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## Politicians doing business: Evidence from Mozambique

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# Politicians doing business

## Evidence from Mozambique

Sam Jones,<sup>1</sup> Felix Schilling,<sup>2</sup> and Finn Tarp<sup>3</sup>

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**Abstract:** We link a new database of politically exposed persons with the complete register of firms established in Mozambique since Independence. Focusing on the network of connections between firm owners, we use a generalized event study analysis to show that holders of political office achieve significant gains in the number of companies owned and their structural power (centrality) within the business-owner network. These gains are concentrated in joint-stock firms active in provision of business services, and our results persist when we aggregate the data to the family-level. This pattern suggests politicians accumulate private sector wealth by acting as rentier-brokers.

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

**JEL classification:** D72, G30, G38

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# 1 Introduction

Gainful exchanges between firms and politicians have been found in numerous contexts (Shleifer and Vishny 1994; Della Porta et al. 1996; Winters 2011). Firms can benefit from such relationships through enhanced property rights, preferential access to capital inputs, licenses or government contracts, as well as to private information (e.g., Johnson and Mitton 2003; Khwaja and Mian 2005; Choi 2009; Goldman et al. 2009; Truex 2014). Politicians can achieve personal enrichment, be it through various forms of grand corruption (McMillan and Zoido 2004) or by securing lucrative employment either during or after their political tenure (Faccio 2006; Fafchamps and Labonne 2017; Mattozzi and Merlo 2008; Ang et al. 2013; Schoenherr 2019). For example, using India's Right to Information Act, Fisman et al. (2014) compare changes in the wealth of parliamentary candidates, finding that winning candidates enjoyed up to 6% faster growth in personal assets compared to losers. 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.

A dominant strand of literature on political corruption focusses on how firms secure political influence and its impact on their performance. Strong versions of this are encapsulated by the notion of state capture (Hellman et al. 2003; Canen and Wantchekon 2022), which also extends to the phenomenon of businessmen standing as political candidates (Gehlbach et al. 2010). A smaller literature considers agency in the opposite direction – from politicians to firms.<sup>1</sup> Aside from cases of looting, especially of state-owned companies (Wedeman 1997), evidence suggests that politicians or their proxies can take ownership stakes in private firms, providing them a means of private wealth generation. This phenomenon was particularly apparent in the shift from socialism to capitalism in Eastern Europe during the 1990s. Staniszkis (1990), for example, notes how both new and old political elites took advantage of the privatization of state assets in former Eastern Bloc countries, coming to straddle private and public spheres (also Mihályi and Szelényi 2019; Szelényi 2010; Lamberova and Sonin 2018). Other prominent examples include the emergence of business empires linked to political families, such as Suharto (Indonesia), Ben Ali (Tunisia) and dos Santos (Angola) (see, respectively, Fisman 2001; Rijkers et al. 2017; A. Pitcher and Rodrigues Sanches 2019).

In various low-income African contexts, a line of largely qualitative scholarship similarly highlights the active business dealings and associated wealth of prominent politicians or family members (e.g., Médard 1992; Wedeman 1997; Szeftel 2000; Daloz 2003; Whitfield and Buur 2014). Nonetheless, it is rarely clear whether this phenomenon is systematic, nor whether it is a genuine consequence of access to political power. As such, this paper provides a quantitative investigation of the link between holding political office and various measures of personal

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<sup>1</sup> For a related discussion of judicial capture see Mehmood and Ali (2024).

business success. Focussing on Mozambique, we examine two main hypotheses: (1) that the propensity to be a firm-owner increases with holding political office; and (2) that an individual's strategic position (centrality) within the network of business owners increases with holding political office. These capture effects on the extensive and intensive margins respectively.

To test our hypotheses we use public firm registry data, from which we construct the complete network of relationships among business owners covering all private (formal) firms established in the country from 1975 to 2019. The registry information allows us to construct time-series metrics of business outcomes, including the number of companies owned by each individual and indicators of their social capital within the network of firm-owners, such as 'godfather centrality' (see Jackson 2020). Linking this to a new database of politically-exposed persons (PEPs), we use generalized event study methods to assess the causal contribution of holding political office to business capital outcomes over the period 1985-2019.<sup>2</sup> In contrast to canonical event study methods, which typically assume a single and permanent event (monotonic binary treatment), this generalization allows us to account for both time-varying (non-monotonic) and continuous types of treatments. This is pertinent here given some PEPs move in and out of positions over time; and PEPs hold office for different numbers of years.

Our main finding is that, after taking office, the average PEP achieves significant gains in personal business capital along multiple dimensions. Our key results, obtained from the sample of individuals who became a PEP at some point, show that holding political office is associated with around a 66% (0.08 percentage point) increase in the propensity to be a firm owner, a 23% (0.19 log unit) increment in the number of companies in which they have an ownership interest, and a 42% (0.39 log unit) increase in their brokerage capital. Digging deeper, we find these results hold for both party political and executive offices, but there is some evidence of moderately larger short-run gains in the latter group. Our results are also robust to aggregation at the family-level, thereby taking into account potential spillovers across family members.

Although our data cannot speak directly to the developmental consequences of business-politician linkages, we provide suggestive evidence they are not growth-enhancing. First, we show PEPs systematically prefer to take ownership in joint-stock companies and predominantly accumulate interests in business services companies. This is consistent with existing qualitative evidence that politicians act as gatekeepers to state contracts as well as to (foreign direct) investment, a view corroborated by case study evidence relating to figures implicated in the 'hidden loans' affair.<sup>3</sup> Second, while we find no clear association between the rate of estab-

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<sup>2</sup> There has never been any general legal prohibition on serving politicians (or public servants) from actively pursuing their own business interests in Mozambique, and this openness extends to the 2013 Public Probity Law (Levy and Williams 2014).

<sup>3</sup> This involved undeclared government guarantees on commercial loans valued at over USD 2 billion. The activities being financed never got going and there is substantial evidence of bribery and fraud, sparking local and

lishment of new firms and macroeconomic growth, there is some evidence that an increase in the number of politically-connected firms is associated with a lower rate of GDP growth at the sector-level.

The contribution of this study is threefold. First, we provide rigorous evidence of an important yet comparatively under-studied mechanism through which politicians achieve self-enrichment, namely through firm ownership. Second, we consider a novel set of outcomes, observed over an extended period of time based on the universe of incorporated firms. In particular, we quantify the size and structure of politicians' personal business networks, including measures of network centrality. While accumulation of this form of social capital may be of value *sui generis*, it merits note that a clear positive relationship with final economic outcomes has been found in various contexts. Mastrobuoni (2015) shows a strong causal effect of the closeness centrality of individuals within the Italian-American mafia network on the value of their private housing, a proxy for economic status. In the management literature, many studies find a positive association between firm performance and network centrality (for a review, see Wang et al. 2015). For example, among public Chinese firms, Tsai et al. (2019) show that a higher centrality of the firm leadership within political networks is associated with greater innovation input, plausibly driven by privileged access to government subsidies.

Third, we demonstrate how public information from business registries can be used to investigate substantive questions in political economy. Large administrative datasets of this sort are increasingly available in developing country contexts, particularly to study tax policy. However, tax-related administrative data is typically anonymized and limited in scope, capturing a subsample of firms – i.e., not all formal firms appear in (specific) tax databases. In contrast, and while by no means without challenges, legal registries of incorporated firms identify their individual beneficial owners, thereby providing an opportunity to construct metrics of personal business capital. In the absence of other types of administrative data (e.g., personal financial records), this constitutes a unique basis to track economic outcomes of individual business owners, including politicians.

## 2 Country background

Mozambique was one of the last African countries to achieve Independence, which arrived in 1975 after prolonged colonial domination by Portugal. Historical legacies of colonial exploitation and under-development created enormous challenges for the country's new political leaders (Newitt 1995; Cruz et al. 2023). In particular, the dearth of both domestic private financial capital as well as business experience helped motivate early pursuit of a state-led (socialist)

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international prosecutions. In 2021 one of the lead banks in the scandal, Credit Suisse, paid approximately USD 475 million in fines to authorities in the UK, US and Switzerland authorities. See also Nuvunga and Orre (2019).

economic development model. However, marred by a complex conflict, this approach was not successful and in 1987 the Government agreed a comprehensive deal with the Bretton Woods institutions and Paris Club creditors. This introduced a five-year Economic Rehabilitation Programme (PRE), entailing a drastic U-turn in economic policy toward market principles.

A key leg of the PRE was dealing with state-owned enterprises via privatization or closure. Analyses of this process, one of the most extensive in sub-Saharan Africa (SSA) by transactions (Cramer 2001), largely agree it did little to curtail the influence of politics within the economy. The governing Frelimo party continued to be run along socialist organisational principles and, rather than allowing a nascent independent private sector to flourish, privatizations effectively represented a ‘marriage between the politician and businessman’ (M. A. Pitcher 2002: 118), shifting economic power away from the state and into the hands of well-connected politicians or associates.<sup>4</sup> Echoing experiences in Eastern Europe, Sumich and Honwana (2007) conclude that privatization was: “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).<sup>5</sup>

The view of high-ranked members of Frelimo acting as central nodes linking economic and political spheres of power constitutes a defining feature of Mozambique’s post-war development trajectory and political settlement (Hanlon 2002; M. A. Pitcher 2002, 2017; Macuane et al. 2018; Cortês 2018). Related to this, three further characteristics merit note. First, an independent class of domestic capitalists with bases of power outside Frelimo is almost completely absent. Second, and perhaps symptomatically, there has been a general lack of open contest (competition) in political 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 their 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, while tight links between politicians and businesses in Mozambique are neither all illegal nor necessarily corrupt, they have presented opportunities for abuse. The Indian Ocean Newsletter (29 June 2007) characterised these political-business connections as follows: “The

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<sup>4</sup> 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 President Samora Machel in the early post-Independence period, and some ministers were reprimanded for using state enterprises for personal enrichment (e.g., Stasavage 1999).

<sup>5</sup> For the World Bank’s perspective on privatization, see Landau (1998).

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. Support or co-optation 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”.<sup>6</sup> 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.

Two specific examples of 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, there is the more recent so-called ‘tuna bonds’ or hidden loans scandal, where 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 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), and the ex-Minister of Finance was apprehended by South Africa and extradited to the USA. We return to this below.

## 3 Data and outcomes

### 3.1 Sources

To examine the link between holding political office and private business outcomes we merge two main data sources, constructing a panel dataset covering all registered business owners and PEPs in the country for each five-year period from 1985 to 2019. Detailed in Appendix A1, our first source is a hand-coded list of PEPs covering the full post-Independence period.<sup>7</sup> Following the Financial Action Task Force on Money Laundering (FATF), we define PEPs 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 the latter we focus on individuals elected to the highest decision-making body of the ruling

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<sup>6</sup> See [www.mol.co.mz/noticias/2007/ion0629.html](http://www.mol.co.mz/noticias/2007/ion0629.html).

<sup>7</sup> Supplementary material is available in the form of Appendices, labelled A to G, with tables and figures numbered consecutively within the appendix to which they belong.



party, the Central Committee (*Comité Central*, CC) of Frelimo, of whom a subset is elected to the party's Politburo.

Table 1 summarizes the number of observed PEPs for each type of mandate in each period. Each mandate is defined by at least one mention as Minister, Vice-Minister, Governor, President, CC member or Politburo member in a five-year period. Figure 1 plots the distribution of individual tenures, defined by the first and last years in which they held political office. The left-hand side plots the cross-section cumulative distributions of the first and last years, while the right-hand side shows the cumulative distribution of the difference (total years spanned) for each PEP. The latter indicates that around 25% of PEPs span more than 10 years of activity, while a small number of party grandees have been active for more than 30 years.

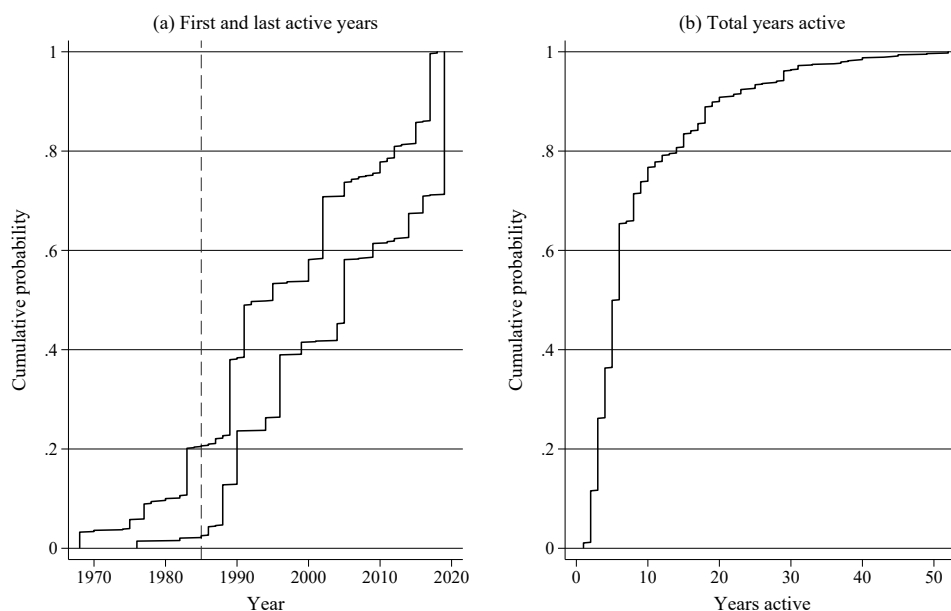
**Table 1: Frequency of individuals in each PEP category, per period**

Type of office	≤1984	'85–89	'90–94	'95–99	'00–04	'05–09	'10–14	'15–19	All
Political Bureau	20	17	16	17	25	29	24	25	<b>61</b>
Central Committee	148	252	270	174	177	180	71	222	<b>640</b>
Minister	39	60	45	34	40	49	54	39	<b>208</b>
Vice-Minister	10	13	7	15	17	18	16	23	<b>87</b>
Governor	10	14	4	5	11	15	15	12	<b>60</b>
Any office	169	294	301	213	225	236	134	270	<b>829</b>

Note: individuals may hold offices across multiple office categories in each period.

Source: authors' compilation from archive material.

**Figure 1: Length of PEP activity (in any office)**



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, defined as the difference between the last and first year in office, by individual.

Source: authors' compilation from archive material.

Second, we draw on public information on incorporated companies and their beneficial owners. In keeping with legislation inherited from Portugal, legal establishment or modification (e.g., closure) of all non-natural persons (mainly enterprises, but also cooperatives, political parties etc.) must be published in the official gazette, known as the *Boletim da República, Serie III* (BdR3).<sup>8</sup> Started at Independence in 1975, the registry provides a complete public list of all firms that have been formally incorporated in the country. Elaborated in Appendix A2, information on each firm contained in the registry includes the list of beneficial owners (*sócios*), as well as their main areas of activity, set out in *objectivos sociais*.

### 3.2 Firm-owner network and outcomes

To compare business affiliations among individuals (natural persons), we transpose information from our bespoke digitized version of the company register into a list of unique owners, mapped to all firms in which they hold a beneficial interest. To do so, we standardize the names of individuals so as to address problems of misspellings and inconsistent inclusion or orderings of middle names. To give one example, the name of a former prime minister was transcribed in the business register under seven different middle name combinations (see Appendix G1).

Using this cleaned owner-register, we construct the network of how individual business owners are inter-connected through different companies. To do so, we define each individual as a node and, for each node, we define as direct connections all other nodes represented by individual shareholders (partners) in the same firm(s). Thus, the edges of the network graph represent different firms, and individuals are directly connected to each other when they are common shareholders (partners) in at least one firm.

The firm-owner network, which we construct for each period, constitutes the basis to derive the main outcomes of interest. These are summarised in Table 2, where  $i$  indexes individuals and  $t$  the period. The first measure is a simple binary indicator of the presence of the individual within the network, namely as a partner in at least one firm. This captures movement at the extensive margin of the owner network, since all other raw outcomes are (naturally) zero for individuals without a stake in any firm. The second is a continuous measure of the number of firms in which the individual holds claims. However, since this measure is positive and highly skewed (with a long right-hand tail), as well as to facilitate interpretation, we transform it following Chen and Roth (2024). Under the assumption of decreasing marginal utility from owning additional firms, we take the natural logarithm of all non-zero values, normalized by their lowest value (one), and set all zero values to the negative of the same non-zero lowest value – i.e.,

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<sup>8</sup> 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. In Mozambique, the published BdR3 documents are available for review at the National Archive or available online since 2006.

the extensive margin effect is calibrated to be equivalent to the initial intensive margin effect. So, this treats the movement from 0 to 1 firms as equivalent to the move from 1 to 2 (100 log points).

**Table 2: Description of primary outcomes**

Variable	Description	Definition
(1) Firm owner	Partner in at least one firm	$c_{it} > 0$
(2) No. companies	Number of separate stakes held	$f(c_{it})$
(3) Information capital	Weighted sum of partners	$f(\sum_{n=1}^3 0.5^n \cdot d_{it}(n))$
(4) Brokerage capital	No. structural holes spanned	$f(\text{Godfather}_{it})$
Synthetic score	Standardized 1 <sup>st</sup> principal component	Using items (1)–(4)

Notes: the table summarises the primary outcomes used henceforth;  $c_{it}$  is the number of companies in which individual  $i$  holds a beneficial interest at time  $t$ ;  $d_{it}(n)$  is the total number of ties of degree (distance)  $n$  to node  $i$ ;  $f(\cdot)$  is a log-like transform as explained in the text.

The final two main outcomes reflect different dimensions of social capital held through firms, capturing aspects of the position of each individual within the firm-owner network.<sup>9</sup> Defining  $d_{it}(n)$  as the total number of ties of degree (distance)  $n$  to node  $i$ , the first degree  $d_{it}(1)$  (known as degree centrality) gives the count of node  $i$ 's direct business partners (ties); and the second degree is the number of ties of each of  $i$ 's direct ties (business partners of immediate partners).<sup>10</sup> Thus, information capital or decay centrality, captures the ability of the individual to send or receive valuable information across the network (Jackson 2020).

In addition to their quantity, the quality of connections in a network also matters. Burt (2000) distinguishes between closed network structures, where the density of connections is high, versus more open networks containing 'structural holes'. A closed or dense structure is often considered to be better able to assure the reliability of information flows and enforce social norms, such as by facilitating effective sanctions (Granovetter 2017). However, a more open structure, in which certain individuals broker relations between others, creates opportunities to control exchanges and access non-redundant information. This is reflected in the concept of brokerage capital, which Jackson (2020) illustrates using the fictional character from the Godfather movies – a figure who never extends favours directly, but is able to collect favours himself by connecting others who don't know each other (also Gould 1996; Stovel and Shaw 2012). This form of capital is given formally by:

$$\text{Godfather}_{it} = \sum_{\forall k} \sum_{\forall j > k} g_{ikt} g_{ijt} (1 - g_{kjt}) \quad (1)$$

<sup>9</sup> Dasgupta (2005) contends that interpersonal networks constitute a 'tight' definition of social capital. Here we apply this to networks between individuals through firm ownership.

<sup>10</sup> For reasons of computational complexity, we only consider ties up to third degree (i.e., business partners of all partners' partners).

where  $g_{ijt}$  takes a value of one if there is a direct tie between nodes  $i$  and  $j$  at time  $t$ . By way of example, if individual  $i$  has only one business with three direct partners, by definition all three partners have mutual ties (through the same firm), so  $i$  cannot broker any relationships in the network. But if an individual owns two different firms, each with a separate partner, and these partners have no direct tie (co-firm ownership), then  $i$  would be a broker.

B provides an illustrated example of how alternative network measures capture distinct aspects of network position. Measures of the kind proposed here have been applied elsewhere. Reddy (2023), for example, analyses the connections between the top 125 public companies in South Africa created through common board members (interlocking directorships) over the period 1993-2018, showing a fall in average degree centrality as the network became more fragmented. The author further investigates the determinants of differences in centrality, showing that the number of PEPs on the firms' board is a key predictor of being a more central firm.

Consistent with our interest in accumulation of private wealth by PEPs, our focus is on the network of individual business-owners. In Mozambique, these are by far the most prevalent type of beneficial owner. Looking across all firms in the register, 82% are entirely owned by natural persons on establishment; and just 3% are fully owned by non-natural persons (e.g., other corporations, political parties); see also Appendix Figure A1. Put differently, natural persons account for around 95% of all owning entities in the register. Thus, our analysis refers to the dominant set of relationships structuring the formal business sector.

It merits emphasis that the focus of our primary metrics concerns individuals who are business-owners and the network of connections between them. In Mozambique, natural persons are by far the most prevalent class of beneficial owners in firms. Looking across all firms in the register, 82% are entirely owned by natural persons on establishment; and just 3% are fully owned by non-natural persons (e.g., other corporations, political parties); see also Appendix Figure A1. Put differently, natural persons account for around 95% of all owning entities in the register. Thus, our analysis refers to the dominant set of relationships structuring the formal business sector.

Last, previous studies of firm-politician connections have used the (quoted) value of firms on stock markets (Brugués et al. 2022) or declarations of the value of private wealth (Fisman et al. 2014; Eggers and Hainmueller 2009). In our case, direct monetary valuations of company worth are not feasible. While some company firm announcements list the initial equity value of the company, this measure is problematic – equity values are given in words, without indication of the currency, and a significant proportion documents no value at all. Moreover, we have no way to track company equity over time. Furthermore, Mozambique has just a handful of publicly-listed companies and access to accounting information of other large companies is generally difficult. Even so, it should be emphasised that in contrast to many other studies, a

major advantage of our data is that we reconstruct the *complete* network of ties between individual business-owners as created through legal firm ownership. Consequently, we do not face challenges associated with the presence of hidden components of the network graph or possible bias driven by non-random sampling that can severely distort network outcome metrics (for discussion, see Mastrobuoni 2015; Hsieh et al. 2018).

### 3.3 Merged panel

Pulling our data sources together, we merge the PEP database with the owner register and derived outcomes, forming a longitudinal dataset at the individual-level. Due to the slow-moving nature of political mandates and personal business outcomes, we construct (as noted above) a five-year panel starting in 1985 and ending in 2019. This periodicity broadly coincides with the national election cycle – 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.<sup>11</sup> Effectively, we take a snapshot of the owner-network data at the end of each five-year period. In this way the attributes of individuals (nodes) change over time – i.e., as new firms are founded, additional edges (and nodes) are added to the network. We combine this with details of all PEP mandates held during the same period. Information on firms and political offices held before 1985 are retained, and used later as baseline control variables. And with respect to individuals, who only appear in one or another register after 1985, we set all relevant variables to zero for earlier periods.

Due to the long time span covered by our data, there is a risk we include individuals, who have retired from business or politics or even passed away. Since Mozambique does not have a comprehensive public register of influential persons, we have no way of manually correcting the data for such exits. Instead, we remove all unique firm owners, who only entered the register before the 1980s, have no later entries and also do not appear as a PEP; similarly, we remove all PEPs, who only had mandates before the 1980s and show no firm or political activity during the focus period. This procedure excludes a total of 2,884 individuals, less than 2.5% of the original observations.

