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Sam Jones

Felix Schilling

Finn Tarp

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University of Copenhagen

Faculty of Social Sciences

Department of Economics

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Doing business while holding public office: Evidence from Mozambique's firm registry

Sam Jones[a,c], Felix Schilling[b], and Finn Tarp[c]

[a]UNU-WIDER, Mozambique
[b]Copenhagen Business School
[c]University of Copenhagen, Denmark

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Abstract

We link the universe of owners of businesses formally registered in Mozambique since Independence to a new database of politically exposed persons. Recreating the dynamic network of ties between firm owners, we estimate the value of party political and executive mandates to their personal business interests. We find holders of political office attain significantly faster growth not only in the number of companies they own but also in their structural power within the business-owner network, as measured by their 'godfather centrality'. Such growth is concentrated in joint-stock firms active in trade and finance sectors and is even larger once we aggregate the analysis to the family-name level. This is consistent with politicians accumulating private sector wealth by acting as rentier-brokers.

Key words: firm registry, beneficial ownership, political connections, rent-seeking, Mozambique

JEL codes: D72, G30, G38

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1 Introduction

The textbook notion of multiple independent firms operating in competitive markets at arms-length from politicians is a valuable theoretical benchmark. However, in many real world settings firms and politicians make trades to obtain mutual benefits, using both legal and illegal channels (e.g., Shleifer and Vishny, 1994; Khan and Jomo, 2000; Lim and Stern, 2002; Choi and Thum, 2009; Alok and Ayyagari, 2020). To illustrate, the 'Luanda Leaks' from Angola detailed the many ways in which businesses owned by the ex-president's daughter, Isabel dos Santos, benefited from her father's political patronage.[1] And during the Covid-19 pandemic, investigations suggest that associates of politicians from the UK's governing Conservative Party have been major beneficiaries of emergency public procurement of medical supplies and protective gear.[2]

In this paper we shed light on an under-studied channel through which serving politicians can reap private benefits from holding political office. Much of the existing literature has focussed on the benefits firms reap from political connections, typically achieved through direct payments to (ex-)politicians or their relatives, such as via appointments as directors or advisors (e.g., Goldman et al., 2009). However, in developing countries where both legislation and capacity to regulate conflicts of interest are limited, individuals serving in high political office are often simultaneously active business owners, with interests in multiple firms. Evidence from various contexts, albeit much of it anecdotal, suggests that it is in through these complex networks of relationships between firms (Khanna and Yafeh, 2007) that politicians are able to accumulate private wealth and influence (e.g., Daloz, 2003; Cortês, 2018).

We focus on the extent to which politicians' personal business interests expand on account of holding public office. This represents a particular form of cronyism, whereby active politicians straddle the public-private sector divide. As we elaborate in Section 2, this is conceptually distinct from crude forms of neo-patrimonialism or state capture, which respectively tend to caricature either politicians or existing private firms as the prime agents of rent-seeking behaviour. In contrast, we hypothesise that the expansion of politicians' own business network is one feasible outcome of a time-consistent and (often semi-)legal bargain, whereby entrepreneurs or investors agree to share the benefits (profits) of their business activities with firms owned by politicians in exchange for ongoing protection and/or other favours (e.g., permits, licenses etc.).

[1] Under a new president, the Angolan government ha sought to recover US$ 1.1 billion from her estate. See https://www.icij.org/investigations/luanda-leaks/.

[2] See https://www.nytimes.com/interactive/2020/12/17/world/europe/britain-covid-contracts.html.

Closely related channels have been investigated in a small number of previous studies. Della Vigna et al. (2016) show how firms in Italy shifted advertising spending to the country's major television network, owned by the media entrepreneur Silvio Berlusconi, during periods when he held political office. The authors estimate the additional revenue earned by the network was in the order of billions of Euros and was driven by firms in more regulated sectors, implying advertising firms sought to curry political favours. Evidence from former communist countries also reveal how cronyism operates through connections to firms owned by politicians. For example, Lamberova and Sonin (2018) use network analysis to document a significant association between the wealth of businessmen and their closeness to the inner circle of the incumbent leader. And Ivanović et al. (2019) show that Serbian firms privatized into the hands of politicians were more likely to subsequently file for bankruptcy, having been stripped of assets.

To shed light on how politicians' personal business networks evolve we use public registry data from Mozambique to construct the complete network of companies established since 1975, including their registered owners. To date, the vast majority of businesses are either sole-owned or joint stock companies with physical persons as shareholders. Furthermore, even under the 2013 Public Probity Law, there has never been any general legal restriction on serving politicians (or public servants) from actively pursuing their own business interests (Levy and Williams, 2014). The registry information allows us to construct time-series metrics of business performance, including the number of companies owned by each individual, as well as indicators of their personal structural power within the network of firm-owners, such as given by their 'godfather centrality' (as per Jackson, 2019). Linking this to a new hand-collected database of politically-exposed persons (PEPs), we use both individual fixed-effects and lagged outcome models to bracket estimates of the contribution of holding political office to own business outcomes over the period 1985-2019.

In comparison to individuals without so-called political exposure, we find that the average PEP achieved significantly faster growth in their personal business network along multiple dimensions. According to our core results, obtained from a sub-sample of current PEPs matched to other PEPs who only held office later in the observation period, becoming a PEP is associated with a: 7 percentage point faster growth (over five years) in the number of companies in which they have an ownership interest; 10 percentage point greater increase in their godfather centrality position; and 20 percentage point greater increase in both their degree and decay centrality positions. In other words, even when we compare current PEPs against future PEPs, current PEPs become owners in more companies and accumulate a stronger structural position in the business network (e.g., as a broker between other businesses). Our basic results hold across a range of alternative models used to address

potential confounding from unobserved selection into holding political office, including group-wise trends and controls for prior business performance, and are also confirmed from event study estimates.

Digging deeper, we find that while both party political and executive offices are associated with broadly similar outcomes over the period(s) individuals hold office, but these benefits only persist for holders of executive positions once they leave office. Importantly, we also show that PEPs systematically tend to accumulate ownership in joint-stock companies, as opposed to sole-owned companies, and they predominantly accumulate interests in companies with activities in commerce (trade) and investment/finance. Together, this is consistent with a dynamic in which holders of political office leverage their positions to create and control rents across the private sector, acting as gatekeepers to state contracts and genuine (foreign direct) investment.

In relation to previous studies our contribution is threefold. First, we provide one of the first quantitative (microeconomic) inquiries into the dynamics of politicians' personal business networks, especially in a very low-income country where the (small) formal private sector is known to be heavily influenced by political elites. Second, we consider a distinctive and novel set of outcomes over an extended period of time, namely the size and importance of the private business networks associated with individual politicians, including measures of network centrality that capture their influence within the network of business-owners. In so doing, we provide support to existing work, largely of a qualitative nature in Mozambique and beyond (e.g., Hanlon, 2002; Twijnstra, 2015; Macuane et al., 2018), which contends politicians frequently act as unproductive rentier-brokers, captured by the metaphor of the 'big man' straddling private and public interests (e.g., Szeftel, 2000). Third, we demonstrate how publicly-available information from (digital) business registries, which have the advantage of near-universal coverage of the formal sector, can be deployed to investigate substantive political economy questions.

The paper is organised as follows: after this introduction, we elaborate further on our main hypotheses. Section 3 describes the country background and context. In Section 4 we outline our data, followed by our empirical strategy in Section 5. Section 6 presents our results; and we conclude in Section 7.

2 Main hypotheses

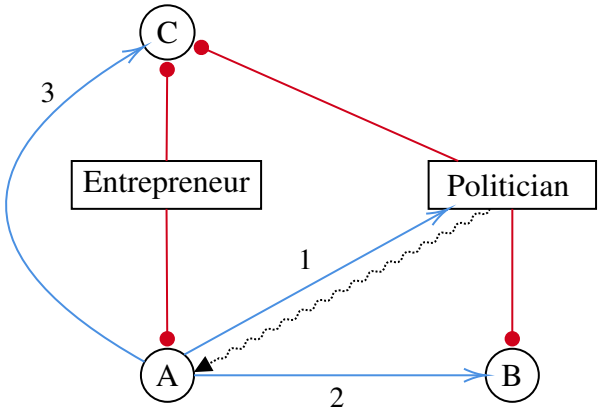
The proposition that politicians or their relatives may benefit financially from access to political power is neither new nor particularly controversial.[3] For instance, Fisman et al. (2014) use India's Right to Information Act to compare changes in assets (wealth) of parliamentary candidates. They find winning candidates enjoyed up to six percent faster growth in personal assets compared to losing candidates. Comparing British Members of Parliament (MPs), Eggers and Hainmueller (2009) show that Conservative MPs almost doubled their wealth compared to similar politicians, who did not win a mandate. Fafchamps and Labonne (2017) show that relatives of current elected municipal office holders in the Philippines were able to find relatively higher-paid jobs, compared to the relatives of unsuccessful candidates. And in rural Vietnam, Markussen and Tarp (2014) find that households with relatives in a position of political or bureaucratic power tend to invest more in land improvement, likely due to strengthened *de facto* property rights.

More broadly, the importance of politician-business links is a recurrent theme of the literature on modern forms of patrimonial government, which generically posits an abrogation of the separation of public and private realms, replaced by some type of patron-client relationship spanning the two. 'Neopatrimonialism', frequently used to describe states in sub-Saharan Africa, characterizes political leaders as patrons who manipulate clients in the public and private sectors in pursuit of their own personal and political ends, including rent extraction (e.g., Bratton and Van de Walle, 1993; Bach, 2011).[4] At another extreme, what Hutchcroft (1998) described as 'oligarchic patrimonialism' conceives political power as captured by a narrow set of private sector interests, which has been often applied to characterise developing-Asian and transition economies (e.g., Hellman et al., 2003), as well as some middle income African economies (e.g., Alence and Pitcher, 2019).[5]

Both these forms of patrimonialism imply a relatively direct exchange between politicians and businesses. This is shown schematically in Figure 1, represented by the two-way flow in which the politician provides support (favours) to Firm A, owned by an independent entrepreneur, for which the politician or his close family receives some financial benefit (arrow 1). The benefits to firms of political connections are well-documented (e.g., Goldman et al., 2009; Amore and Bennedsen, 2013). For example, Fisman (2001) finds that the value of firms listed on the Jakarta Stock Exchange with connections to the former Indonesian President Soharto saw their value decline when rumours about the President's

[3] For historical precedents see, for example, Della Porta et al. (1996).
[4] This reading of the state in Africa is not without substantive critiques. However, this debate is beyond the scope of the present study.
[5] See Winters (2011) for a detailed treatment of oligarchy and its internal types.

Figure 1: Sketch of types of connections between politicians and entrepreneurs



Note: Letters in circles represent registered firms, with ownership indicated by lines with round heads (in red); financial flows indicated by solid lines with arrow heads; political support indicated by wiggly line.

health emerged. Khwaja and Mian (2005) show that firms in Pakistan with directors who have participated in elections gain preferential access to credit from state banks, but have higher default rates. While in China, Chen and Kung (2019) find that firms with personal connections to Politburo members were able to obtain significant price discounts on land purchases.

The other side of the market – namely, exactly how politicians benefit from providing support to firms – has received somewhat less attention (Choi and Thum, 2009). Political corruption via bribes or illegal gifts is likely to be a main channel, but direct systematic evidence on these activities involving high-level politicians is generally lacking beyond individual legal proceedings (McMillan and Zoido, 2004; Cheung et al., 2012). Legal, or at least not explicitly illegal, direct connections between firms and politicians are also prevalent. Faccio (2006), for instance, defines political connections to include politicians (mainly, members of parliament) or family members formally appointed as top officers to public companies. Similarly, Truex (2014) identifies the change in financial returns to those public Chinese firms whose CEOs become a deputy of the National People's Congress.

However, an exclusive focus on direct payments (relationships) between firms and politicians is likely to miss a range of indirect exchanges. One-off payments-for-favours, such as bribes, carry risks for both parties – they are generally illegal and they do not commit either party to providing future support to the other. Also direct legal connections, such as through appointments, are often subject to legal prohibitions and open to public scrutiny. Moreover, in most circumstances they fix the financial payment to the politician *ex ante*. An alternative is for the parties to make some agreement to share the flow of rents from the business venture. This can be achieved, among other things, by sub-contracting arrangements or even by becoming business partners in related ventures, implying a significant degree of

agency on the part of both players. Under these mechanisms, illustrated by arrows 2 and 3 respectively in Figure 1, politicians can be expected to accumulate personal wealth by expanding their own business portfolio.[6]

Empirically, exchanges of this kind would be difficult to observe in the absence of detailed data on firm ownership and intra-firm transactions (as in Della Vigna et al., 2016). Even so, in the absence of the latter, we hypothesise that an increase in the number of businesses in which politicians are registered owners and/or an increase in the structural power of politicians' own firms, defined in relation to their network centrality (see below; also Lamberova and Sonin, 2018), would be symptomatic of material indirect exchanges between politicians and businesses. Exchanges of this sort may not only be easier to hide, especially where they involve unlisted companies, but they also may be economically-preferable in the presence of substantive uncertainty regarding returns to new business ventures and/or to safeguard the time consistency of the relationship. Furthermore, in contrast to crude models of patrimonialism which tend to focus on a single monopolistic (dominant) player or group, ongoing competition between a factionalized political elite may well play-out through their competing business networks and, in low income contexts, their ability to attract (foreign) investment capital. With this in mind, we now turn to the specific case of Mozambique where the business activities of political elites has been a long-standing topic of debate.

3 Country background

3.1 Historical context

Mozambique's contemporary political and economic landscape cannot be grasped without some appreciation of its historical roots. As put at the turn of the Millennium: "The combined legacies of colonialism, idealism, socialism, war fuelled by racism, economic collapse and structural adjustment (inspired by stout liberalism) have made a lasting impact on the structure of the economy" (Tarp et al., 2002). In this section, we briefly outline four critical aspects of this history, setting the scene for a discussion of how the relationship between the state, politicians and the private sector has evolved over the past 30 years.

First, modern-day Mozambique is a large country occupying over 2,500 kilometres of Indian Ocean coastline, with borders to South Africa, Zimbabwe, Malawi, Zambia and Tanzania,

[6] More elaborate connections can also be envisaged, such as involving multiple intermediary companies. Also, where regulation is lax, politicians may simply direct support to their own personal firms with or without partnering with investors.

and through which various large rivers find their way to the ocean (e.g., the Limpopo, Save, Zambezi and Rovuma rivers). Going back even before the arrival of Vasco da Gama in 1498, territories in Mozambique have long served as gateways to the 'interior' of East and Central Africa, as well as a conduit for trade in whatever tropical commodity happened to be in demand (e.g., gold, ivory, labour, cotton, cashew). And while the Portuguese crown was already making territorial claims in Mozambique by the early 16th century, it was not until around the 1930s that Portugal was able to exercise reasonable effective control of what continued to be an ethnically- and geographically-diverse territory (Newitt, 1995). During the height of colonial rule, Mozambique's formal economy remained reliant on the supply of cheap raw materials to Portugal (e.g., sugar) and the provision of labour and transport services to neighbouring countries (e.g., mines in South Africa; see First, 1985). Whatever infrastructure existed ran East-West (from ports to inland frontiers), while the country remained economically disintegrated in the North-South dimension. Moreover, the local-mainly agriculturally-based economy continued underdeveloped and exploited. In other words, right up to Independence, the economy was reliant on a few specific commercial relationships of an external nature in which native Mozambicans had little or no say.

Second, Mozambique's transition to Independence was late, rapid and messy. The final 15 years of the colonial period were characterised by large inflows of Portuguese settlers, yielding some agricultural and industrial progress. However, inspired by success elsewhere on the continent, this period also saw the start of a serious struggle for liberation, initiated by the Front for the Liberation of Mozambique (FRELIMO) from a base in Dar-Es-Salaam, Tanzania. Originally constitutionalist and non-violent, FRELIMO opted for armed struggle in 1964. A decade of violent conflict followed until Independence was suddenly announced in 1975, following the Carnation revolution in Portugal in 1974. This led to an exodus of about 80 percent or several hundred thousand Portuguese settlers, who had dominated managerial and technical positions (down to taxi drivers in the capital city), which in turn devastated the public administration and led to an almost total collapse of industry and commercial agriculture, leaving millions of peasants without inputs or supplies. This challenge was compounded by regional tensions with the apartheid states of Rhodesia and South Africa, as well as Cold War geopolitics. These left the new country little room for manoeuvre, either politically or economically, and turned out to be very costly, illustrated by the economic and military impact of Mozambique's decision to enforce United Nations sanctions against Rhodesia (Minter and Schmidt, 1988).

Third, not unlike other liberation movements, the vision adopted by Frelimo for a newly autonomous Mozambique was one of state-led socialism.[7] Under the Presidency of Samora

[7] We use 'Frelimo' without capitalization to refer to the post-Independence political party rather than the

Machel, the Frelimo leadership initially enjoyed a high degree of legitimacy and, arguably, the underlying social contract associated with socialism has provided the only credible unifying vision for the country up to the present day. As in Vietnam during the mid-1970s after the defeat of US forces, the atmosphere in Mozambique at the time was upbeat. Frelimo optimistically declared that the coming decade would see 'the victory over under-development'. Of course, this was naïve in retrospect, but it appeared self-evident to many at the time.

But, fourthly, post-independence challenges and ruptures quickly mounted. In particular a series of misguided and overly-ambitious economic choices followed the Third Frelimo Congress in 1977, in which Marxist-Leninism was formally adopted, prompting the creation of state farms and forced resettlement of large numbers of people into communal villages. A similar policy had been imposed by the Portuguese, albeit for different reasons. So, rather than winning support among the peasantry, Frelimo started to lose it. At the same time, under Rhodesian and South African support, the Mozambique Resistance Movement (MNR) emerged as an effective military force. MNR incorporated unhappy dissidents with roots predominantly in central Mozambique, where religious and ethnic grievances were both common and deep, and gradually absorbed others, who turned increasingly critical of Frelimo's policy stance.

With the Independence of Zimbabwe in 1980, hopes were high that a turnaround was possible. Yet, now backed by South Africa, MNR (renamed Renamo) slowly but surely undermined Frelimo's nation-building efforts. On the other side, Frelimo cadres remained steadfast in criminalizing so-called insurgents and their supporters. A brief glimmer of optimism occurred with the signing of the Nkomati Accord between Mozambique and South Africa in 1984. Yet, large-scale destruction of infrastructure and killings continued, with support from South Africa, and a political settlement was not on the cards before the end of Apartheid and fall of the Berlin Wall. In October 1992, Frelimo and Renamo signed the Rome General Peace Accords, finally ending over a decade of gruesome conflict that had left millions dead or displaced and the economy on its knees.[8]

3.2 Elite control and corruption

Even before the peace accords, Frelimo had begun to march back on its socialist vision. This was precipitated by the collapse of former allies in Eastern Europe and elsewhere on

liberation movement (FRELIMO).

[8] For a review of recent literature on state formation and the legacies of violence in Mozambique see Vines (2020).

the global arena, as well as the economic consequences of the ongoing war, which reached a historical low-point in 1986. Negotiations for financial support from the Bretton Woods institutions, as well as a range of western donors (in addition to the Nordics, which were present from very early on), began after the signing of the Nkomati agreement. Subsequently, the Government agreed a comprehensive deal with the Bretton Woods institutions and the Paris Club creditors in 1987. This introduced a five-year Economic Rehabilitation Programme (PRE), which entailed a drastic and complete U-turn in economic policy, while the Frelimo party continued to run along essentially the same socialist organisational lines.

A key leg of the PRE was dealing with state-owned enterprises via privatization or closure. Investigations of this process, which according to Cramer (2001) was one of the most extensive in sub-Saharan Africa by number of transactions, largely agree it did little to curtail the influence of politics within the economy. Rather than allowing a nascent independent private sector to flourish, privatizations represented a 'marriage between the politician and businessman' (Pitcher, 2002, p. 118), shifting economic power away from the state and into the hands of well-connected politicians or their associates.[9] Sumich and Honwana (2007), for instance, conclude that privatization: "was not a neutral, technical measure as the World Bank and the IMF seemed to naïvely assume, but a deeply political process where Frelimo directed events as much as possible to assure the continuing support of some elements of older constituencies and create new ones." (p. 19).[10]

We are not arguing that the privatisation process suffocated a 'willing and able' nascent domestic private sector. As noted, Mozambique's historical trajectory had precluded the accumulation of significant pools of domestic capital (human, financial or otherwise) outside the state. Our point is that in addition to being hasty and careless (Cramer, 2001), making extensive privatization a condition of external assistance in the context of weakness in *both* the domestic politico-judicial system and the private sector created fertile territory for the emergence of intricate links between the owners of private firms and existing holders of political power (see Harrison, 1999, for examples). In this sense, the process of privatization enabled Frelimo, both as a political party but also as a collection of individuals, not just to maintain but also to consolidate its hegemonic position in the shift to a market economy. Indeed, early on, Renamo members were still in the bush when assets and opportunities began to be privatized. Since then, the concentration of power in the structures of Frelimo has only been reinforced through repeated victories (albeit disputed) at the ballot box, as well as through the essential role of the state as bridgehead to foreign capital inflows (either

[9] This is not to say that prior to privatization links between business and politics were absent. Indeed, concerns with corruption were already prevalent in the speeches of Samora Machel in the early post-Independence period, and some ministers were reprimanded for using state enterprises for personal enrichment (e.g., Stasavage, 1999).

