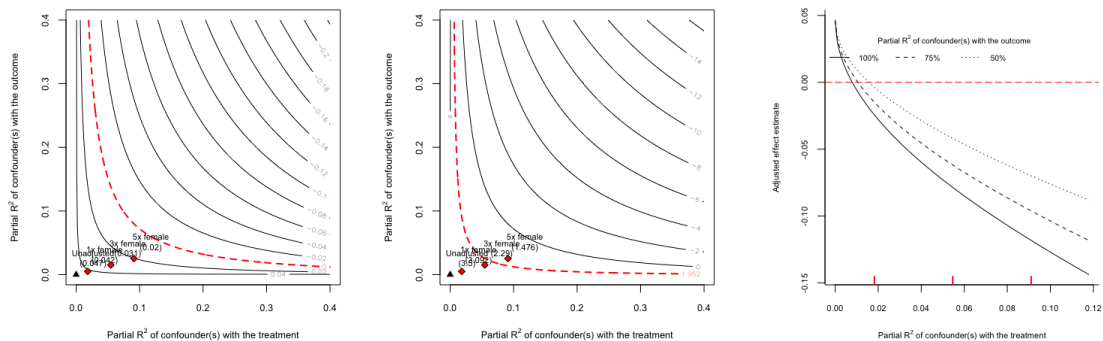


Figure B4: Sensitivity Analysis Plots: Vote Buy



### B.4.3 Demonstrate

Next I consider this paper’s finding that RPO membership is associated with a higher likelihood of demonstrating in the last year, again of the full model found in Table 2. Table B9 and Figure B5 present the results from this analysis. First, in order to eliminate the effect of RPO membership unobserved confounds that explains all of the residual variation in demonstrating would also have to explain 1.2 percent of the variation in RPO membership. Alternatively, an unobserved confound explaining at least 10.4 percent of the variation in both demonstrating and RPO membership would eliminate this effect, while an unobserved confound explaining at least 5.7 percent of the variation in both demonstrating and RPO membership would drop the RPO membership coefficient below a p-value of .05. Put differently, an unobserved confound would have to be at least three times as strong as the effect observed on gender for the true effect of RPO membership to be 0.

Table B10: Sensitivity Analysis: Demonstrate

| Outcome: <i>Demonstrate</i> |  |      |         |                               |            |                         |
|-----------------------------|--|------|---------|-------------------------------|------------|-------------------------|
| Treatment:                  | Est.   | S.E. | t-value | $R_{Y \sim D   \mathbf{X}}^2$ | $RV_{q=1}$ | $RV_{q=1, \alpha=0.05}$ |
| <i>rpo</i>                  | 0.043  | 0.01 | 4.27    | 1.2%                          | 10.4%      | 5.7%                    |
| df = 1524                   | <i>Bound (1x female):</i> $R_{Y \sim Z   \mathbf{X}, D}^2 = 2.2\%$ , $R_{D \sim Z   \mathbf{X}}^2 = 1.8\%$ |      |         |                               |            |                         |

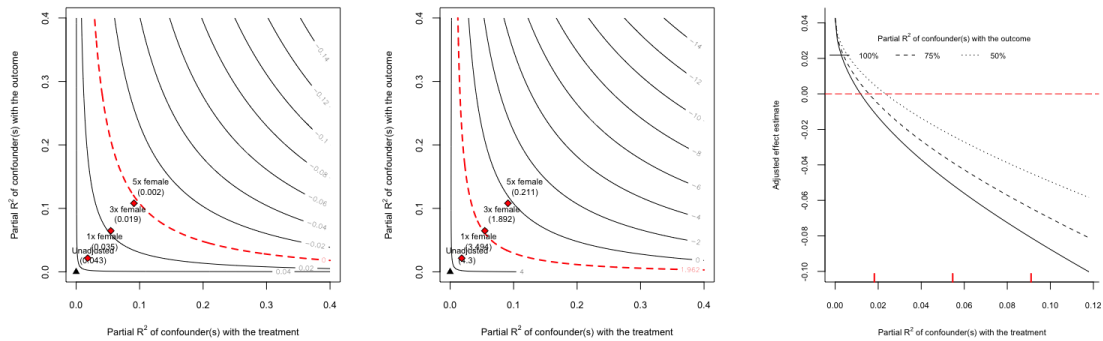


Figure B5: Sensitivity Analysis Plots: Demonstrate

### B.4.4 Group Petition

Next I consider this paper's finding that RPO membership is associated with a higher likelihood of joining others to raise an issue in the last year, again of the full model found in Table 2. Table B10 and Figure B6 present the results from this analysis. First, in order to eliminate the effect of RPO membership unobserved confounds that explains all of the residual variation in group petition would also have to explain 8.6 percent of the variation in RPO membership. Alternatively, an unobserved confound explaining at least 26.3 percent of the variation in both group petitioning and RPO membership would eliminate this effect, while an unobserved confound explaining at least 22.5 percent of the variation in both group petitioning and RPO membership would drop the RPO membership coefficient below a p-value of .05. Put differently, an unobserved confound would have to be at least three times as strong as the effect observed on gender for the true effect of RPO membership to be 0.