Table 3 gives an overview of the structure of our full dataset, labelling five-year periods by their final year. Panel (a) shows we have a total of 109,566 unique firm owners, which together with 829 PEPs (also Table 1) yields 110,077 unique individuals, implying 511 of the PEPs (about 60%) are not observed in the firm register (also Appendix Table A1). Panel (b) summarises the sub-sample of what we define as ‘active’ individuals. PEPs are classified as active from the

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<sup>11</sup> Prior to 1983, Frelimo considered itself a Marxist-Leninist party, meaning private business activity was limited. Also, weak documentation before 1985 makes it difficult to define a perfectly-consistent list of PEP mandates for this period.

first period they hold office within the observational period onwards; firm owners are classed as active from the first period they become a firm owner (after 1985); and the final row of panel (b) defines individuals as active on either of the previous two definitions. Note the difference in the number of PEPs in panels (a) and (b) simply reflects that there are 17 PEPs, who do not hold an active mandate in the period 1985-2019.

**Table 3: Panel data descriptive statistics**

		1989	1994	1999	2004	2009	2014	2019
(a) All persons	PEPs	829	829	829	829	829	829	829
	Owners	109,566	109,566	109,566	109,566	109,566	109,566	109,566
	Total	110,077	110,077	110,077	110,077	110,077	110,077	110,077
(b) Active	PEPs	294	393	425	568	607	657	812
	Owners	2,042	7,597	17,929	30,150	49,937	80,158	109,566
	Total	2,331	7,933	18,257	30,563	50,351	80,578	110,077
(c) Outcomes	Companies	1.27	1.30	1.33	1.36	1.40	1.43	1.45
	Information capital	7.29	7.28	7.80	8.40	8.46	7.91	7.22
	Brokerage capital	1.92	1.66	1.67	1.70	1.73	1.63	1.51
	Score	-0.15	-0.30	-0.22	-0.17	-0.19	-0.20	-0.16

Note: panels (a) and (b) reports counts of unique individuals, where panel (b) excludes individuals not yet appearing in the list of active PEPs or the firm registry prior to the indicated terminal period; panel (c) reports untransformed winsorized means of key outcomes for active firm owners only (see Table 2); all outcomes are untransformed (raw means); 'Score' is the standardized first principal component of the four main outcomes (also Table A1).

Source: authors' estimates from merged panel data.

Panel (c) summarises period averages for primary outcomes, focusing only on active business owners.<sup>12</sup> A few observations merit attention here. First, as hinted, throughout the period, the vast majority of business owners hold stakes in just one firm – i.e., less than one in three owners are engaged in multiple firms; thus, the average number of firm stakes held is 1.45 in 2019. At the same time, while the majority of businesses are established in partnership with other natural persons, around half of all businesses are isolates in the sense that no partner is connected to any other business person through a *different* firm. In turn this means connections are quite dense while the structural position of being a broker is comparatively rare and stable. Around 6% of all firm owners broker at least one relationship amongst their business partners, translating into a mean Godfather centrality measure of 1.51 in 2019.

Finally, while the chosen outcomes capture distinctive aspects of business activity, they are not mutually orthogonal – e.g., individuals with more companies typically have more business partners and are more likely to broker a relationship between others. Consequently, to facilitate presentation we construct an overall measure of individual business network capital. To do so, we take the first principal component of the four outcomes, standardized such that scores for

<sup>12</sup> For individuals not (yet) present in the firm register, all outcomes are automatically zero in the raw data. See Appendix Table A1 for period means for both the full sample and the PEPs samples.

all active non-PEPs take a mean of zero and standard deviation of one in each period. Henceforth, we focus predominantly on this outcome score (also shown in Table 3).

## 4 Empirical approach

Our primary hypotheses are that PEPs display a higher propensity to accumulate ownership stakes in private firms and enhance their strategic positions within the firm-owner network. To identify the causal effect of holding political office on these outcomes two key issues need to be tackled. Namely: (i) the composition of the counterfactual sample; and (ii) our specification and choice of estimator. We discuss each in turn.

### 4.1 Counterfactual sample

Definition of the relevant treatment group is straightforward, being individuals classified as PEPs. For the time being we consider this as a monotonic property – i.e., once classified a PEP an individual remains so going forward. However, against whom outcomes for these PEPs should be compared is less obvious.<sup>13</sup> To see this, Table 4 tabulates individuals by their current PEP and firm-owner status, including within each group a ‘never’ category that contains individuals, who either never become a PEP or never own a firm. The table covers the entire period, such that most unique individuals appear in different cells of the table as their status changes.

Three points emerge. First, as per empty cell (a), our data only contains individuals who eventually become either a firm-owner or a PEP – i.e., our sample is restricted to individuals who demonstrate satisfied preferences to engage in politics, formal business or both. Put differently, our target population excludes the majority of the population. Second, most observations occur in row (1), being individuals with no fulfilled preference for politics. But, third, since all cells in columns (1) and (2) refer to individuals not yet in the firm register, only a minority (39%) of all observations in the balanced panel map to non-zero outcomes on any measure. It follows that, to ensure meaningful variation in *both* PEP status and business outcomes, observations in cells (f) and (i) must always be included. These sub-groups represent minimal feasible definitions of the control and treatment groups respectively, equivalent to comparing current firm-owning PEPs to all other current firm-owners, who later become PEPs.

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<sup>13</sup> Minimally, our counterfactual or control group must contain some individuals, who are not currently PEPs. Also, since our focus hypotheses pertain to business activity outcomes, we should cover some individuals who (go on to) own firms.

**Table 4: Count of observations classified by PEP and firm status, all periods**

PEP status	Firm-owner status			Total
	(1) Never	(2) Before	(3) Current	
(1) Never	0 (a)	468,694 (b)	296,042 (c)	<b>764,736</b>
(2) Before	2,672 (d)	622 (e)	836 (f)	<b>4,130</b>
(3) Current	905 (g)	267 (h)	501 (i)	<b>1,673</b>
Total	3,577	469,583	297,379	<b>770,539</b>

Note: table cross-tabulates observations by PEP and firm status; ‘never’ refers to individuals not appearing in a given registry over the entire period 1985-2019; ‘before’ refers to individuals that later become PEPs/firm owners; and ‘current’ are the active PEPs/owners; individuals are counted multiple times in the same cell(s) when their status remains unchanged over consecutive periods.

Source: authors’ estimates from merged panel data.

Although admissible, this minimum analytical sample is unbalanced and selects on a primary outcome of interest, having a firm. To avoid this potential source of selection bias, our preferred analytical sample comprises all unique individuals who were ever a PEP ( $N_i=829$ ), taken from cells (d)–(i), thereby restricting attention to individuals with a revealed preference to engage in politics.<sup>14</sup> Effectively, this means future PEPs serve as controls for current PEPs. For robustness analysis, however, we also consider three other balanced samples (in the sense that each individual appears in all periods). From smallest to largest, these are: all unique individuals who are both a PEP and a firm-owner in the terminal period ( $N_i=318$ ); all unique individuals who are a firm-owner in the terminal period ( $N_i=109,566$ ); all unique individuals ( $N_i=110,077$ ).

## 4.2 Generalized event study model

Moving to our estimation framework, the ‘treatment’ of holding political office is in actual fact continuously-valued and non-monotonic. For instance, individuals may hold office for periods shorter than five years and move into different positions, possibly with intervening spells out of office. Furthermore, dynamic treatment effects are plausible and of inherent interest – e.g., a new PEP may take some time to develop relevant information and networks before developing personal business activities; and the private value of being a PEP may only be crystallized after leaving office. In light of these considerations, we adopt an event study (dynamic difference-in-differences) approach. Our primary empirical specification is represented by the distributed lag model:

$$y_{it} = \sum_{j=-a}^b \delta_j \cdot \Delta \text{PEP}_{i,t-5j} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

<sup>14</sup> Note the table counts each unique individual separately in each period (i.e., seven times).



where  $i$  indexes individuals,  $t$  indexes periods (the first year of each panel); parameters  $\mu$  and  $\lambda$  represent their corresponding fixed-effects;  $y$  is the selected outcome, with residual error  $\varepsilon$ ; and  $a, b \geq 0$  define the span of the event study window. Variable ‘PEP’ indicates the fraction of the period in which an individual held political office, being zero for all periods when not in office. The first difference ( $\Delta$ ) in PEP status takes a (maximum) value of one when an individual is a current PEP and continues in office for five years. If this person subsequently exits and remains without office for the next five years, then the next difference will take a (minimum) value of negative one. As elaborated in Schmidheiny and Siegloch (2023), this represents a highly flexible framework, which nests the canonical (binary monotonic) event study as a special case. In particular, in contrast to a specification in levels of the treatment variable, the coefficients before and after time zero in equation (2) capture *cumulative* pre- and post-dynamic effects of interest (also McHale et al. 2023).

By way of implementation, some practical choices must be made. Specifically, since our data contains a relatively small number of periods (seven), it might only seem feasible to include a few leads/lags without losing the majority of observations. However, in our case two assumptions allow us to maintain a fully balanced panel without restricting temporal coverage. First, we discard all mandates prior to the shift to a market economy (which occurred during the first observed period), equivalent to assuming political office in the socialist phase could not be used to accumulate private business capital through firms. This amounts to:  $\forall y \leq 1980 : \text{PEP}_{i,y} = 0 \implies \Delta \text{PEP}_{i,1985} = \text{PEP}_{i,1985}$ . Second, we assume all mandates observed in the final period continue thereafter:  $\forall y \geq 2020 : \text{PEP}_{i,y} = \text{PEP}_{i,2015} \Leftrightarrow \Delta \text{PEP}_{i,y} = 0$ . In turn, we set  $a = b = 5$ , which considers dynamics up to 25 years before/after any treatment.

As per standard practice, we normalize the dynamic coefficients by setting the first lead to zero:  $\delta_{t+5} \equiv 0$ . We also follow Freyaldenhoven et al. (2021) and include additional tests. First, our event-study plots include the sup-t confidence band, which takes into account the joint set of hypotheses regarding the dynamic effects of the treatment. Second, we undertake two Wald tests on the estimated coefficients: (i) for the absence of a pre-trend, equivalent to a joint test that all estimated leads are equal to zero:  $\forall j \in \{-a, \dots, -2\} \cap \mathbb{Z}, \delta_j = 0$ ; and (ii) for the presence of a one-off (levelling-off) treatment effect, equivalent to a joint test that all lags are equivalent:  $\forall j \in \{0, \dots, b-1\} \cap \mathbb{Z}, \delta_j = \delta_b$ . Third, as in Dobkin et al. (2018), to validate robustness to simple forms of unobserved confounding, we overlay the event plot with a linear trend derived from all pre-event (leading) coefficients. If this intersects the sup-t confidence band after event time zero, this would constitute evidence against the presence of a meaningful treatment effect – i.e., the post-period coefficients would simply be consistent with the continuation of the pre-trend.

We extend equation (2) with a small number of controls. In terms of invariant individual characteristics, we can approximate the individuals’ gender as well as capture any relevant activ-

ity prior to the primary analysis period (i.e., pre-1985), such as the number of early mandates held. However, these are naturally absorbed by the fixed-effects of equation (2). With respect to time-varying controls, we add the number of non-corporate legal persons with which the individual is a partner (e.g., associations or foundations), as well as the number of corporate alterations or closures registered in the BdR3. But, as we show, these controls have minimal implications for our main regression analysis.

As a further extension, since politicians may move into lucrative private sector roles *after* completing a spell in public office, we identify periods in which individuals are classified as ex-PEPs. In so doing, this helps differentiate between treatment effects that only materialize after leaving office. As we elaborate further in our results (below), we do so in a variety of ways, most simply by adding a variable capturing the share of each period following their first mandate in which the individual is no longer a PEP. The distinction between current and ex-PEPs is also clear from the simple difference-in-difference model:

$$y_{it} = \delta \text{PEP}_{it} + \gamma \text{Ex-PEP}_{it} + X'_{it}\beta + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

where  $X$  is the vector of controls. This static specification provides a valuable complement to the dynamic specification, requiring no assumptions as regards mandates held before or after the analytical period.

## 5 Results

### 5.1 Descriptive evidence

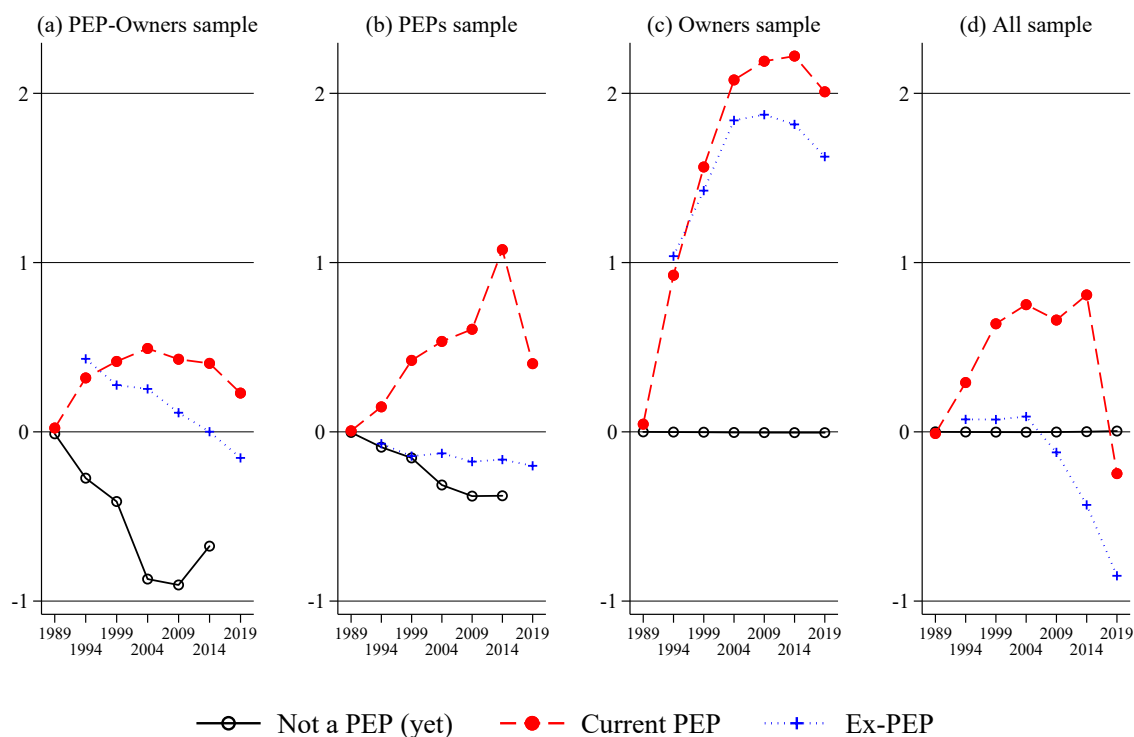
We start with preliminary graphical evidence, which also sheds light on the significance of alternative sample definitions. Figure 2(i) plots period averages for the synthetic outcome score, distinguishing between non-PEPs (not yet PEPs), current PEPs and ex-PEPs (see Appendix Figure A2 for all underlying outcomes). These groups are mutually exclusive in each period – the first includes at least some individuals who later become PEPs, while the latter includes those who have held but presently no longer hold office. We run the analysis using the four potential sample definitions. For each of these we center the outcome on the period-specific mean, comparable to adjusting for time fixed-effects.<sup>15</sup> Unadjusted outcomes for both the full sample and PEPs sub-sample are reported in Table A1 for reference.

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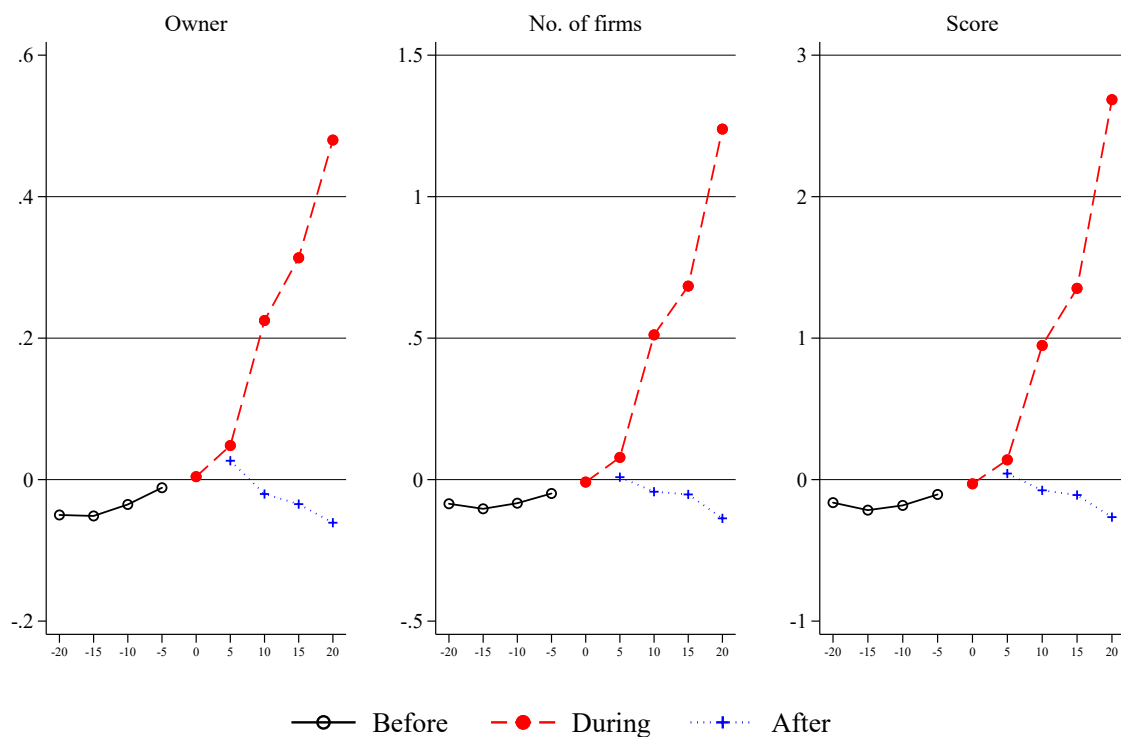
<sup>15</sup> In the samples including all firm owners (sub-figures c and d), the vast majority of observations pertain to the non-PEP category. Thus, the average for this group is almost identical to the overall mean, implying the time-adjusted value is approximately zero.

**Figure 2: Comparison of outcomes over time across PEP status categories**

(i) *Synthetic score, alternative samples, by calendar time:*



(ii) *Multiple outcomes, individual-level PEPs sample, by event time*



Source: authors' estimates from merged panel data.

Note: figures in panels (i) and (ii) plot period averages for specified outcomes for different groups – current PEPs, ex-PEPs and not PEPs; panel (i) covers alternative samples with the synthetic outcome score; panel (ii) covers alternative outcomes with the individual-level PEPs sample; all outcomes are centered on the chosen full sample period means; panel (i) is ordered chronologically; panel (ii) is ordered by time before/after becoming a PEP.

Regardless of the chosen sample, we observe material differences between the PEP status groups. In particular, current PEPs are consistently associated with the highest outcomes and non-PEPs the lowest. These gaps are somewhat less material in the early periods, when there were both few active PEPs and few firms. Results for ex-PEPs often fall between those of the two other groups, suggesting that it is current office holders who are generally most active in developing their business capital and are possibly most able to leverage their office to private advantage.

Although results from the different samples tell a consistent story, they are not identical. The owners' sample in panel (c) of Figure 2(i) tends to indicate larger differences between PEPs and non-PEPs. This is driven by two factors. First is the *inclusion* of the substantial number of business owners who never become PEPs, many of whom are small-scale entrepreneurs unconnected to any wider business networks. Second is the *exclusion* of PEPs who never own a business, whose outcomes are valued at zero and therefore pull-down the current and ex-PEP group means. Comparison against results for the full sample demonstrates the influence of these latter zero-valued outcomes. Put differently, both the PEPs and full sample (sub-figures b and d) suggest the most conservative estimates of the contrasts of interest. However, as PEPs plausibly are distinctive in other ways – e.g., they may share some common unobserved latent trait that is beneficial for business success – we retain these as our focus sample.

To prefigure the main event study analysis, Figure 2(ii) plots period-demeaned outcome averages for the individual-level PEPs sample, distinguishing between the number of years before or after *first* becoming a PEP – i.e., period zero is the first period in which they become a PEP, and 'after' is the average outcome among individuals who have held office but no longer do so (only feasible from period 5 onwards). These results broadly support the previous graphical evidence – outcomes for current PEPs are consistently higher than in the 'before' or 'after' cases. Additionally, they indicate that gains from holding office may compound over time, suggestive of an important role of consolidated political power.

## 5.2 Event study analysis

Building on these descriptive insights, Figure 3 presents our main event study results for being a firm owner and the synthetic outcome score.<sup>16</sup> These are obtained from equation (2) using the (individual-level) PEPs sample, to which we add control variables, a dummy variable for whether the individual is no longer in office (ex-PEP) as well as distinct PEP cohort linear trends. These cohorts are defined according to the first period in which an individual holds any political mandate; thus, we permit each cohort to follow a unique temporal trend. For all esti-

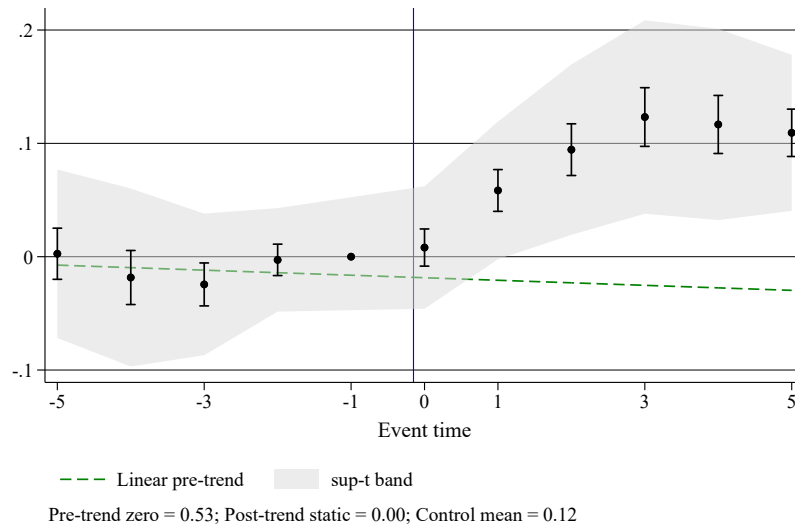
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<sup>16</sup> Appendix Figure A3 shows the same event plots for other outcomes.

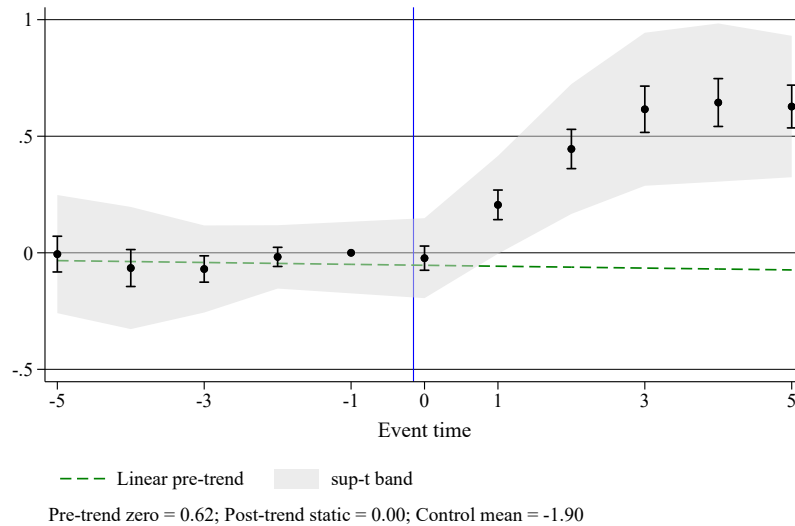
mates we adopt a standard linear regression, where fixed-effects are absorbed by alternating projections.<sup>17</sup> Notably, this approach is robust to the presence of rare events and remains accurate for binary (censored) outcomes. As Timoneda (2021) clarifies, maximum likelihood estimators do not share this property and can be severely biased when (as here) fewer than half of all observations are non-zero (also Cook et al. 2020).