[10] For the World Bank's perspective on privatization, see Landau (1998).

as aid or investments).

This view of high-ranked members of Frelimo as central nodes linking economic and political spheres of power constitutes a defining feature of Mozambique's post-war development trajectory (see also Pitcher, 2002, 2017; Cortês, 2018). Related to this, three further aspects merit note. First is the almost complete absence of an independent non-political domestic capitalist class. Second is a general lack of open contest (competition) in political and economic life. To illustrate, the current electoral system is based on closed party candidate lists, which means that while party members are in principle accountable to the people, they are in reality foremost accountable to the party, both for their election and to gain access to business opportunities (among Frelimo members). Partly as a consequence, competition *within* Frelimo is fierce, meaning that managing internal tensions and interests often dominates public policy-making. In the case of industrial policy, for instance, this has produced a mixed and piece-meal approach, with no clearly articulated or commonly-agreed vision (e.g., Buur et al., 2012; Whitfield and Buur, 2014).

Third, tight links between politicians and businesses in Mozambique are not all illegal, nor are they necessarily corrupt. Nonetheless they have presented opportunities for abuse, which have been seized in some instances. Salimo et al. (2020) provide a detailed case study of how political insiders, as well as the investment arm of the Frelimo party, were able to benefit from the domestic allocation of natural gas from Sasol, often via partnerships with other foreign investors. The Indian Ocean Newsletter (29 June 2007) characterised these political-business connections as follows: "The business networks and the ruling Frelimo party have been closely interweaved for decades, leading to a risk of insider trading at all levels of power in Mozambique. Support or co-option between entrepreneurs and government officials puts the companies that do not have the benefit of this kind of political protection into a difficult position ... [giving] the Mozambican ruling class an air of a set of political-trading dynasties".[11]

Two specific examples of where this has degenerated into elite corruption are emblematic. As documented by Hanlon (2001, 2002), in the early 2000s journalist Carlos Cardoso and economist António Siba-Siba Macuacua were murdered, both while investigating funds embezzled during the (failed) privatizations of two commercial banks and which (in later proceedings) implicated family members of the political elite. Second, is the more recent so-called 'hidden debts' scandal, whereby three state-backed enterprises took out over USD 2 billion in loans from private foreign banks (Hanlon, 2017; Macuane et al., 2018). These loans had not been submitted for approval to the National Assembly, as required by law, and exceeded the limit placed on government borrowing in the relevant annual budget

[11] See www.mol.co.mz/noticias/2007/ion0629.html.

appropriation bill by a wide margin. When the existence of the loans became public, the IMF suspended its support to Mozambique and most foreign aid (already on a downward trajectory) was frozen. An international forensic audit and legal proceedings instigated by the US government implicated numerous members of the ruling elite (Nuvunga and Orre, 2019). While the ex-Minister of Finance was apprehended by South Africa for extradition to the USA, in Mozambique no prosecutions have been concluded successfully.

In sum, the extensive historical legacy of exploitation and under-development in Mozambique created enormous challenges for political leaders following Independence. At the outset, the dearth of both domestic private financial capital resources and business experience provided one motivation for the government's pursuit of state-led economic development in the late 1970s and 1980s. However, the failure of this programme – in large part due to external forces – did not imply anything resembling a capable or independent private sector was in place when Mozambique began to adopt market-based reforms in the mid-1980s. Put differently, even with the embrace of a market economy, it was not clear in the beginning, who would be the new captains of industry or even what industries could lead economic growth. The country's subsequent experience suggests that PEPs have occupied this space, establishing a clear nexus between party political and private economic power.

The above indicates that numerous scholars and commentators have raised concerns regarding the way in which political power in Mozambique has become intertwined with influence in the domestic formal private sector. However, existing analysis has been largely qualitative or anecdotal and it is unclear whether this is a generalized phenomenon or whether it is substantial in economic magnitude. Thus, our objective in the remainder of the paper is to undertake a quantitative investigation of the degree to which personal business success depends on access to the reigns of political power.

4 Data

This section presents our two main data sources, which we merge to construct a panel dataset covering all registered business owners and politically-exposed persons over each 5-year period from 1985-2019, where each period coincides with the national election cycle (from 1994 onwards).

4.1 Politically exposed persons (PEPs)

As noted in Section 1, we follow the Financial Action Task Force on Money Laundering (FATF) definition and construct a list of Mozambique's post-Independence politically exposed persons. PEPs are defined as holders of high executive office or important political party officials. We operationalize the former as individuals holding the office of Provincial Governor, Vice-minister, Minister or President. For important political party officials, we focus on individuals elected to the highest decision-making body of the ruling party, the Central Committee (*Comité Central*, CC) of Frelimo. Reflecting its socialist heritage, Frelimo has held a national party congress every two to six years since 1962. Members of the CC are elected at each congress, comprising provincial representatives (nominated by prior provincial party congresses) as well as central level members. While the composition and size of the CC has changed over time, the last congress held in 2017 elected 180 committee members of whom 129 were provincial representatives, plus 18 replacements.

No single public record lists the historical executive mandates or central committee members. Consequently, we collected a wide range of historical news articles and official publications in order to develop a complete list of PEPs, digitizing individual office holders, the type of office held and years in power (see Appendix A.1 for a full list of sources). While this list may have some gaps, we were able to identify the all executive officers (ministers, governors etc.) in all seven governments since 1990. Membership of the CC is more challenging. For all 11 congresses held since 1962, we were able to identify the members of the Political Committee (Politburo), which is the highest elected central body of the party and forms part of the core CC structure. In addition, for 5 of 11 congresses we have the full list of members elected to represent central functions; and we have the full list of the further provincial representatives for five of the eleven congresses.

To ensure consistent treatment of the same individuals, some of whom appear with different spellings (e.g., with or without middle names), we standardize each name in the PEP database. After doing so, we identify 884 unique individuals (PEPs). However, since many PEPs have held multiple posts, either at the same or at different points in time (e.g., many ministers are CC members; and presidents typically serve two terms), we observe a larger number of distinct mandates than unique individuals. Here, each mandate is defined by at least one mention as Minster, Vice-Minister, Governor, President, CC member or Politburo member in the respective time period. Table 1 summarizes the number of observed PEPs for each type of mandate in each period; and Figure 2 plots the distribution of individual tenure, defined as the length of time the individual has held political office. The left-hand side plots the cross-section cumulative distributions of first and last year in office, while the

Table 1: Frequency of individuals in each PEP category, per period

Type of office	≤1989	'90-94	'95-99	'00-04	'05-09	'10-14	'15-19	All
Political Bureau	38	43	48	55	61	59	61	79
Central Committee	401	489	411	423	427	333	481	759
Minister	41	52	53	55	65	68	63	151
Vice-Minister	13	13	25	27	28	26	33	87
Governor	14	12	14	21	25	25	22	60
Any office	418	514	449	466	482	390	530	884

Source: authors' compilation from archive material.
Note: individuals may hold offices across multiple office categories in each period.

right-hand side shows the cumulative distribution of active years in office for each PEP. The latter indicates that more than 20% of PEPs have been 'active' for more than 10 years while a small number of party grandees have been active for more than 30 years.

4.2 Company register

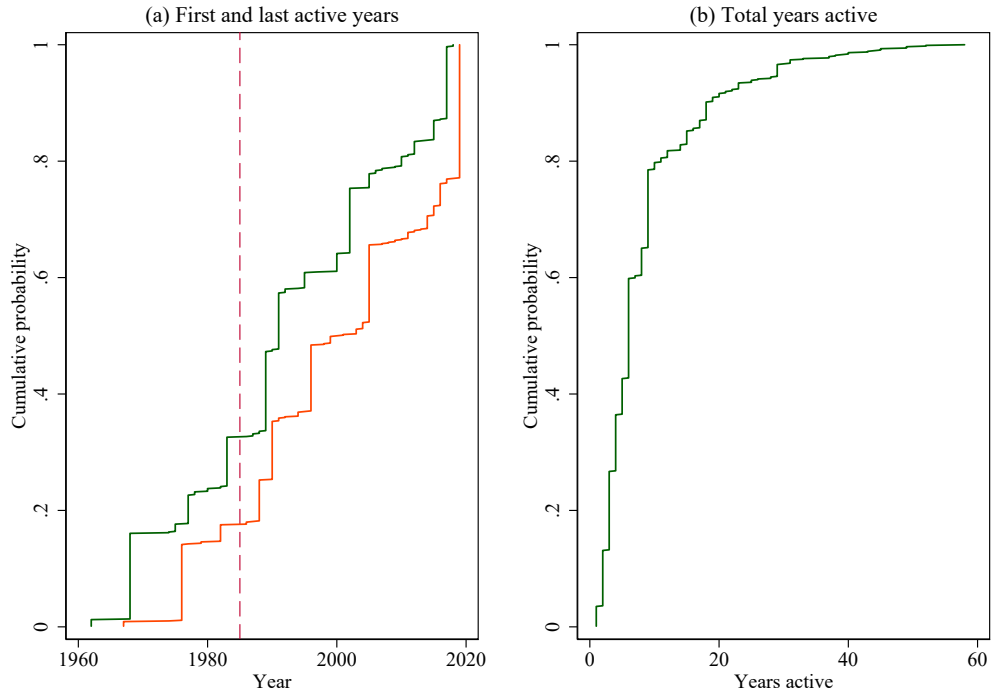
In keeping with the legislative structure inherited from Portugal, the constitution or modification (e.g., closure) of all legal entities (mainly enterprises, but also cooperatives, political parties, etc.) in Mozambique must be published in the official gazette, known as the *Boletim da República, Serie III* (BdR3).[12] Started at Independence in 1975, the registry provides a complete public list of all firms that have been formally established in the country. The published BdR3 documents are available for review at the National Archive or online (since 2006) and Appendix A.2 provides an example of one such entry.[13]

Entries in the gazette essentially represent the formal and legal publication of information transcribed manually at notarial offices around the country. While no official digital repository of the underlying data exists, a local private company (Pandora's Box Lda.) has sought to digitize all laws and announcements published in the various series of the *Boletim da República*, including BdR3. A main aim was to enable users to search for key words (e.g., firm names) and then access the relevant material quickly and directly based on scanned copies of the original publications. In the case of legal entities, the searchable index of the BdR3 is extensive and contains most of the information contained in each published announcement.

We leverage this digitalized information to construct a consistent register of companies. To

[12] This practice was maintained in Portugal until 2006, when the third series of the equivalent gazette (the Diário da República) was discontinued and replaced by a digital registry.
[13] See: www.portaldogoverno.gov.mz/por/Governo/Legislacao/Boletins-da-Republica.

Figure 2: Length of PEP activity (in any office)



Source: authors' compilation from archive material.

Note: panel (a) shows the cross-sectional cumulative distributions of first and last years in which individuals hold/held PEP mandates; panel (b) is the cumulative distribution of number of years active, per individual; we do not assume individuals hold office in all intervening years.

do so, we implemented a web-scraping procedure to parse through the internal index of BdR3 announcements in the Pandora's Box database and fetch all associated data fields. The fields associated with each index provide (at least) the name of the legal entity to which the announcement refers ('*Nome da entidade*'), the type of announcement ('*Anúncio de*') and the publication reference ('*Publicado em*'). As might be expected, there are both different types of legal entities, ranging from single-person companies to political parties, as well as various types of announcement. In each case, different additional information is provided. For the present purposes, we focus primarily on announcements of the constitution (matriculation) of the three main classes of limited liability companies, namely: firms registered under individual ownership ('*Sociedades individuais*'), firms owned by shareholders ('*Sociedades por quotas*') and anonymous societies ('*Sociedades anónimas*'). In addition, we retain information on other types of entities and announcements, which we subsequently deploy as control variables (see further below).

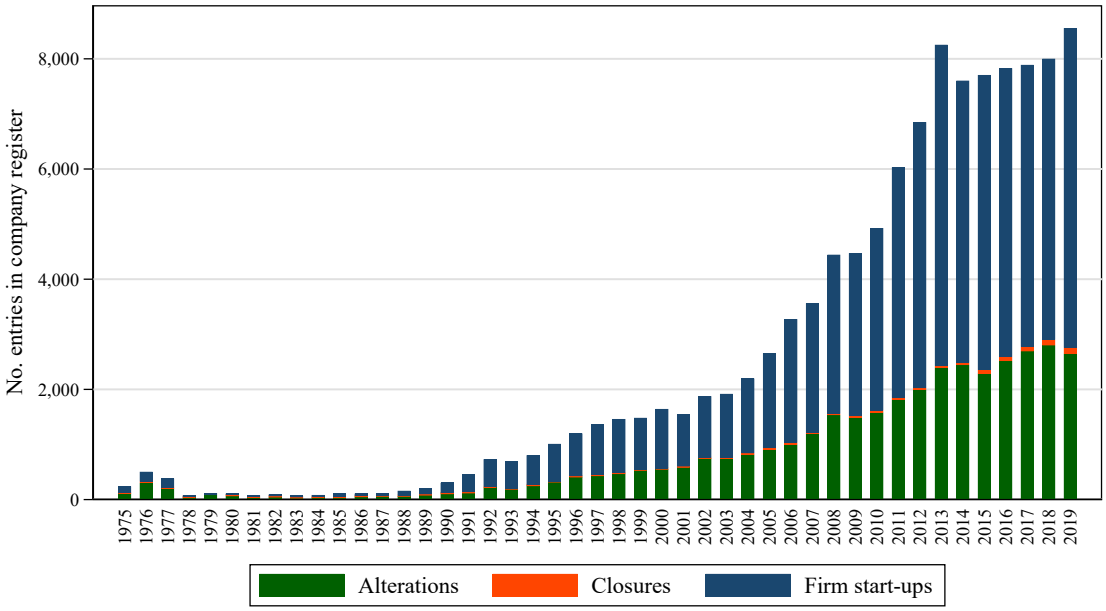
Having scraped the data in raw form, we cleaned it. First, we normalized the firm names to identify unique entities. Second, to make our subsequent analysis of the structure of the

business network tractable (see below), we mapped all documented information about each firm to a single entry. This information includes: (i) the founding year of the firm, given by its first entry in the register; (ii) the province of registration; (iii) all documented owners of the firm, regardless of the time they became owners; and (iv) the broad industry of the firm, based on key words in the founding mission statement. Where multiple keywords matched, we allocated the firm to all matching industries. In setting up the database in this way we do lose some specificity about the timing of ownership changes. To give an example, if a company A is registered in 2005 with four owners and documents an alteration of two additional owners in 2007, we define A as a firm with six owners founded in 2005. However, around 90% of all firms either have no alterations or all alternations occur within two years of founding (i.e., within a 5-year period).

To give a sense of the constructed firm register, Figure 3 plots the number of company announcements of different types in each year. The vast majority of firms appear only once in the register or, if not, they record all further alterations within 2 years of founding; and hardly any firm closures are documented. The BdR3 information can also be used to identify the sector(s) in which a firm operates, based on sector-specific key words found in the 'social objective' included in the BdR3 company founding information. The mapping of key words to sectors is provided in Appendix A.5. Figure 4 plots the number of companies founded per year across the different sectors. It shows that trade- and finance-related firms represent a significant share of firms founded from 2006. Even though extractive industries were a main drive of economic growth over the last decades (The World Bank, 2017), the share of mining-related firms remains small. Figure 5 further counts the number of firms founded in each of the three classes of limited liability firms in each year. The majority of firms are listed as joint-stock types, which can have multiple shareholders, although sole-owner entities (*sociedades individuais*) have grown rapidly in number since 2010.

Overall, the number of registered firms may appear small for a country of around 30 million inhabitants. Even so, we have data on 112,705 unique firms, of which 6,509 were established in 2019 alone. However, it is important to take into account the fact that more than half of the country's population is under 15, average income levels remain low (Mozambique's Human Development Index was 0.446 in 2019), and informal labour arrangements dominate. According to the World Bank, informal firms outnumber formal firms in urban Mozambican areas by a factor of 9 to 1 (Jolevski and Ayana Aga, 2019). Around 75% of all registered firms in the BdR3 are located in Maputo City or in the Province Maputo, and the labour market is dominated by informal employment (Tarp and Jones, 2013), which falls outside the purview of the BdR3

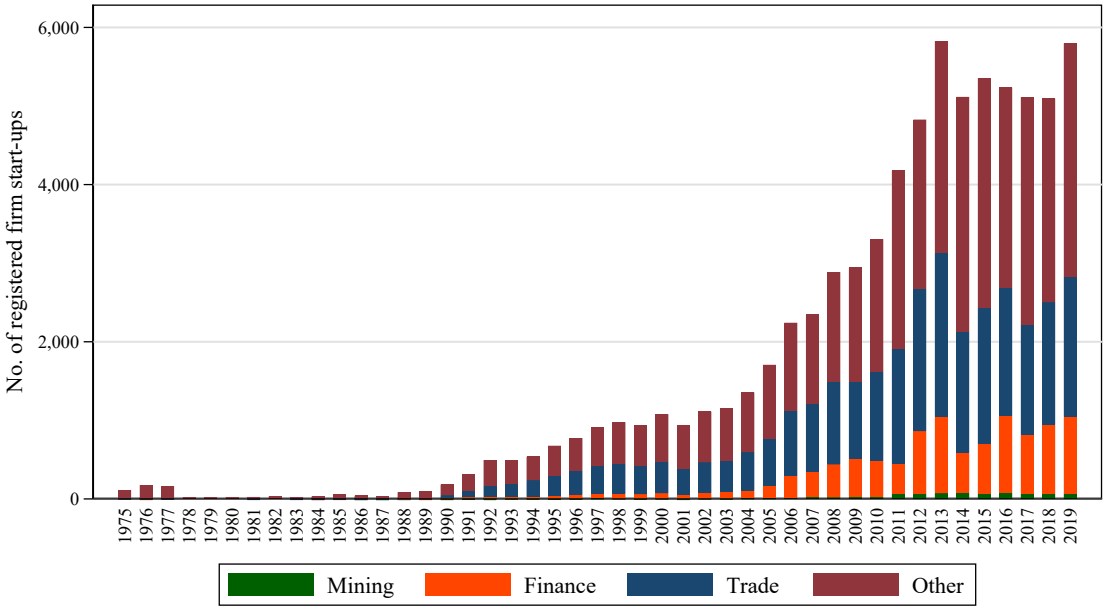
Figure 3: Types of entries in business register



Source: authors' calculations from firm registry.

Note: the figure indicates the number of unique entries concerning the establishment (start-up), alteration or closure of businesses in the official gazette.

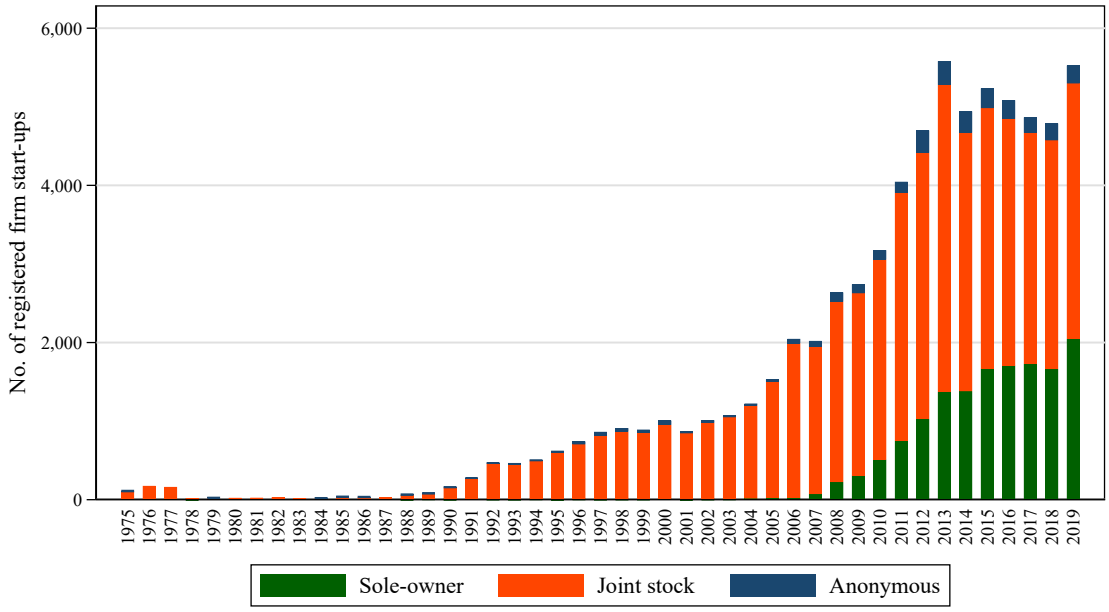
Figure 4: Number of companies founded per year



Source: authors' calculations from firm registry.

Note: the figure indicates the number of companies founded per year in each sector in the official gazette.

Figure 5: Type of registered firm



Source: authors' calculations from firm registry.

Note: the figure indicates the legal type of all firms established in each year according to the official gazette.

4.3 Owner register

To compare business affiliations among individuals, we transposed the information contained in the (unique) company register into a unique register of owners. For each individual, this lists all firm affiliations for which they are identified as a beneficial owner. To do so, we also needed to standardize the names of individuals so as to address problems of misspellings and inconsistent inclusion or orderings of middle names. To give one example, we found the name of a former prime minister to be written in the business register in seven different middle name combinations.