Table B11: Sensitivity Analysis: Group Petition

| Outcome: <i>Group Petition</i> |  |       |         |                               |            |                         |
|--------------------------------|--|-------|---------|-------------------------------|------------|-------------------------|
| Treatment:                     | Est.   | S.E.  | t-value | $R_{Y \sim D   \mathbf{X}}^2$ | $RV_{q=1}$ | $RV_{q=1, \alpha=0.05}$ |
| <i>rpo</i>                     | 0.159  | 0.013 | 11.951  | 8.6%                          | 26.3%      | 22.5%                   |
| df = 1523                      | <i>Bound (1x female):</i> $R_{Y \sim Z   \mathbf{X}, D}^2 = 4.9\%$ , $R_{D \sim Z   \mathbf{X}}^2 = 1.8\%$ |       |         |                               |            |                         |

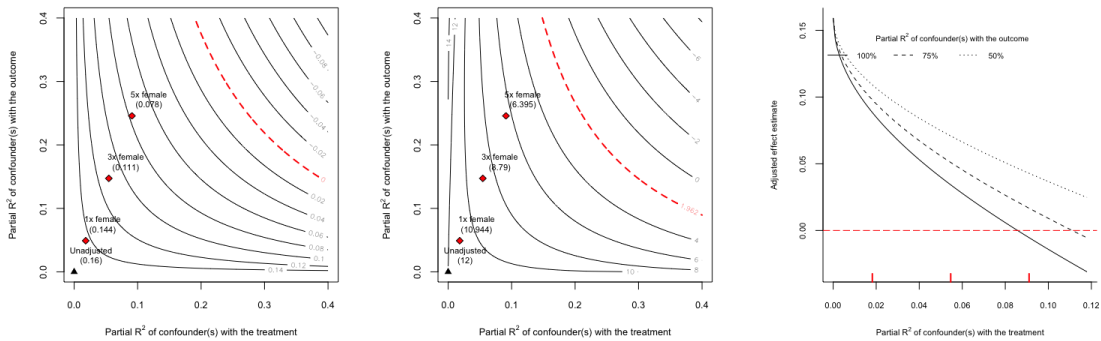


Figure B6: Sensitivity Analysis Plots: Group Petition

## B.5 Multiple Hypotheses Corrections

To account for testing my main hypotheses using several different measures, I adjust my p-values in two ways: the Bonferroni correction and the Benjamini-Hochberg procedure. The Bonferroni correction minimizes the risk of falsely rejecting null the hypothesis (Type I errors) by multiplying your p-value by the number of hypothesis tests you conduct. This is a very conservative approach, and likely increases the risk of Type II errors. Nonetheless, the political outcomes examined in this paper almost universally survive this adjustment, with only voting the last election when modeled using linear probability models failing to maintain some level of significance. The Benjamini-Hochberg procedure, or False Discovery Rate, is a less conservative method for adjusting for multiple comparisons, and my results universally hold up after implementing this procedure.

Table B12: Multiple Hypothesis Correction - Political Outcomes

|                    | Voted - All               | Voted - Farmers | Vote Buy - All | Vote Buy - Farmers | Demonstrate - All | Demonstrate - Farmers | Group Petition - All | Group Petition - Farmers |
|--------------------|---------------------------|-----------------|----------------|--------------------|-------------------|-----------------------|----------------------|--------------------------|
|                    | Linear Probability Models |                 |                |                    |                   |                       |                      |                          |
| Original           | 0.0221                    | 0.0062          | 0.0005         | 0.0007             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
| Bonferroni         | 0.1770                    | 0.0495          | 0.0040         | 0.0052             | 0.0002            | 0.0000                | 0.0000               | 0.0000                   |
| Benjamini-Hochberg | 0.0221                    | 0.0071          | 0.0008         | 0.0009             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
|                    | Logistic Regressions      |                 |                |                    |                   |                       |                      |                          |
| Original           | 0.0091                    | 0.0077          | 0.0004         | 0.0005             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
| Bonferroni         | 0.0727                    | 0.0613          | 0.0032         | 0.0037             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
| Benjamini-Hochberg | 0.0091                    | 0.0088          | 0.0006         | 0.0006             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
|                    | Probit Regressions        |                 |                |                    |                   |                       |                      |                          |
| Original           | 0.0144                    | 0.0080          | 0.0003         | 0.0003             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
| Bonferroni         | 0.0912                    | 0.0639          | 0.0025         | 0.0028             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |
| Benjamini-Hochberg | 0.0144                    | 0.0091          | 0.0005         | 0.0005             | 0.0000            | 0.0000                | 0.0000               | 0.0000                   |