**Figure 3: Event study results, individual-level PEPs sample**

(a) Is a firm owner (dummy variable):



(b) Synthetic score (standard deviation units):



Note: figure plots dynamic (cumulative) event study coefficients relating to the fraction of each period an individual holds a political mandate (is a PEP), as per our complete model based on equation (2); dependent variable is the outcome score; dots are point estimates and spikes are 95% confidence intervals; the dashed line is the linear pre-trend; and grey shading is the sup-t (joint) confidence band; event time reflects panels of 5 years, where time zero is the current period; see also Table 5(a) column (1c).

Source: authors' estimates from merged panel data.

<sup>17</sup> Implemented in Stata via the `reghdfe` command; also see Guimarães and Portugal (2010).

Table 5(a) summarizes the same estimates, also showing how coefficients shift as the specification is built-up. Columns (Ia)-(Ic) refer to the ownership dummy, where in column (a) PEP status is defined as a dummy variable, but switches to a fraction of each period thereafter. Column (Ib) adds time-varying controls; and column (Ic) is the complete specification. Columns (II)-(V) apply the full model to all the other outcomes – the number of companies, information capital, brokerage capital, and the synthetic score in the final column. Panel (b) of the same table shows corresponding static versions of the same regressions, in which PEP status enters directly (in levels).

The key finding is a statistically significant and economically meaningful impact of holding political office on various measures of private business capital. From the static model we obtain a marginal effect on firm ownership of 0.04, which corresponds to about one third of the control mean (see Figure 3), defined as the average of the outcome for all individuals not (yet) treated. The dynamic (event study) results indicate such effects cumulate over time. Although there is no immediate significant impact of holding office (at time zero), effects quickly cumulate in the positive domain and level-off at above 0.10 units, equal to around 100% of the control mean. And while there is some uncertainty regarding the point estimates, the sup-t confidence band remains above zero from period one onwards.

Four additional points merit note. First, there is no evidence of significant anticipatory effects and almost all estimated leads are individually not significantly different from zero. Second, there are only minor differences in coefficient estimates across the alternative specifications (see Table 5). Nonetheless, and third, the effect associated with being an ex-PEP differs in sign between the dynamic and static results, being negative in the former. Our interpretation is that the latter positive effect is capturing some of the dynamics (lagged responses) that are merely explicit in panel (a). Thus, the negative coefficient in the dynamic model suggests a moderate diminution of the capacity of (ex-)PEPs to capitalize on their positions after leaving office. We explore this further below.

Fourth, we combine the dynamic effects from time zero onwards into an estimated net present value (NPV). This is simply the discounted sum of the individual level effects, where we apply a discount factor of 5% per *annum* – i.e., the change in the dynamic effect in the last period is discounted by around 0.75. These results, reported in the footer of panel (a), can be interpreted as the estimated average present values of a political mandate considered over a 25 year horizon. They are also positive and more than double the magnitude of the static level effects.

**Table 5: Summary regression estimates, individual-level PEPs sample**

	(la)	(lb)	(lc)	(II)	(III)	(IV)	(V)
<i>(a) Dynamic model:</i>							
PEP t=+5	-0.02 (0.03)	-0.00 (0.02)	0.00 (0.02)	-0.00 (0.04)	-0.06 (0.10)	0.01 (0.09)	-0.01 (0.08)
PEP t=+4	-0.04 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.03 (0.04)	-0.15 (0.10)	0.01 (0.09)	-0.07 (0.08)
PEP t=+3	-0.05** (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.03 (0.03)	-0.15** (0.08)	0.01 (0.07)	-0.07 (0.06)
PEP t=+2	-0.03* (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.00 (0.02)	-0.05 (0.05)	-0.00 (0.05)	-0.02 (0.04)
PEP t=0	0.00 (0.01)	0.01 (0.02)	0.01 (0.02)	-0.01 (0.03)	0.05 (0.07)	-0.11* (0.06)	-0.02 (0.05)
PEP t=-1	0.06*** (0.02)	0.07*** (0.02)	0.06*** (0.02)	0.10*** (0.03)	0.24*** (0.08)	0.17** (0.07)	0.21*** (0.07)
PEP t=-2	0.12*** (0.02)	0.11*** (0.02)	0.09*** (0.02)	0.23*** (0.05)	0.44*** (0.11)	0.45*** (0.11)	0.45*** (0.09)
PEP t=-3	0.17*** (0.02)	0.14*** (0.02)	0.12*** (0.03)	0.32*** (0.05)	0.60*** (0.12)	0.64*** (0.13)	0.62*** (0.10)
PEP t=-4	0.19*** (0.03)	0.15*** (0.02)	0.12*** (0.03)	0.32*** (0.06)	0.67*** (0.12)	0.71*** (0.14)	0.64*** (0.11)
PEP t=-5	0.17*** (0.02)	0.12*** (0.02)	0.11*** (0.02)	0.30*** (0.05)	0.66*** (0.11)	0.72*** (0.12)	0.63*** (0.09)
Ex-PEP		-0.02 (0.03)	-0.02 (0.03)	-0.08* (0.04)	-0.04 (0.10)	-0.31*** (0.10)	-0.17* (0.08)
Obs.	5,684	5,546	5,546	5,546	5,546	5,546	5,546
R2	0.65	0.73	0.73	0.81	0.79	0.78	0.82
NPV (prob.)	0.11 0.00	0.09 0.00	0.08 0.00	0.19 0.00	0.41 0.00	0.39 0.00	0.38 0.00
<i>(b) Static model:</i>							
Current PEP	0.05*** (0.02)	0.08*** (0.02)	0.04** (0.02)	0.06** (0.03)	0.16** (0.06)	0.05 (0.06)	0.12** (0.05)
Ex-PEP		0.05** (0.02)	0.03 (0.02)	0.07** (0.03)	0.17** (0.08)	0.03 (0.07)	0.12* (0.06)
Obs.	5,684	5,546	5,546	5,546	5,546	5,546	5,546
RMSE	0.25	0.22	0.21	0.37	0.89	0.80	0.71
Fractional PEP	No	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Cohort trends	No	No	Yes	Yes	Yes	Yes	Yes

Significance: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Note: table reports selected coefficients from difference-in-difference regressions for alternative outcomes using the individual sample of PEPs ( $N_i = 812$ ); outcome in columns (la)-(lc) is firm ownership; in column (II) it is number of companies owned; in column (III) it is information capital; column (IV) it is brokerage capital; column (V) it is the synthetic score; panel (a) is based on equation (2), where columns refer to alternative specifications, as shown in the footer and the first lead is omitted for normalization; NPV (net present value) is a linear combination of the coefficients in the post-event period; panel (b) is the static specification as per equation (3); all estimates include unit and period fixed-effects; standard errors (in parentheses) are clustered at the individual-level.

Source: authors' estimates from merged panel data.

### 5.3 Extensions and robustness

We now consider a number of extensions, which also speak to the robustness of previous results. First, we apply an alternative estimator, replacing individual fixed-effects (FE) with a one period lag of the outcome. While dropping these individual effects may seem problematic, these latter unobserved terms are plausibly absorbed by the prior outcome itself.<sup>18</sup> Moreover, as set out in Guryan (2001), the FE and lagged outcome (LO) approaches are expected to bracket the true parameter estimate(s) of interest under reasonable conditions (see E). Inclusion of the lagged outcome may be pertinent on additional grounds. In particular, outcomes may be state dependent. For instance, Podobnik and Stanley (2008) show that size-dependency can account for the power law distributions of growth rates identified across many economic variables (see also 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). Similarly, models of changes in status or position (strength) in a network tend to give a fundamental role to lagged outcomes. For instance, models of progress in scientific careers and citations of scholarly publications show clear path-dependency and, in turn, exponential growth over time (Newman 2003; DiPrete and Eirich 2006).

Results from this exercise are reported in Row (1) of Table 6 and confirm the presence of statistically and economically significant (dynamic) treatment effects. The LO estimates are generally marginally lower, but nonetheless indicate material net present effects (NPVs) – e.g., being a PEP is associated with an increase of 0.26 standard deviations in the overall score (see the last column). The same table reports unadjusted and adjusted estimates of the probability the null hypotheses are true, where adjustment is made for multiple hypothesis testing over all coefficients estimated under the dynamic and static specifications respectively.<sup>19</sup> Even after adjustment, the vast majority of coefficient estimates remain significant at the 1% level or below. This suggests there is consistent evidence of a strong positive dynamic effect of holding political office on private business network capital.

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<sup>18</sup> As Imbens and Wooldridge (2009) clarify: “... the DiD [difference-in-differences, FE] 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”.

<sup>19</sup> We employ the Benjamini–Hochberg procedure to control the false discovery rate (Benjamini and Hochberg 1995).



**Table 6: Summary regression estimates for various outcomes, individual-level PEPs sample**

		Owner		Companies		Information		Brokerage		Score	
		FE	LO	FE	LO	FE	LO	FE	LO	FE	LO
(a) <i>Dynamic model:</i>											
(1)	PEP	0.08 (0.00) [0.00]	0.05 (0.00) [0.00]	0.19 (0.00) [0.00]	0.13 (0.00) [0.00]	0.41 (0.00) [0.00]	0.26 (0.00) [0.00]	0.39 (0.00) [0.00]	0.37 (0.00) [0.00]	0.38 (0.00) [0.00]	0.26 (0.00) [0.00]
(2)	Exec	0.09 (0.00) [0.00]	0.04 (0.02) [0.02]	0.25 (0.00) [0.00]	0.10 (0.00) [0.00]	0.53 (0.00) [0.00]	0.20 (0.01) [0.01]	0.55 (0.00) [0.00]	0.34 (0.00) [0.00]	0.50 (0.00) [0.00]	0.21 (0.00) [0.00]
(3)	Party	0.06 (0.00) [0.00]	0.03 (0.06) [0.06]	0.17 (0.00) [0.00]	0.13 (0.00) [0.00]	0.41 (0.00) [0.00]	0.25 (0.00) [0.00]	0.38 (0.00) [0.00]	0.42 (0.00) [0.00]	0.36 (0.00) [0.00]	0.27 (0.00) [0.00]
(4)	Exec	0.08 (0.00) [0.00]	0.04 (0.04) [0.04]	0.22 (0.00) [0.00]	0.09 (0.00) [0.01]	0.47 (0.00) [0.00]	0.18 (0.02) [0.02]	0.48 (0.00) [0.00]	0.30 (0.00) [0.00]	0.44 (0.00) [0.00]	0.18 (0.00) [0.00]
	Party	0.07 (0.00) [0.00]	0.04 (0.01) [0.01]	0.17 (0.00) [0.00]	0.14 (0.00) [0.00]	0.40 (0.00) [0.00]	0.27 (0.00) [0.00]	0.34 (0.00) [0.00]	0.43 (0.00) [0.00]	0.34 (0.00) [0.00]	0.29 (0.00) [0.00]
(b) <i>Static model:</i>											
(1)	PEP	0.04 (0.01) [0.02]	0.04 (0.01) [0.01]	0.06 (0.04) [0.04]	0.09 (0.00) [0.00]	0.16 (0.01) [0.02]	0.16 (0.00) [0.01]	0.05 (0.37) [0.37]	0.25 (0.00) [0.00]	0.12 (0.02) [0.03]	0.18 (0.00) [0.00]
(2)	Exec	0.08 (0.00) [0.01]	0.05 (0.00) [0.01]	0.14 (0.01) [0.01]	0.08 (0.01) [0.01]	0.37 (0.00) [0.01]	0.11 (0.09) [0.09]	0.20 (0.05) [0.05]	0.18 (0.01) [0.01]	0.29 (0.00) [0.01]	0.16 (0.01) [0.01]
(3)	Party	0.05 (0.02) [0.02]	0.04 (0.01) [0.01]	0.13 (0.00) [0.00]	0.15 (0.00) [0.00]	0.27 (0.00) [0.01]	0.25 (0.00) [0.00]	0.22 (0.02) [0.02]	0.40 (0.00) [0.00]	0.24 (0.00) [0.00]	0.28 (0.00) [0.00]
(4)	Exec	0.09 (0.00) [0.01]	0.05 (0.00) [0.01]	0.15 (0.00) [0.01]	0.09 (0.00) [0.01]	0.39 (0.00) [0.01]	0.12 (0.06) [0.06]	0.21 (0.03) [0.04]	0.20 (0.00) [0.01]	0.31 (0.00) [0.01]	0.17 (0.00) [0.01]
	Party	0.06 (0.01) [0.01]	0.05 (0.01) [0.01]	0.15 (0.00) [0.00]	0.15 (0.00) [0.00]	0.30 (0.00) [0.00]	0.26 (0.00) [0.00]	0.23 (0.01) [0.01]	0.41 (0.00) [0.00]	0.26 (0.00) [0.00]	0.29 (0.00) [0.00]

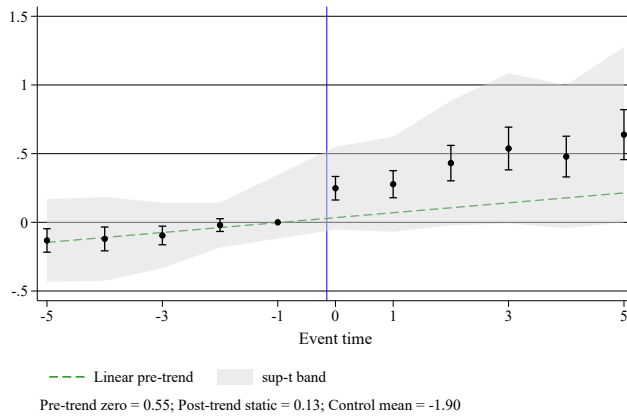
Note: table summarizes estimates for multiple outcomes (in columns) based on the complete dynamic and static specifications as per columns (Ic)-(V) of Table 5; continuous outcomes are transformed using a calibrated log transform; in panel (a) reports the NPV estimate; FE indicates a fixed-effects specification is used; LO is a lagged outcome model in which unit effects are replaced by lagged outcomes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing; rows (1)-(4) refer to alternative definitions of the treatment: (1) is any kind of PEP, (2) is a executive PEP only, (3) is a party political PEP only, and (4) includes executive and party PEPs separately in the same model.

Source: authors' estimates from merged panel data.

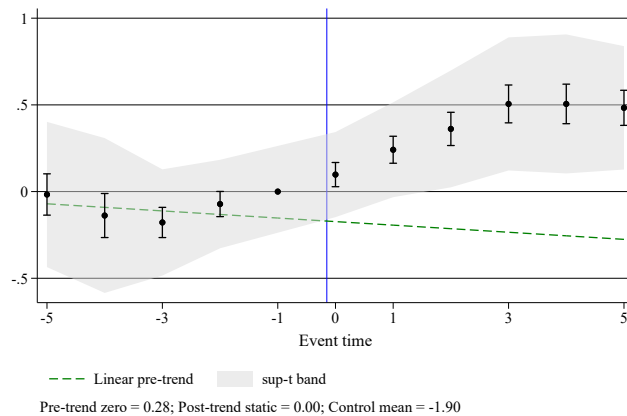
Second, we distinguish between two principal types of PEPs, namely: party political versus executive office holders. Rows (2)-(4) of Table 6 report results for these alternative treatment definitions, based on our complete specification that allows for both fractional periods and movements in and out of office. In row (2) we replace the fraction of the period as any kind of PEP with the fraction as an executive office only (e.g., minister, vice-minister, governor); and we add separate controls for periods spent as ex-executive and ex-party PEPs. Row (3) is identical to (2) except for focusing on the fraction in a party political office (e.g., member of the Politburo); and row (4) combines the two treatments in a single specification. Figure 4 shows event plots for the two vectors of dynamic effects obtained from model (4) with respect to the outcome score using the FE model. Regardless of these modifications, the estimates remain highly similar in magnitude to those of the (any) PEP treatment. That is, there is no evidence to indicate the previous estimates are driven by one specific type of PEP.

**Figure 4: Event study results by office type, outcome score, individual-level PEPs sample**

(a) *Executive office holders:*



(b) *Party office holders:*



Note: figures plot dynamic (cumulative) event study coefficients relating to the fraction of each period an individual holds a political mandate, split between party and executive positions; estimates come from a single model in which the dependent variable is the outcome score; dots are point estimates and spikes are 95% confidence intervals; dashed line is the linear pre-trend; and grey shading is the sup-t (joint) confidence band; event time reflects panels of 5 years, where time zero is the current period.

Source: authors' estimates from merged panel data.

Third, we aggregate our data from the individual to the family-level. A recurrent theme of scholarship around cronyism is that private benefits can be distributed across wider family groups. Where this is the case, we might find spillovers from individual PEPs to their family members, violating a stable unit treatment value assumption. In the absence of detailed information on actual family ties, we presume individuals with the same surname belong to a single family group. We then collapse the data at the family name level, taking averages for all outcomes and the maximum value of the treatment indicators (current and ex-PEPs) in each period. As such, if any family member is a PEP then the entire family is deemed to be exposed. An additional rationale for this aggregation, discussed in Section 3, is that names in the business registry and PEP database are not always written in a consistent format. Thus, despite 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 ameliorates some of these issues, but nonetheless risks diluting the effects of being a PEP across unrelated persons; and it will not capture relationships that are deliberately hidden through unrelated proxies.

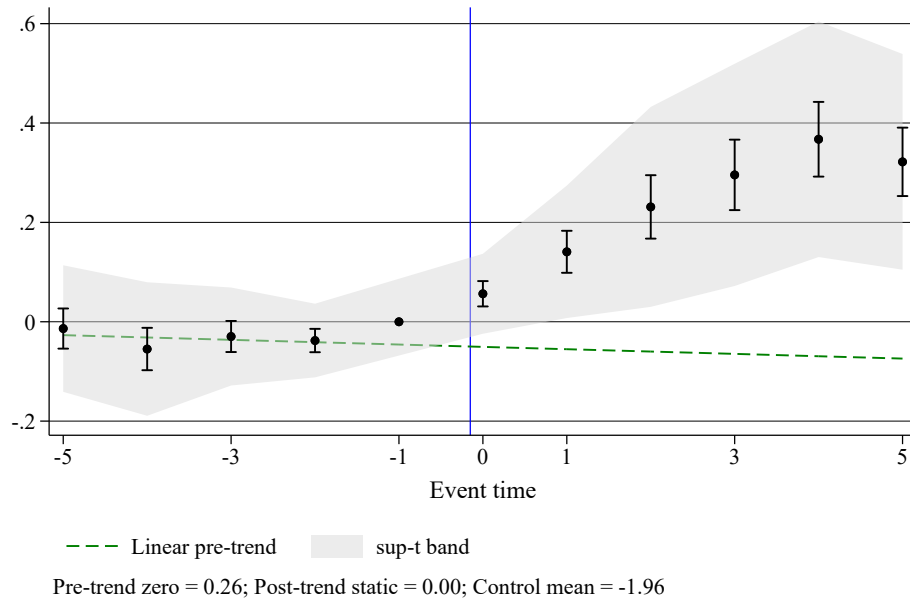
Results from our core (FE) specification based on this aggregated data are reported in Figure 5(a) for the outcome score; and Table 7 summarises results across all outcomes and specifications.<sup>20</sup> The results are consistent with before, both in terms of effect magnitudes and their dynamic profile. For instance, the dynamic NPV estimate for the outcome score based on the general PEP treatment lies between 0.15 and 0.22 standard deviations (final two columns of row 1), while the static effect equals 0.12 standard deviations under both the FE and LO estimators.

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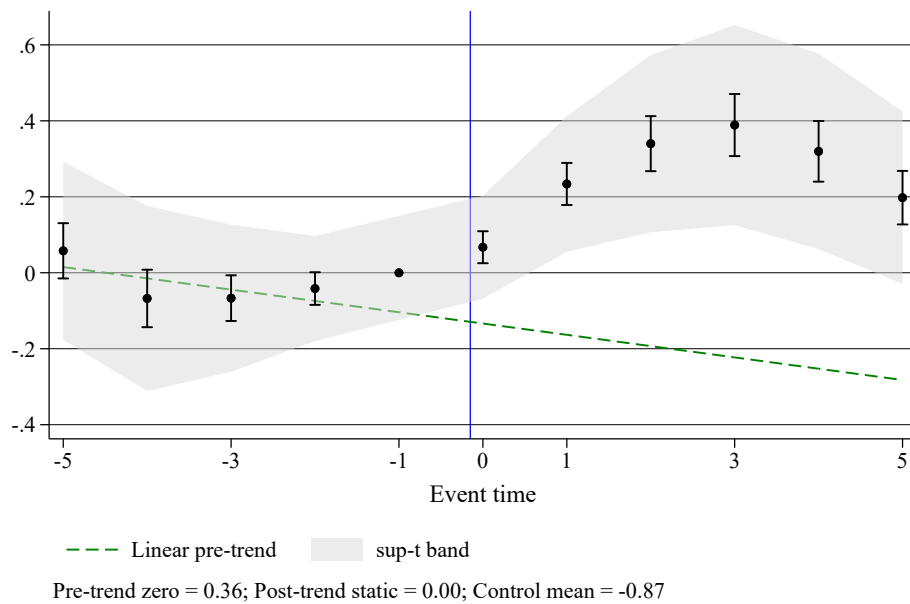
<sup>20</sup> See Appendix Figure A4 for separate event plots for each of the four underlying outcomes. In all estimates based on aggregated data we include family name fixed-effects and a linear trend for each family size group. Figure A5 shows corresponding results for the outcome score disaggregated by PEP type.

**Figure 5: Event study results for aggregated samples, outcome score**

(a) Means by family name:



(b) Family name networks:



Note: figures plot dynamic (cumulative) event study coefficients relating to the fraction of each period an individual holds a political mandate; estimates come from separate models run on different samples (a) aggregated to family names and (b) family networks; dependent variable is the outcome score; dots are point estimates and spikes are 95% confidence intervals; dashed line is the linear pre-trend; and grey shading is the sup-t (joint) confidence band; event time reflects panels of 5 years, where time zero is the current period.

Source: authors' estimates from merged panel data.