Obviously, and as with the PEP names, any standardization procedure involves choices – if we standardize names too loosely, such as by removing all middle names, different individuals will be counted as the same person. Too strict a standardization, however, would tend to under-estimate the scope of personal business networks, treating the same person as various separate owners. In practice, we standardized each name by first converting to lowercase and removing all diacritics and spaces. Next we mapped all raw unique names on to themselves, merging matches into one entry that have a Levenshtein match of at least 92.5%.[14] Additionally we manually mapped 386 aliases for known individuals to a

[14] The Levenshtein distance is a string metric to measure the difference between two words (Levenshtein, 1966). It is given by the minimum number of single-character edits required to change a source string into a

unique identifier.[15] After implementing these cleaning steps, we identified 98,267 unique individuals listed as shareholders or unique owners of a least one firm.

4.4 Company-owner network

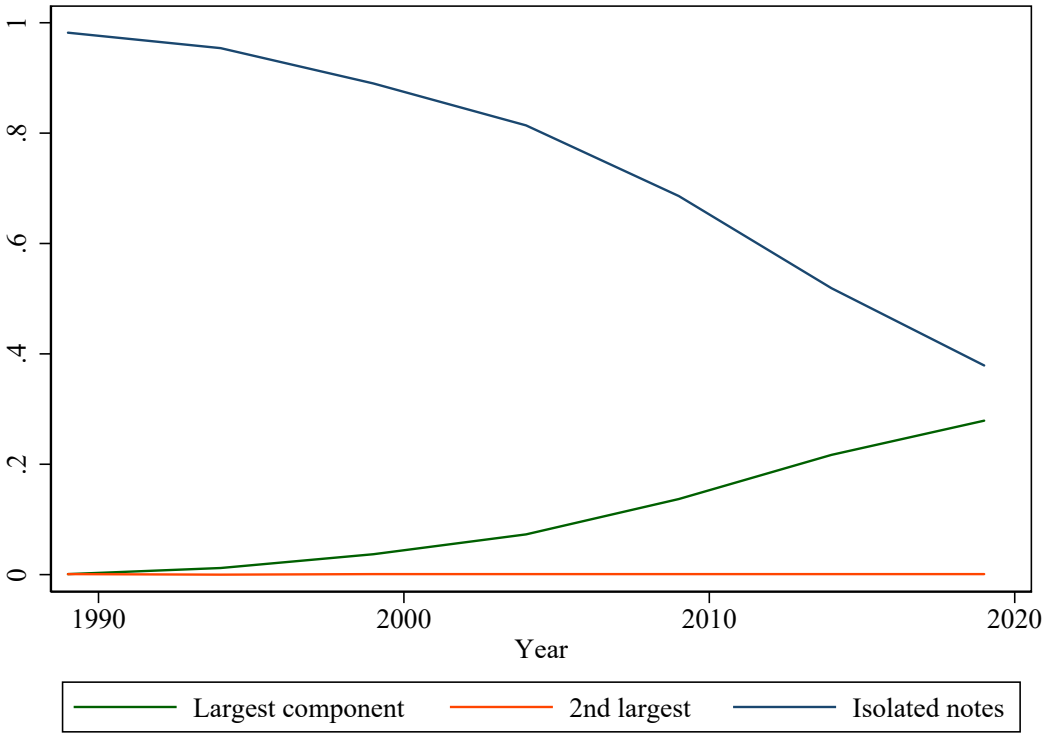
Using the cleaned registers of companies and owners, we then constructed the network of how business owners are connected through different companies. This permits an assessment of the relative importance of individuals within the formal business network – e.g., through common shareholders and their associated connections. To construct this network we defined each individual as a node and, for each node, we created a direct connection to all other nodes represented by shareholders (partners) in the same firm(s). As such, the edges of the network graph represent different firms – i.e., individuals are connected to each other as common shareholders in one or more firms.

As discussed further below, the position each individual holds in the network, in the sense of the number and structure of connections they have, reflects their network power (Jackson and Rogers, 2007). Since our focus is on how individuals' business performance evolves over time, we created period-specific snapshots of the network, treating a firm as non-existent before its first registration in the BdR3 and existent thereafter. As such, attributes of individuals (nodes) change between each period – i.e., as new firms are founded, additional edges (and nodes) are added to the network. This approach creates a series of unweighted, undirected graphs G_t. Notably, these graphs are highly fragmented. In the last 5-year period (2015-2019) we have 42,473 components (unconnected sub-networks), but just one component dominates the overall network, connecting 26,378 (27%) of all business owners, directly or indirectly, with each other. The remaining components are not substantial in size, connecting at most 71 nodes with each other. Furthermore, by the end of our observation period, 35,276 nodes remain isolated in the sense of having no connecting edges. Figure 6 plots the share of nodes affiliated with the first and second largest component in each year, as well as the share defined as isolated nodes. It shows the presence of one strong business network covering the entire private sector in Mozambique. That is, the graphs (in each year) are highly fragmented and dominated by a single component. In 2019, for instance, around a fourth of all business owners are somehow connected, but outside of this group there exists no other sizeable group of connected owners. The second largest component of business owners is 371 times smaller than the first.

target. So the distance going from *Arojo* to *Araujo* would be two.

[15] Such clear aliases are for instance "Guebuza" for the ex-president Armando Emilio Guebuza, "Virgilia B.N.A. dos Santos Matabele" for Virginia Bernarda Neto Alexandre dos Santos Matabele.

Figure 6: Proportion of firms belonging to largest sub-network components or isolated nodes



Source: authors' calculations from firm registry.

Note: the figure shows the share of unique individuals contained in the largest and second largest components, as well as the share constituted by isolated nodes; network components are groups of individuals who are connected (part of the same sub-network); isolated nodes are unconnected individuals (namely, those appearing in the register without business partners).

4.5 Business outcomes

Based on the above period-specific networks, we constructed various metrics of business performance. The most direct proxy of the extent to which individuals have active private sector interests is the raw number of private firms in which they are registered owners (shareholders). As indicated above, the number of registered companies in Mozambique has burgeoned over recent years and around 25% of the 97,328 individuals in the full panel database own more than one company. In addition to the total number of firms in which an individual is a beneficial owner, we can further distinguish between different types of firms (e.g., individual, joint-stock etc.). This is useful because the establishment of firms together with other partners (non-PEPs) might be indicative of some kind of *quid pro quo* or free-carry, whereby the political connections of the PEP represent their value to the firm.

A related notion of performance is the position or centrality of each individual in the

business network. As shown by studies on corporate elites, the network position of business leaders is associated with various measures of success. For instance, El-Khatib et al. (2015) use degree-, betweenness- and eigenvector-centralities of CEOs to evaluate their position in social networks, finding these measures help predict the success of mergers and acquisitions. Centrality measures have also been used to analyze power dynamics within political elites. First, centralities are used to identify vertical patron-client structures, reflecting the idea that power and resources are often distributed by patrons to trusted agents in exchange for loyalty and support (Mclean, 2011; Padgett and Ansell, 1993; Walle and Knight, 2007).

A second power dynamic that can be captured by centrality measures is brokerage on a structural level. Within networks, brokers wield influence by spanning gaps or holes between different groups (Gould, 1996; Stovel and Shaw, 2012). While most studies describe patron-client dynamics in settings where single groups hold the power, some scholars argue that brokerage becomes particularly important where elites are fractionalized (Stokes et al., 2013). Indeed, analyzing the role of the two power dynamics both under a contested period of regime formation and a single party rule in Mexico, Van Gunten (2019) identifies horizontal brokerage to be more relevant in both settings.

Another common centrality measure is 'betweenness centrality' (Freeman, 1977). It measures the number of shortest paths that pass through each node to connect two not directly connected nodes. However, this measure has it limitations. For instance, all intermediaries in the shortest path between two modes are treated equally, no matter how many intermediaries there are in the path; and all paths are considered equally valuable, even though individuals at great distances to another are much less likely to interact.

Following Jackson (2019), who identifies seven different types of social capital within social networks, we deploy two of his proposed centrality measures that are particularly germane in the context of this study. The first is brokerage capital, defined as the ability to serve as an intermediary between others. Jackson illustrates this idea using the fictional character from the Godfather movies, a figure that never extends favours directly, but is able to collect favours himself by connecting others who don't know each other. By distributing favours, the Godfather is able to benefit later on, either on behalf of someone else or on his own behalf.[16] In terms of implementation, the basic notion of the Godfather Index is to count, for each individual, the number of pairwise combinations involving that person's direct contacts, who are not connected with each other. Ignoring time, the Godfather Index

[16] This is similar to coordination or leadership capital, which describes the ability to be the 'friend-in-common', who is able to connect an individual to someone unknown. This becomes particularly useful when a group of people needs to act collectively or coordinate actions.

of a node can be calculated as follows:

$$\begin{aligned} \text{Godfather}_i &= \sum_{\forall k} \sum_{\forall j>k} \mathrm{g}_{ik}\mathrm{g}_{ij}(1-\mathrm{g}_{kj}) \\ &= |\{\mathrm{k} \neq \mathrm{j} : \mathrm{g}_{ik} = \mathrm{g}_{ij} = 1, \mathrm{g}_{kj} = 0\}| \end{aligned} \tag{1}$$

where g represents a dummy variable capturing the relationship between nodes. For instance g_{ij} takes a value of one if there exists a direct connection between node i and node j (e.g., they are partners in the same company) and zero otherwise – see below for illustration.

The second main type of social capital used here is informational in nature. In a network, power of this sort is defined by access to information, measured by the decay centrality of a node (Jackson and Wolinsky, 1996). In this measure, both direct and indirect connections within the network are considered. For our network, we consider connections up to three degrees (i.e., business partners of all partners' partners). We calculate the decay centrality (Jackson, 2019) using a pre-defined parameter p = 0.5, which weights the value of each connection between two nodes, leading to the following formula:

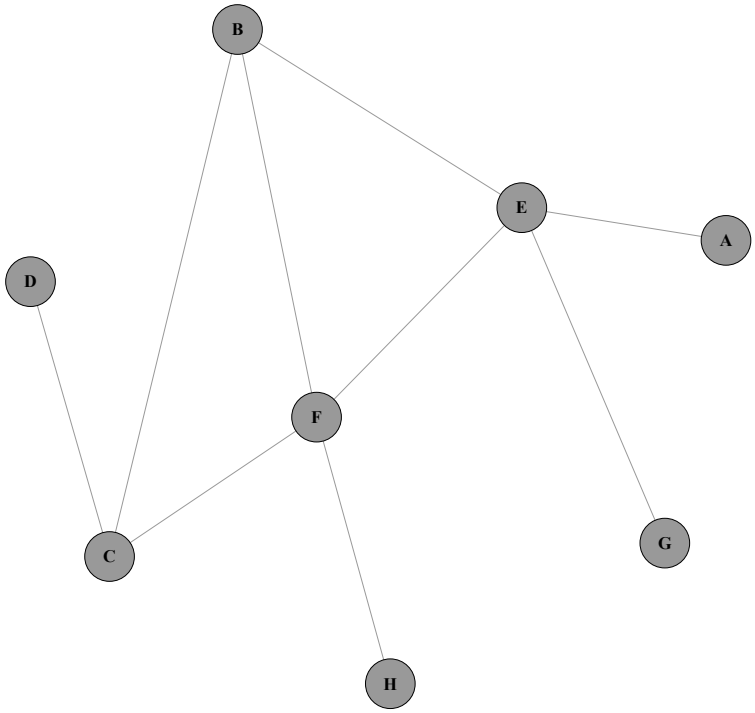
$$\text{Decay}_i = \sum_{l=1}^{3} 0.5^l \times \mid N(l; g_i) \mid \tag{2}$$

where l is the degree and $N(l; g_i)$ gives the sum of all links of i at level (degree) l.

Another conceptually simple and widespread centrality measure is degree centrality. This simply counts the number of direct connections of each individual, and divides them by the total amount of connections that exist in the network. We include this measure primarily as an additional reference to the first two centrality measures used. To see how the three measures on which we rely capture different dimensions of network position, Figure 7 shows a simplified network and the associated table lists the corresponding centrality metrics for each node. Notably, nodes E and F have the same degree centrality but differ both in the Godfather Index and decay centrality. Correspondingly, no unambiguous most central node exists within the network – i.e., different metrics capture different aspects of influence within the network. With respect to our data, Table A.4 lists the correlations across these four main outcome measures (number of companies and the three centrality measure) for the network observed in 2019 G_{2015}. As expected, all measures are positively associated, but they are far from collinear.

Finally, previous studies in this field have used the (quoted) value of firms on stock markets (Brugués et al., 2018) or declarations of the value of private wealth (Fisman et al., 2014; Eggers and Hainmueller, 2009) to investigate the impact of political office. In our case,

Figure 7: Graph of a simple business network



Node	Degree centrality	Godfather Index	Decay centrality
A	0.143	0	1.500
B	0.429	1	2.500
C	0.429	2	2.250
D	0.143	0	1.250
E	0.571	5	2.625
F	0.571	4	2.750
G	0.143	0	1.500
H	0.143	0	1.625

Note: authors' elaboration.

Note: cells report the centrality measures for each node in the above graph.

however, direct monetary valuations of company worth are not feasible. While some of the BdR3 company firm announcements do list the initial equity value of the company, this measure is highly problematic – the equity values are transcribed in words, without indication of the currency, a significant proportion document no value at all; and we have no way to track company equity over time. Furthermore, Mozambique has just a handful of public companies and access to accounting information of other large companies is generally difficult. Consequently, this avenue is not feasible.

4.6 Merged panel

Next, we merged the PEP database with the owner register plus associated outcomes to form a longitudinal panel at the individual level. That is, we take a snapshot of each database over time in five-year periods, which broadly follow the national election cycle, starting in 1985 and ending in 2019.[17] Unless otherwise indicated, we treat any 5-year period during which an individual held an executive or party office as one 'mandate'. Details of any executive mandates or firms held before 1985 are nonetheless retained, used later as baseline control variables. In the merged panel data, each individual who ever appears in either the company register or the PEP database is listed in each period, scoring a zero on all business outcome measures if they do not appear in the owner register at that time. Thus, PEPs without any firms in the company register are simply ascribed zero values on the outcomes throughout. We label the observation periods by their starting year – e.g., the observation period labelled 1995 covers all firms an individual acquired until the end of 1999.

Finally, recognising that both the company-owner and PEP databases contain entries that are no longer active or even alive at the start of our observation period, we excluded a small number observations. Concretely, we removed all firm owners with observations only before the 1980s and no subsequent entries, including as a PEP; and, similarly, we removed all PEPs who only had mandates before the 1980s and show no recent firm or further political activity. The final panel data thus lists business affiliations and political mandates of 97,338 individuals aggregated into five year periods between 1990 and 2019. Table 2 summarises the structure of the panel. On the left-hand side (a) are the numbers of founded firms per company type listed, on the right-hand-side (b) are active PEP mandates and prior to the beginning of our observation listed. (a) & (b) lists the number of firms that founded by PEPs in each five year period. This shows that PEPs have been active in the private sector, especially in more recent years – e.g., since 2000, at least one new firm was

[17] The first multi-party elections were held in 1994 and the new government took office in 1995. Since then, elections have been held every five years. Prior to 1983 Frelimo considered itself a Marxist-Leninist party. Weak documentation before 1985 makes it difficult to define a perfectly-consistent list of PEP mandates.

established for every third active PEP.

Table 2: Summary of panel data structure (all observations)

	(a) Company owner				(b) PEP				
Year	Sole	Joint	Anon.	Any	Active	<1985	All	(a) & (b)	Total
1985	20	1,084	7	1,109	259	157	287	5	97,338
1990	50	5,287	226	5,483	356	157	383	61	97,338
1995	76	13,458	536	13,869	381	157	408	108	97,338
2000	131	23,254	977	23,956	509	157	535	167	97,338
2005	769	40,706	1,448	42,039	542	157	568	207	97,338
2010	5,386	65,108	2,276	69,785	583	157	608	259	97,338
2015	13,012	87,220	2,633	96,911	729	157	753	326	97,338

Source: authors' calculations from final panel data.
Note: 'year' indicates the first year of each five year period; all cells are counts of unique individuals; active PEPs refer to individuals that have held office during the observation period; PEPs<1990 indicate individuals that held office before the observation period.
Source: own estimates.

5 Empirical strategy

The previous sections described the data and the main outcomes of interest. We now set out our strategy to identify the (causal) effect of PEP membership on private business success. To do so, five main issues need to be addressed. Namely: (i) how the treatment variable is defined; (ii) how the outcome variables will enter the model; (iii) which estimator(s) to use; (iv) the relevant analytical sample; and (v) assuring balance between treatment and control groups (e.g., in terms of pre-treatment covariates). The first two issues relate to the *object* of identification; and the remaining three refer to the *mechanics* of identification. We discuss each in turn.

5.1 Treatment variable definition

First, with respect to the treatment variable (group), we focus on PEPs defined as those who hold high government executive office or high party office within Frelimo. While current office holders are unambiguous PEPs, the appropriate duration of this 'treatment' is less clear. Private business success and political mandates can be interrelated in at least three distinct ways. First, private sector success may be used to launch a political career (e.g., Donald Trump), in which case selection into office will be positively correlated with prior business outcomes. Second, business affiliations and wealth could be amassed

while the individual holds high office (e.g., Eduardo dos Santos). But, third, social capital accumulated while holding office can be capitalized in the private sector primarily after leaving office (e.g., George Osborne or Gerhard Schröder), implying the impact of holding office would be delayed yet persistent.

The above suggests that private benefits associated with political office often go beyond immediate decision-making power over policy or procurement. They include making personal ties to important individuals (domestic and international) as well as access to privileged information (e.g., government investment plans). These represent forms of intangible (social) capital that do not simply dissolve on leaving office, exemplified by the common practice in many countries whereby ex-government ministers join as non-executive directors of large firms (see Greenberg et al., 2010). Thus, to capture both the current and ongoing effect of being a PEP, we begin by assuming the treatment is permanent – i.e., if an individual holds office during the observation period they remain in the treatment group, implying the treatment is monotonically non-decreasing. However, since the benefits of office may vary between current and former PEPs, we further distinguish between the two moments – currently holding office and having left office.

5.2 Focus outcomes

Second, the temporal series of business outcomes, such as the number of companies an individual owns, are differentiated only by the length of horizon applied to the full dataset (see Section 4) – i.e., observations in time T include all companies created from $t = 0$ to $t = T$. As such, outcomes are expected to be (near) unit-root processes (highly autocorrelated), following a process similar to: $Y_t = Y_{t-1} + N_t$, where N_t is the number of companies established during the 5-year period indexed by t (between the end of the previous period and the end of the current period). To avoid the econometric difficulties associated with the analysis of such processes (in short panels), we thus focus on between-period changes: $\Delta Y_t = N_t$. More specifically, the primary outcomes of interest are defined as the first differences of the inverse hyperbolic sine (IHS) transforms of raw network outcomes, which is appropriate to deal with zero values (Bellemare and Wichman, 2020). As such, the effective question of interest is the extent to which PEP membership is associated with differences in the growth rates of business outcomes over time. Or, more simply, we ask whether PEPs experience faster growth in their business networks than non-PEPs. This transformation is also helpful since it removes differences in scale between outcomes, allowing more meaningful interpretation and comparison of results.

5.3 Identification strategy

Moving to the mechanics of identification, we reiterate that selection into politically-exposed positions may well occur on factors that are relevant for business success. To the extent these factors reflect fixed (innate) characteristics, such as entrepreneurial capabilities, skills, or inherited capital of various types (social, financial), then a two-way fixed effects (difference-in-differences) model would be attractive:

$$\begin{aligned} y_{it} &= y_{i,t-1} + \alpha_i + \gamma_t + \beta \text{ PEP}_{it} + \varepsilon_{it} \\ \Leftrightarrow y_{it} - y_{i,t-1} \equiv \dot{y}_{it} &= \alpha_i + \gamma_t + \beta \text{ PEP}_{it} + \varepsilon_{it} \end{aligned} \tag{3}$$

where $\dot{y}$ is the focus outcome (first difference); α_i and γ_t capture individual and period-specific effects, respectively, with $i \in \mathcal{N} = \{1, \ldots, N\}$ and $t \in \mathcal{T} = \{0, \ldots, T\}$; and PEP_{it} takes a value of one when individual i is classified as a PEP (current or former) and zero otherwise.[18] From the perspective of potential outcomes, for (least squares) estimates of parameter β to capture the causal effect of being a PEP on the chosen outcomes, the following conditional independence assumption must hold:

$$(\dot{y}^0_{it}, \dot{y}^1_{it}) \perp \text{PEP}_{it} \mid \alpha_i, \gamma_t \tag{4}$$

which says that assignment to treatment is independent of potential outcomes conditional on the fixed effects. This is tantamount to assuming that, within any given time period and for individuals with the same background conditions, *who* becomes a PEP is as good as random.

The above assumption might be questioned on at least two grounds. First, selection into treatment may be dynamic, in the sense of occurring directly on prior business performance, such as where captains of industry leverage their private sector success to secure public positions. Second, equation (3) may be misspecified if outcome growth rates are a function of prior outcome levels. Non-linearity of this sort occurs in a wide range of macro- and micro-economic outcomes, including with respect to enterprise growth in developing countries (Van Biesebroeck, 2005). More generally, Podobnik and Stanley (2008) show that size-dependency can account for the power law distributions of growth rates identified across many economic variables (also see Gabaix, 2016). The same goes for the properties of networks, where characteristics such as the evolution of the node degree distribution are understood to depend on the existing degree distribution (Krapivsky and Redner, 2003) –

[18] As discussed further below, individuals who only held political mandates *before* the observation period 1985-2019 are not considered as treated; but, in the full model, control variables are added to account for such differential initial conditions, or these are absorbed in the unit fixed effect.

i.e., these processes exhibit state dependence. Similarly, models of changes in status or position (strength) in a network tend to give a fundamental role to lagged outcomes, as found in models of progress in scientific careers and citations of scholarly publications, which show path-dependency and, in turn, exponential growth over time (Newman, 2003; DiPrete and Eirich, 2006).

To address these concerns, an alternative model identifies β on the assumption that potential outcomes are not confounded with assignment to treatment after conditioning on the outcome in the prior period, plus time fixed effects and other observed (initial) covariates (X_{it}):

$$(\dot{y}^0_{it}, \dot{y}^1_{it}) \perp \text{PEP}_{it} \mid \dot{y}_{t,t-1}, \gamma_t, X_{it} \tag{5}$$

This implies the following 'lagged outcome' (LO) regression model:[19]

$$\dot{y}_{it} = \alpha + \gamma_t + \theta y_{it-1} + \beta \text{ PEP}_{it} + X'_{it}\eta + \varepsilon_{it} \tag{6}$$

which has the dual advantage of both accounting for selection on past performance, in which unobserved individual factors may contribute via initial conditions (e.g., $y_{i0} = \alpha_i + \epsilon_{i0}$; see also Appendix B) and allowing for path-dependency in the growth rates of the outcomes.[20]

5.4 Implementation

In terms of implementation, it would be tempting to combine the LO specification with the two-way fixed effects (FE) estimator in equation (3). However, given the short time dimension of the panel structure available, Nickell-bias is likely to be severe. And, although a range of solutions to this problem have been proposed, such as via GMM estimators, these tend to be highly sensitive to a range of hard-to-justify implementation choices (Kiviet et al., 2017). Nonetheless, under reasonable conditions that plausibly apply here, the FE and LO estimators can be expected to bracket the true parameter estimate of interest. In line with Guryan (2001), and as elaborated in Appendix B, if there is positive selection into the treatment based on *either* unobserved unit-specific characteristics *or* on lagged outcomes, then: $\hat{\beta}_{\text{FE}} \leq \beta \leq \hat{\beta}_{\text{LO}}$. Leveraging this property of the two estimators, rather than relying on a single 'best' estimator, we report results from both the FE and LO specifications.

[19] Note this is derived under the assumption that the outcome is autocorrelated but not an exact unit root process, at least after controlling for any time trends: $y_{it} = \alpha + \gamma_t + (1+\theta)y_{it-1} + \beta \text{ PEP}_{it} + \varepsilon_{it}$.

[20] As Imbens and Wooldridge (2009) advocate: "As a practical matter, the DiD [difference-in-differences] approach appears less attractive than the [lagged outcome] unconfoundedness-based approach in the context of panel data. It is difficult to see how making treated and control units comparable on lagged outcomes will make the causal interpretation of their difference less credible, as suggested by the DiD assumptions".

Even under the assumption that the above bracketing property holds, the estimated bounds may be large, perhaps spanning zero. To address this, we narrow the focus of estimation in two complementary ways, the aim being to concentrate our analysis on treatment and control units that are more similar to each other in pre-treatment periods. First, rather than considering all business owners, we limit the analytical sample to politically-active individuals. As discussed in Section 4, the full sample includes all named owners from the business registry plus all named PEPs, in both cases covering the full Independence period. While this sample has the advantage of (near) universal coverage, it is plausible that many business owners (e.g., sole traders, or foreign nationals) have quite different underlying characteristics to PEPs, meaning their business trajectories do not serve as useful counterfactuals for our treated individuals. Taking advantage of the fact we not only observe historical PEPs, being those who held government or party office before 1985, but also that individuals in our sample become PEPs at different times during the observation period (after 1985), we can restrict our analysis to the subsample of former and current PEPs – i.e., we discard all business owners who never held any form of political office between 1975-2019. An even tighter restriction is to focus on the subsample of treated individuals who only become a PEP *during* the observation period. This limits attention to so-called 'switchers', in which case individuals treated later in time constitute controls for those treated earlier in time (see Goodman-Bacon, 2018a).

Applying the above sample restrictions manipulates the control group, filtering-out business owners, who *ex ante* are expected to be least similar to PEPs. However, this does not guarantee the resulting treatment and control groups share similar observed characteristics in the pre-intervention period. To ensure a greater degree of balance in the distribution of these covariates, such that comparison of treatment and controls is made between observationally alike individuals, some form of re-weighting or matching is also frequently applied (e.g., see Smith and Todd, 2005; Ho et al., 2007; Lockwood and McCaffrey, 2016; Bodory et al., 2020; Rosenbaum, 2020). While a variety of such balancing procedures have been proposed, we compare results from both a re-weighting and a nearest-neighbour matching. In both cases we begin by classifying all individuals who became PEPs during the observation horizon according to the specific time period in which they (first) switch. We then run a probability model to estimate the propensity that any given unit becomes a PEP, based on covariates observed in the immediately-preceding period. Concretely, the variables used to forecast a switch into the treatment group include the full range of one period lagged business outcomes expressed in IHS transformed levels (e.g., number of businesses owned, degree centrality, etc.). To these we add a range of fixed initial conditions, including whether the individual was a PEP in the pre-observation period, whether they owned a firm before 1985, and the number of years economically and politically active

before 1986. Thus, for each individual in each period we obtain the propensity that he/she becomes a PEP.

To implement the re-weighting procedure, we use these (time-varying) propensity scores to construct inverse probability weights, trimmed at the 5th and 95th percentiles.[21] With respect to the matching procedure, for each individual switching into the treatment group we identify one individual from the remaining group of untreated (control) individuals, based on the absolute difference in their propensity scores measured in the same period. To avoid recurrent multiple matches to the same individual in the control group, we randomly select one match from the 5% of controls with the smallest absolute difference in scores to the focus switcher, giving preference to individuals not yet matched under the procedure.[22] To avoid contamination from poor matches, however, we exclude the poorest 10% of inexact matches. Placing individuals in random order and repeating this procedure for each treated unit generates the matched sample, where all observations for the matched pair are retained. We run these two procedures separately for each subsample, allowing the propensity scores to vary accordingly. So, for the matching procedure, this yields a separate sample of matched PEPs and a sample consisting of earlier switchers matched to later switchers.

In sum, our empirical strategy encompasses draws on different estimators, sample restrictions and balancing protocols. The various identifying assumptions underlying these choices are all subsumed under the following very general framework:

$$w_{ijt} \cdot (y^0_{ijt}, y^1_{ijt}) \perp \text{PEP}_{ijt} \mid i \in S, w_{ijt} \cdot (\lambda\alpha_i, \theta y_{ij,t-1}, \xi_j, \delta_j t, \gamma_t, X_{it}) \tag{7}$$

Here, i and t are as before; w represent balancing weights, (e.g., if matching weights are applied these would take a value of one for matched pairs and zero for all others); S indicates the chosen (sub)sample; and either $\theta \equiv 0$ under the unit fixed effects model; or $\alpha \equiv 0$ under the lagged outcome model. In addition, we add index j to classify individuals into four mutually exclusive groups, namely: never PEPs; individuals who first became PEPs during the observation period (1985-2019); individuals who became PEPs before 1985, but also held a high office after 1985; and individuals who became PEPs before 1985, but held no high office since then. The latter two groups are pertinent since they encompass party founders and elders, many of whom are particularly important in the history of Frelimo (as leaders of the anti-colonial movement) and have accumulated significant influence within

[21] To focus exclusively on the likelihood of switching into treatment, propensity scores are not estimated for PEPs *after* they move into the treatment group. For these observations, we apply the smallest estimated weight at the unit-level. For those units for which no propensity score can be estimated, since they are always 'treated' and we do not observe pre-treatment covariates, we apply the global minimum weight of one.

[22] This amounts to application of a matching caliper, set to the 5th percentile of the distribution of absolute propensity score differences for individual i, followed by random sampling.

both the party and government. Since these groups may share some unobserved traits, such as (historical) political capital, including ξ_j captures such fixed differences. This is relevant under the lagged outcome specification, where individual fixed effects are excluded; and $\delta_j t$ allows for differential group-specific trends.

Different choices for the elements in (7) map to different identification assumptions. For instance, a basic FE estimator applied to the full sample with equal weights is given by: $(\theta = 0, S = \mathcal{N}, w_{ijt} = 1)$. In contrast, the LO estimator, applied to the sample of switchers, with matching weights, is obtained from: $(\lambda = 0, S = \mathcal{N}_\text{s}, w_{ijt} = w_{ij} = 1[\exists\ k \in \mathcal{N}_\text{s} : |p_{it} - p_{kt}| < \epsilon_i])$, where $\mathcal{N}_\text{s}$ is the subsample of switchers and p_{it} represents the propensity score used in the matching procedure for the same subsample, with matching caliper ϵ. In other words, we have $2 \times 3 \times 3 = 18$ distinct combinations, corresponding to choices of estimator, samples and balancing protocols respectively; or, for each estimator, we have nine combinations of sample restrictions and weight vectors. While this range of choices may appear cumbersome, comparing results across a range of different identifying assumptions demonstrates both the extent to which the bracketing property holds, as well as the precision of the associated bounds. Consequently, showing the full range of estimates maximizes transparency and provides an immediate indication of robustness to alternative assumptions. Put differently, we believe our approach gets as close as possible to being able to bound the causal effects of interest in a non-experimental setting. But in the absence of a source of purely-exogenous variation in exposure to political office, as well as measurement error, we do not claim our results represent precise causal effects.

6 Results

6.1 Descriptives

Before moving to the regression estimates, we review some descriptive statistics. Table 3 reports the number of unique individuals and means for a range of variables, distinguishing between the treatment and control groups under different combinations of sample restrictions and weights (balancing protocols).[23] For the treated group, we report statistics for the first period they become a PEP, which in the case of lagged outcomes thus refers to the outcome in the period immediately before becoming a PEP. The control group refers to all other non-treated observations, including those who become PEPs in later periods. The counts in the first column indicate the likely merit of using a matching approach. With respect

[23] As such, some individuals will appear in both the treatment and control groups at some point.

to the full sample, the first row shows we have almost 97,000 unique individuals in the control group (at some point), versus just 729 unique treated individuals. Among the latter, 259 were PEPs in 1985 and therefore were not observed switching treatment status. In fact, the match weights discard the vast majority of (non-PEP) controls – e.g., with the full sample, just 751 unique individuals form part of the control group. And when the sample is restricted to other PEPs, including historical PEPs, the control group narrows to just 340 unique individuals (versus 432 matched treated PEPs).[24] As such, combining sample restrictions with (binary) match weights substantially alters the pool of controls from which the impact of being a PEP is identified.

Four variables in the table capture initial conditions. They are: the individual's gender, as estimated from their first name;[25] whether they were a PEP before 1985; how many years prior to 1985 they were a PEP; and whether they had founded any companies before 1985. The lagged outcomes are the (transformed) number of companies the individual owns and their Godfather index. Four insights standout. First, the panel is slightly dominated by men, and more so in the treated group – i.e., a higher proportion of PEPs are male compared to firm owners. Second, looking at the (unweighted) full sample, the average control (typical firm owner) had no prior exposure to political or executive office. In contrast, 18% of all treated individuals were PEPs prior to 1985. However, in the full sample matched weight group, the latter share falls to zero. This points to an important generational shift – many individuals holding office in 1985-89 had held high office previously, many being the cadre of party founders, while individuals coming into high office in the 1990s and 2000s generally did so for the first time. So, the empirical results using match weights should capture impacts associated with this newer group of PEPs.

Third, the lagged outcomes reveal that individuals who become PEPs (in the next period) owned slightly more companies (0.60 versus 0.45) than the full sample of controls and enjoyed much larger brokerage capital (Godfather index), implying their position in the business network was already relatively strong. These differences are generally narrowed when some combination of sample restriction and weight protocol is applied. Even so, it merits emphasis that neither of the inverse probability weights nor the caliper matching approaches is designed to achieve an exact balance across all covariates in all periods. However, fourth, the most restrictive specification – the group of matched switchers shown in the final row of the table – uniquely achieves balance across all covariates in the table, although in part this reflects the smaller sample size at play.

[24] This is marginally more than the comparable all-sample group of matched PEPs (423) as the matching protocol and associated exclusions rules were run separately for each (sub-)sample.

[25] Here, we first assign each individual a value of 0.5; we then code individuals with typical Portuguese female first names as zeros and individuals with typical Portuguese male first names as ones.

Table 3: Descriptive statistics for selected covariates in pre-intervention period

				Initial conditions								Lagged outcomes			
		Unique obs.		Female		PEP<‘85		PEP yrs		Firm <‘85		Companies		Godfather	
Sample	Weight	C	T	C	T	C	T	C	T	C	T	C	T	C	T
All	Equal	96,982	729	0.42	0.36	0.00	0.18*	0.00	1.06*	0.01	0.01	0.45	0.60	1.05	8.51*
	Inv. prob.	96,982	729	0.42	0.37†	0.00	0.00†	0.00	0.00†	0.01	0.01	0.45	0.69‡	1.06	2.09
	Match	751	423	0.44	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.30	0.19	0.23
PEPs	Equal	397	729	0.40	0.36	0.11	0.18‡	1.59	1.06‡	0.01	0.01	0.29	0.60	4.17	8.51
	Inv. prob.	397	729	0.40	0.38	0.09	0.09‡	1.34	0.71‡	0.01	0.01	0.33	0.37	4.53	4.61
	Match	340	432	0.38	0.40	0.07	0.01‡	1.19	0.15‡	0.00	0.00	0.21	0.52†	3.50	8.12
Switchers	Equal	373	470	0.42	0.41	0.01	0.01	0.15	0.13	0.01	0.01	0.25	0.60‡	4.73	8.51
	Inv. prob.	373	470	0.41	0.41	0.01	0.01	0.14	0.09	0.01	0.00*	0.30	0.38	4.94	5.06
	Match	305	400	0.44	0.43	0.01	0.00	0.10	0.08	0.00	0.00	0.13	0.37	0.48	1.81

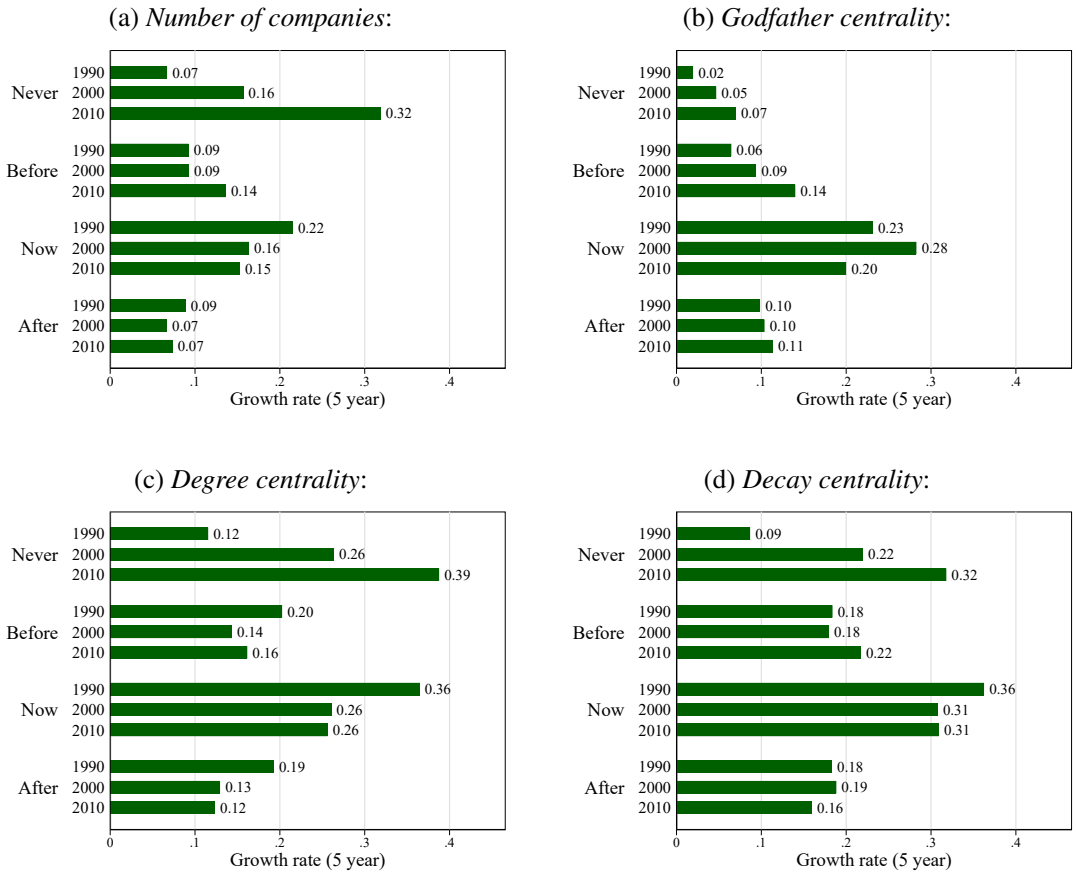
Source: authors' estimates from final panel data.

Note: table reports sample counts and means for indicated variables, comparing treated (T) and control (C) units in the pre-intervention period only; for treated units, only the period immediately *before* they become treated is considered; PEP and firm years refer to the number of years an individual was either a PEP or owned a firm before 1990; (lagged) company and godfather index outcomes are reported applying the IHS transform, as used in subsequent analysis; difference between treatment and control means are reported based on a simple dummy variable regression (including period fixed effects).

significance: * $p < 0.10$, † $p < 0.05$, ‡ $p < 0.01$.

To perceive how differences in business performance across treatment and control groups have evolved, Figure 8 plots unweighted average decadal growth rates for the four main outcomes. We split the observations into four groups: individuals who never became PEPs during the observation period; observations for PEPs before they held office ('before'); observations for individuals who currently hold a high office ('now'); and observations for individuals after they held a high office ('after'). Across all outcomes it is apparent that the growth of business outcomes among individuals who currently hold a high office is almost always superior to growth rates in all other groups in the same period. For example, in the 2000s, individuals holding a high office grew the number of businesses by around 0.16 points every period (of 5 years) versus 0.09 points among other future PEPs. From this view, holding a high office would appear to yield private benefits. However, an important exception to this general finding is found in the last decade, where growth rates for so-called never PEPs are largest in three of the four outcomes. One reason for this may be the rapid growth of sole-owned companies (see Figure 5), started by individuals with zero or a few existing companies, in turn yielding high rates of growth. Thus, we consider differences in growth rates of different firm types in an extension to the main analysis (Section 6.4).

Figure 8: Average changes in main outcomes by treatment status and decade



Source: authors' estimates from final panel data.
Note: changes are defined as the period average of the first differences in the IHS-transformed outcomes by decade; 'never' refer to individuals that never become PEPs; all other groups refer to PEPs either before, during (now) or after holding a political mandate.

6.2 Baseline regressions

Following our empirical strategy (Section 5), we compare results from fixed effects (FE) and lagged outcomes (LO) models. Tables 4 to 6 show detailed regression estimates for the growth in the number of companies owned under different sample restrictions – namely, the full sample; only PEPs; and only switchers. Each panel refers to a different weighting protocol and in the columns we distinguish between the two main models, within which we sequentially build-up to the full specification. Concretely, column (I) presents the lagged outcome results, in which all models contain the prior period outcome level (number of companies) plus group fixed effects (ξ_j); all estimates in column (II) include individual-specific fixed effects. Sub-column (a) is a naïve model, containing the single monotonically-increasing treatment status dummy; sub-column (b) adds control variables, which include time invariant factors (relevant for the LO model), as well as two time-varying controls, namely whether the individual is associated with any non-firm announcements or company alterations during the same period;[26] sub-column (c) adds group-specific time trends ($\delta_j t$); and sub-column (d) adds a dummy variable taking a value of one in each period after which a treated PEP has left high office, thereby enabling us to isolate any variation in the treatment effect due to no longer holding high office. To capture possible unobserved inter-dependence across related individuals as well as economy-wide effects, all models cluster standard errors by year and family name (surnames); only selected coefficients shown.

Our focus is on the estimated coefficients on the primary treatment variable, 'holds office', which takes a value of one in all periods both during and after the individual holds political office. In sub-columns (d), therefore, the sum of this term and the coefficient for 'left office' would give the estimate for periods once the individual no longer held executive or party office. These results prefigure the general pattern found across the full range of outcomes. First, the estimates in Table 4 for the full sample indicate the presence of differences in underlying trend growth rates across the four fixed groups indexed by j, as shown by the change in sign of the coefficient of interest between columns (b) and (c). However, this finding is not repeated among the PEP and switcher sub-samples (Tables 5 and 6), indicating quite essential differences between typical firm owners and individuals who either already had been or become PEPs during the observation period. Put differently, these two broad types of individuals appear to have experienced quite dissimilar overall trends in business outcomes, which is consistent with the notion that typical business owners do not constitute

[26] In addition to the initial conditions shown in Table 3, we include a dummy variable proxying for whether the individual is a registered lawyer, based on current members of the *Ordem dos Advogados de Moçambique* (www.oam.org.mz), and the number of years they owned a company before 1985.