**Table 7: Summary regression estimates for various outcomes, PEPs sample aggregated to family names**

		Owner		Companies		Information		Brokerage		Score	
		FE	LO	FE	LO	FE	LO	FE	LO	FE	LO
(a) <i>Dynamic model:</i>											
(1)	PEP	0.06 (0.00) [0.00]	0.04 (0.00) [0.00]	0.10 (0.00) [0.00]	0.07 (0.00) [0.00]	0.30 (0.00) [0.00]	0.17 (0.00) [0.00]	0.16 (0.00) [0.00]	0.14 (0.00) [0.00]	0.22 (0.00) [0.00]	0.15 (0.00) [0.00]
(2)	Exec	0.03 (0.03) [0.06]	0.04 (0.00) [0.01]	0.06 (0.03) [0.06]	0.05 (0.00) [0.01]	0.23 (0.00) [0.01]	0.13 (0.00) [0.00]	0.09 (0.07) [0.11]	0.05 (0.02) [0.05]	0.13 (0.01) [0.03]	0.09 (0.00) [0.01]
(3)	Party	0.05 (0.00) [0.00]	0.05 (0.00) [0.00]	0.09 (0.00) [0.00]	0.08 (0.00) [0.00]	0.25 (0.00) [0.00]	0.19 (0.00) [0.00]	0.16 (0.02) [0.03]	0.16 (0.00) [0.00]	0.20 (0.00) [0.00]	0.17 (0.00) [0.00]
(4)	Exec	0.02 (0.24) [0.30]	0.02 (0.05) [0.09]	0.02 (0.39) [0.44]	0.03 (0.06) [0.10]	0.14 (0.08) [0.11]	0.09 (0.02) [0.04]	0.01 (0.81) [0.86]	0.01 (0.82) [0.86]	0.05 (0.32) [0.38]	0.05 (0.10) [0.13]
	Party	0.05 (0.00) [0.00]	0.05 (0.00) [0.00]	0.09 (0.00) [0.00]	0.08 (0.00) [0.00]	0.25 (0.00) [0.00]	0.18 (0.00) [0.00]	0.17 (0.03) [0.03]	0.16 (0.00) [0.00]	0.20 (0.00) [0.00]	0.17 (0.00) [0.00]
(b) <i>Static model:</i>											
(1)	PEP	0.04 (0.00) [0.00]	0.04 (0.00) [0.00]	0.07 (0.00) [0.00]	0.06 (0.00) [0.00]	0.16 (0.00) [0.00]	0.13 (0.00) [0.00]	0.05 (0.06) [0.06]	0.10 (0.00) [0.00]	0.12 (0.00) [0.00]	0.12 (0.00) [0.00]
(2)	Exec	0.04 (0.00) [0.00]	0.04 (0.00) [0.00]	0.07 (0.00) [0.00]	0.05 (0.00) [0.00]	0.23 (0.00) [0.00]	0.11 (0.00) [0.00]	0.09 (0.02) [0.03]	0.04 (0.02) [0.02]	0.15 (0.00) [0.00]	0.09 (0.00) [0.00]
(3)	Party	0.05 (0.00) [0.00]	0.04 (0.00) [0.00]	0.09 (0.00) [0.00]	0.08 (0.00) [0.00]	0.19 (0.00) [0.00]	0.16 (0.00) [0.00]	0.10 (0.04) [0.04]	0.15 (0.00) [0.00]	0.16 (0.00) [0.00]	0.15 (0.00) [0.00]
(4)	Exec	0.04 (0.00) [0.00]	0.04 (0.00) [0.00]	0.07 (0.00) [0.00]	0.05 (0.00) [0.00]	0.23 (0.00) [0.00]	0.09 (0.00) [0.00]	0.09 (0.03) [0.03]	0.03 (0.15) [0.15]	0.15 (0.00) [0.00]	0.08 (0.00) [0.00]
	Party	0.05 (0.00) [0.00]	0.04 (0.00) [0.00]	0.08 (0.00) [0.00]	0.07 (0.00) [0.00]	0.18 (0.00) [0.00]	0.15 (0.00) [0.00]	0.10 (0.04) [0.04]	0.14 (0.00) [0.00]	0.16 (0.00) [0.00]	0.14 (0.00) [0.00]

Note: table summarizes estimates for multiple outcomes (in columns) as per Table 6 using the PEPs sample aggregated by family names; all estimates are stated as relative to (ratios of) control group means; dynamic model in panel (a) reports the NPV estimate; FE indicates a fixed-effects specification is used; LO is a lagged outcome model in which unit effects are replaced by lagged outcomes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing; rows (1)-(4) refer to alternative definitions of the treatment: (1) is any kind of PEP, (2) is a executive PEP only, (3) is a party political PEP only, and (4) includes executive and party PEPs separately in the same model.

Source: authors' estimates from merged panel data.

An alternative approach to aggregation is to (re)construct the firm network at the family- rather than individual-level. Thus, instead of taking the average of outcomes over individuals with the same surname, we ascribe all firms owned by any one family member to a single group. In this way, interpretation of outcomes shifts from the (average) individual to the family as a whole. Results based on this alternative aggregation are reported in Figure 5(b) and Table 8 (also Figures A6 and A7). As before, the general pattern and magnitude of effects remains largely unchanged. For example, we estimate that if a family network contains a PEP, the NPV of family business capital increases by around 0.22 standard deviations (based on the FE estimates for the outcome score in row 1). That said, effect sizes for network capital outcomes now appear somewhat larger, especially for brokerage capital.

With respect to the different types of PEPs, results from both approaches to aggregation suggest certain estimates for executive office holders may not be statistically significant after adjustment for multiple testing. In part this reflects the smaller number of these kinds of PEPs and thus greater parameter uncertainty. However, paying closer attention to dynamics, we note larger and significant short-run positive effects for executive office holders, though they decline over time. For instance, results based on the second aggregation (see Figure A7) suggest an immediate effect of holding executive office of almost 0.2 standard deviations on the outcome score, falling close to zero by the fourth lag. In other words, there is indicative evidence of some differences in the dynamic structure and persistence of positive impacts from different office types – executive office holders reap quick gains, but political office holders achieve larger gains over the long-run.

**Table 8: Summary regression estimates for various outcomes, family name networks PEPs sample**

		Owner		Companies		Information		Brokerage		Score	
		FE	LO	FE	LO	FE	LO	FE	LO	FE	LO
(a) <i>Dynamic model:</i>											
(1)	PEP	0.03 (0.10) [0.10]	0.04 (0.00) [0.00]	0.18 (0.00) [0.00]	0.16 (0.00) [0.00]	0.33 (0.02) [0.02]	0.36 (0.00) [0.00]	0.51 (0.00) [0.00]	0.52 (0.00) [0.00]	0.22 (0.00) [0.00]	0.19 (0.00) [0.00]
(2)	Exec	-0.00 (0.90) [0.90]	0.02 (0.19) [0.23]	0.17 (0.00) [0.01]	0.13 (0.00) [0.01]	0.37 (0.03) [0.05]	0.36 (0.01) [0.02]	0.58 (0.00) [0.00]	0.46 (0.00) [0.00]	0.20 (0.00) [0.01]	0.14 (0.01) [0.02]
(3)	Party	0.04 (0.08) [0.09]	0.06 (0.00) [0.00]	0.16 (0.00) [0.00]	0.16 (0.00) [0.00]	0.18 (0.30) [0.31]	0.36 (0.00) [0.00]	0.46 (0.00) [0.00]	0.50 (0.00) [0.00]	0.20 (0.00) [0.00]	0.21 (0.00) [0.00]
(4)	Exec	-0.01 (0.57) [0.63]	0.01 (0.57) [0.63]	0.11 (0.05) [0.08]	0.10 (0.02) [0.04]	0.31 (0.09) [0.12]	0.29 (0.03) [0.05]	0.42 (0.01) [0.02]	0.35 (0.00) [0.01]	0.13 (0.07) [0.09]	0.10 (0.07) [0.09]
	Party	0.05 (0.05) [0.06]	0.06 (0.00) [0.00]	0.15 (0.00) [0.00]	0.16 (0.00) [0.00]	0.19 (0.31) [0.31]	0.37 (0.00) [0.01]	0.39 (0.01) [0.01]	0.48 (0.00) [0.00]	0.19 (0.00) [0.01]	0.22 (0.00) [0.00]
(b) <i>Static model:</i>											
(1)	PEP	0.04 (0.03) [0.03]	0.05 (0.00) [0.00]	0.11 (0.00) [0.00]	0.18 (0.00) [0.00]	0.39 (0.00) [0.01]	0.42 (0.00) [0.00]	0.20 (0.05) [0.05]	0.47 (0.00) [0.00]	0.16 (0.00) [0.00]	0.21 (0.00) [0.00]
(2)	Exec	0.02 (0.26) [0.28]	0.04 (0.01) [0.01]	0.15 (0.01) [0.01]	0.20 (0.00) [0.00]	0.55 (0.00) [0.00]	0.51 (0.00) [0.00]	0.37 (0.01) [0.01]	0.45 (0.00) [0.00]	0.20 (0.00) [0.01]	0.21 (0.00) [0.00]
(3)	Party	0.04 (0.15) [0.17]	0.06 (0.00) [0.00]	0.12 (0.02) [0.03]	0.17 (0.00) [0.00]	0.25 (0.19) [0.20]	0.44 (0.00) [0.00]	0.29 (0.03) [0.04]	0.51 (0.00) [0.00]	0.16 (0.01) [0.03]	0.24 (0.00) [0.00]
(4)	Exec	0.02 (0.28) [0.28]	0.03 (0.02) [0.03]	0.14 (0.01) [0.01]	0.19 (0.00) [0.00]	0.54 (0.00) [0.00]	0.48 (0.00) [0.00]	0.36 (0.01) [0.01]	0.41 (0.00) [0.00]	0.20 (0.00) [0.01]	0.20 (0.00) [0.00]
	Party	0.03 (0.16) [0.17]	0.06 (0.00) [0.00]	0.11 (0.03) [0.04]	0.16 (0.00) [0.00]	0.24 (0.22) [0.22]	0.41 (0.00) [0.00]	0.28 (0.04) [0.05]	0.48 (0.00) [0.00]	0.16 (0.02) [0.03]	0.23 (0.00) [0.00]

Note: table summarizes estimates for multiple outcomes (in columns) as per Table 6 using the PEPs family name networks dataset; all estimates are stated as relative to (ratios of) control group means; dynamic model in panel (a) reports the NPV estimate; FE indicates a fixed-effects specification is used; LO is a lagged outcome model in which unit effects are replaced by lagged outcomes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing; rows (1)-(4) refer to alternative definitions of the treatment: (1) is any kind of PEP, (2) is a executive PEP only, (3) is a party political PEP only, and (4) includes executive and party PEPs separately in the same model.

Source: authors' estimates from merged panel data.

Fourth, we re-run the above analyses – i.e., with alternative outcomes, treatment definitions, estimators and levels of aggregation – for the full sample, that is including all individuals identified in either the firm or the PEP register. Tables A2–A4 summarise these results, which strongly support the previous insights, in terms of the direction and magnitude of key estimates. For instance, being an active PEP is associated with a 0.22 net present increase in the propensity to own a firm and a 0.58 standard deviation increase in the overall business capital (see FE estimates in Table A2, row 1). Perhaps the only caveat is somewhat larger gaps between the FE and LO estimates under the models for firm ownership, but this may well simply be capturing the large number (and rapid growth) of sole-owned enterprises in the firm register that are predominantly unconnected to other firms or PEPs.

Finally, a potential challenge to our results is that they may be driven by specific kinds of PEPs or firms. Similarly, it is helpful to validate the extent to which our findings may depend on the specific sample chosen (i.e., of current, future and past PEPs). Tables A5 to A7 report our results for each of the data aggregations respectively. Column (I) shows dynamic and static results for the PEPs sample, while column (II) shows results for the full sample. The rows describe specific sample restrictions applied – e.g., we exclude: all firms that register any alterations, all individuals who owned firms before 1995, or all individuals who were PEPs before 1995.<sup>21</sup> The broad pattern of results remains highly consistent with those from before, both across samples and across the various restrictions.

## 6 Developmental implications

The previous section established a strong temporal association between holding political office and various metrics of personal business success. As such, consistent with our initial hypotheses, we interpret this as evidence that PEPs have leveraged their political influence to further their private business interests. However, as noted earlier, this kind of ‘entanglement’ of public and private spheres is encountered in many contexts, including cases of rapid growth and transformation (for a discussion of South Korea, see Aghion et al. 2021). Thus, a fundamental question is whether this feature of Mozambique’s political economy is detrimental to her developmental prospects.

We cannot answer this question directly. Data on the long-run performance of firms in the register is unavailable, as is a convincing political economy counterfactual. However, suggestive evidence points to a negative assessment of the way in which PEPs have used their influence in Mozambique’s private sector. To see this we explore how patterns of accumulation (investment) vary between PEPs and non-PEPs across different company types – i.e., do PEPs tend

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<sup>21</sup> In applying these restrictions we simply drop observations in all periods for those individuals (or families) meeting the specified criteria at any time.



to invest more in sectors associated with structural transformation and/or broad-based job creation? Concretely, we consider a new set of outcomes, namely the number of companies an individual owns either of different legal forms (sole-owned, joint-stock or anonymous) or different sectoral classifications.<sup>22</sup>

These results are reported in Table 9, covering each of the three datasets and applying the full dynamic and static versions of our FE model. Overall, the most dominant and consistent (significant) treatment effects are found in joint-stock companies, as well as in companies classified as engaged in providing business services. Positive treatment effects are also found for firms classified in the heavy industry and mining sector, although these are not significant in all specifications. This evidence indicates that PEPs systematically pool resources with other entrepreneurs, where their contribution to such enterprises likely derives from their contacts and political influence. Moreover, reflecting the weak state of the economy, activities in business services and mining are particularly characterised by opportunities for rent-seeking in Mozambique – e.g., as gatekeepers for foreign investment, gaining privileged access to land and/or import contracts.

This reading is supported by case study evidence. Concretely, we consider the profile of businesses associated with the former Finance Minister, Manuel Chang, who served in this role from 2005 to 2015 after which he became a member of parliament. In late December 2018, Chang was detained *en route* to Dubai at the request of the US authorities in connection with his involvement in the hidden loans (tuna bonds) affair, and was finally extradited to the US in 2023.<sup>23</sup> Reviewing the list of firms registered in Mozambique, Mr. Chang himself does not appear as a named beneficiary. Nonetheless, we find six firms directly linked to his daughter, ‘Manuela Solange de Martins Chang’, all established in the period 2008-2016. As listed in F, the first of these ‘Tupann Med’ was set up in 2008 as a sole venture. The remaining firms are all jointly owned with at least one other partner and cover a diverse range of (mainly) business services and investment vehicles – from sales of electronics to real estate – in which privileged access to information and public authorizations are likely to drive success. Her partners in these firms are also active in their own right, connecting her to 11 other separate firms, some of which are owned by her former husband, including a car rental firm set up in 2011. This pattern of activity appears to be highly consistent with the foregoing quantitative evidence.

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<sup>22</sup> See A for further details. All such outcomes are transformed using the same calibrated log-like transform applied above.

<sup>23</sup> Details of outstanding formal charges against Mr. Chang, which include receipt of millions of dollars in bribes to bank accounts outside of Mozambique are set out in: USA vs. Manuel Chang, Case 1:18-cr-00681-NGG Document 524, United States District Court for the Eastern District of New York, filed 21/12/2023.

**Table 9: Analysis of impacts for different counts of firm types, various samples**

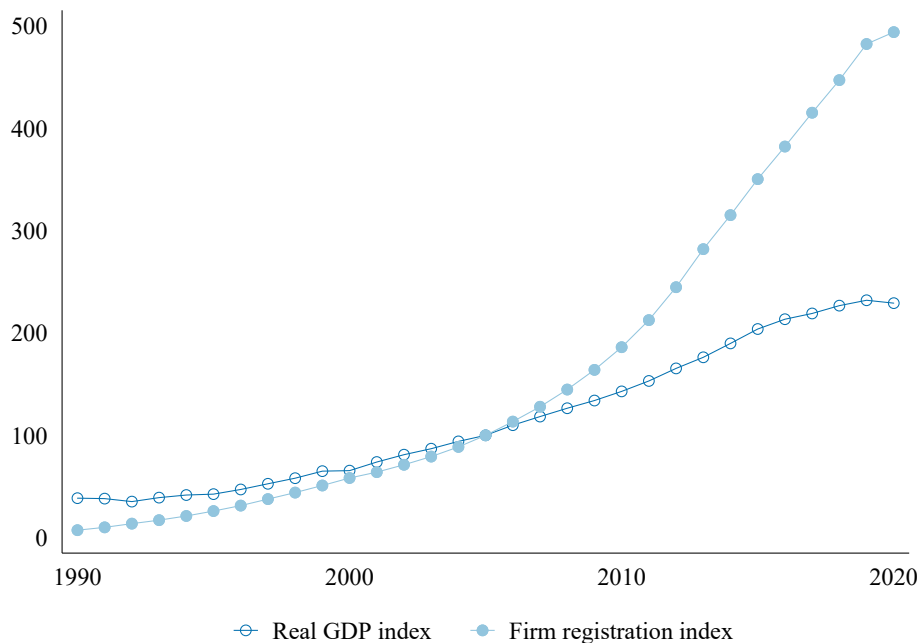
Outcome		(I) Individuals		(II) Family names		(III) Family network	
		Static	Dynam.	Static	Dynam.	Static	Dynam.
(a) Form	Sole	0.03	0.06	0.01	0.01	0.06	0.07
		(0.02)	(0.00)	(0.04)	(0.52)	(0.08)	(0.05)
		[0.04]	[0.01]	[0.07]	[0.52]	[0.19]	[0.10]
	Joint	0.15	0.18	0.07	0.09	0.14	0.19
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
		[0.00]	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]
	Anonymous	0.03	0.03	0.01	0.02	0.01	0.03
		(0.01)	(0.04)	(0.00)	(0.01)	(0.71)	(0.43)
		[0.04]	[0.06]	[0.00]	[0.03]	[0.75]	[0.65]
(b) Sector	Bus. services	0.12	0.13	0.05	0.07	0.13	0.20
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
		[0.00]	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]
	Commerce	0.02	0.04	0.00	0.01	0.06	0.06
		(0.18)	(0.08)	(0.37)	(0.31)	(0.41)	(0.44)
		[0.26]	[0.08]	[0.37]	[0.34]	[0.56]	[0.65]
	Industry   Mining	0.01	0.04	0.01	0.02	0.07	0.09
		(0.23)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)
		[0.29]	[0.03]	[0.02]	[0.03]	[0.10]	[0.03]
	Finance	0.03	0.04	0.00	0.01	0.01	-0.00
		(0.04)	(0.01)	(0.30)	(0.10)	(0.67)	(0.99)
		[0.07]	[0.03]	[0.34]	[0.17]	[0.75]	[0.99]
	Construction	0.01	0.05	0.01	0.02	0.03	0.05
		(0.22)	(0.00)	(0.05)	(0.10)	(0.37)	(0.10)
		[0.29]	[0.00]	[0.08]	[0.17]	[0.56]	[0.17]
	Other	0.01	0.02	0.00	0.00	0.10	0.08
		(0.28)	(0.30)	(0.27)	(0.25)	(0.25)	(0.44)
		[0.29]	[0.30]	[0.34]	[0.32]	[0.44]	[0.65]

Note: table reports estimates from different datasets (columns I-III), showing both dynamic and static results for being a PEP (any kind), as per column (V) of Table 5; rows refer to different outcomes all of which refer to the number of companies of different kinds; cells give absolute and relative effect sizes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing.

Source: authors' estimates from merged panel data.

Last, we consider some macroeconomic evidence. Figure 6 plots the time series relationship between an index of real GDP and an index of the number of firms in the official register (both normalized to 2005 = 100). Visually, the rate of firm establishment has substantially outpaced real GDP growth, particularly after 2010, when the trend rate of growth declined. A simple pairwise test of Granger causality between the two growth rates further reveals no evidence that firm growth (Granger) causes GDP growth; but rather, GDP growth does seem to spur firm growth (prob. = 0.043).

**Figure 6: Trends in real GDP and firm registration (2005 = 100)**



Note: figure shows indexes for the levels of real GDP and the number of formally-registered firms (2005 = 100).

Source: authors' estimates from merged panel data.

Digging deeper, we map the sectoral classifications of firms in our data to the sectoral classification used in the national accounts. We then estimate the association between changes in the number of politically-connected firms and value-added growth in each sector over time. Specifically, we regress each rate of growth on lags of the other growth rates, including both period and sector fixed-effects. For instance, the rate of value-added growth in sector  $j$  is regressed on the lagged rate of growth of connected and unconnected firms in the same sector, plus fixed-effects. Treating these as a set of (three) simultaneous equations and using an iterated estimator, Table 10 summarises the results. While these are merely indicative, relying on a small number of observations and using crude sectoral classifications, they nonetheless point to a negative association between sectoral GDP growth and growth of connected firms versus a positive effect of growth in unconnected firms – e.g., doubling the number of politically-connected firms in a given sector is expected to weaken growth by around 2 percent-

age points (column I) in the following period. Also, we note that lower prior GDP growth in a given sector is associated with higher rates of creation of politically-connected firms.

**Table 10: Simultaneous estimation of GDP and firm growth rates across aggregate sectors, 5 year panels**

Lagged explanatory vars. ↓	Outcome growth rates		
	(I) Real GDP	(II) Unconnected	(III) Connected
Unconnected firms	0.04** (0.02)		-0.59*** (0.11)
Connected firms	-0.02** (0.01)	0.05 (0.07)	
Real GDP		0.63 (0.67)	-1.22** (0.48)
R <sup>2</sup>	0.76	0.71	0.69

Note: all variables are rates of growth; outcomes in columns; rows are explanatory variables all lagged one (5 year) period; standard errors in parentheses; all equations include sector and period fixed-effects; estimated using an iterated simultaneous equation estimator with 6 aggregate sectors and 6 periods.

Source: authors' estimates from merged panel data and national accounts.

## 7 Conclusion

We began by noting that the nature of the relationship between the state and the private sector is rarely one of mutual autonomy. In Mozambique, there has been a long-standing concern that PEPs use their influence to accumulate wealth in the private sector through direct business interests, often in partnership with other business owners. Similar to experiences in Eastern Europe, this theme emerged as a critique of the process of market liberalization and privatization that gained pace in the late 1990s (M. A. Pitcher 2002); and it has gained renewed force with the boom in natural resource investments over the past decade (Macuane et al. 2018; Salimo et al. 2020). Nonetheless, as elsewhere, systematic evidence of this phenomenon has been patchy and largely qualitative in nature, often reflecting data limitations.

Adding to studies on how PEPs leverage their position for personal business advantage, we shed light on the dynamics of state-business relationships in Mozambique, quantifying the extent to which holders of high executive or party political office have expanded their personal business empires. Our main contribution has been to address this issue quantitatively, providing a comprehensive analysis of variation in the private business network capital of politically-exposed persons in a low-income country. We combined a new database of PEPs with data on all companies formally-registered in Mozambique since Independence, including their named beneficial owners. From this, we constructed the complete network of how individuals are connected through firms, allowing us to track how the influence of individuals within this network evolved over time, captured by different measures of their network centrality.

Based primarily on a generalized event study model, which allowed for both non-monotonic and fractional treatments, we found consistent evidence of large positive effects of holding political office. On average, current office holders tend to accumulate stakes in more companies and broker almost 50% more relationships in the firm-owner network compared to non-office holders. We extended the analysis to consider whether these effects differ between party political and executive offices. Overall, the evidence points to marginally larger long-run effects associated with party officials, but significant short-run gains for executive office holders. The latter is consistent with one insider's observation that: "... in democratic governments like ours people come and go, and everyone involved will want to have his share of the deal while in office, because once out of the office it will be difficult." (email from T. Nhangumele to J. Boustani of 14/11/2011, quoted in *United States vs. Boustani*, case 1:18-cr-00681, District Court, E.D. New York).<sup>24</sup>

We also provided indicative evidence that this feature of Mozambique's political economy may hamper sustained growth. Specifically, we found the above treatment effects concentrate in joint-stock companies active within the business services and mining sectors, in turn suggesting that PEPs earn rents as gatekeepers to private investments and government contracts. These results hold when we aggregate the data to the family-name level, implying benefits of political office are likely to extend to broad family groups. Indeed, the main individual-level estimates may well just represent a lower-bound on the real benefits of holding political office. Furthermore, at the sectoral level, higher rates of establishment of politically-connected firms appear associated with lower rates of real growth.

In sum, this study deepens our understanding of how the private sector functions in Mozambique, highlighting the essentially political nature of doing business in a context where the domestic private sector remains fragile. Indeed, our results highlight the continued absence of a strong 'contestable' private sector that might lobby for a fair playing-field in which to do business. This is likely associated with a range of inefficiencies, including higher costs of goods and services, misallocation of investment and talent, as well as weakened growth and innovation. None of this is prone to support an inclusive dynamic economy in the long-run.

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<sup>24</sup> For details see: [www.courtlistener.com/docket/13587766/united-states-v-boustani](http://www.courtlistener.com/docket/13587766/united-states-v-boustani).

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# Appendix

## A Data sources

### A1 PEPs register

We follow the Financial Action Task Force on Money Laundering (FATF) and construct a list of Mozambique's post-Independence PEPs, 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 most recent congress covered by our data, held in 2017, elected 180 committee members of whom 129 were provincial representatives, plus 18 replacements.

There is no single public record of all historical executive mandates or CC members. Consequently, using a wide range of historical news articles and official publications, we hand-collected an extensive list of PEPs over the period 1975-2019, recording the names of individual office holders, the type of office held, and years in power (see below for a full list of sources). Although this list may have some gaps, we were able to identify all executive officers (ministers, governors etc.) in all governments since 1975. Membership of the CC is more challenging. For all 11 congresses held from 1962-2019, 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 829 unique individuals (PEPs).<sup>25</sup> Since numerous 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.

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<sup>25</sup> We exclude here individuals who were PEPs before the 1980s but show no activity in either the PEP or firm register *after* 1985. This leads to the removal of 158 individuals from the initial list.

With respect to sources, the FRELIMO Central Committee (CC) and Polit Bureau (PB) members for each Congress were 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](http://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: [digitalq.arquivos.pt/](http://digitalq.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. Quelimã, 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](http://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](http://www.open.ac.uk/technology/mozambique/news-reports-2017)

Minister mandates from 1990-2019 were obtained from:

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

Vice-minister mandates were obtained from:

- João M. Cabrita(2000). Mozambique The Tortuous Road to Democracy. 2000. Palgrave Macmillan
- Joseph Hanlon and Racel Waterhouse (1995:10). Mozambique peace process bulletin Issue 14. February 1995. AWEPA European Parliamentarians for Southern Africa. Available at: [www.open.ac.uk/technology/mozambique/political-process-1993-2008](http://www.open.ac.uk/technology/mozambique/political-process-1993-2008)
- AIM(2005).President Guebuza appoints his government. 16th February 2005. Mozambique News Agency AIM Reports No.293. Available at: [www.poptel.org.uk/mozambique-news/newsletter/aim293.html](http://www.poptel.org.uk/mozambique-news/newsletter/aim293.html)
- Joseph Hanlon(1984:300). Mozambique: The Revolution Under Fire. 1 Dezember 1984. Zed Books Ltd.
- Irving Kaplan (1977: 175). Area handbook for Mozambique. January 1, 1977. University of Michigan Library.
- Mozambique Embassy to the USA (2008). Armando Alexandre Panguene. 9th Jul 2008. AllAfrica Global Media. Available at: [myafrica.allafrica.com/view/people/main/id/07SDoPbUCoymygp.html](http://myafrica.allafrica.com/view/people/main/id/07SDoPbUCoymygp.html)
- John Paxton (1987:874). Mozambique. 1987. The Staesman´s Year-Book 1987-1988.
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- Mozvest (2019). Tomaz Augusto Salomão. 2019. Retrieved from: [mozvest.com/speakers/tomaz-augusto-salomao/](http://mozvest.com/speakers/tomaz-augusto-salomao/)

## A2 Company register

We derive a list of all incorporated companies and their owners from the government's official gazette, the *Boletim da República, Serie III* (BdR3). Entries in the gazette represent a formal record of information transcribed manually at notary offices around the country; Figure A1 provides an example of one such entry.<sup>26</sup> While no official digital repository of the underlying data exists, a local private company (Pandora's Box Lda.) has digitized all laws and announcements published in the various series of the *Boletim da República*, including BdR3. Their aim was to allow 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.

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<sup>26</sup> See: [www.portaldogoverno.gov.mz/por/Governo/Legislacao/Boletins-da-Republica](http://www.portaldogoverno.gov.mz/por/Governo/Legislacao/Boletins-da-Republica).

**Figure A1: Sample excerpt from the BR3**

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, para 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, matriculada sob NUEL 100016605 deliberaram a cessação da quota no valor de vinte mil meticais que o sócio Cecilio Bila, possuía no capital social da referida sociedade e que cedeu a Giancarlo Monteforte.

Em consequência, 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 inexacto 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 Cláida 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 Cláida 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 quatro 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 Cláida 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*.

We leverage this digitalized information to construct a consistent register of companies. To 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 sole-ownership (*'Sociedades unipessoais'*), joint-stock firms (*'Sociedades por quotas'*) and public companies (*'Sociedades anónimas'*). In addition, we retain information on other types of entities and announcements, which we subsequently deploy as control variables (also below).

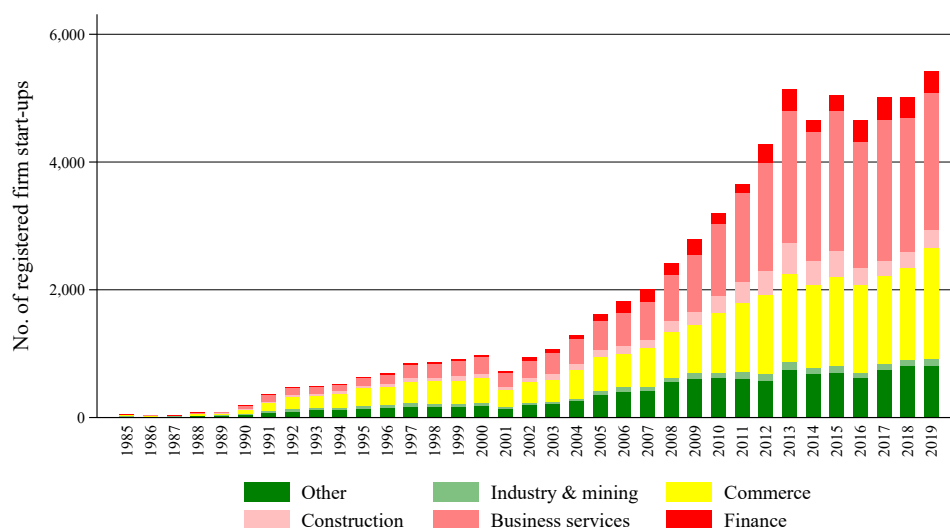
Having scraped the data in raw form, we cleaned it. First, we normalized the firm names to identify unique entities. Second, to make our subsequent analysis of the structure of the business network tractable (see below), we mapped all documented information about each firm to a single entry. This information 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 sectoral classification of the firm, identified from key words in the founding mission statement (*objecto social*). Where we find matches to multiple keywords, we allocated the firm to several industries. (The mapping of key words to sectors is provided in Appendix G2).

In setting up the database in this way we 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 only have alterations occurring within two years of founding (i.e., within a 5-year period).

To give a sense of the constructed firm register, Figure A2 plots the number of companies founded per year across different sectors. It shows that trade- and business services firms represent a significant share of firms founded from 2006. Even though the extractive sector made an important contribution to economic growth over the last decades (The World Bank 2017), the share of newly-registered mining-related firms has remained small. Appendix Figure A3 plots the number of company announcements of different types in each year – the vast majority of firms appear only once in the register; and hardly any firm closures are documented, likely reflecting misreporting. Appendix Figure A4 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 since 2010.

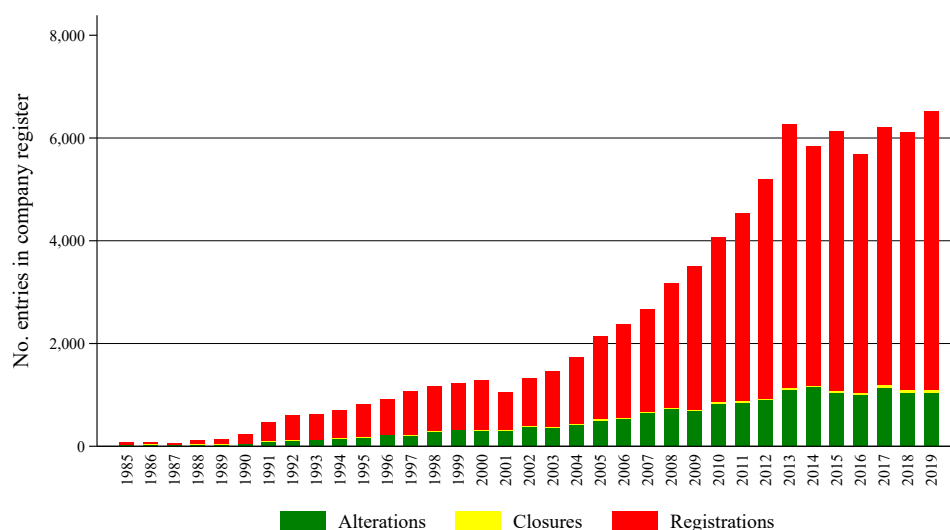
**Figure A2: Number of companies founded per year**



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

Source: authors' calculations from firm registry.

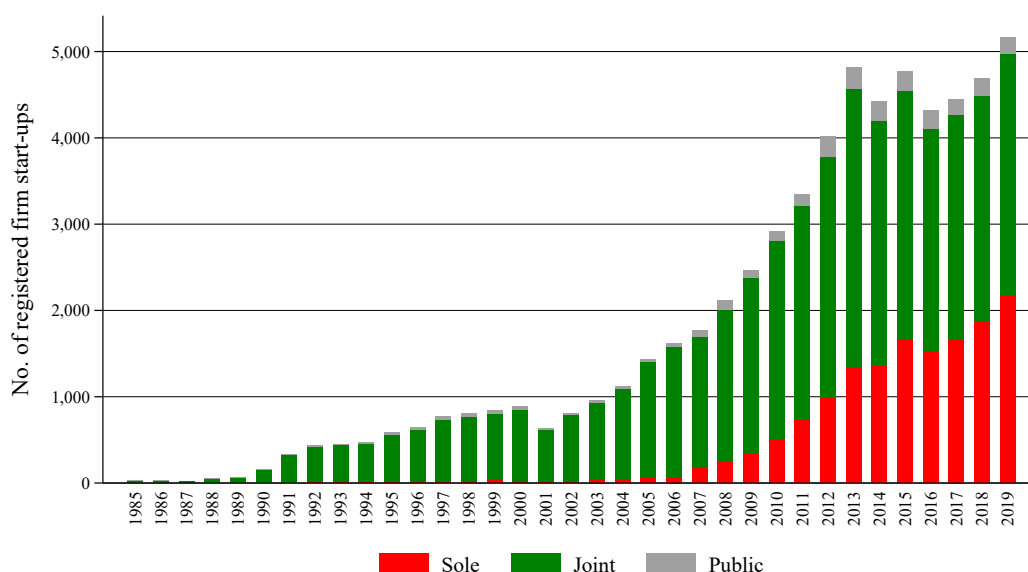
**Figure A3: Types of entries in business register**



Note: the figure indicates the total number of unique entries per year in the official gazette (BdR3) reporting the establishment (start-up), alteration or closure of private firms.



**Figure A4: Types of registered firm**



Note: the figure indicates the legal type of all private firms established in each year, according to the official gazette (BdR3).

## A3 Company-owner network

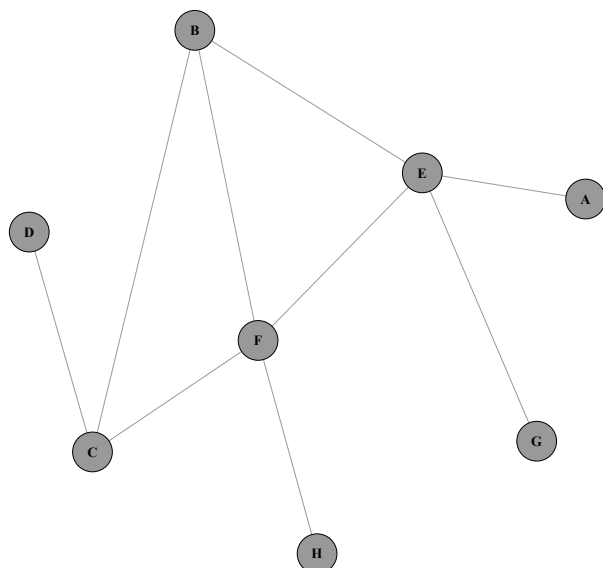
To compare business affiliations among individuals (natural persons), we transposed the information from the company register into a unique register of owners. For each individual, this lists all firm affiliations for which they are identified as a beneficial owner. To do so, we standardized the names 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 transcribed in the business register under seven different middle name combinations.

Using this cleaned register of owners, we then constructed the network of how individual business owners are connected through different companies. As we describe below, this permits assessment of the strategic position or relative importance of each individual 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 defined as direct connections all other nodes represented by individual 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 (partners) in firms.

## B Example of network metrics

As an example of how three key measures of network position capture different insights, Figure A1 shows a simplified network. 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.

**Figure A1: Graph of a simple business network**



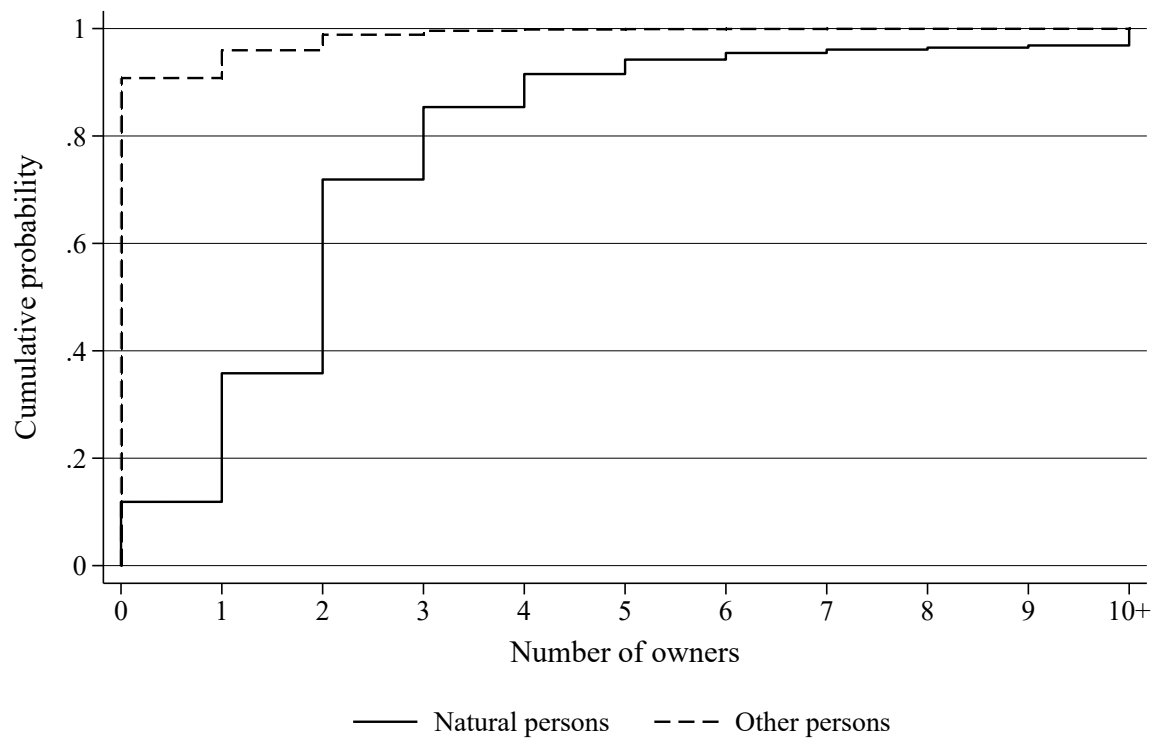
Node	Degree centrality	Godfather Index	Decay centrality
A	0.143	0	1.500
B	0.429	1	2.500
C	0.429	2	2.250
D	0.143	0	1.250
E	0.571	5	2.625
F	0.571	4	2.750
G	0.143	0	1.500
H	0.143	0	1.625

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

Source: authors' elaboration.

## C Additional figures

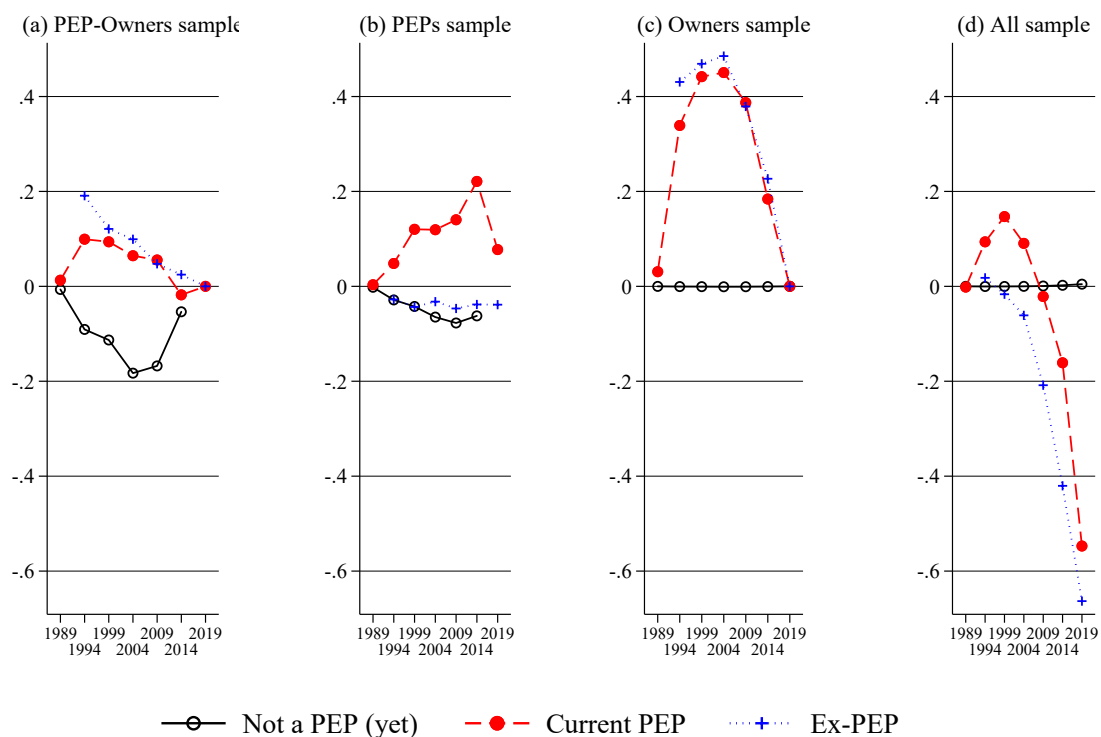
Figure A1: Distribution of no. owners per firm, full sample



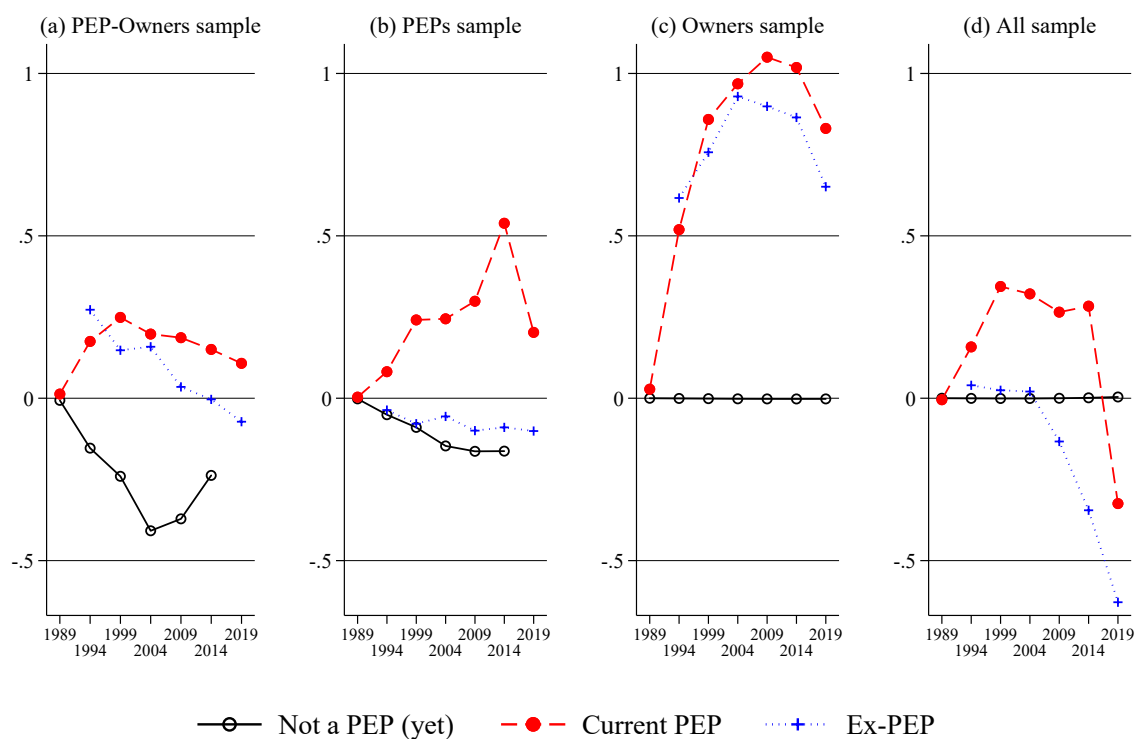
Note: the figure plots the cumulative distribution of all unique firms in the register (up to 2019) according to the number owners of each type (natural persons and other owners), according to the official gazette (BdR3).