Table 4: Regression estimates for the growth in number of companies owned (1985-2019), with full sample and alternative weighting schemes

Estimator →	(I) Lagged outcome				(II) Fixed effects			
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
(i) Equal weights:								
Holds office	-0.06***	-0.06***	0.06***	0.11***	-0.17***	-0.17***	0.04**	0.03
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.10***				-0.06***
				(0.02)				(0.02)
Female		-0.02***	-0.02***	-0.02***				
		(0.00)	(0.00)	(0.00)				
Constant	0.26***	0.26***	0.26***	0.26***	0.18***	0.18***	0.17***	0.18***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Obs.	584,028	584,028	584,028	584,028	584,028	584,028	584,028	584,028
RMSE	0.34	0.34	0.34	0.34	0.39	0.39	0.39	0.39
(ii) Inverse probability weights:								
Holds office	0.02	0.02	0.06***	0.08***	-0.02	-0.02	0.09***	0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Left office				-0.11***				-0.11**
				(0.02)				(0.04)
Female		-0.03	-0.03	-0.03*				
		(0.02)	(0.02)	(0.02)				
Constant	0.14***	0.14***	0.12***	0.13***	0.16***	0.16***	0.09***	0.14***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)
Obs.	584,028	584,028	584,028	584,028	584,028	584,028	584,028	584,028
RMSE	0.35	0.34	0.33	0.33	0.30	0.30	0.29	0.29
(iii) Matching weights:								
Holds office	-0.03*	-0.03**	0.08***	0.09***	-0.14***	-0.13***	0.05***	0.05**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.05***				-0.06***
				(0.02)				(0.02)
Female		-0.03***	-0.03***	-0.03***				
		(0.01)	(0.01)	(0.01)				
Constant	0.15***	0.16***	0.14***	0.14***	0.17***	0.17***	0.12***	0.13***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Obs.	5,076	5,076	5,076	5,076	5,076	5,076	5,076	5,076
RMSE	0.33	0.32	0.31	0.31	0.34	0.33	0.33	0.33
Controls?	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Group trends?	No	No	Yes	Yes	No	No	Yes	Yes

Source: authors' estimates from final panel data.

Note: table reports selected coefficients for the growth rate (first difference of IHS-transform) of the number of firms owned per person across 5-year periods for the full sample; 'holds office' takes a value of one for all periods during and after an individual holds political office; column (I) is the LO specification, including the lagged outcome, year and group-specific fixed effects (ξ_j) throughout; column (II) is the FE specification, including unit and year fixed effects throughout; sub-column (b) adds time-varying controls plus fixed controls for the LO specification; sub-column (c) adds group-specific time trends ($\delta_j t$); and sub-column (d) differentiates between PEPs that have left office; standard errors clustered by family name and year; panels (i)-(iii) apply different balancing weights as indicated.

significance: * p < 0.10, ** p < 0.05, *** p < 0.01.

Table 5: Regression estimates for the growth in number of companies owned (1985-2019), with PEPs sample and alternative weighting schemes

Estimator →	(I) Lagged outcome				(II) Fixed effects			
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
(i) Equal weights:								
Holds office	0.03**	0.03**	0.02*	0.06***	0.05***	0.05***	0.04*	0.03
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.09***				-0.07***
				(0.01)				(0.02)
Female		-0.03***	-0.03***	-0.04***				
		(0.01)	(0.01)	(0.01)				
Constant	0.08***	0.08***	0.08***	0.10***	0.08***	0.07***	0.08***	0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Obs.	4,518	4,518	4,518	4,518	4,518	4,518	4,518	4,518
RMSE	0.32	0.32	0.32	0.31	0.31	0.31	0.31	0.31
(ii) Inverse probability weights:								
Holds office	0.04**	0.03**	0.03*	0.06***	0.07***	0.06***	0.06***	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.09***				-0.08***
				(0.02)				(0.02)
Female		-0.03**	-0.03**	-0.03**				
		(0.01)	(0.01)	(0.01)				
Constant	0.07***	0.08***	0.08***	0.10***	0.07***	0.06***	0.06***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Obs.	4,518	4,518	4,518	4,518	4,518	4,518	4,518	4,518
RMSE	0.32	0.32	0.32	0.31	0.30	0.30	0.30	0.30
(iii) Matching weights:								
Holds office	0.02	0.03*	0.03*	0.05***	0.03	0.03	0.04	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.07***				-0.07***
				(0.02)				(0.02)
Female		-0.05***	-0.05***	-0.05***				
		(0.01)	(0.01)	(0.01)				
Constant	0.08***	0.10***	0.10***	0.11***	0.10***	0.10***	0.09***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Obs.	2,622	2,622	2,622	2,622	2,622	2,622	2,622	2,622
RMSE	0.32	0.32	0.32	0.31	0.31	0.31	0.31	0.31
Controls?	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Group trends?	No	No	Yes	Yes	No	No	Yes	Yes

Source: authors' estimates from final panel data.
Note: this table replicates the structure of Table 4, now restricting attention to the sample of PEPs.
significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Regression estimates for the growth in number of companies owned (1985-2019), with switchers sample and alternative weighting schemes

Estimator →	(I) Lagged outcome				(II) Fixed effects			
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
(i) Equal weights:								
Holds office	0.03*	0.03**	0.03**	0.05***	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.06***				-0.07***
				(0.02)				(0.02)
Female		-0.05***	-0.05***	-0.05***				
		(0.01)	(0.01)	(0.01)				
Constant	0.08***	0.09***	0.09***	0.10***	0.10***	0.09***	0.09***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Obs.	2,820	2,820	2,820	2,820	2,820	2,820	2,820	2,820
RMSE	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30
(ii) Inverse probability weights:								
Holds office	0.03*	0.03*	0.03*	0.06***	0.06***	0.06***	0.06***	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.09***				-0.09***
				(0.02)				(0.03)
Female		-0.03*	-0.03*	-0.03**				
		(0.02)	(0.02)	(0.02)				
Constant	0.07***	0.08***	0.08***	0.09***	0.07***	0.07***	0.07***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Obs.	2,820	2,820	2,820	2,820	2,820	2,820	2,820	2,820
RMSE	0.32	0.31	0.31	0.31	0.30	0.29	0.29	0.29
(iii) Matching weights:								
Holds office	0.05***	0.05***	0.05***	0.08***	0.08***	0.08***	0.08***	0.07***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Left office				-0.08***				-0.07***
				(0.02)				(0.02)
Female		-0.03***	-0.03***	-0.04***				
		(0.01)	(0.01)	(0.01)				
Constant	0.05***	0.06***	0.06***	0.07***	0.05***	0.05***	0.05***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Obs.	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
RMSE	0.29	0.29	0.29	0.29	0.28	0.28	0.28	0.28
Controls?	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Group trends?	No	No	Yes	Yes	No	No	Yes	Yes

Source: authors' estimates from final panel data.
Note: this table replicates the structure of Table 4, restricting attention to the sample of 'switchers', namely individuals who become a PEP (for the first time) during the observation period.
significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

particularly plausible counterfactuals for PEPs. So, at least group-specific fixed effects and trends are needed to account for these differences, or the restricted samples are more credible.[27]

Second, the bounding relationship between the LO and FE estimates for the main coefficient holds consistently across all models, where the former estimates are always larger than the latter. Under the full sample equal weights model in panel (i) of Table 4, the bounds are fairly wide [0.03, 0.11], but they tend to narrow around the implied midpoint when sample restrictions and/or balancing weights are applied. Indeed, in panel (iii) of Table 6, the difference in the LO and FE estimates is trivial [0.07, 0.08]. This suggests that bias from omitted positive selection effects may have been minimized under this set of identification assumptions.

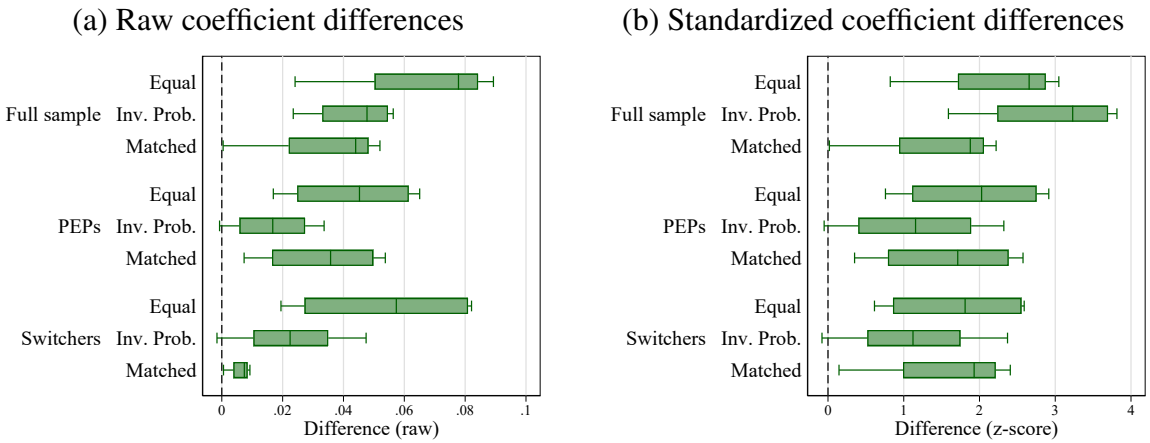
Third, across all models reported in sub-columns (c) and (d) of the tables, the estimated effect of being a PEP on company growth rates is in the positive domain; and it is significant at conventional levels under all LO model estimates as well as in a majority of cases under the FE model estimates. Moreover, the magnitude of the effect is substantial – e.g., in the most restrictive specification of Table 6 panel (iii), we find that while they hold high office, earlier-switching PEPs grow their business network (the number of companies) at double the rate of later-switching PEPs. Finally, inclusion of the dummy for the period when they leave office appears highly relevant (see sub-column d). This estimate is consistently negative and is generally of a similar magnitude to the main coefficient. Thus, we conclude the benefits of political exposure primarily accrue while individuals are holding office and are not sustained afterwards.

Maintaining our focus hereafter on the full specification, as per sub-column (d) of the previous tables, Table 7 summarises the main results looking across all specifications and outcomes. Column (I) repeats the estimates of Tables 4–6, but adds the Benjamani-Hochberg adjustment for multiple hypothesis testing, given by the probability value in (square) brackets; and the three network/centrality outcomes are reported in the other main columns.[28] Overall, the pattern of results is highly consistent. Not only are all estimates positive but, with a few exceptions that plausibly only reflect imprecision in the point estimates, the (expected) bounding relationship between the FE and LO estimates holds. This gives us good confidence that the true effect is likely to fall within the corresponding range. The unweighted (full sample) results generally show the widest range, while the estimated bounds for the matched switchers are tight across all outcomes. The magnitude

[27] Omitting the group-specific effects and time trends does not materially alter any of the PEP or switcher sub-sample regression estimates. Results available on request.

[28] The probability adjustment procedure is calculated over all 72 separate regressions summarised in the table.

Figure 9: Distribution of differences in regression results for holding high office between LO and FE estimators, by model



Source: authors' estimates from final panel data.

Note: figures are box plots of the differences in the LO and FE point estimates taken from the regressions summarized in Table 7, reported both on a raw and standardized basis.

of the estimates are also broadly similar – holders of high executive or party office tend to experience growth of their business network at a rate roughly 10 points higher than non-office holders, although the effect is somewhat larger for the degree (and decay) centrality measures. And while not all estimates are statistically significant at conventional levels after adjusting for multiple testing, a large number of estimates remain plausibly different from zero. And all estimates for the matched switchers sample are significant at the 5% level, after adjustment for false discovery.

Figure 9 provides some further insights into the overall pattern of results. For each model, characterized by the sample restriction and weights applied, it plots the difference in coefficients (across all outcomes) between the LO and FE estimates for holding high office. That is, it plots the range of the estimated expected upper and lower bounds: $\beta_{LO} - \beta_{FE}$, where panel (a) plots the raw differences and panel (b) plots standardized differences (z-scores, given by the raw value divided by the standard deviation of raw differences). It confirms that under each of the three sample restrictions, movement from equal to more balanced weighting protocols tends to narrow the raw coefficient gap. However, while under the PEPs sample the IP weights yield the smallest differences, the matched weights are most similar for the switchers sample. Also, once balancing weights are applied, the standardized difference between the LO and FE coefficient estimates is almost always below two, at least for the PEP and switcher samples, implying they are not statistically distinguishable.

Finally, Appendix Table C1 summarises the equivalent set of results for the effect of being a PEP but only in the period *after* holding high office. These estimates are based on the

Table 7: Summary of main regression results for being a PEP on business outcomes when holding office

Sample	Weights	(I) No. companies		(II) Godfather cent.		(III) Degree cent.		(IV) Decay cent.	
		LO	FE	LO	FE	LO	FE	LO	FE
All	Equal	0.107	0.030	0.115	0.091	0.157	0.068	0.134	0.055
		(0.000)	(0.126)	(0.000)	(0.022)	(0.000)	(0.169)	(0.000)	(0.249)
		[0.000]	[0.168]	[0.001]	[0.040]	[0.000]	[0.209]	[0.001]	[0.289]
	Inv. Prob.	0.082	0.040	0.084	0.061	0.153	0.100	0.118	0.062
		(0.000)	(0.173)	(0.037)	(0.365)	(0.004)	(0.137)	(0.017)	(0.357)
		[0.001]	[0.211]	[0.062]	[0.392]	[0.010]	[0.180]	[0.034]	[0.396]
	Matched	0.090	0.046	0.139	0.139	0.220	0.168	0.220	0.176
		(0.000)	(0.023)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
		[0.000]	[0.042]	[0.000]	[0.000]	[0.000]	[0.003]	[0.000]	[0.001]
PEPs	Equal	0.060	0.028	0.106	0.089	0.114	0.049	0.102	0.044
		(0.000)	(0.163)	(0.001)	(0.028)	(0.001)	(0.321)	(0.003)	(0.366)
		[0.001]	[0.205]	[0.003]	[0.049]	[0.003]	[0.362]	[0.009]	[0.388]
	Inv. Prob.	0.061	0.040	0.071	0.072	0.117	0.104	0.095	0.061
		(0.001)	(0.055)	(0.038)	(0.101)	(0.006)	(0.045)	(0.020)	(0.210)
		[0.003]	[0.084]	[0.062]	[0.137]	[0.013]	[0.071]	[0.037]	[0.248]
	Matched	0.051	0.025	0.090	0.083	0.116	0.070	0.086	0.032
		(0.004)	(0.267)	(0.016)	(0.077)	(0.004)	(0.202)	(0.040)	(0.553)
		[0.010]	[0.305]	[0.034]	[0.110]	[0.010]	[0.243]	[0.064]	[0.561]
Switchers	Equal	0.051	0.016	0.104	0.084	0.117	0.037	0.093	0.011
		(0.003)	(0.465)	(0.004)	(0.059)	(0.002)	(0.490)	(0.018)	(0.833)
		[0.007]	[0.486]	[0.010]	[0.088]	[0.007]	[0.504]	[0.037]	[0.833]
	Inv. Prob.	0.059	0.036	0.068	0.069	0.119	0.097	0.095	0.048
		(0.002)	(0.097)	(0.067)	(0.146)	(0.008)	(0.079)	(0.031)	(0.358)
		[0.006]	[0.135]	[0.099]	[0.188]	[0.017]	[0.111]	[0.053]	[0.390]
	Matched	0.078	0.070	0.100	0.090	0.193	0.193	0.189	0.182
		(0.000)	(0.001)	(0.003)	(0.019)	(0.000)	(0.000)	(0.000)	(0.000)
		[0.000]	[0.002]	[0.007]	[0.037]	[0.000]	[0.001]	[0.000]	[0.001]

Source: authors' estimates from final panel data.

Note: this table summarises the coefficient estimates on the monotonic PEP treatment variable ('holds office') across different outcomes (in the main columns), different estimators (LO and FE) as well as with different samples and weights (in the rows); column (I) repeats the estimates given in sub-columns (d) of Tables 4 to 6; all other columns are based on the same models, using different outcomes; values in parentheses give the probability the reported coefficient is different from zero; values in brackets correct for the false discovery rate.

same regressions as in Table 7, but now showing the linear combination of the coefficients for being a PEP and not currently being in office. As already suggested, these estimates are much smaller in magnitude and generally not different from zero, particularly when we refer to the adjusted probability estimates. That said, some of the decay centrality measures (e.g., Godfather and decay metrics) hint that a moderate positive effect of being a PEP may remain, even after holding office. However, the most consistent and dominant treatment effect clearly is associated with currently holding office.

6.3 Event study analysis

In the context of dynamic impact analyses (as here), investigation of *how* treatment effects vary with time to exposure is often valuable. As Goodman-Bacon (2018a,b) and others have shown, event study analyses can help examine the plausibility of the implicit assumption that control and treatment groups shared similar pre-treatment trajectories. They can also demonstrate the extent to which treatment effects are stable over time after exposure. To do so, we re-run the complete models for both the switchers (with matched weights) and PEPs (with IP weights) sub-samples, which correspond to the two models showing the smallest differences between the LO and FE coefficient estimates (see Figure 9), now allowing the main treatment effect to vary across periods both before and after exposure, setting $t = 0$ to the period in which individuals first become a PEP. As in other studies, we normalize the set of these period-specific treatment dummies, such that the effect at $t = -2$ equals zero; and the small number of coefficients relating to periods before $t = -3$ and after $t = 3$ are aggregated into these limit points.

Figures 10 and 11 plot the results for the four outcomes, discriminating between the LO and FE models. What do we learn? Although no single pattern is evident across all plots, the coefficient estimates before becoming a PEP (i.e., at $t < 0$) are generally not different from zero at the 10% level (at least), consistent with the required identification assumptions. Even so, while the estimates are all approximately centred on zero at $t = -1$, the FE estimates hint at the presence of an upward-growing pre-trend, particularly in outcomes (c) and (d). This may be picking up state dependence, which is excluded from the fixed effects specifications. Under both LO and FE estimates, we also note the (positive) treatment effect at $t = 0$ is generally small in magnitude and inferior to the effects found at later periods. For example, under the LO model for Godfather centrality, the treatment effect peaks at $0 < t < 3$. The implication is that the benefits of holding office tend to strengthen, and become statistically most credible, for individuals who accumulate multiple consecutive mandates, rather than among those who hold office for just a single term. Notwithstanding

that all post-exposure estimates are positive and there is no evidence for any negative effects of being a PEP, we recognise our event study estimates remain somewhat imprecise. For example, none of the period-specific effects shown in Figure 11 are significant for the FE models; and in the corresponding LO models, only two estimates can be distinguished from zero – viz., panels (a) and (b) at $t = 2$. This underlines the difficulty of arriving at very precise identification of causal effects in this kind of dynamic noisy observational setting.

6.4 Extensions

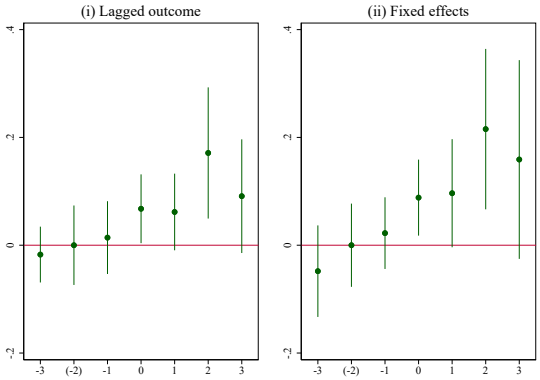
Thus far, we have considered party and executive offices in conjunction. However, the private benefits of holding these offices are plausibly different, even in an 'institutionalized party system' such as Mozambique (Carbone, 2005), largely because executive positions come with legal powers over government spending and contract negotiations. Furthermore, we have only looked at companies in general, not distinguishing between their legal form or their sector of activity. To investigate these dimensions, Table 8 repeats the full LO and FE models for the (preferred) IP-weighted PEPs and matched switchers models, reported in columns (Id) and (IId) of Tables 5(ii) and 6(iii), now splitting out the two types of office. Table 9 reports results for the same extended specification, estimated using the LO model (see Table C2 for the corresponding FE results) focussing on various specific firm types, where in each case the outcomes are defined as the (IHS transformed) number of companies of a given type owned by each individual. In both tables the footer reports two further results: the absolute difference in the coefficients associated with currently being a party or executive PEP; and the absolute difference in coefficients associated with the periods after holding party or executive office. And the null hypothesis is that there is no difference.

Looking first at the difference between party and executive positions, we first note that in each model the two coefficients pertaining to current office holders are highly similar, being generally positive and significantly different from zero. Moreover, while the coefficient for current executive office holders tends to be somewhat larger, there is no significant difference here between the benefits obtained by current party and executive office holders. In contrast, we note that the coefficient for ex-office holders is in the negative domain for high-ranking party officials, but not for executive office holders. This implies the benefits of high government office are substantially more persistent than those of party officials. Note that these results obtain across both LO and FE estimators, as well as for the two different weighting approaches shown.

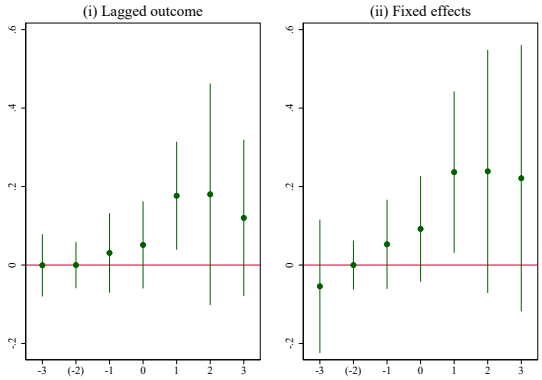
Turning to the analysis of different company types (Table 9), the same pattern identified above broadly holds. Additionally, we find that the unique legal form of company for

Figure 10: Event study analysis for matched switchers, across outcomes

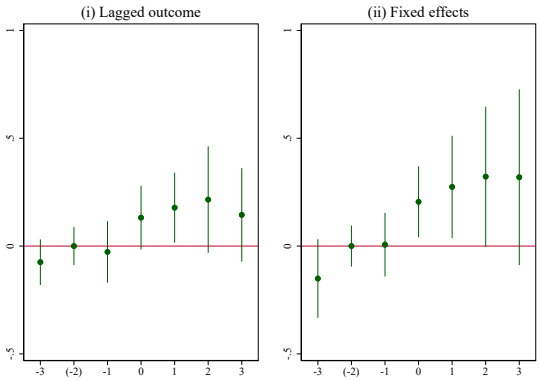
(a) No. companies



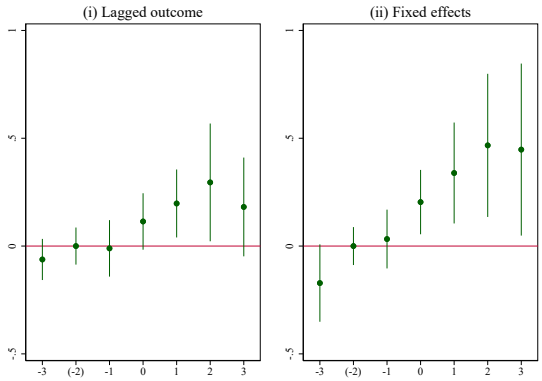
(b) Godfather centrality



(c) Degree centrality



(b) Decay centrality

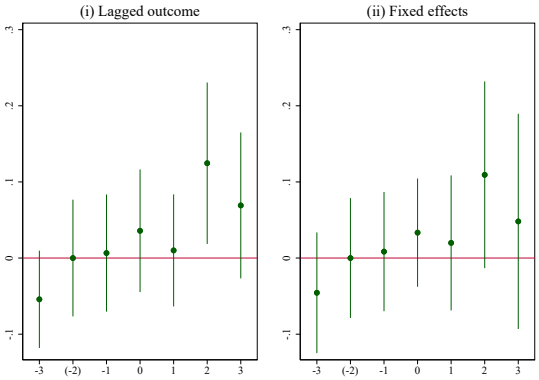


Source: authors' estimates from final panel data.

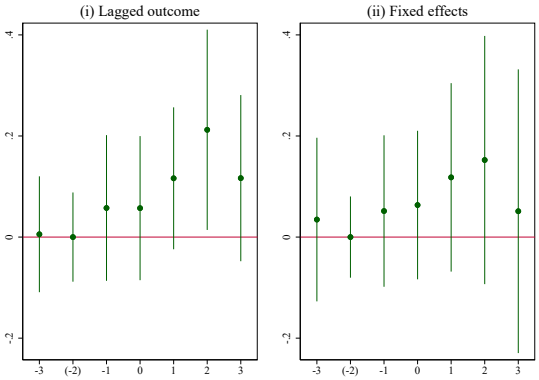
Note: each panel plots the event study coefficients and 99% confidence intervals for being a PEP for different outcomes, using the full LO and FE models for matched switchers; $t = 0$ denotes the period in which individuals first become a PEP; the set of dummy variables is normalized to equal zero at $t = -2$.

Figure 11: Event study analysis for PEPs (IP weights), across outcomes

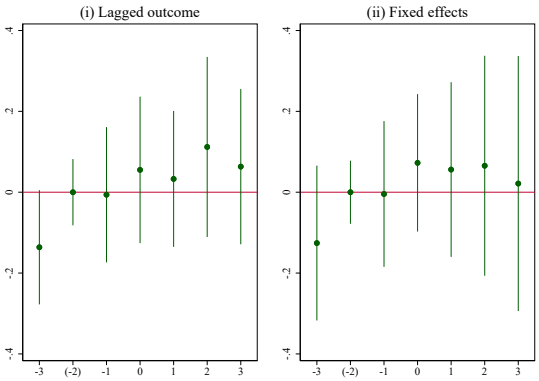
(a) No. companies



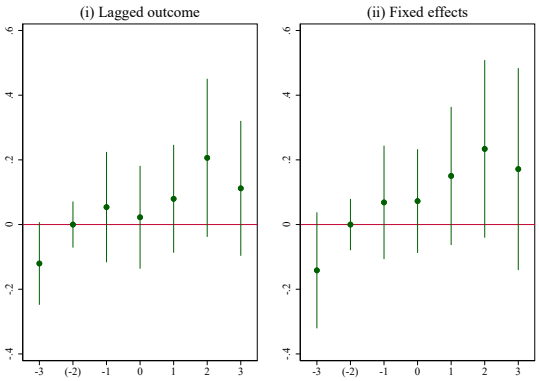
(b) Godfather centrality



(c) Degree centrality



(b) Decay centrality



Source: authors' estimates from final panel data.

Note: each panel plots the event study coefficients and 99% confidence intervals for being a PEP for different outcomes, using the full LO and FE models for PEPs with inverse-probability weights; $t = 0$ denotes the period in which individuals first become a PEP; the set of dummy variables is normalized to equal zero at $t = -2$.

Table 8: Extended regression results

	Companies		Godfather		Degree		Decay	
	LO	FE	LO	FE	LO	FE	LO	FE
(a) *Inverse probability weighted PEPs*:								
Party PEP	0.05***	0.05**	0.08**	0.08*	0.09**	0.04	0.11**	0.06
	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)
Party PEP (after)	-0.07***	-0.07***	-0.08**	-0.05	-0.12***	-0.13**	-0.13***	-0.14**
	(0.02)	(0.02)	(0.03)	(0.05)	(0.04)	(0.05)	(0.04)	(0.06)
Executive PEP	0.10***	0.03	0.10*	0.05	0.22***	0.12	0.15**	0.04
	(0.03)	(0.03)	(0.06)	(0.08)	(0.08)	(0.08)	(0.07)	(0.08)
Executive PEP (after)	-0.04	-0.03	0.08	0.09	-0.07	-0.04	0.02	0.05
	(0.04)	(0.04)	(0.08)	(0.09)	(0.09)	(0.09)	(0.08)	(0.09)
Female	-0.02*		-0.04		-0.06*		-0.05*	
	(0.01)		(0.03)		(0.03)		(0.03)	
Constant	0.08***	0.10***	0.06**	0.07	0.16***	0.20***	0.15***	0.21***
	(0.01)	(0.02)	(0.03)	(0.05)	(0.03)	(0.05)	(0.03)	(0.05)
Obs.	4,518	4,518	4,518	4,518	4,518	4,518	4,518	4,518
Current abs. diff.	0.05	0.02	0.02	0.04	0.14	0.08	0.04	0.01
(prob.)	(0.17)	(0.60)	(0.77)	(0.68)	(0.14)	(0.38)	(0.59)	(0.89)
After abs. diff.	0.09	0.02	0.19	0.11	0.19	0.18	0.19	0.18
(prob.)	(0.00)	(0.70)	(0.00)	(0.36)	(0.00)	(0.15)	(0.00)	(0.15)
(b) *Matched switchers*:								
Party PEP	0.07***	0.07***	0.11***	0.09**	0.16***	0.13**	0.18***	0.15***
	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)
Party PEP (after)	-0.08***	-0.07***	-0.07	-0.06	-0.15***	-0.18***	-0.13***	-0.13**
	(0.02)	(0.02)	(0.04)	(0.05)	(0.04)	(0.06)	(0.04)	(0.06)
Executive PEP	0.10***	0.06*	0.10*	0.05	0.23***	0.17**	0.18***	0.12*
	(0.03)	(0.03)	(0.06)	(0.06)	(0.06)	(0.08)	(0.06)	(0.07)
Executive PEP (after)	-0.01	0.00	0.13	0.12	0.02	0.01	0.09	0.12
	(0.04)	(0.04)	(0.08)	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)
Female	-0.03**		-0.03		-0.05*		-0.03	
	(0.01)		(0.02)		(0.03)		(0.03)	
Constant	0.06***	0.07***	0.02	0.04*	0.10***	0.10***	0.07***	0.09***
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.04)	(0.02)	(0.03)
Obs.	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Current abs. diff.	0.03	0.01	0.01	0.05	0.07	0.03	0.00	0.03
(prob.)	(0.37)	(0.83)	(0.92)	(0.49)	(0.34)	(0.70)	(0.97)	(0.70)
After abs. diff.	0.10	0.06	0.19	0.13	0.24	0.22	0.22	0.22
(prob.)	(0.00)	(0.13)	(0.01)	(0.12)	(0.00)	(0.03)	(0.00)	(0.02)

Source: authors' estimates from final panel data.
Note: columns report selected coefficients for the preferred full LO and FE specifications, as per Table 7, now separating out the treatment variables between type of office holder; table footer reports linear combinations of the party and executive coefficients for current and post (after) holder office; standard errors clustered by year and family name.
significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Extended lagged outcome (LO) model results for alternative firm types

		(I) Legal form			(II) Named objective			
	All	Sole	Joint	Anon	Trade	Social	Fin.	Mining
(a) *Inverse probability weighted PEPs*:								
Party PEP	0.05***	0.00	0.04**	0.01**	0.04***	0.01	0.04***	0.01**
	(0.02)	(0.00)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Party PEP (after)	-0.07***	0.00	-0.06***	-0.02***	-0.04***	-0.03***	-0.04***	-0.01**
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Executive PEP	0.10***	-0.00	0.11***	-0.01**	0.07***	-0.01	0.02	0.01
	(0.03)	(0.00)	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)
Executive PEP (after)	-0.04	-0.01	-0.05	0.04***	-0.02	0.03	0.02	-0.00
	(0.04)	(0.01)	(0.04)	(0.01)	(0.03)	(0.02)	(0.02)	(0.01)
Female	-0.02*	0.01	-0.02	-0.01	-0.02*	0.01	0.01	0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
Constant	0.08***	0.00	0.06***	0.01	0.03***	0.01	0.00	-0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Obs.	4,518	4,518	4,518	4,518	4,518	4,518	4,518	4,518
Current diff.	0.05	0.00	0.07	0.03	0.03	0.02	0.01	0.00
(prob.)	(0.17)	(0.71)	(0.07)	(0.00)	(0.34)	(0.17)	(0.49)	(0.47)
After diff.	0.09	0.01	0.07	0.03	0.05	0.03	0.05	0.00
(prob.)	(0.00)	(0.15)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.82)
(b) *Matched switchers*:								
Party PEP	0.07***	0.00	0.05***	0.02***	0.04***	0.01	0.03***	0.01**
	(0.02)	(0.00)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Party PEP (after)	-0.08***	-0.01	-0.06***	-0.02**	-0.05***	-0.03**	-0.04***	-0.01
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Executive PEP	0.10***	0.00	0.10***	-0.01	0.07***	0.00	0.02	0.01
	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Executive PEP (after)	-0.01	-0.02	-0.02	0.05***	-0.01	0.01	0.01	-0.01
	(0.04)	(0.01)	(0.04)	(0.01)	(0.03)	(0.02)	(0.02)	(0.01)
Female	-0.03**	-0.00	-0.03**	0.00	-0.02**	-0.00	-0.00	0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
Constant	0.06***	0.01	0.05***	-0.00	0.02***	0.01*	0.01	-0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
Obs.	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Current diff.	0.03	0.00	0.04	0.03	0.03	0.01	0.01	0.00
(prob.)	(0.37)	(0.74)	(0.18)	(0.00)	(0.20)	(0.44)	(0.61)	(0.73)
After diff.	0.10	0.01	0.09	0.03	0.07	0.02	0.04	0.00
(prob.)	(0.00)	(0.28)	(0.00)	(0.00)	(0.00)	(0.17)	(0.05)	(0.86)

Source: authors' estimates from final panel data.
Note: columns report selected coefficients for the same LO specifications shown in Table 8, but now focussing on different outcomes – namely, different legal types of firms, and firms with differing social objectives; all outcomes refer to the first difference in IHS-transformed firm counts; standard errors clustered by year and family name.
significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

which we observe a significant effect of holding office is in the shareholding (joint-stock or multi-owner) structures, not the sole-owned or anonymous forms. This is indeed consistent with a model in which the contribution of PEPs to a business is their contacts and political influence, not their operational/management expertise. In terms of the distinction between firms according to their stated social objectives (sectors of activity), we further find that the positive effect of holding office is most pronounced in the trading and finance domains (e.g., investment companies), and in fact only firms in the trade sector are significant for executive office holders. In Mozambique, where the domestic manufacturing industry is small, both of these sectors are particularly characterised by opportunities for rent-seeking – e.g., through import contracts or as gatekeepers for foreign investment.

6.5 Robustness

Throughout the presentation of our findings we have integrated an explicit concern for robustness – *viz.*, our use of different estimators and weighting schemes. And while there is some sensitivity to specific empirical choices, which is hardly unexpected given the (noisy) nature of our data, our main results do not appear to depend on any one specific empirical choice. Nonetheless, in this section we pursue two further robustness checks. First, we run a placebo analysis on the PEP sample. Concretely, for each individual PEP we match their office-holding history to the time series of business outcomes of a different randomly-chosen PEP, thereby splitting the relationship between outcomes and the explanatory variables while maintaining the original panel structure of the data. We undertake 250 repetitions of this placebo matching, in each iteration running the primary LO and FE models from Table 7 (with inverse-probability weights) and saving the estimated results for the treatment dummy.

Figure C3 illustrates our results. For each estimator and outcome we plot the distribution of estimated t-statistics, where the solid vertical line (in red) indicates the t-statistic obtained from the observed data and from which we can calculate the permutation-based probability that these observed results were obtained by chance alone. As can be seen, the LO results are highly robust to this procedure – less than 1% of the random permutations yield a t-statistic larger than estimated from the observed data. The FE results are also robust, but somewhat weaker, which directly matches what we had found in our earlier results. For three outcomes, namely the number of companies, degree centrality and godfather centrality, we obtain a t-statistic that is at least as large as that estimated from the observed data around 5% of the time (or less). However, for the decay centrality, the probability of obtaining a t-statistic of similar magnitude rises to around 10%. Importantly, these permutation-based

probability estimates are highly consistent with those estimated from our earlier regressions. Thus, this analysis adds clear support to the previous findings.

As a second robustness analysis we aggregate the individual-level data into family dynasties based on surnames. That is, for all individuals sharing the same surname we say the family was treated (politically exposed) if any one person with that surname was a PEP during a given period. And for the outcomes, such as the number of companies, we now use the sum total over all individuals with the same family name. The rationale for this analysis is twofold. First, as discussed in Section 4, the names in the business registry and PEP database are not always written in a consistent format. Thus, despite the normalization (and our best efforts), it is possible that either the same individual is treated as two (or more) separate units, or that two different individuals are merged into one. Aggregating by surname avoids these issues, but risks diluting the effects of being a PEP across unrelated persons. Secondly, the benefits of political exposure are plausibly not limited to individuals but are spread across the (wider) family, which would undermine the underlying econometric assumption that units are independent. And while aggregation by family name does not assure we capture all familial relationships, it goes some way in the intended direction.

To proceed, we note that after aggregating the data there are a small number of very common surnames which are unlikely to encompass unrelated individuals. Thus, we drop dynasties with more than 22 individuals, which amounts to just 2.5% of the aggregated sample. Next, we run the full LO and FE models for different samples (all, PEPs and switchers) applying equal weights. Table 10 reports the results for both the number of companies and the godfather centrality measure, while Table C3 reports results for the remaining two outcomes. A main result is that the results, particularly for the LO estimators, are not only positive and significant but in fact are somewhat larger in magnitude than the corresponding individual-level estimates (c.f., Table 7). For instance, in the unweighted full sample results, being a PEP was associated with an approximate 0.10 point faster growth rate in the Godfather centrality measure; under these dynasty results, we find a 0.19 point faster rate of growth. Considering the process of aggregation would reasonably be expected to dilute our results, due to the elision of unrelated individuals, the present results strongly indicate that the benefits of political exposure go beyond the office holder and extend to their wider family. So, if anything, our earlier results may in fact be something of a lower bound on how political exposure generates private business benefits.

Table 10: Regression results for family dynasties

	All		PEPs		Switchers	
	LO	FE	LO	FE	LO	FE
(a) *No. of companies*:						
Holds office	0.13***	0.10**	0.11***	0.11**	0.10***	0.08
	(0.03)	(0.05)	(0.03)	(0.05)	(0.03)	(0.05)
Left office	-0.14***	-0.06	-0.13***	-0.05	-0.08**	-0.04
	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)	(0.05)
Female	0.00		0.09***		0.07*	
	(0.00)		(0.03)		(0.03)	
Constant	0.21***	0.23***	0.09***	0.23***	0.09***	0.29***
	(0.00)	(0.00)	(0.02)	(0.03)	(0.02)	(0.03)
Obs.	143,238	143,238	2,466	2,466	1,350	1,350
R^2 (adj.)	0.23	-0.01	0.22	0.10	0.20	0.08
RMSE	0.40	0.46	0.45	0.48	0.46	0.49
(b) *Godfather centrality*:						
Holds office	0.19***	0.19**	0.21***	0.22***	0.26***	0.25***
	(0.05)	(0.08)	(0.05)	(0.08)	(0.07)	(0.09)
Left office	-0.20***	-0.08	-0.20***	-0.10	-0.21***	-0.16
	(0.05)	(0.07)	(0.06)	(0.07)	(0.08)	(0.10)
Female	-0.00		0.12**		0.11	
	(0.00)		(0.05)		(0.07)	
Constant	-0.00	0.06***	-0.02	0.14**	-0.05	0.16***
	(0.00)	(0.00)	(0.04)	(0.06)	(0.05)	(0.06)
Obs.	143,238	143,238	2,466	2,466	1,350	1,350
R^2 (adj.)	0.06	0.03	0.10	0.06	0.09	0.03
RMSE	0.46	0.47	0.87	0.89	0.90	0.93

Source: authors' estimates from final panel data.
Note: columns show selected coefficients from regressions based on aggregating the individual-level into groups with common family names; LO and FE specifications shown, as per Table 7; equal weights applied; robust standard errors in parentheses.
significance: * p < 0.10, ** p < 0.05, *** p < 0.01.

7 Conclusion

The point of departure for this study was that the nature of the relationship between the state and the private sector is rarely one of mutual autonomy. Here, we sought to shed light on the dynamics of state-business relationships in Mozambique, quantifying the extent to which holders of either high executive or party political office have leveraged these positions to grow their personal business empires. The hypothesis that politicians and senior members of the ruling party have used their influence to accumulate wealth in the private sector through their own business interests is not new. This theme emerged as a critique of the process of privatization (Pitcher, 2002) and has gained renewed force with the boom in natural resource investments over the past decade (Macuane et al., 2018; Salimo et al., 2020). Nonetheless, the evidence has been patchy and largely qualitative in nature, reflecting data limitations.

Our contribution has been to address this issue quantitatively, providing one of the first comprehensive econometric analyses of the growth in the private business networks of politically exposed persons, particularly in a low income country. To do so, we combined data on all companies formally registered in Mozambique since Independence, including their named beneficial owners, with a new database of politically exposed persons. From this, we constructed the complete network of how individuals are connected through firms, in turn allowing us to track how the influence of individuals within this network has evolved over time, as captured by different measures of their network centrality.

Based on both fixed effect and lagged outcome models, which bound the estimate of interest, we find consistent evidence of large positive effects of holding political office. Typically, current holders of high office tend to increase the number of companies in which they are owners and expand their Godfather centrality at about double the counterfactual rate. In our core specifications, the counterfactual rate is identified from individuals who either have been or later become office holders (PEPs), meaning we exclude individuals with no past or future political orientation. These estimates also provide very tight bounds on our main estimates, suggesting significant sources of omitted selection bias may be absent.

We extended the analysis to consider whether these effects persist after leaving high office, as well as any differences between party political and executive office holders. Overall, the evidence points to similar effects for current office holders regardless of the type of position held, but these effects are not sustained among ex-party political office holders. We also showed that the treatment effect is predominant in joint-stock companies as well as companies active in finance and trade, consistent with an interpretation that politically exposed persons earn rents as gatekeepers for investment and government contracts.

Last, an event study analysis confirmed these main results but also indicated that the largest effects emerge among individuals who accumulate multiple consecutive mandates. We also showed that the estimated magnitudes of treatment effects associated with political exposure tend to increase when we aggregate the data to the family-name level, suggesting the benefits of political office are likely to extend to family groups more broadly. As such, the main individual-level estimates probably represent a lower bound on the real private business benefits of holding political office.

The present analysis serves to deepen our understanding of how the private sector functions in Mozambique and highlights, more generally, the essential political dimensions of doing business in countries with a nascent domestic private sector. Of itself, however, we are not able to determine whether the dynamics we have identified have damaged economic development and growth. Nonetheless, our results do point to the prevalence of rentier-broker behaviour, as well as the ongoing absence of a strong 'contestable' private sector that might lobby for a fair playing-field on which to do business. This is likely to be associated with a range of inefficiencies, including higher costs of goods and services, misallocation of investment (and talent), as well as weakened innovation. None of this is likely to support a more dynamic economy in the long-run.