**Figure A2: Comparison of outcomes over time across PEP categories**

(i) *Firm owner:*



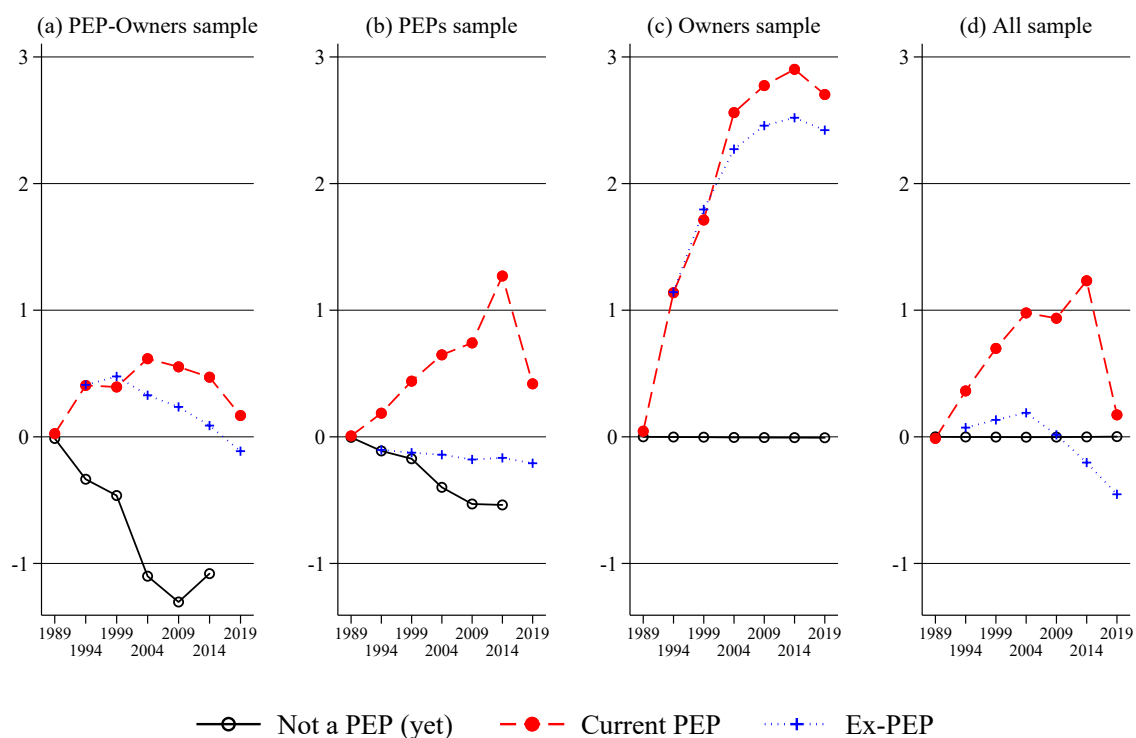
(ii) *No. firms:*



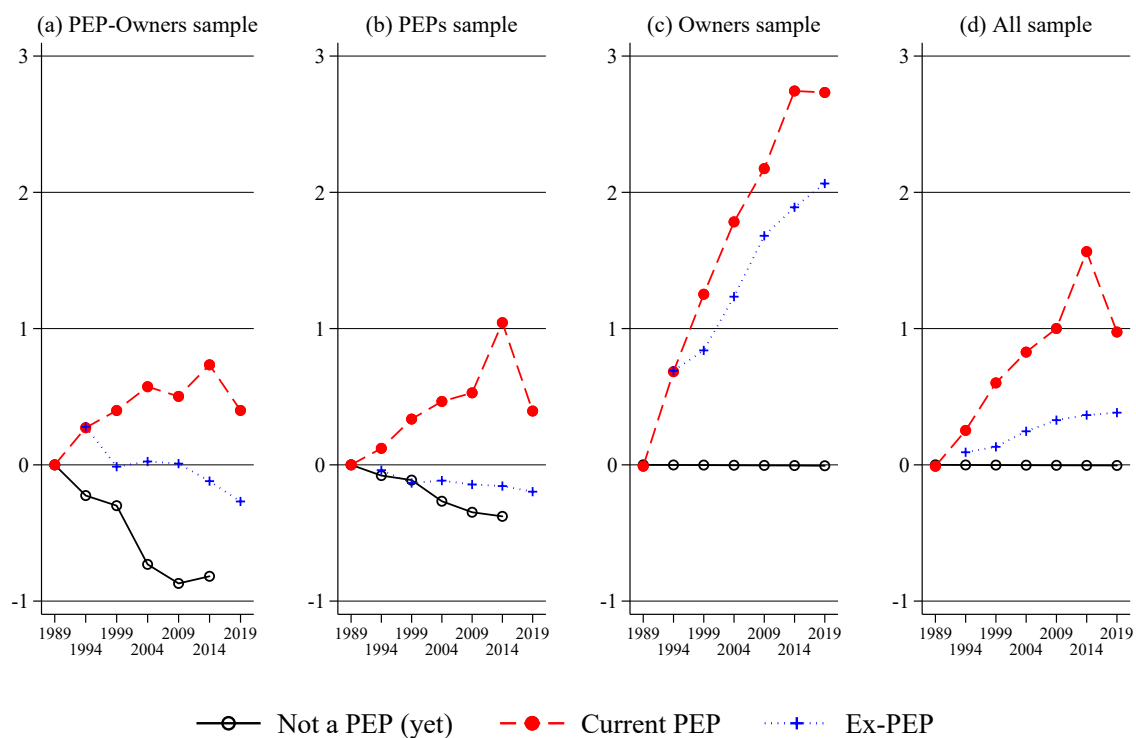
Notes: this figure (continued below) replicates that of Figure 2(i) for the set of four separate outcomes underlying the outcome score.

**Figure A2: Comparison of outcomes over time, across different PEP categories using alternative samples (contd.)**

(iii) *Information capital:*

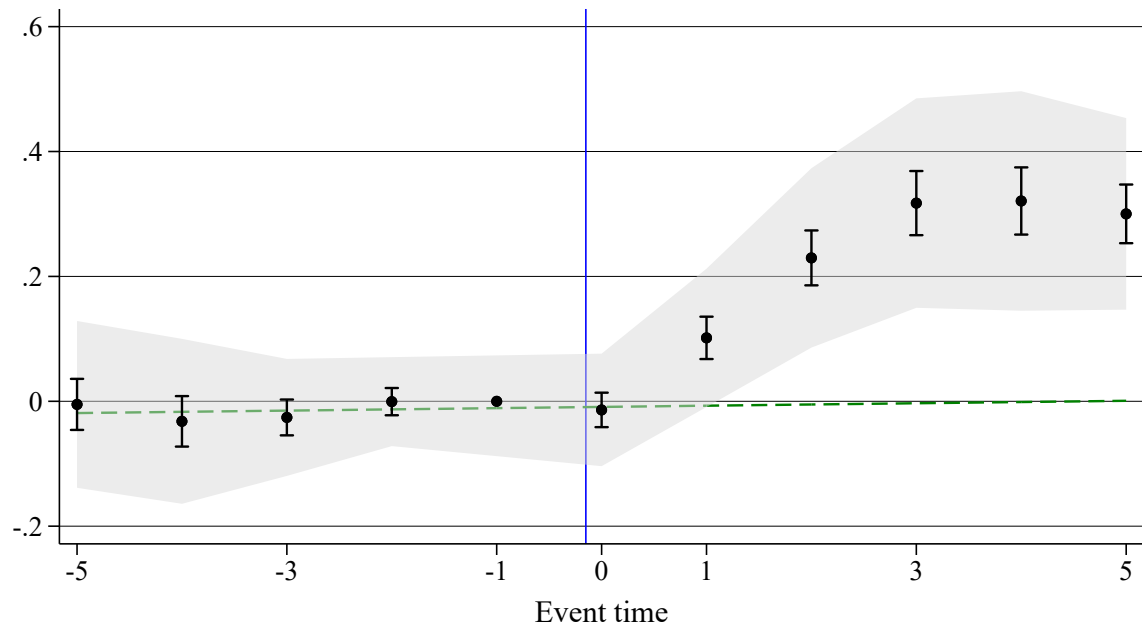


(iv) *Brokerage capital:*



**Figure A3: Event study results for additional outcomes, individual-level PEPs sample**

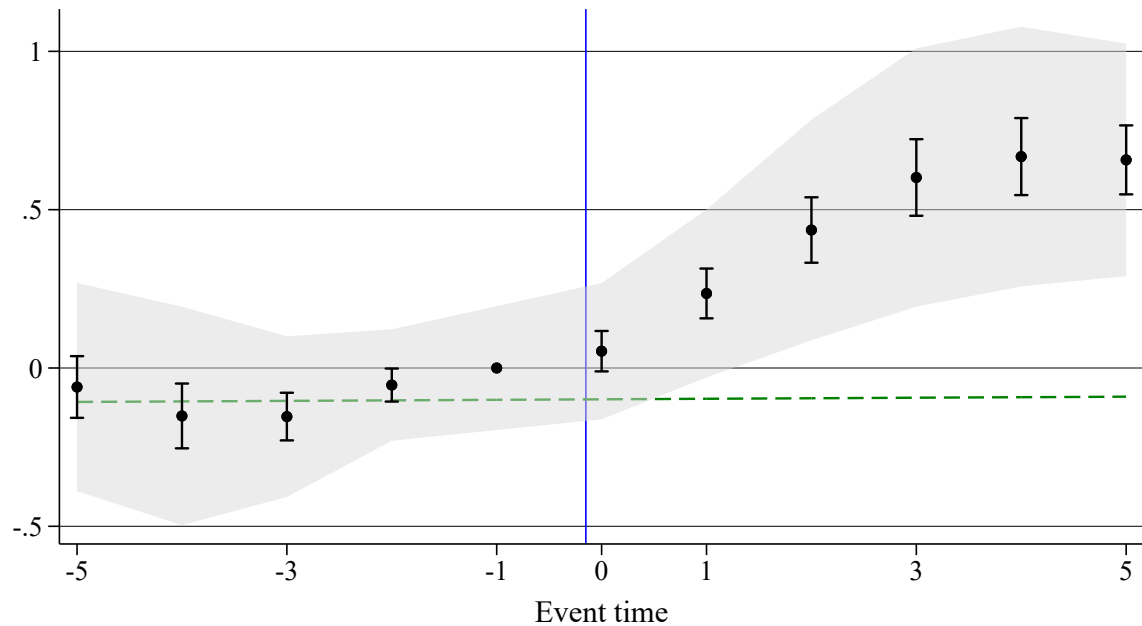
(a) *No. companies:*



--- Linear pre-trend    sup-t band

Pre-trend zero = 0.72; Post-trend static = 0.00; Control mean = -0.82

(b) *Information capital:*

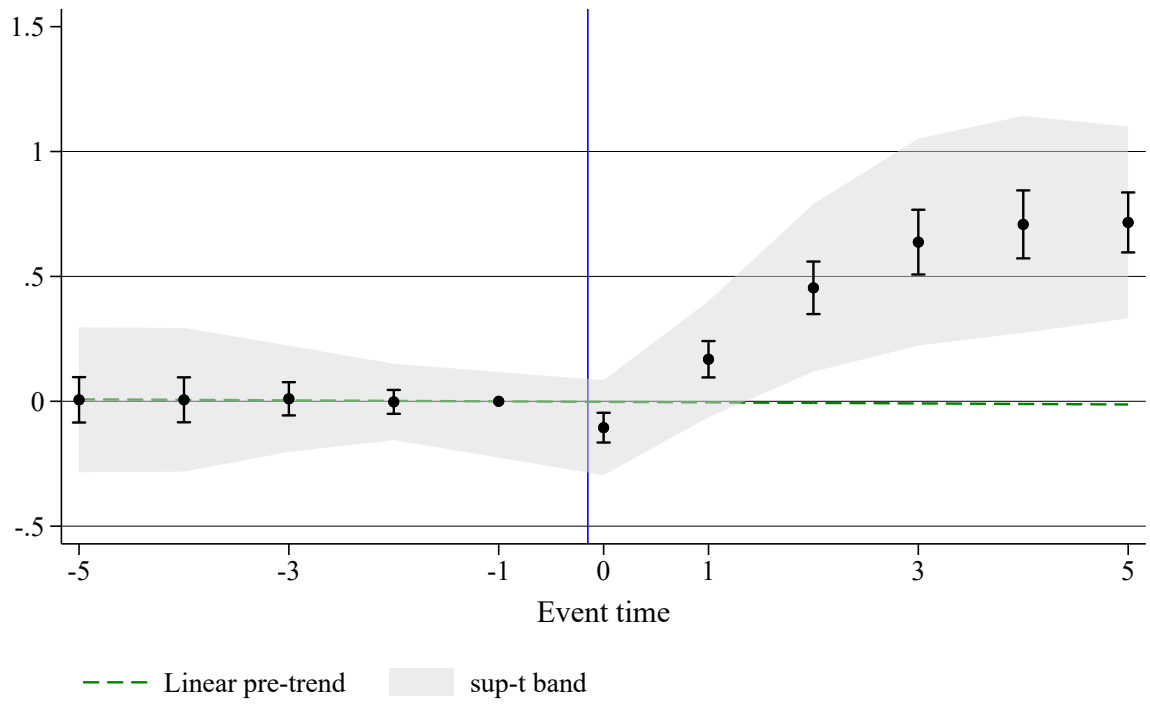


--- Linear pre-trend    sup-t band

Pre-trend zero = 0.30; Post-trend static = 0.00; Control mean = -0.14

Note: this figure (continued below) replicates that of Figure 3 for the set of four separate outcomes underlying the outcome score.

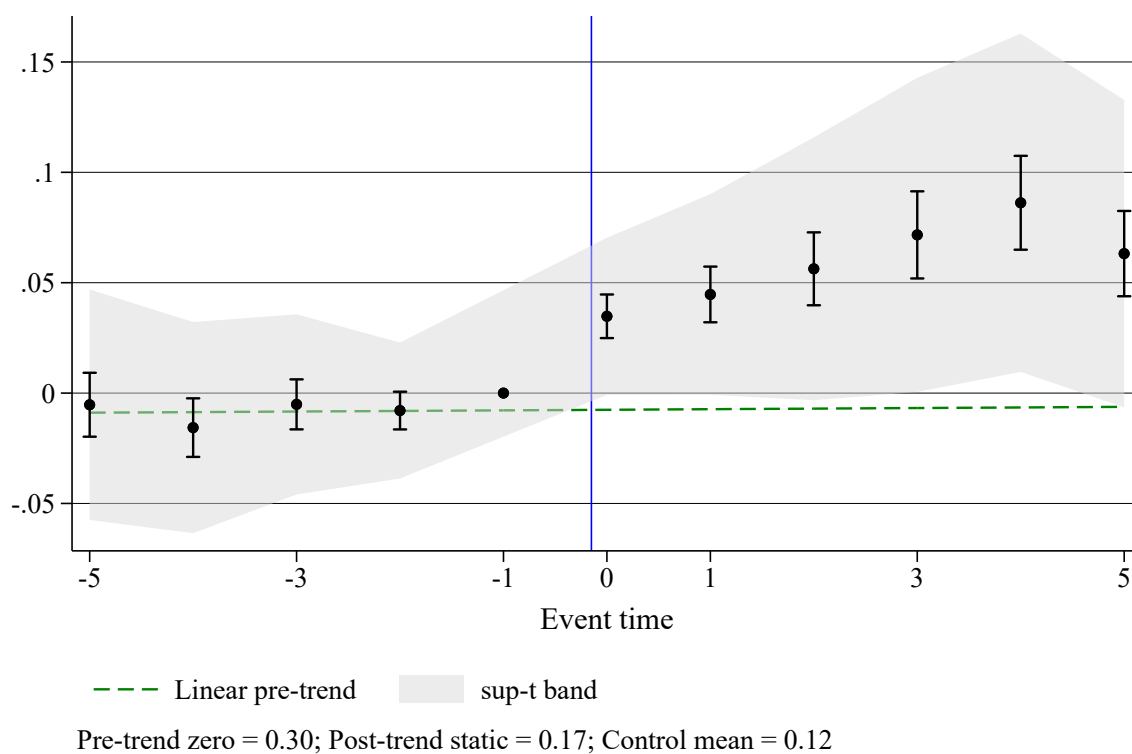
**Figure A3: Event study results for additional outcomes, individual-level PEPs sample (contd.)**  
(c) *Brokerage capital:*



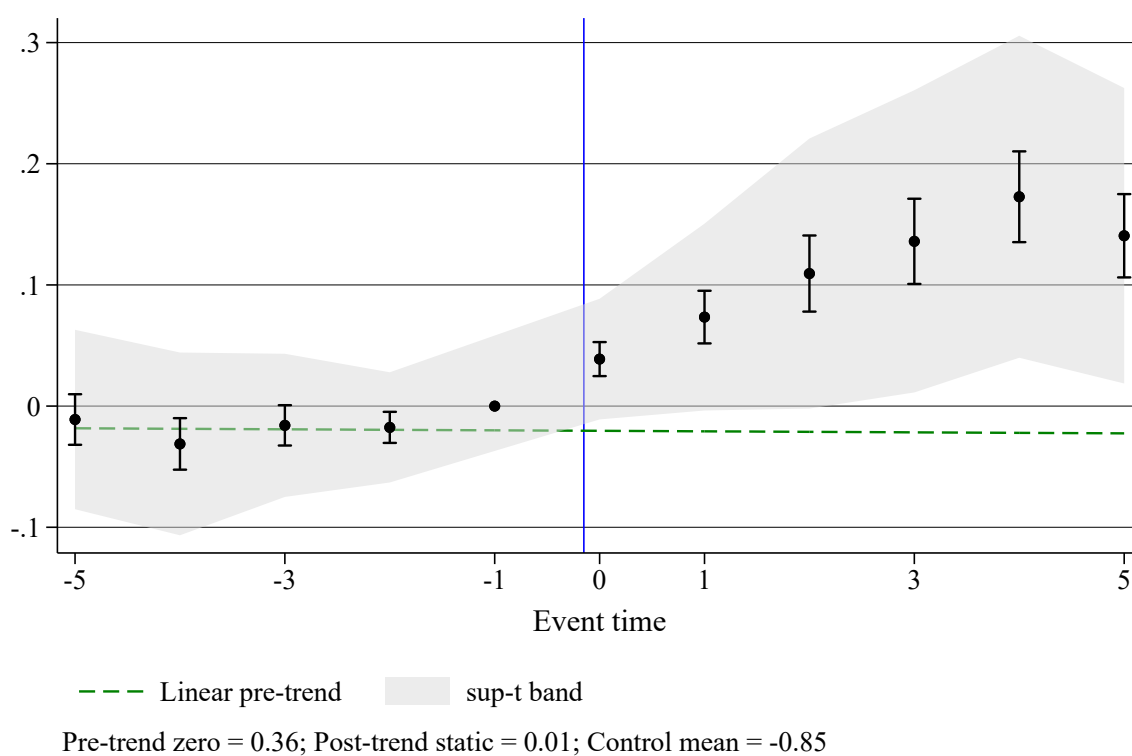
Pre-trend zero = 1.00; Post-trend static = 0.00; Control mean = -0.83

**Figure A4: Event study results for additional outcomes, PEPs sample aggregated by family name**

(a) *Firm owner:*



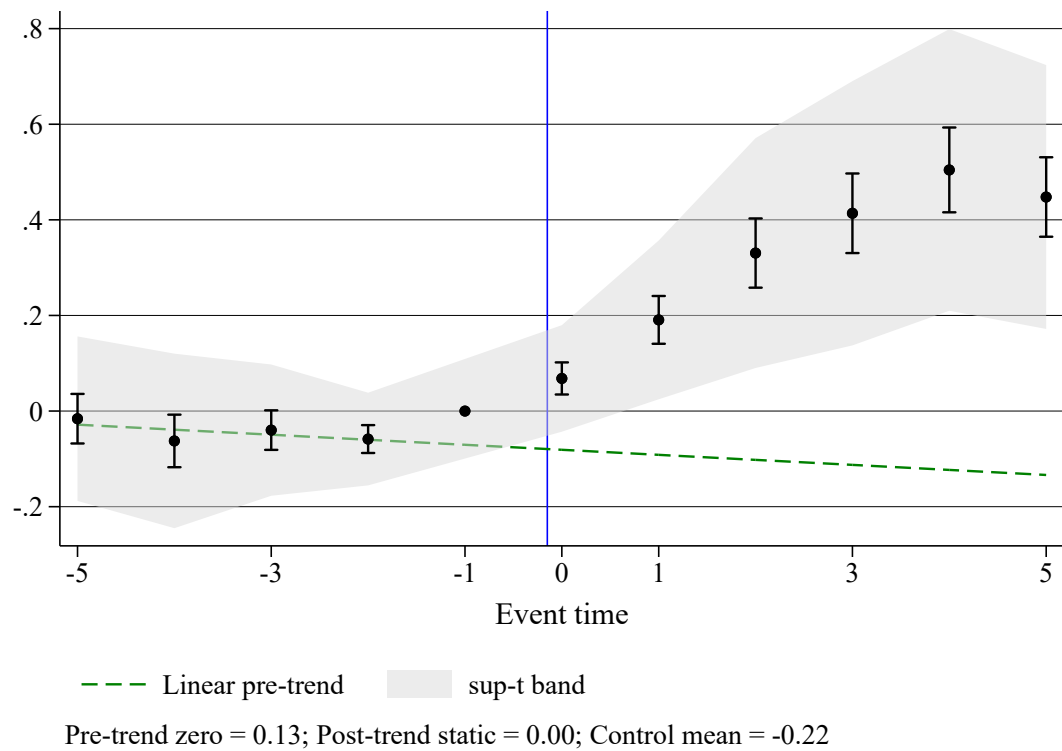
(b) *No. companies:*



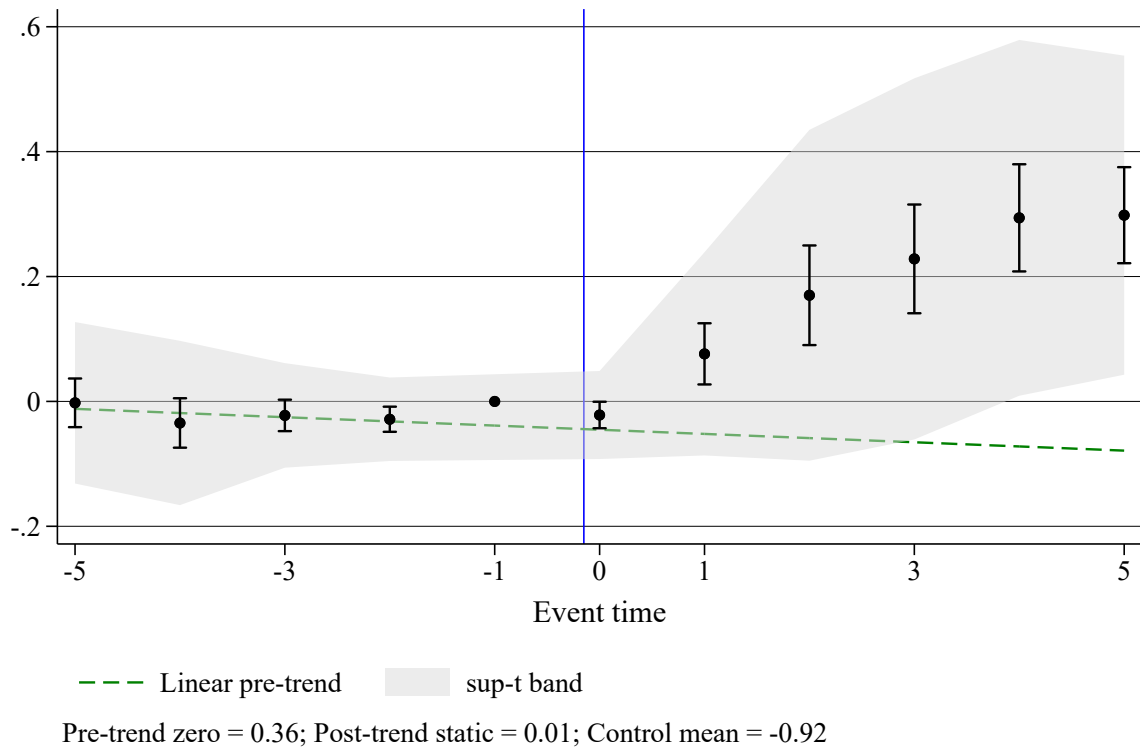
Note: this figure (continued below) replicates that of Figure 3 (also Figure 5) for the set of four separate outcomes underlying the outcome score, using data aggregated to the family name level.



**Figure A4: Event study results for additional outcomes, PEPs sample aggregated by family name (contd.)**  
(c) *Information capital:*

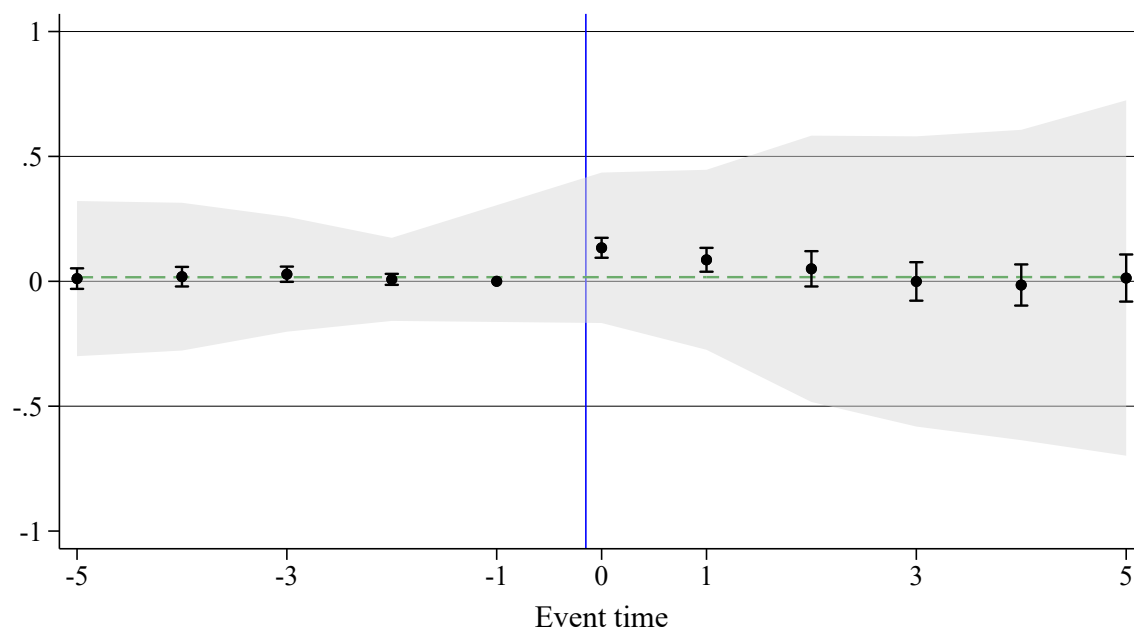


(d) *Brokerage capital:*



**Figure A5: Event study results by office type for outcome score using PEPs sample aggregated by family names**

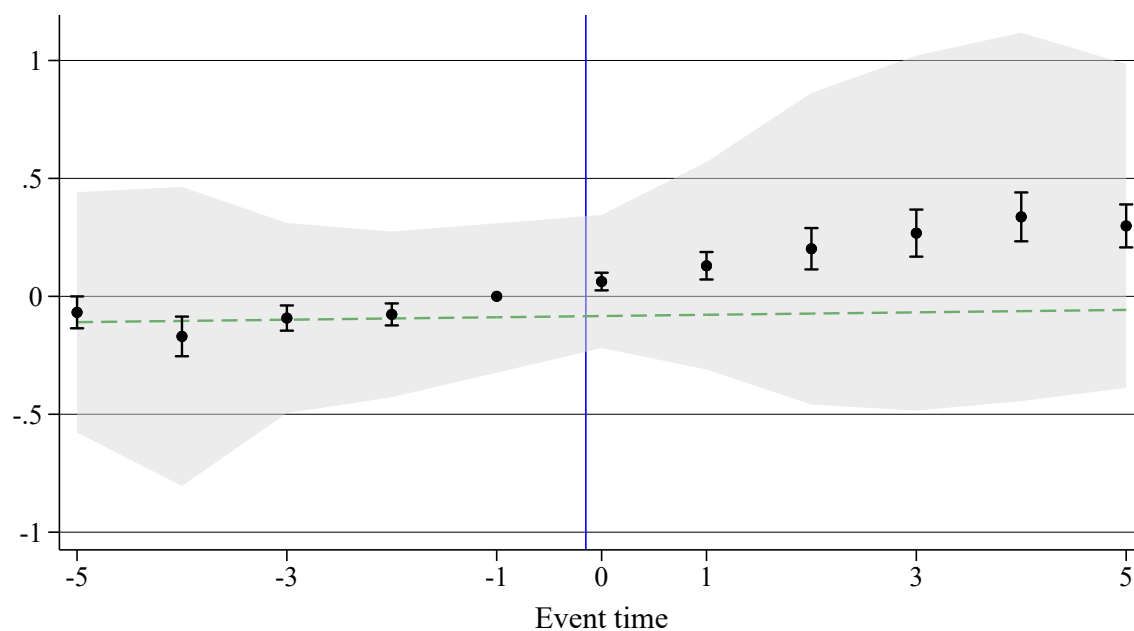
(a) *Executive office holders:*



--- Linear pre-trend    sup-t band

Pre-trend zero = 0.85; Post-trend static = 0.52; Control mean = -1.96

(b) *Party office holders:*



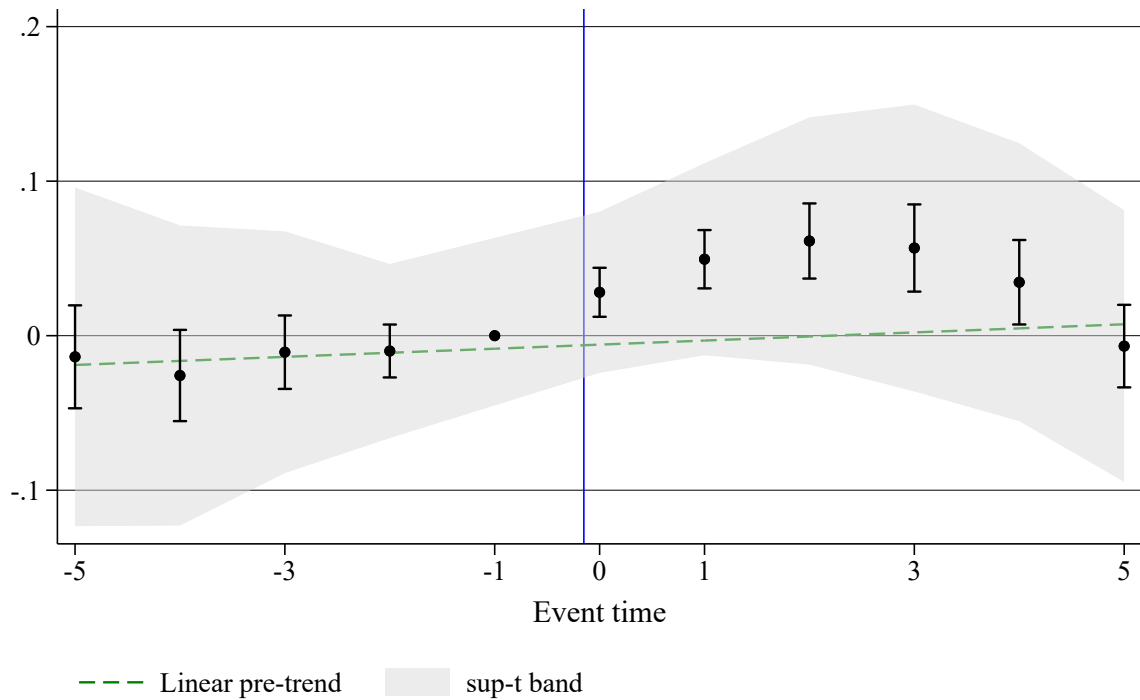
--- Linear pre-trend    sup-t band

Pre-trend zero = 0.30; Post-trend static = 0.07; Control mean = -1.96

Note: this figure replicates that of Figure 4 using the PEPs sample aggregated to the family name level.

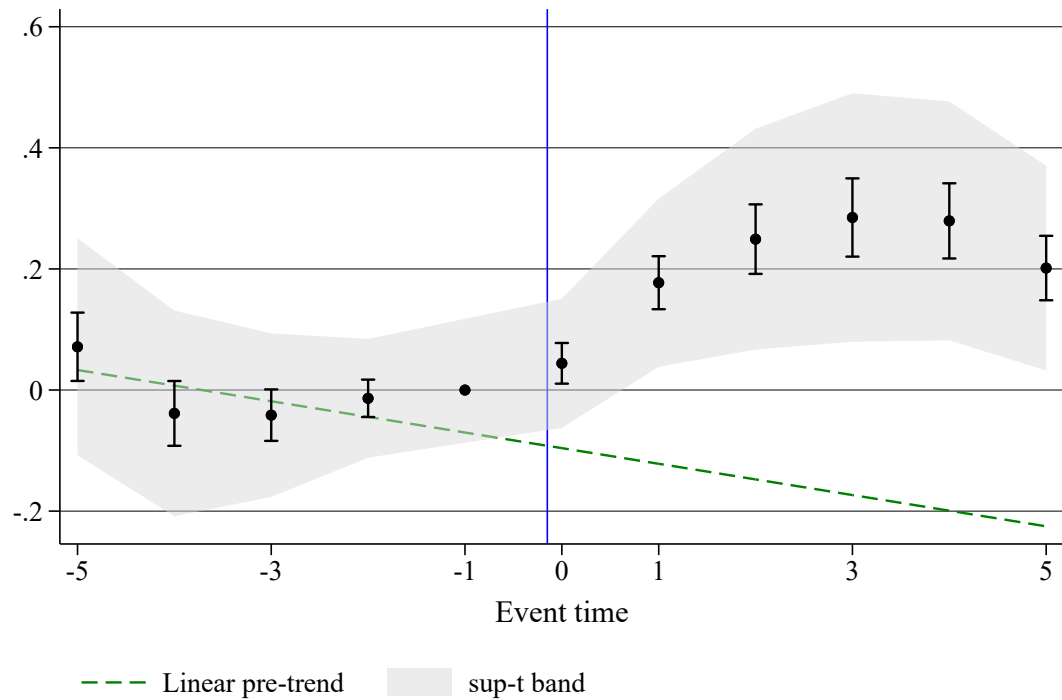
**Figure A6: Event study results for additional outcomes, family networks PEPs sample**

(a) *Firm owner:*



Pre-trend zero = 0.93; Post-trend static = 0.09; Control mean = 0.45

(b) *No. companies:*

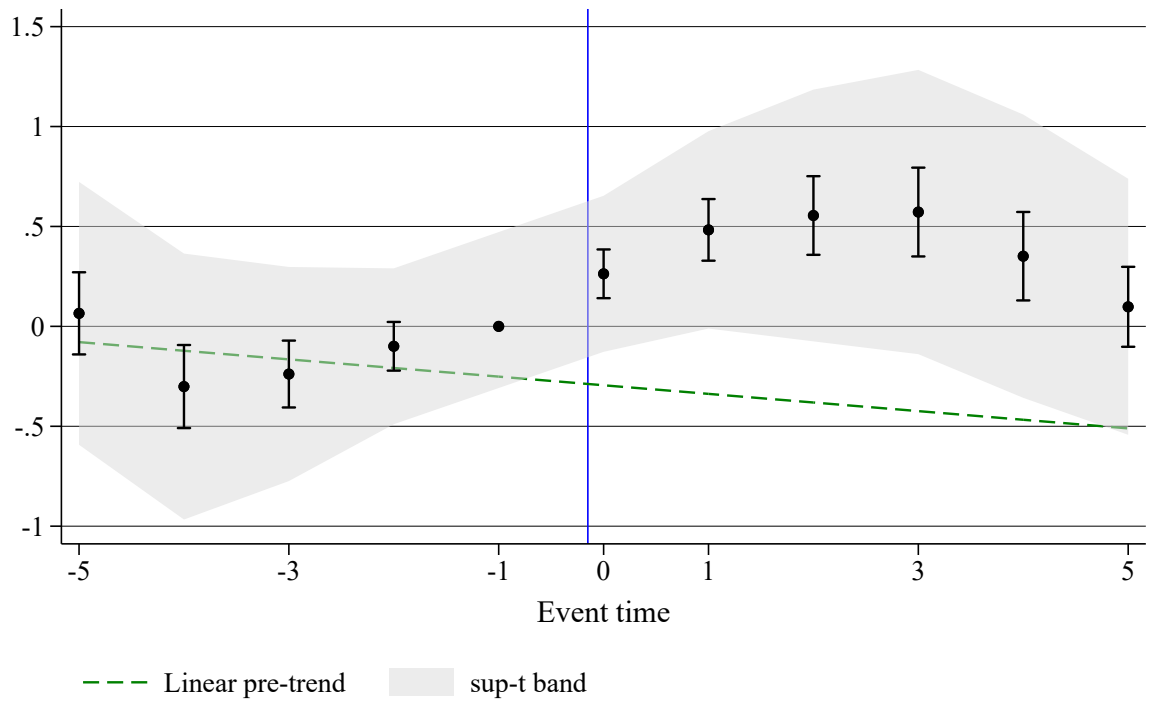


Pre-trend zero = 0.20; Post-trend static = 0.00; Control mean = 0.09

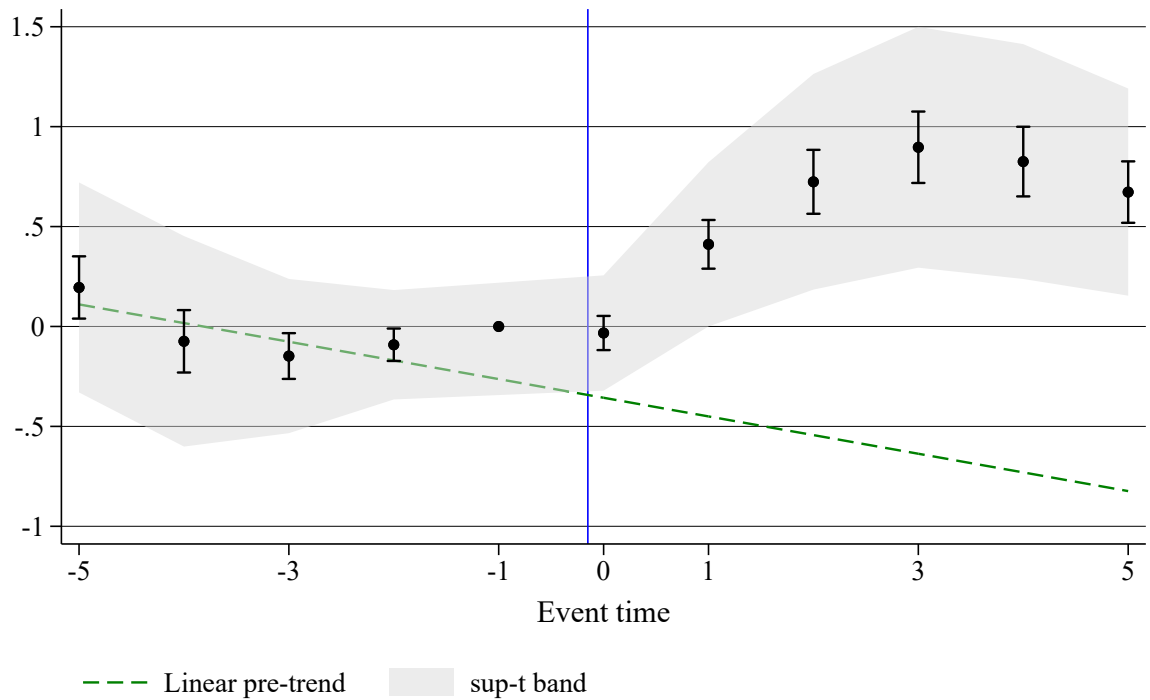
Note: this figure (continued below) replicates that of Figure 3 (also Figure 5) for the set of four separate outcomes underlying the outcome score, using the family networks data.

**Figure A6: Event study results for additional outcomes, family networks PEPs sample (contd.)**

(c) *Information capital:*

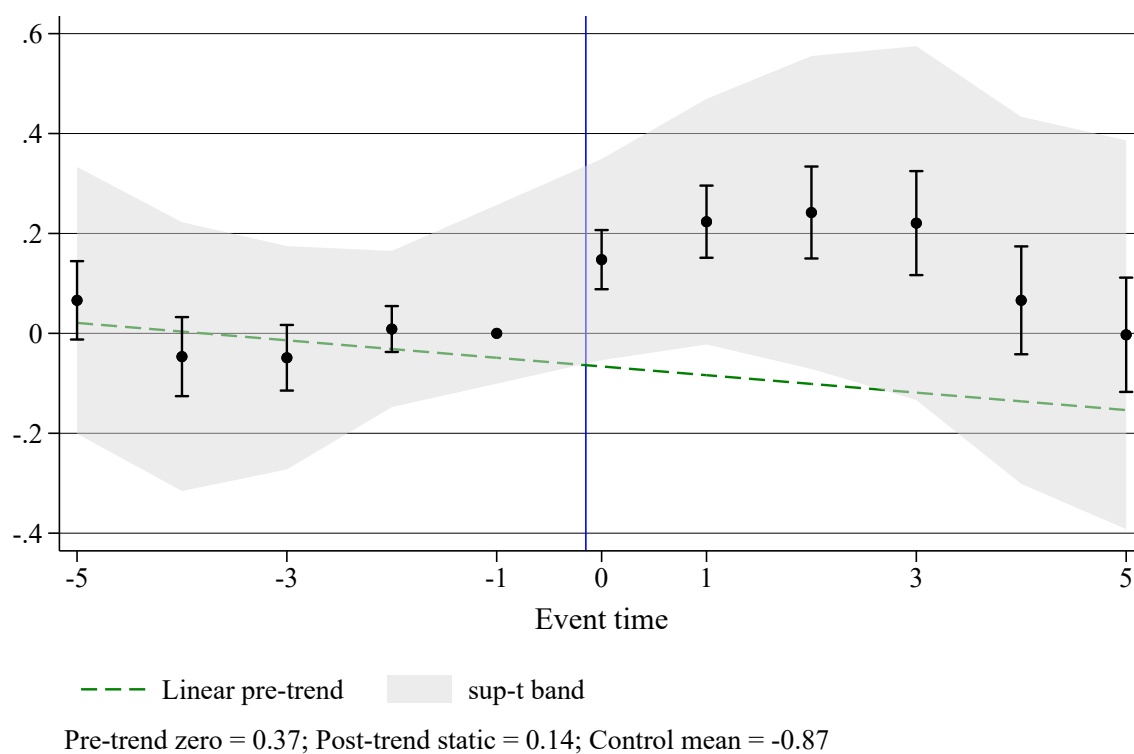


(d) *Brokerage capital:*

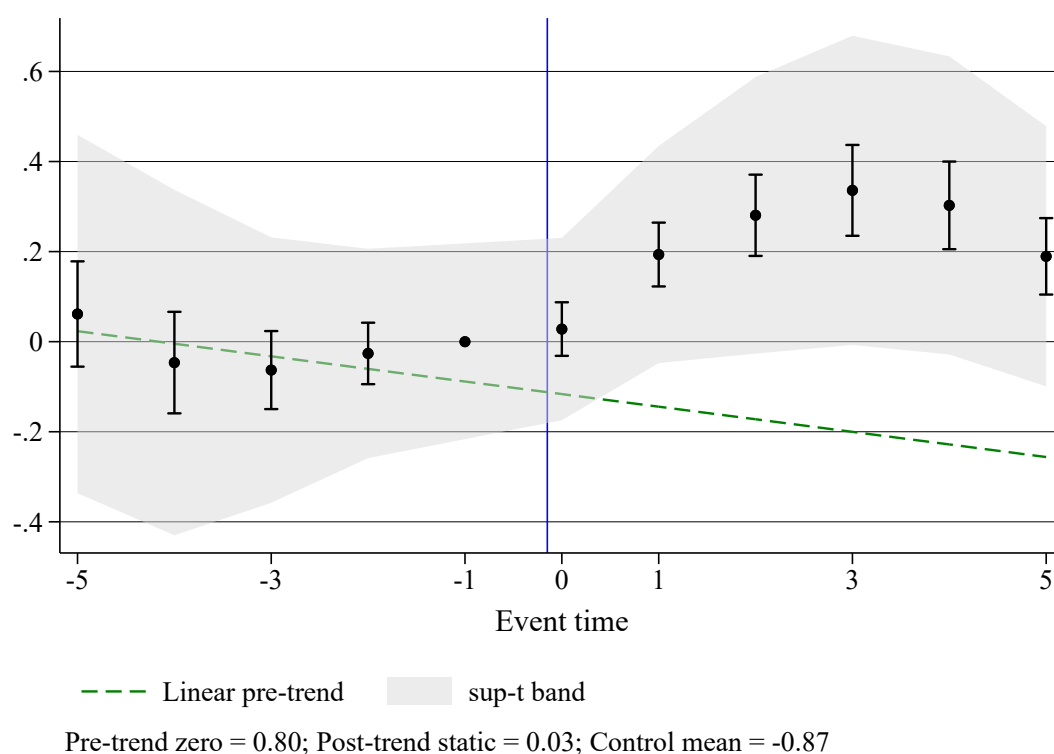


**Figure A7: Event study results by office type for outcome score using family networks PEPs sample**

(a) *Executive office holders:*



(b) *Party office holders:*



Note: this figure replicates that of Figure 4 using the family networks PEPs dataset.

## D Additional tables

**Table A1: Additional panel data descriptive statistics**

		1989	1994	1999	2004	2009	2014	2019
(i) <i>Full sample:</i>								
(a)	Individuals	110,077	110,077	110,077	110,077	110,077	110,077	110,077
	Female	37,992	37,992	37,992	37,992	37,992	37,992	37,992
	In firms registry (t)	2,042	7,597	17,929	30,150	49,937	80,158	109,566
(b)	Owner	0.02	0.07	0.16	0.27	0.45	0.73	1.00
	No. of firms	-0.98	-0.92	-0.80	-0.67	-0.44	-0.08	0.27
	Decay	-0.46	-0.35	-0.13	0.12	0.50	1.00	1.39
	Godfather	-0.99	-0.97	-0.92	-0.86	-0.76	-0.64	-0.55
	Score	-2.16	-2.03	-1.91	-1.70	-1.30	-0.72	-0.12
(ii) <i>PEPs sample:</i>								
(a)	Individuals	829	829	829	829	829	829	829
	Female	262	262	262	262	262	262	262
	In firms registry (t)	11	98	162	208	246	294	318
	In PEPs registry (t)	315	413	445	587	626	675	829
	Current exec. PEP	76	55	52	68	79	80	69
	Current party PEP	252	270	174	177	180	74	224
	Current PEP	294	301	213	225	236	134	270
(b)	Owner	0.01	0.12	0.20	0.25	0.30	0.35	0.38
	No. of firms	-0.99	-0.84	-0.70	-0.59	-0.47	-0.33	-0.25
	Decay	-0.48	-0.16	0.13	0.46	0.70	0.97	1.15
	Godfather	-1.00	-0.83	-0.65	-0.50	-0.30	-0.13	0.02
	Score	-2.17	-1.88	-1.69	-1.48	-1.24	-0.98	-0.76

Notes: table presents summary statistics for the full and PEP samples in panels (i) and (ii) respectively; variables in sub-panels (a) are counts and in sub-panels (b) are outcome means, including zero values where individuals are not active firm owners; with the exception of firm ownership, all outcomes are transformed to either logarithmic or standard deviations units (the overall score); see also Table 3 in the text.