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Whitfield, L. and Buur, L. (2014). The politics of industrial policy: ruling elites and their alliances. *Third World Quarterly*, 35(1):126–144.

Winters, J.A. (2011). *Oligarchy*. Cambridge University Press.

Supplementary material:

'Doing business while holding public office: Evidence from Mozambique's firm registry'

A Appendix: Data, cleaning and flowchart python code

A.1 PEP references

The FRELIMO Central Committee (CC) and Polit Bureau (PB) members for each Congress where identified with the following documents:

- 1st CC : FRELIMO (1962). Documents from the 1st Congress, Dar Es Salaam, 23-28 September 1962. Mozambique Liberation Documents Collection. Available at: www.aluka.org
- 2nd CC: FRELIMO (1968). Voting results of the 2nd Congress, Dar Es Salaam, 20-25 July 1968. Arquivo Nacional da Torre do Tombo. Available at: digitarq.arquivos.pt/
- 3rd CC: Noticias (1977). Voting results of the 3th Congress , 3-7 February 1977. Sociedade do Noticias SA Archive, not available online
- 4th CC: Notícias (1983). Article about the 4th FRELIMO Congress. Maputo 27 April 1983. Sociedade do Noticias SA Archive, not available online
- 5th CC: Notícias (1989). Documents from the 5th Congress, 1989, Sociedade do Noticias SA Archive, not available online
- 6th CC: FRELIMO (1991). Voting results from the 6th Congress, 1991, Personal archive of Colin Darch, not available online
- 7th CC: Walle, Nicolas & Villalón, Leonardo (2006). The Fate of Africa's Democratic Experiments: Elites and Institutions, p 244. Indiana University Press.
- 8th CC: Jaime Cuambe (2002). O novo Comité Central. 17 June 2002. Sociedade do Noticias SA Archive, not available online
- 9th CC: Jaime Cuambe (2006). Dirigente deve servir nao servir-se do povo. Quelima, 11-15 November 2006. Sociedade do Noticias SA Archive, not available online
- 10th CC: Hanlon (2012). New Political Commission. Pemba, 2012. MOZAMBIQUE News reports & clippings 202. Available at: tinyurl.com/mozamb
- 11th CC: Hanlon (2017) Nyusi wins control of Political Commission. 2 October 2017. MOZAMBIQUE News reports & clippings 386. Available at: www.open.ac.uk/technology/mozambique/news-reports-2017

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- The Statesman's Year-Book series. Published 1864 - 2020. Springer Nature. Available at: link-springer-com.ep.fjernadgang.kb.dk/bookseries/15683

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- João M. Cabrita(2000). Mozambique The Tortuous Road to Democracy. 2000. Palgrave Macmillan
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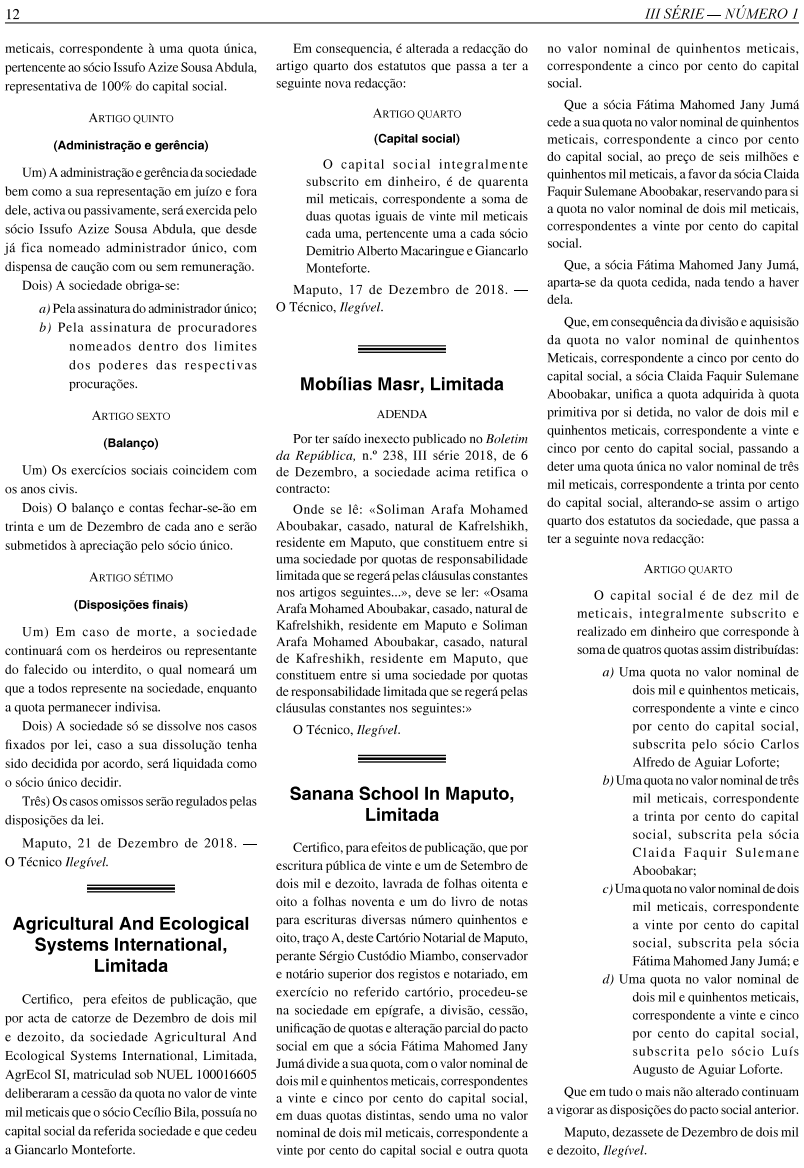
- John Paxton (1989:884). Mozambique. 1989. The Staesman´s Year-Book 1989-1990.
- Mozvest(2019). Tomaz Augusto Salomão. 2019. Retrieved from: mozvest.com/speakers/tomaz-augusto-salomao/

A.2 Registry data

Figure A1: Sample excerpt from the BR3



12 III SÉRIE — NÚMERO 1

meticais, correspondente à uma quota única, pertencente ao sócio Issufo Azize Sousa Abdula, representativa de 100% do capital social.

ARTIGO QUINTO

(Administração e gerência)

Um) A administração e gerência da sociedade bem como a sua representação em juízo e fora dele, activa ou passivamente, será exercida pelo sócio Issufo Azize Sousa Abdula, que desde já fica nomeado administrador único, com dispensa de caução com ou sem remuneração.

Dois) A sociedade obriga-se:

a) Pela assinatura do administrador único;

b) Pela assinatura de procuradores nomeados dentro dos limites dos poderes das respectivas procurações.

ARTIGO SEXTO

(Balanço)

Um) Os exercícios sociais coincidem com os anos civis.

Dois) O balanço e contas fechar-se-ão em trinta e um de Dezembro de cada ano e serão submetidos à apreciação pelo sócio único.

ARTIGO SÉTIMO

(Disposições finais)

Um) Em caso de morte, a sociedade continuará com os herdeiros ou representante do falecido ou interdito, o qual nomeará um que a todos represente na sociedade, enquanto a quota permanecer indivisa.

Dois) A sociedade só se dissolve nos casos fixados por lei, caso a sua dissolução tenha sido decidida por acordo, será liquidada como o sócio único decidir.

Três) Os casos omissos serão regulados pelas disposições da lei.

Maputo, 21 de Dezembro de 2018. — O Técnico *Ilegível.*

Agricultural And Ecological Systems International, Limitada

Certifico, pera efeitos de publicação, que por acta de catorze de Dezembro de dois mil e dezoito, da sociedade Agricultural And Ecological Systems International, Limitada, AgrEcol SI, matriculad sob NUEL 100016605 deliberaram a cessão da quota no valor de vinte mil meticais que o sócio Cecílio Bila, possuía no capital social da referida sociedade e que cedeu a Giancarlo Monteforte.

Em consequencia, é alterada a redacção do artigo quarto dos estatutos que passa a ter a seguinte nova redacção:

ARTIGO QUARTO

(Capital social)

O capital social integralmente subscrito em dinheiro, é de quarenta mil meticais, correspondente a soma de duas quotas iguais de vinte mil meticais cada uma, pertencente uma a cada sócio Demitrio Alberto Macaringue e Giancarlo Monteforte.

Maputo, 17 de Dezembro de 2018. — O Técnico, *Ilegível.*

Mobílias Masr, Limitada

ADENDA

Por ter saído inexecto publicado no *Boletim da República,* n.º 238, III série 2018, de 6 de Dezembro, a sociedade acima retifica o contracto:

Onde se lê: «Soliman Arafa Mohamed Aboubakar, casado, natural de Kafrelshikh, residente em Maputo, que constituem entre si uma sociedade por quotas de responsabilidade limitada que se regerá pelas cláusulas constantes nos artigos seguintes...», deve se ler: «Osama Arafa Mohamed Aboubakar, casado, natural de Kafrelshikh, residente em Maputo e Soliman Arafa Mohamed Aboubakar, casado, natural de Kafreshikh, residente em Maputo, que constituem entre si uma sociedade por quotas de responsabilidade limitada que se regerá pelas cláusulas constantes nos seguintes:»

O Técnico, *Ilegível.*

Sanana School In Maputo, Limitada

Certifico, para efeitos de publicação, que por escritura pública de vinte e um de Setembro de dois mil e dezoito, lavrada de folhas oitenta e oito a folhas noventa e um do livro de notas para escrituras diversas número quinhentos e oito, traço A, deste Cartório Notarial de Maputo, perante Sérgio Custódio Miambo, conservador e notário superior dos registos e notariado, em exercício no referido cartório, procedeu-se na sociedade em epígrafe, a divisão, cessão, unificação de quotas e alteração parcial do pacto social em que a sócia Fátima Mahomed Jany Jumá divide a sua quota, com o valor nominal de dois mil e quinhentos meticais, correspondentes a vinte e cinco por cento do capital social, em duas quotas distintas, sendo uma no valor nominal de dois mil meticais, correspondente a vinte por cento do capital social e outra quota no valor nominal de quinhentos meticais, correspondente a cinco por cento do capital social.

Que a sócia Fátima Mahomed Jany Jumá cede a sua quota no valor nominal de quinhentos meticais, correspondente a cinco por cento do capital social, ao preço de seis milhões e quinhentos mil meticais, a favor da sócia Claida Faquir Sulemane Aboobakar, reservando para si a quota no valor nominal de dois mil meticais, correspondentes a vinte por cento do capital social.

Que, a sócia Fátima Mahomed Jany Jumá, aparta-se da quota cedida, nada tendo a haver dela.

Que, em consequência da divisão e aquisição da quota no valor nominal de quinhentos Meticais, correspondente a cinco por cento do capital social, a sócia Claida Faquir Sulemane Aboobakar, unifica a quota adquirida à quota primitiva por si detida, no valor de dois mil e quinhentos meticais, correspondente a vinte e cinco por cento do capital social, passando a deter uma quota única no valor nominal de três mil meticais, correspondente a trinta por cento do capital social, alterando-se assim o artigo quarto dos estatutos da sociedade, que passa a ter a seguinte nova redacção:

ARTIGO QUARTO

O capital social é de dez mil de meticais, integralmente subscrito e realizado em dinheiro que corresponde à soma de quatros quotas assim distribuídas:

a) Uma quota no valor nominal de dois mil e quinhentos meticais, correspondente a vinte e cinco por cento do capital social, subscrita pelo sócio Carlos Alfredo de Aguiar Loforte;

b) Uma quota no valor nominal de três mil meticais, correspondente a trinta por cento do capital social, subscrita pela sócia Claida Faquir Sulemane Aboobakar;

c) Uma quota no valor nominal de dois mil meticais, correspondente a vinte por cento do capital social, subscrita pela sócia Fátima Mahomed Jany Jumá; e

d) Uma quota no valor nominal de dois mil e quinhentos meticais, correspondente a vinte e cinco por cento do capital social, subscrita pelo sócio Luís Augusto de Aguiar Loforte.

Que em tudo o mais não alterado continuam a vigorar as disposições do pacto social anterior.

Maputo, dezassete de Dezembro de dois mil e dezoito, *Ilegível.*

A.3 Name cleaning

To account for inconsistencies in name spellings we apply a two fold strategy. First we encode all strings into lowercase ASCII characters using the Phython package *unidecode* (pypi.org/project/Unidecode/). Next, we apply fuzzy string matching to identified identical names that are spelled slightly different. We implement this step with the package *difflib* (docs.python.org/3/library/difflib.html) which uses the Levenshtein distance between strings. This approach improves the consistency of our

Table A1: Matching rate threshold

Name in the bulletin	Threshold for Levenshtein distance
Aires Bonifácio Baptista Ali	100 %
Aires Binifacio Baptista Ali	92 %
Aires Bonifacio Batista Aly	90 %
Ayres Bonifacio Baptista Aly	89 %
Aires Bonifacio Baptista AliJunior	87%
Aires Bonifacio Ali	76%
Luisa da Conceicao Baptista Ali	71 %
Bonomar Baptista Alifa	68%

sample significant, nevertheless it is not a panacea. *Difflib* requires a threshold to identify matching strings, the "right" threshold to identify plausible matches differs across names, as table A1 illustrates. While all matches until 71% are plausible matches in this examples, are matches below 70 % at the most family members or individuals with the same name. Our main empirical analysis define a threshold of 92.5 % as a match, as robustness checks we also define 90% and 95% thresholds.

A.4 Outcome variables

Table A2: Correlation between outcome variables

	Companies	Decay	Degree	Godfather index
Companies	1.000000	0.408750	0.374471	0.468743
Decay	0.408750	1.000000	0.607449	0.473603
Degree	0.374471	0.607449	1.000000	0.451502
Godfather index	0.468743	0.473603	0.451502	1.000000

A.5 Keywords by industry

To allocate firms to specific industries, we use the following keywords:

Table A3: Keywords used to identify main company sectors

Finance	Health/Education	Mining	Trading
financeiro	farmacia	minerais	import
investimento	hospital	minas	export
participacao	medica	mineiro	importacao
participacoes	optica	drilling	exp
banco	cosmeticos	mining	imp
financas	health	minerals	trading
seguro	educacao	coal	exportadora
aluguer	beleza	mining	exportacao
investiment	social	metais	
holding	crianca	mineracao	
invest	dental		
capital	school		
banking	instituto		

Note: to match companies to sectors we removed diacritical marks in the text; matching was applied to each company's stated social objectives, where available.

A.6 Documentation of Python code

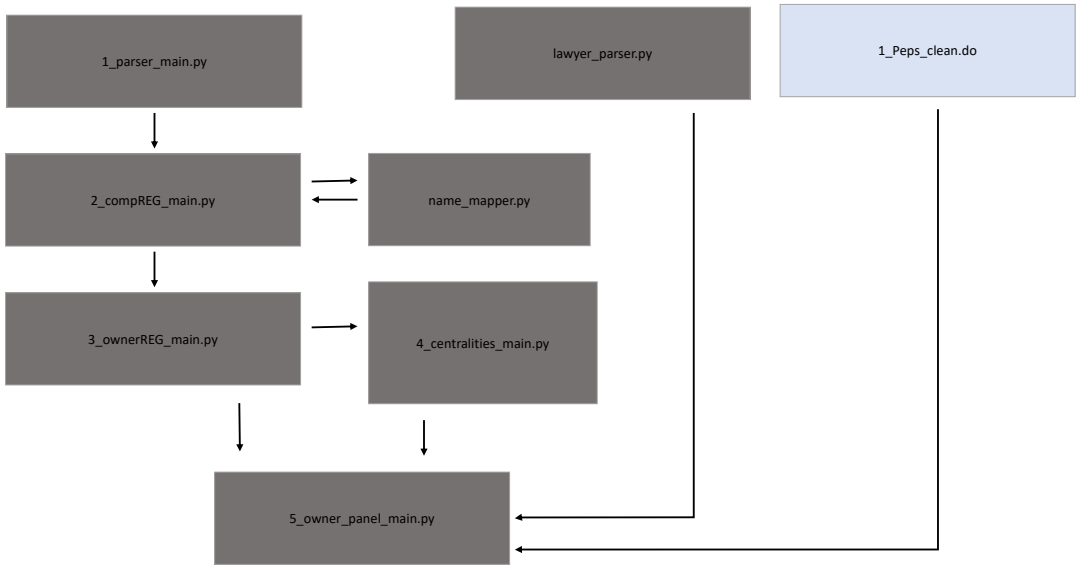
The Python code consists of four main modules that are executed subsequently. Each uses external- and submodules. Flowchart A2 visualizes the process. First, *parser_main* downloads all entries in the pandora database and stores each entry as a single row in a csv file. To get access to the Pandora database, a subscription is needed. Next, *compREG_main* sets up a consistent company register, listing unique firms and their characteristics. This step includes the name cleaning of business owners. Duplicate names are identified in the module *name_mapper* using the Levenshtein distance (see A.3). This step requires the extensive computing power. Each name-duplicate using a receptive Levenshtein threshold is therefore stored locally. The industries in which firms operate are identified by keywords (seeA.5).

The cleaned company register is now reshaped into an owner register in *ownerREG_main*, listing all firm affiliations for each business owner. This module also creates undirected networks of business owners in five year periods, starting in 1985.

Theses network graphs are use in *centralities_main*, to calculate centralities of this network. Degree-, betweeness and closeness centralities are calculated using the inbuilt modules of the python package *network x*. Jackson´s (2019) Godfather and decay centralities are calculated in modules written by the author.

Finally, the panel for our main analysis is merged in *owner_panel_main.py*. It includes company characteristics from the owner register and network centralities. Additionally, we parse a list of Mozambican company lawyers and map them with the same Levenshtein distance threshold that is used in the *name_mapper* on the panel. This threshold is also used to map names of PEPs from our PEP database on the panel. We export this panel as a .dta file and analyze it in STATA.

Figure A2: Flowdiagramm of main python modules



B Appendix: Bracketing relationship between lagged outcome and fixed effects estimators

In order to demonstrate, in a simplified setting, the bracketing relationship between the fixed effects (FE) and lagged outcome (LO) estimators, presume the following true data generating process:

$$y_{it} = \lambda\alpha_i + \theta y_{i,t-1} + \beta P_{it} + \varepsilon_{it} \tag{B.1}$$

where P is the treatment variable of interest (PEP), all variables are mean zero (permitting us to ignore constant terms), $\lambda \geq 0$, and we assume $\varepsilon_{it} \perp P_{it} \mid \alpha_i, y_{t-1}$, allowing for selection into treatment based on either unit fixed effects or past outcomes. We further assume a simple two period setting in which some units receive the treatment only in period t, implying: $P_{i,t-1} = 0 \Leftrightarrow y_{i,t-1} = \lambda\alpha_i + \varepsilon_{i,t-1}$.

B.1 Fixed effects estimator

Here, the analyst proposes to analyse the data using the following empirical model:

$$y_{it} = \lambda\alpha_i + \beta P_{it} + \varepsilon_{it} \tag{B.2}$$

Taking first differences to sweep out the fixed effects, and assuming no serial correlation in the error terms, the resulting estimate for β will be:

$$\hat{\beta}_{\text{FE}} \xrightarrow{p} \beta + \frac{\text{E}([\lambda\alpha_i + (\theta-1)y_{i,t-1} + \varepsilon_{it}] \cdot P_{it})}{\text{E}(P_{it}^2)} \tag{B.3}$$

$$= \beta + \lambda\theta\frac{\text{E}(\alpha_i P_{it})}{\text{E}(P_{it}^2)} + (\theta-1)\frac{\text{E}(\varepsilon_{i,t-1}P_{it})}{\text{E}(P_{it}^2)} \tag{B.4}$$

B.2 Lagged outcome estimator

Here, the analyst proposes to analyse the data using the following empirical model:

$$y_{it} = \theta y_{i,t-1} + \beta P_{it} + \varepsilon_{it} \tag{B.5}$$

To do so, she first partitions the treatment variable into a component correlated with the lagged outcome and an orthogonal residual:

$$P_{it} = \hat{\phi} y_{i,t-1} + \tilde{P}_{it} \tag{B.6}$$

where $\hat{\phi} = \mathrm{E}(P_{it}y_{i,t-1})/\mathrm{E}(y_{i,t-1}^2)$. Focussing then on the simplified (covariance-adjusted) model of interest, $y_{it} = \beta\tilde{P}_{it} + \varepsilon_{it}$, yields the following estimator:

$$\hat{\beta}_{\text{LO}} \overset{prob.}{\to} \beta + \frac{\mathrm{E}([\lambda\alpha_i + \theta y_{i,t-1} + \varepsilon_{it}] \cdot \tilde{P}_{it})}{\mathrm{E}(\tilde{P}_{it}^2)} \tag{B.7a}$$

$$= \beta + \lambda\frac{\mathrm{E}(\alpha_i\tilde{P}_{it})}{\mathrm{E}(\tilde{P}_{it}^2)} \tag{B.7b}$$

$$= \beta + \lambda\frac{\mathrm{E}(\alpha_i \cdot [P_{it} - \hat{\phi}y_{i,t-1}])}{\mathrm{E}(\tilde{P}_{it}^2)} \tag{B.7c}$$

$$= \beta + \lambda\frac{\mathrm{E}(\alpha_i \cdot [P_{it} - \hat{\phi}(\lambda\alpha_i + \varepsilon_{i,t-1})])}{\mathrm{E}(\tilde{P}_{it}^2)} \tag{B.7d}$$

$$= \beta + \lambda\left(\frac{\mathrm{E}(\alpha_i P_{it})}{\mathrm{E}(\tilde{P}_{it}^2)} - \frac{\mathrm{E}(\alpha_i^2)}{\mathrm{E}(\tilde{P}_{it}^2)}\frac{\mathrm{E}(P_{it}[\lambda\alpha_i + \varepsilon_{i,t-1}])}{\mathrm{E}(\alpha_i^2) + \mathrm{E}(\varepsilon_{i,t-1}^2)}\right) \tag{B.7e}$$

$$= \beta + \lambda\frac{\mathrm{E}(\alpha_i P_{it})}{\mathrm{E}(\tilde{P}_{it}^2)}\big[1 - \lambda k\big] - \lambda k\frac{\mathrm{E}(P_{it}\varepsilon_{i,t-1})}{\mathrm{E}(\tilde{P}_{it}^2)} \tag{B.7f}$$

$$= \beta + \lambda\frac{\mathrm{E}(\alpha_i P_{it})}{\mathrm{E}(\tilde{P}_{it}^2)}\underbrace{\left[1 - k\left(\lambda + \frac{\mathrm{E}(P_{it}\varepsilon_{i,t-1})}{\mathrm{E}(\alpha_i P_{it})}\right)\right]}_{\text{Adjustment factor}} \tag{B.7g}$$

where $k = \mathrm{E}(\alpha_i^2)/[\mathrm{E}(\alpha_i^2) + \mathrm{E}(\varepsilon_{i,t-1}^2)] \leq 1$.

B.3 Implications

The following two cases set out the primary implications of this exercise:

Case 1: Consider the special case of equation (B.1) where selection into treatment occurs positively and uniquely on the unit fixed effects. This implies: $\theta = 0$ or $\mathrm{E}(\varepsilon_{i,t-1}P_{it}) = 0$, and $\mathrm{E}(\alpha_i P_{it}) > 0$. In turn, this implies $\hat{\beta}_{\text{LO}} > \beta = \hat{\beta}_{\text{FE}}$.

Case 2: Consider the opposite case where selection into treatment occurs positively and uniquely on the lagged error term. Now we have: $\lambda = 0$ or $\mathrm{E}(\alpha_i P_{it}) = 0$, and $\mathrm{E}(\varepsilon_{i,t-1}P_{it}) > 0$. For $\theta < 1$, this implies $\hat{\beta}_{\text{FE}} < \beta = \hat{\beta}_{\text{LO}}$.

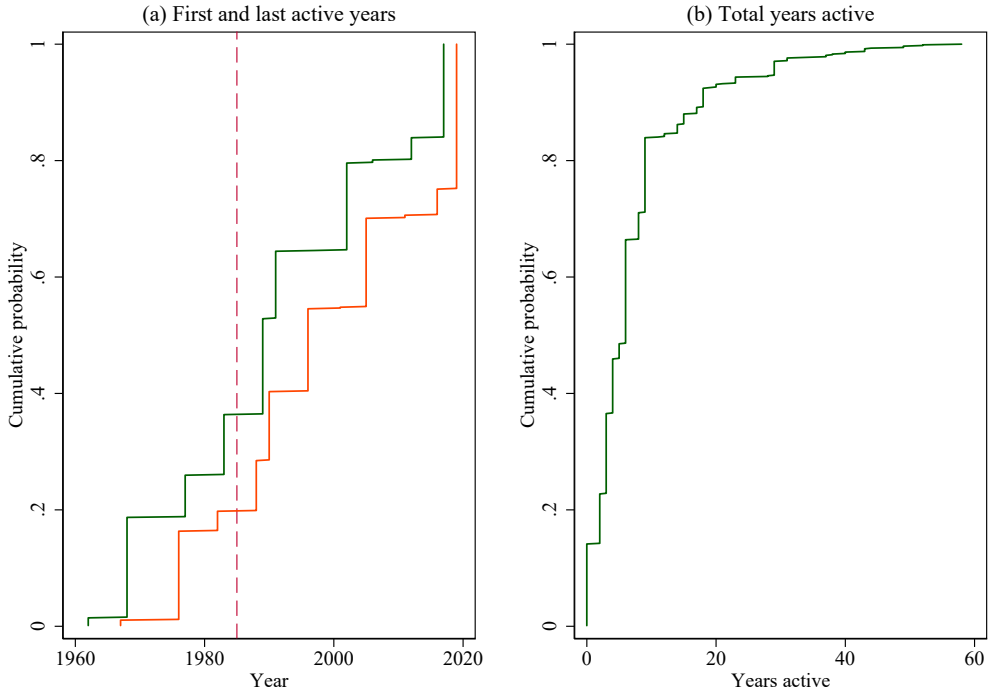
Cases 1 and 2 demonstrate the bounding properties of the two estimators – i.e., $\hat{\beta}_{\text{LO}} \geq \beta \geq \hat{\beta}_{\text{FE}}$. Beyond these limit cases, we would generally expect the bounds to be tighter:

Case 3.1: In intermediate cases, where there is some combination of both forms of selection, the magnitude of bias given in each of the latter two cases would typically be smaller – the downward bias for the FE estimator is offset by the second term in equation (B.4) with coefficient $\lambda\theta$; and the upward bias in the LO estimator would be offset by the adjustment factor in equation (B.7g).

Case 3.2: In the special case that the lagged outcome is highly persistent ($\theta \approx 1$) and $\lambda > 0$, then both estimators are likely to be upward biased by similar magnitudes. However, here we would now expect $\hat{\beta}_{\text{FE}} > \hat{\beta}_{\text{LO}}$). Thus, the ordering of the two estimates provides an important indication of the properties of the data.

C Appendix: Additional figures and tables

Figure C1: Length of PEP activity (party political positions)



Note: panel (a) shows the cross-sectional cumulative distributions of first and last years in which individuals hold/held party political mandates (political bureau and central committee); panel (b) is the cumulative distribution of number of years active, per individual; we do not assume individuals hold office in all intervening years.

Table C1: Summary of main regression results for being a PEP on business outcomes after holding office

Sample	Weights	(I) No. companies		(II) Godfather cent.		(III) Degree cent.		(IV) Decay cent.	
		LO	FE	LO	FE	LO	FE	LO	FE
All	Equal	0.002	-0.029	0.010	0.097	0.016	0.016	0.004	0.025
		(0.893)	(0.310)	(0.731)	(0.086)	(0.635)	(0.819)	(0.913)	(0.726)
		[0.974]	[0.657]	[0.923]	[0.411]	[0.896]	[0.951]	[0.966]	[0.934]
	Inv. Prob.	-0.025	-0.068	0.003	0.047	-0.090	-0.069	-0.086	-0.132
		(0.282)	(0.305)	(0.955)	(0.756)	(0.095)	(0.644)	(0.110)	(0.391)
		[0.655]	[0.666]	[0.996]	[0.938]	[0.426]	[0.891]	[0.438]	[0.723]
	Matched	0.044	-0.015	0.128	0.165	0.131	0.046	0.145	0.101
		(0.014)	(0.626)	(0.000)	(0.004)	(0.000)	(0.523)	(0.000)	(0.142)
		[0.165]	[0.940]	[0.009]	[0.069]	[0.008]	[0.856]	[0.014]	[0.536]
PEPs	Equal	-0.027	-0.039	0.007	0.082	-0.007	-0.012	-0.013	0.002
		(0.057)	(0.163)	(0.804)	(0.151)	(0.827)	(0.861)	(0.713)	(0.972)
		[0.373]	[0.560]	[0.965]	[0.544]	[0.945]	[0.968]	[0.933]	[0.986]
	Inv. Prob.	-0.031	-0.036	0.001	0.061	-0.037	0.013	-0.036	-0.024
		(0.041)	(0.282)	(0.970)	(0.392)	(0.285)	(0.864)	(0.323)	(0.759)
		[0.368]	[0.676]	[0.998]	[0.706]	[0.641]	[0.957]	[0.646]	[0.926]
	Matched	-0.016	-0.041	0.054	0.082	0.010	-0.040	0.019	-0.039
		(0.418)	(0.230)	(0.208)	(0.238)	(0.814)	(0.614)	(0.682)	(0.627)
		[0.734]	[0.637]	[0.623]	[0.612]	[0.961]	[0.961]	[0.909]	[0.921]
Switchers	Equal	-0.012	-0.052	0.074	0.084	0.020	-0.090	0.031	-0.077
		(0.517)	(0.103)	(0.060)	(0.193)	(0.618)	(0.244)	(0.472)	(0.320)
		[0.865]	[0.438]	[0.360]	[0.604]	[0.947]	[0.605]	[0.810]	[0.657]
	Inv. Prob.	-0.033	-0.052	0.020	0.049	-0.049	-0.043	-0.038	-0.081
		(0.057)	(0.170)	(0.656)	(0.557)	(0.211)	(0.627)	(0.369)	(0.357)
		[0.409]	[0.558]	[0.891]	[0.891]	[0.607]	[0.904]	[0.699]	[0.695]
	Matched	-0.000	0.004	0.089	0.108	0.074	0.087	0.109	0.136
		(0.996)	(0.907)	(0.020)	(0.069)	(0.072)	(0.236)	(0.011)	(0.050)
		[0.996]	[0.975]	[0.202]	[0.381]	[0.373]	[0.630]	[0.154]	[0.402]

Note: this is as per Table 7 in the text, but we now show the effect associated with periods after which individuals held high office, given by the linear combination of the monotonic 'holds office' and 'after' dummy variables.

Table C2: Extended fixed effects (FE) model results for alternative firm types

		Legal form			Named objective			
	All	Sole	Multi	Anon	Trade	Social	Fin.	Mining
(a) *Inverse probability weighted PEPs*:								
Party PEP	0.05**	0.01	0.04*	0.01	0.05***	0.03**	0.03**	0.02***
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Party PEP (after)	-0.07***	0.01	-0.06***	-0.01	-0.04**	-0.01	-0.04***	-0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.00)
Executive PEP	0.03	0.00	0.04	-0.02	0.02	0.01	0.02	0.00
	(0.03)	(0.01)	(0.03)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)
Executive PEP (after)	-0.03	-0.00	-0.04	0.05***	0.01	0.06***	0.04*	-0.00
	(0.04)	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)	(0.03)	(0.01)
Constant	0.10***	-0.00	0.09***	0.02	0.03**	0.00	0.02*	-0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Obs.	4,518	4,518	4,518	4,518	4,518	4,518	4,518	4,518
Current diff.	0.02	0.01	0.01	0.03	0.03	0.02	0.01	0.02
(prob.)	(0.60)	(0.46)	(0.88)	(0.09)	(0.29)	(0.22)	(0.64)	(0.03)
After diff.	0.02	0.02	0.03	0.03	0.02	0.05	0.07	0.02
(prob.)	(0.70)	(0.13)	(0.62)	(0.20)	(0.58)	(0.02)	(0.03)	(0.14)
(b) *Matched switchers*:								
Party PEP	0.07***	-0.00	0.06***	0.01	0.05***	0.03**	0.02	0.01**
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Party PEP (after)	-0.07***	-0.00	-0.05**	-0.01	-0.04**	-0.01	-0.03**	-0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Executive PEP	0.06*	0.00	0.06**	-0.01	0.07***	0.00	0.00	0.01
	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
Executive PEP (after)	0.00	-0.01	-0.01	0.06***	0.02	0.05**	0.03	0.00
	(0.04)	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)	(0.03)	(0.01)
Constant	0.07***	0.01**	0.06***	0.00	0.02*	0.01	0.03***	-0.00
	(0.02)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Obs.	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Current diff.	0.01	0.01	0.00	0.03	0.01	0.03	0.02	0.01
(prob.)	(0.83)	(0.56)	(0.90)	(0.04)	(0.65)	(0.16)	(0.51)	(0.40)
After diff.	0.06	0.00	0.05	0.04	0.07	0.02	0.05	0.00
(prob.)	(0.13)	(0.95)	(0.23)	(0.01)	(0.02)	(0.30)	(0.05)	(0.74)

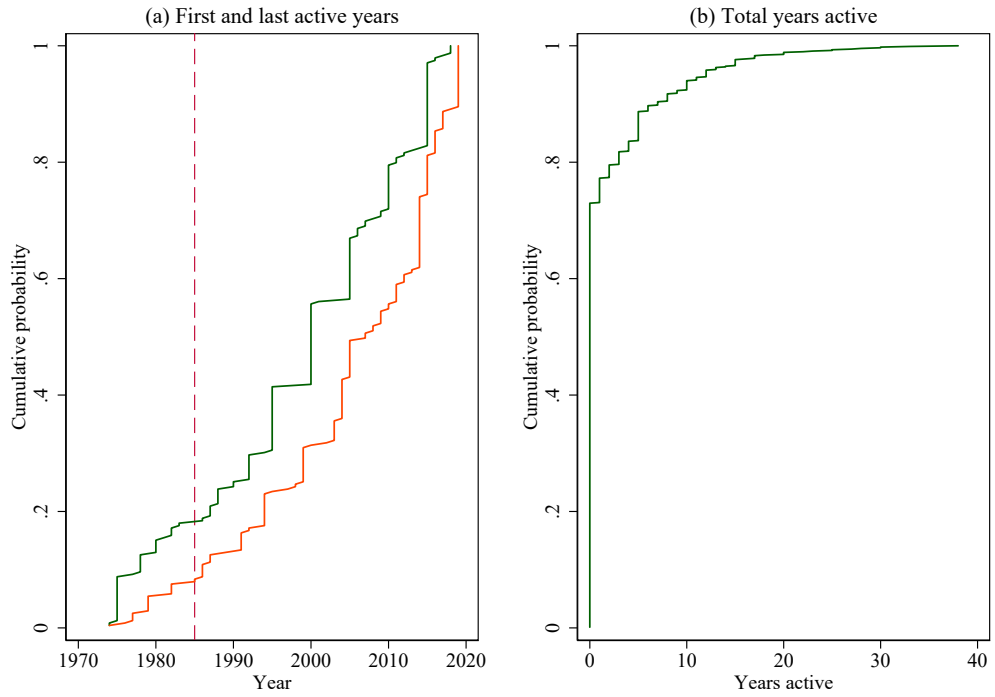
significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Note: this is as per Table 9 in the text, now applying the FE specification.

Table C3: Regression results for family dynasties (additional)

	All		PEPs		Switchers	
	LO	FE	LO	FE	LO	FE
(a) *Degree centrality*:						
Holds office	0.11**	0.00	0.11**	0.00	0.14**	0.02
	(0.05)	(0.09)	(0.05)	(0.09)	(0.06)	(0.10)
Left office	-0.19***	-0.14**	-0.20***	-0.13*	-0.15**	-0.12
	(0.04)	(0.07)	(0.05)	(0.07)	(0.06)	(0.09)
Female	-0.00		0.15***		0.08	
	(0.01)		(0.05)		(0.06)	
Constant	0.22***	0.27***	0.18***	0.42***	0.16***	0.43***
	(0.00)	(0.00)	(0.04)	(0.07)	(0.05)	(0.06)
Obs.	143,238	143,238	2,466	2,466	1,350	1,350
R^2 (adj.)	0.10	-0.05	0.15	-0.02	0.14	-0.04
RMSE	0.75	0.81	0.84	0.92	0.86	0.94
(b) *Decay centrality*:						
Holds office	0.11*	0.00	0.12**	0.01	0.14**	0.03
	(0.05)	(0.09)	(0.06)	(0.09)	(0.07)	(0.10)
Left office	-0.21***	-0.15**	-0.22***	-0.15**	-0.17**	-0.14*
	(0.05)	(0.07)	(0.05)	(0.07)	(0.07)	(0.09)
Female	-0.00		0.15***		0.09	
	(0.01)		(0.05)		(0.07)	
Constant	0.18***	0.26***	0.17***	0.47***	0.15***	0.46***
	(0.00)	(0.00)	(0.04)	(0.07)	(0.05)	(0.06)
Obs.	143,238	143,238	2,466	2,466	1,350	1,350
R^2 (adj.)	0.09	0.01	0.13	0.04	0.11	0.02
RMSE	0.69	0.72	0.86	0.91	0.89	0.93

significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Note: this is as per Table 10 in the text, using different outcomes.
Source: own estimates.

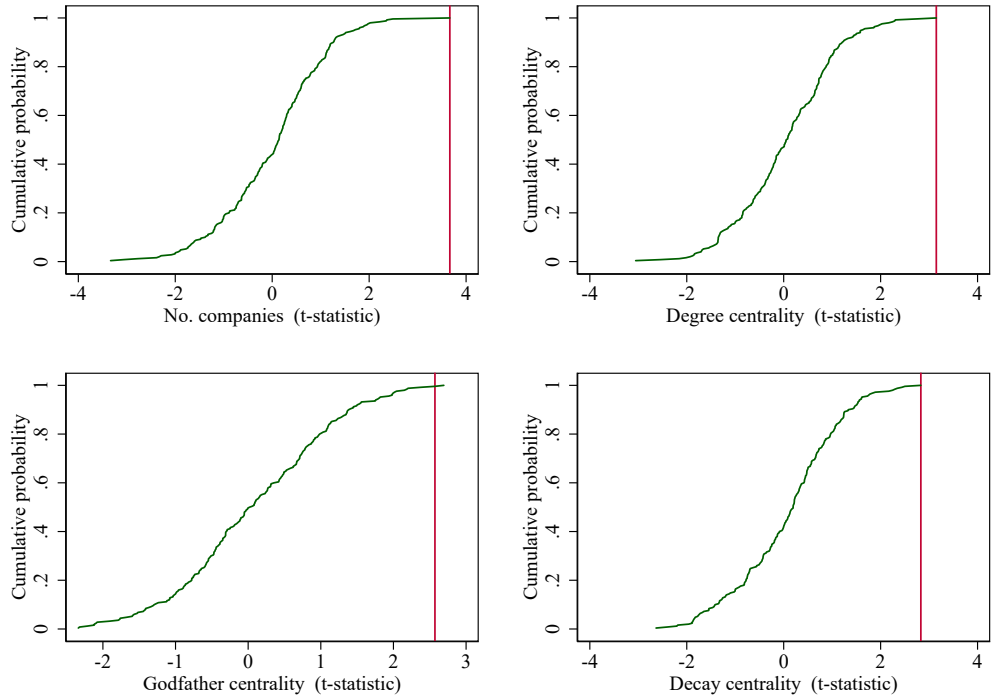
Figure C2: Length of PEP activity (executive positions)



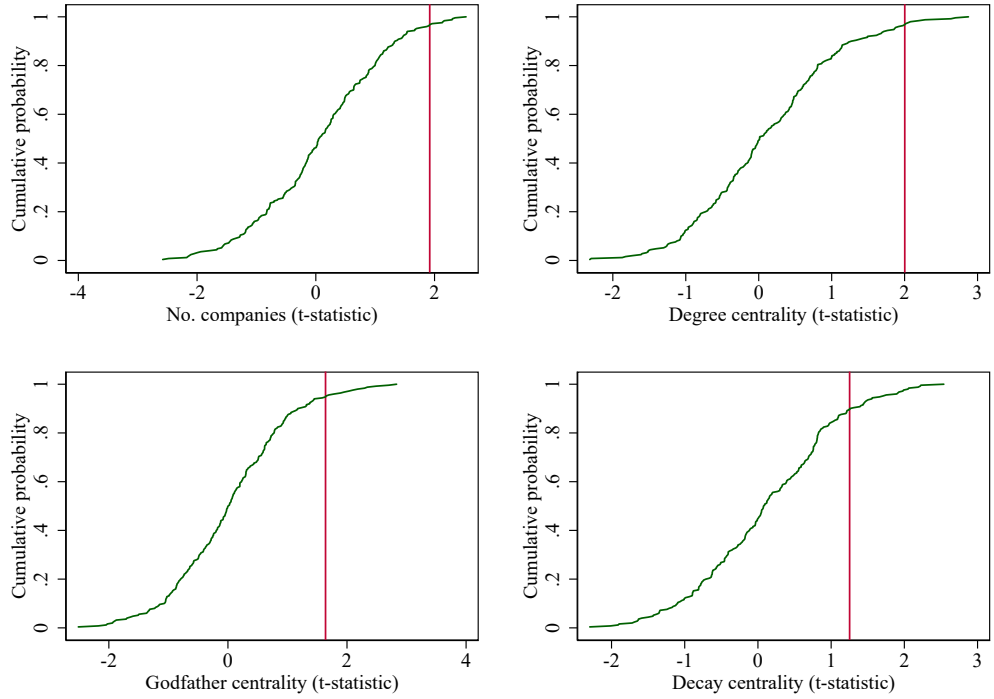
Note: panel (a) shows the cross-sectional cumulative distributions of first and last years in which individuals hold/held party political PEP mandates (ministers, vice-ministers and governors); panel (b) is the cumulative distribution of number of years active, per individual; we do not assume individuals hold office in all intervening years.

Figure C3: Distribution of t-statistics for permutation-based placebo analysis

(a) *Lagged outcome estimators*:



(b) *Fixed effects estimators*:



Note: figures plot the cumulative distributions of t-statistics associated with estimates for the dummy variable for being a PEP using different estimators (LO, FE) and outcomes (x-axes) based on the placebo approach described in the text; red lines indicate t-statistics obtained from regressions run with the observed data (see Table 7).