**Table A2: Summary regression estimates for various outcomes, individual-level full sample**

		Owner		Companies		Information		Brokerage		Score	
		FE	LO	FE	LO	FE	LO	FE	LO	FE	LO
(a) <i>Dynamic model:</i>											
(1)	PEP	0.22 (0.00) [0.00]	0.03 (0.07) [0.07]	0.33 (0.00) [0.00]	0.20 (0.00) [0.00]	0.57 (0.00) [0.00]	0.42 (0.00) [0.00]	0.32 (0.00) [0.00]	0.55 (0.00) [0.00]	0.58 (0.00) [0.00]	0.47 (0.00) [0.00]
(2)	Exec	0.16 (0.00) [0.00]	0.05 (0.06) [0.07]	0.31 (0.00) [0.00]	0.20 (0.00) [0.00]	0.59 (0.00) [0.00]	0.37 (0.00) [0.00]	0.47 (0.00) [0.00]	0.52 (0.00) [0.00]	0.57 (0.00) [0.00]	0.46 (0.00) [0.00]
(3)	Party	0.22 (0.00) [0.00]	0.03 (0.15) [0.16]	0.35 (0.00) [0.00]	0.20 (0.00) [0.00]	0.65 (0.00) [0.00]	0.44 (0.00) [0.00]	0.40 (0.00) [0.00]	0.59 (0.00) [0.00]	0.64 (0.00) [0.00]	0.48 (0.00) [0.00]
(4)	Exec	0.09 (0.01) [0.01]	0.04 (0.13) [0.13]	0.20 (0.00) [0.00]	0.16 (0.00) [0.00]	0.39 (0.00) [0.00]	0.27 (0.00) [0.00]	0.34 (0.01) [0.01]	0.37 (0.00) [0.00]	0.36 (0.00) [0.00]	0.34 (0.00) [0.00]
	Party	0.22 (0.00) [0.00]	0.02 (0.26) [0.26]	0.34 (0.00) [0.00]	0.18 (0.00) [0.00]	0.64 (0.00) [0.00]	0.41 (0.00) [0.00]	0.35 (0.00) [0.00]	0.54 (0.00) [0.00]	0.62 (0.00) [0.00]	0.44 (0.00) [0.00]
(b) <i>Static model:</i>											
(1)	PEP	0.06 (0.00) [0.00]	-0.06 (0.00) [0.00]	0.08 (0.01) [0.01]	0.07 (0.01) [0.01]	0.23 (0.00) [0.00]	0.28 (0.00) [0.00]	0.08 (0.19) [0.19]	0.42 (0.00) [0.00]	0.17 (0.00) [0.00]	0.25 (0.00) [0.00]
(2)	Exec	0.10 (0.00) [0.00]	0.01 (0.59) [0.59]	0.16 (0.00) [0.00]	0.11 (0.00) [0.00]	0.41 (0.00) [0.00]	0.23 (0.00) [0.00]	0.22 (0.03) [0.04]	0.35 (0.00) [0.00]	0.34 (0.00) [0.00]	0.27 (0.00) [0.00]
(3)	Party	0.06 (0.05) [0.05]	-0.06 (0.00) [0.00]	0.15 (0.00) [0.00]	0.10 (0.01) [0.01]	0.37 (0.00) [0.00]	0.38 (0.00) [0.00]	0.29 (0.00) [0.00]	0.55 (0.00) [0.00]	0.29 (0.00) [0.00]	0.32 (0.00) [0.00]
(4)	Exec	0.10 (0.00) [0.00]	0.02 (0.34) [0.35]	0.18 (0.00) [0.00]	0.09 (0.01) [0.01]	0.44 (0.00) [0.00]	0.18 (0.00) [0.00]	0.25 (0.02) [0.02]	0.28 (0.00) [0.00]	0.36 (0.00) [0.00]	0.23 (0.00) [0.00]
	Party	0.07 (0.03) [0.03]	-0.07 (0.00) [0.00]	0.16 (0.00) [0.00]	0.08 (0.02) [0.03]	0.41 (0.00) [0.00]	0.36 (0.00) [0.00]	0.31 (0.00) [0.00]	0.51 (0.00) [0.00]	0.32 (0.00) [0.00]	0.29 (0.00) [0.00]

Note: table summarizes estimates for multiple outcomes (in columns) based on the complete dynamic and static specifications as per columns (Ic)-(V) of Table 5; continuous outcomes are transformed using a calibrated log transform; in panel (a) reports the NPV estimate; FE indicates a fixed-effects specification is used; LO is a lagged outcome model in which unit effects are replaced by lagged outcomes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing; rows (1)-(4) refer to alternative definitions of the treatment: (1) is any kind of PEP, (2) is a executive PEP only, (3) is a party political PEP only, and (4) includes executive and party PEPs separately in the same model.

Source: authors' estimates from merged panel data.

**Table A3: Summary regression estimates for various outcomes, aggregated family names, full sample**

		Owner		Companies		Information		Brokerage		Score	
		FE	LO	FE	LO	FE	LO	FE	LO	FE	LO
<i>(a) Dynamic model:</i>											
(1)	PEP	0.13 (0.00) [0.00]	0.04 (0.00) [0.00]	0.18 (0.00) [0.00]	0.08 (0.00) [0.00]	0.30 (0.00) [0.00]	0.19 (0.00) [0.00]	0.12 (0.00) [0.00]	0.15 (0.00) [0.00]	0.31 (0.00) [0.00]	0.18 (0.00) [0.00]
(2)	Exec	0.08 (0.00) [0.00]	0.04 (0.02) [0.03]	0.11 (0.00) [0.00]	0.07 (0.00) [0.01]	0.24 (0.00) [0.00]	0.16 (0.00) [0.00]	0.07 (0.13) [0.22]	0.09 (0.00) [0.00]	0.20 (0.00) [0.00]	0.14 (0.00) [0.00]
(3)	Party	0.14 (0.00) [0.00]	0.05 (0.00) [0.00]	0.19 (0.00) [0.00]	0.10 (0.00) [0.00]	0.31 (0.00) [0.00]	0.20 (0.00) [0.00]	0.15 (0.01) [0.01]	0.18 (0.00) [0.00]	0.33 (0.00) [0.00]	0.21 (0.00) [0.00]
(4)	Exec	0.03 (0.19) [0.28]	0.02 (0.26) [0.33]	0.03 (0.46) [0.53]	0.03 (0.18) [0.28]	0.10 (0.22) [0.30]	0.09 (0.01) [0.03]	-0.01 (0.82) [0.82]	0.02 (0.45) [0.53]	0.05 (0.46) [0.53]	0.06 (0.10) [0.19]
	Party	0.14 (0.00) [0.00]	0.04 (0.00) [0.00]	0.19 (0.00) [0.00]	0.09 (0.00) [0.00]	0.31 (0.00) [0.00]	0.18 (0.00) [0.00]	0.16 (0.02) [0.02]	0.17 (0.00) [0.00]	0.34 (0.00) [0.00]	0.20 (0.00) [0.00]
<i>(b) Static model:</i>											
(1)	PEP	0.07 (0.00) [0.00]	-0.00 (0.67) [0.67]	0.09 (0.00) [0.00]	0.04 (0.01) [0.01]	0.18 (0.00) [0.00]	0.14 (0.00) [0.00]	0.04 (0.11) [0.13]	0.11 (0.00) [0.00]	0.15 (0.00) [0.00]	0.10 (0.00) [0.00]
(2)	Exec	0.06 (0.00) [0.00]	0.02 (0.10) [0.11]	0.09 (0.00) [0.00]	0.04 (0.01) [0.01]	0.23 (0.00) [0.00]	0.12 (0.00) [0.00]	0.08 (0.04) [0.05]	0.07 (0.00) [0.00]	0.17 (0.00) [0.00]	0.10 (0.00) [0.00]
(3)	Party	0.08 (0.00) [0.00]	-0.00 (0.98) [0.98]	0.12 (0.00) [0.00]	0.05 (0.01) [0.01]	0.23 (0.00) [0.00]	0.17 (0.00) [0.00]	0.09 (0.05) [0.05]	0.14 (0.00) [0.00]	0.21 (0.00) [0.00]	0.13 (0.00) [0.00]
(4)	Exec	0.06 (0.00) [0.00]	0.02 (0.10) [0.11]	0.09 (0.00) [0.00]	0.03 (0.03) [0.04]	0.23 (0.00) [0.00]	0.09 (0.00) [0.00]	0.08 (0.05) [0.06]	0.03 (0.08) [0.08]	0.17 (0.00) [0.00]	0.07 (0.01) [0.01]
	Party	0.08 (0.00) [0.00]	-0.00 (0.71) [0.75]	0.12 (0.00) [0.00]	0.04 (0.02) [0.02]	0.22 (0.00) [0.00]	0.16 (0.00) [0.00]	0.09 (0.05) [0.06]	0.14 (0.00) [0.00]	0.20 (0.00) [0.00]	0.12 (0.00) [0.00]

Note: table summarizes estimates for multiple outcomes (in columns) based on the complete dynamic and static specifications as per columns (Ic)-(V) of Table 5; continuous outcomes are transformed using a calibrated log transform; in panel (a) reports the NPV estimate; FE indicates a fixed-effects specification is used; LO is a lagged outcome model in which unit effects are replaced by lagged outcomes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing; rows (1)-(4) refer to alternative definitions of the treatment: (1) is any kind of PEP, (2) is a executive PEP only, (3) is a party political PEP only, and (4) includes executive and party PEPs separately in the same model.

Source: authors' estimates from merged panel data.



**Table A4: Summary regression estimates for various outcomes, family network data, full sample**

		Owner		Companies		Information		Brokerage		Score	
		FE	LO	FE	LO	FE	LO	FE	LO	FE	LO
<i>(a) Dynamic model:</i>											
(1)	PEP	0.05 (0.03) [0.03]	0.05 (0.01) [0.01]	0.29 (0.00) [0.00]	0.35 (0.00) [0.00]	0.88 (0.00) [0.00]	0.32 (0.00) [0.00]	0.82 (0.00) [0.00]	0.79 (0.00) [0.00]	0.39 (0.00) [0.00]	0.38 (0.00) [0.00]
(2)	Exec	-0.08 (0.01) [0.02]	0.00 (0.92) [0.92]	0.21 (0.00) [0.00]	0.29 (0.00) [0.00]	0.62 (0.00) [0.00]	0.24 (0.11) [0.15]	0.96 (0.00) [0.00]	0.61 (0.00) [0.00]	0.25 (0.00) [0.00]	0.28 (0.00) [0.00]
(3)	Party	0.09 (0.00) [0.00]	0.07 (0.00) [0.00]	0.33 (0.00) [0.00]	0.34 (0.00) [0.00]	0.95 (0.00) [0.00]	0.42 (0.00) [0.00]	0.84 (0.00) [0.00]	0.81 (0.00) [0.00]	0.45 (0.00) [0.00]	0.40 (0.00) [0.00]
(4)	Exec	-0.13 (0.00) [0.00]	-0.03 (0.33) [0.39]	0.07 (0.25) [0.32]	0.17 (0.00) [0.01]	0.25 (0.24) [0.31]	0.11 (0.47) [0.49]	0.64 (0.00) [0.00]	0.36 (0.00) [0.01]	0.07 (0.38) [0.42]	0.15 (0.04) [0.06]
	Party	0.13 (0.00) [0.00]	0.08 (0.00) [0.00]	0.33 (0.00) [0.00]	0.31 (0.00) [0.00]	0.95 (0.00) [0.00]	0.40 (0.00) [0.00]	0.68 (0.00) [0.00]	0.73 (0.00) [0.00]	0.45 (0.00) [0.00]	0.37 (0.00) [0.00]
<i>(b) Static model:</i>											
(1)	PEP	0.03 (0.13) [0.13]	0.05 (0.00) [0.00]	0.12 (0.01) [0.01]	0.39 (0.00) [0.00]	0.44 (0.01) [0.01]	0.52 (0.00) [0.00]	0.30 (0.01) [0.01]	0.87 (0.00) [0.00]	0.18 (0.00) [0.00]	0.44 (0.00) [0.00]
(2)	Exec	-0.03 (0.28) [0.28]	0.04 (0.02) [0.04]	0.11 (0.08) [0.10]	0.36 (0.00) [0.00]	0.44 (0.03) [0.05]	0.50 (0.00) [0.00]	0.45 (0.00) [0.01]	0.75 (0.00) [0.00]	0.15 (0.05) [0.08]	0.39 (0.00) [0.00]
(3)	Party	0.07 (0.01) [0.01]	0.08 (0.00) [0.00]	0.16 (0.01) [0.01]	0.41 (0.00) [0.00]	0.44 (0.04) [0.05]	0.66 (0.00) [0.00]	0.35 (0.02) [0.02]	0.97 (0.00) [0.00]	0.23 (0.00) [0.00]	0.50 (0.00) [0.00]
(4)	Exec	-0.03 (0.24) [0.25]	0.03 (0.14) [0.16]	0.10 (0.10) [0.11]	0.28 (0.00) [0.00]	0.42 (0.04) [0.06]	0.38 (0.01) [0.01]	0.44 (0.01) [0.01]	0.56 (0.00) [0.00]	0.15 (0.07) [0.09]	0.30 (0.00) [0.00]
	Party	0.08 (0.01) [0.01]	0.07 (0.00) [0.00]	0.16 (0.01) [0.01]	0.36 (0.00) [0.00]	0.43 (0.05) [0.05]	0.59 (0.00) [0.00]	0.33 (0.02) [0.02]	0.87 (0.00) [0.00]	0.22 (0.00) [0.01]	0.45 (0.00) [0.00]

Note: table summarizes estimates for multiple outcomes (in columns) based on the complete dynamic and static specifications as per columns (Ic)-(V) of Table 5; continuous outcomes are transformed using a calibrated log transform; in panel (a) reports the NPV estimate; FE indicates a fixed-effects specification is used; LO is a lagged outcome model in which unit effects are replaced by lagged outcomes; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing; rows (1)-(4) refer to alternative definitions of the treatment: (1) is any kind of PEP, (2) is a executive PEP only, (3) is a party political PEP only, and (4) includes executive and party PEPs separately in the same model.  
Source: authors' estimates from merged panel data.

**Table A5: Robustness checks for outcome score, individual-level panel**

Restriction	(I) PEP sample				(II) Full sample			
	Static	Dynam.	Control	$N_i$	Static	Dynam.	Control	$N_i$
None	0.35 (0.00) [0.00]	0.44 (0.00) [0.00]	-1.90	812	0.43 (0.00) [0.00]	0.70 (0.00) [0.00]	-1.42	110,077
Alterations	0.30 (0.00) [0.00]	0.35 (0.00) [0.00]	-2.05	640	0.32 (0.00) [0.00]	0.75 (0.00) [0.00]	-1.72	71,575
Closures	0.35 (0.00) [0.00]	0.46 (0.00) [0.00]	-1.90	797	0.43 (0.00) [0.00]	0.73 (0.00) [0.00]	-1.43	108,767
Owners <1985	0.35 (0.00) [0.00]	0.45 (0.00) [0.00]	-1.92	805	0.43 (0.00) [0.00]	0.70 (0.00) [0.00]	-1.45	108,804
Owners <1995	0.28 (0.00) [0.00]	0.33 (0.00) [0.00]	-2.02	719	0.31 (0.00) [0.00]	0.62 (0.00) [0.00]	-1.53	102,480
PEPs <1985	0.33 (0.00) [0.00]	0.61 (0.00) [0.00]	-1.90	660	0.41 (0.00) [0.00]	1.01 (0.00) [0.00]	-1.42	109,908
PEPs <1995	0.31 (0.00) [0.00]	0.51 (0.01) [0.01]	-1.88	416	0.17 (0.04) [0.04]	0.12 (0.48) [0.48]	-1.42	109,664

Note: table reports estimates for our full model with the outcome score using both the individual-level PEPs and full sample (columns I and II); static and dynamic columns report coefficient results as per column (V) Table 5, where dynamic is the NPV estimate; 'control' is the control group mean;  $N_i$  is the number of unique individuals; rows describe sample restrictions (exclusions) applied; estimates in parentheses and brackets report the probability that the effect size is equal to zero, where the latter is adjusted for multiple hypothesis testing.

**Table A6: Robustness checks for outcome score, family-name panel**

Restriction	(I) PEP sample				(II) Full sample			
	Static	Dynam.	Control	$N_i$	Static	Dynam.	Control	$N_i$
None	0.17 (0.00) [0.00]	0.22 (0.00) [0.00]	-1.96	559	0.21 (0.00) [0.00]	0.32 (0.00) [0.00]	-1.50	27,144
Alterations	0.07 (0.02) [0.02]	0.09 (0.11) [0.11]	-2.11	207	0.08 (0.05) [0.05]	0.40 (0.00) [0.00]	-1.78	14,827
Closures	0.19 (0.00) [0.00]	0.26 (0.00) [0.00]	-1.99	459	0.25 (0.00) [0.00]	0.40 (0.00) [0.00]	-1.51	26,359
Owners <1985	0.18 (0.00) [0.00]	0.24 (0.00) [0.00]	-1.98	492	0.23 (0.00) [0.00]	0.35 (0.00) [0.00]	-1.52	26,590
Owners <1995	0.27 (0.00) [0.00]	0.43 (0.00) [0.00]	-2.10	300	0.31 (0.00) [0.00]	0.65 (0.00) [0.00]	-1.57	24,228
PEPs <1985	0.19 (0.00) [0.00]	0.54 (0.00) [0.00]	-1.96	436	0.25 (0.00) [0.00]	0.79 (0.00) [0.00]	-1.50	27,015
PEPs <1995	0.17 (0.00) [0.00]	0.37 (0.01) [0.02]	-1.94	265	0.14 (0.00) [0.00]	0.18 (0.10) [0.11]	-1.50	26,844

Note: table replicates Table A5 with data aggregated to the family name level.

**Table A7: Robustness checks for outcome score, family network panel**

Restriction	(I) PEP sample				(II) Full sample			
	Static	Dynam.	Control	$N_i$	Static	Dynam.	Control	$N_i$
None	0.21 (0.00) [0.00]	0.23 (0.00) [0.00]	-0.87	540	0.22 (0.00) [0.00]	0.40 (0.00) [0.00]	-1.31	27,108
Alterations	0.20 (0.01) [0.01]	0.31 (0.00) [0.00]	-1.73	206	0.21 (0.01) [0.01]	0.51 (0.00) [0.00]	-1.73	14,673
Closures	0.27 (0.00) [0.00]	0.31 (0.00) [0.00]	-0.98	450	0.27 (0.00) [0.00]	0.48 (0.00) [0.00]	-1.34	26,296
Owners <1985	0.25 (0.00) [0.00]	0.27 (0.00) [0.00]	-1.32	434	0.28 (0.00) [0.00]	0.47 (0.00) [0.00]	-1.40	26,016
Owners <1995	0.24 (0.00) [0.00]	0.31 (0.00) [0.00]	-1.84	294	0.27 (0.00) [0.00]	0.50 (0.00) [0.00]	-1.51	23,910
PEPs <1985	0.25 (0.00) [0.00]	0.49 (0.00) [0.00]	-0.88	417	0.31 (0.00) [0.00]	0.62 (0.00) [0.00]	-1.31	26,939
PEPs <1995	0.25 (0.00) [0.00]	0.27 (0.00) [0.00]	-0.83	302	0.16 (0.02) [0.02]	0.27 (0.00) [0.00]	-1.31	26,824

Note: table replicates Table A5 with family networks data.

## E 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 of outcome  $y$  indexed by units  $i$  and periods  $t$ :

$$y_{it} = \lambda\alpha_i + \theta y_{i,t-1} + \beta P_{it} + \varepsilon_{it} \quad (1)$$

where  $P$  is a treatment variable of interest (e.g., being a 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  $T > 0$ .

### E1 Fixed effects estimator

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

$$y_{it} = \lambda\alpha_i + \beta P_{it} + \varepsilon_{it} \quad (2)$$

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

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

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

### E2 Lagged outcome estimator

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

$$y_{it} = \theta y_{i,t-1} + \beta P_{it} + \varepsilon_{it} \quad (5)$$

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

$$P_{it} = \hat{\varphi} y_{i,t-1} + \tilde{P}_{it} \quad (6)$$

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

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

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

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

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

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

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

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

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

### E3 Implications

The following two cases set out the primary implications of this exercise, demonstrating the bounding properties of the two estimators – i.e.,  $\hat{\beta}_{LO} \geq \beta \geq \hat{\beta}_{FE}$  :

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

*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  $E(\alpha_i P_{it}) = 0$ , and  $E(\varepsilon_{i,t-1}P_{it}) > 0$ . For  $\theta < 1$ , this implies  $\hat{\beta}_{FE} < \beta = \hat{\beta}_{LO}$ .

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 (4) with coefficient  $\lambda\theta$ ; and the upward bias in the LO estimator would be offset by the adjustment factor in equation (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  $\hat{\beta}_{FE} > \hat{\beta}_{LO}$ ). Thus, the ordering of the two estimates provides an important indication of the properties of the data.

## F Case study evidence

The table below describes data extracted from the firm register regarding firms owned directly by the daughter of ex-Finance Minister Manuel Chang, Manuela Solange de Martins Chang, and her direct business partners. The column ‘Direct? Yes’ takes a value of one if the firm is directly owned (in whole or part) by Ms. Chang, all other firms are owned by her business partners (present or future); ‘Sectors’ is the count of different sectors falling within the stated scope of activities of the firm; and ‘Owners’ is the number of natural persons owning the firm.

**Table A1: Analysis of impacts for different counts of firm types, various samples**

Year	Name	Direct?		Sectors	Owners
		Yes	No		
1990	Sistemas e Dispositivos de proteção Limitada - PROTECTA	0	1	1	5
1996	Gej-Indústria-Química LGA	0	1	3	4
2007	Kutya Correctores, Limitada	0	1	2	4
2008	Tupann Med, Limitada	1	0	3	1
2008	Winner Services, Limitada	0	1	5	2
2010	Quality Electrónica, Limitada	1	0	3	3
2011	Empresa Kulhula, Limitada	1	0	3	3
2011	Win Car Rental, Limitada	0	1	2	3
2013	M.C. Imobiliária e Serviços, Limitada	1	0	3	2
2013	CARPIMaVEL - Carpintaria e Móveis, Limitada	0	1	7	4
2016	Meinvest, Limitada	1	0	10	2
2016	Mozcarp, Limitada	1	0	5	3
2016	HD Imobiliária, Limitada	0	1	3	2
2016	MD Investimentos, Limitada	0	1	5	2
2018	Investimentos AD, Limitada	0	1	3	2
2019	23 Investimentos, Limitada	0	1	4	4
2019	Moz Cola, Limitada	0	1	6	2

Note: see above description.

Source: authors' estimates from firm registry.

## G Additional notes on data cleaning

### G1 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 Python package *unidecode* ([pypi.org/project/Unidecode/](https://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](https://docs.python.org/3/library/difflib.html)) which uses the Levenshtein distance between strings. This approach improves the consistency of our sample significantly, 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.

**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%

### G2 Keywords by industry

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

**Table A2: 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
investment	social	metals	
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.