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The Oligarch Vanishes: Defensive Ownership, Property Rights, and Political Connections

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ABSTRACT

We examine the use of proxies, shell companies, and offshore firms to defend property against seizure by private and state actors. Our theoretical framework emphasizes the role of political connections in defensive ownership. Linking information from investigative journalists on the key holdings of numerous Ukrainian oligarchs with firm-level administrative data on formal ownership ties, we observe

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some form of defensive ownership among more than two-thirds of oligarch-controlled firms, but such conduct is much less common for those connected to the incumbent regime. Further exploiting the abrupt shock to political connections that accompanied the Orange Revolution, we find a sharp rise in defensive ownership among previously connected oligarchs.

Keywords: Defensive ownership; property rights; political connections; oligarchs; Ukraine

The protection of property from arbitrary and illegal seizure by private and state actors is widely understood as a necessary condition for investment and economic growth (e.g., Acemoglu and Johnson, 2005; North, 1981; Olson, 1993). In the traditional understanding, the state provides such protection as a public good (e.g., Bueno de Mesquita and Root, 2000; North *et al.*, 2009). Without overturning this view, recent work — much of it inspired by the experience of formerly socialist countries — has emphasized the proactive measures that asset owners can take to defend their property against raiding, arbitrary taxation, breach of contract, and outright nationalization. Such strategies include forming alliances with politicians (Markus and Charnysh, 2017; Shleifer, 1997) and stakeholders such as foreign governments and neighboring communities (Markus, 2015), seeking political office (Gehlbach *et al.*, 2010; Szakonyi, 2020), building financial relationships with foreign firms (Betz and Pond, 2019), forming tight links with other firms in the local economy (Johns and Wellhausen, 2016), accepting the protection of the mob and other "violent entepreneurs" (Frye and Zhuravskaya, 2000; Volkov, 2002), reducing accounting transparency (Durnev and Guriev, 2011), and doing "good works" to influence the perceived legitimacy of property rights (Frye, 2006, 2017).[1]

An implicit assumption of much of this literature is that property is held transparently or directly by the owners at risk of seizure. Often, however, asset holders engage in what we call "defensive ownership": the sheltering of property behind frontmen, related individuals, shell companies, and offshore firms. Such practices can raise the cost of seizure through various mechanisms — by creating an obscure legal target, by facilitating the transfer of profits and assets out of reach of state authorities or hostile raiders, and by exploiting the protection of foreign jurisdictions. As these mechanisms suggest, defensive ownership may be effective even if the ultimate owner is common knowledge and even if foreign ownership is merely a vehicle for "round trip" investment.

[1]Related work emphasizes that the public provision of property rights is meaningless if entrepreneurs do not take advantage of it. See, e.g., Hendley *et al.* (1997); Hendley *et al.* (2001); and Gans-Morse (2017).

Although defensive ownership can help to protect property from seizure, it comes at a cost. In addition to the direct expense of paying lawyers and bankers for their time and agreement not to disclose the arrangement, elaborate ownership networks can complicate restructuring and reduce access to finance, thus preventing the best use of assets. Owners who engage in such conduct may also subject themselves to legal and reputational risk, to the extent that such arrangements can be discovered.

Both the benefits and costs of defensive ownership may be larger for some owners than for others. In particular, owners connected to the incumbent regime through formal and informal ties may have less need to shelter assets, as they can rely on other means of protection. At the same time, the legal risk that accompanies defensive ownership may be less pronounced for connected owners, as they are insulated from investigation and prosecution. Connected owners may also be able to rely on politically directed credits, reducing the need for transparency.

We address these issues empirically with a study of the ownership patterns of Ukrainian "oligarchs" in the period just before and after the Orange Revolution of 2004 — an environment of generally weak protection of property rights and unexpected political turnover, as Viktor Yushchenko won the presidency over President Leonid Kuchma's designated successor, Viktor Yanukovych.[2] To do so, we link information from investigative journalists on the holdings of numerous Ukrainian oligarchs — a remarkable and unusual data source — with firm-level administrative data on formal ownership ties. Using the linked data, we identify the ownership chains of over 300 of the most important enterprises in Ukraine. We characterize these chains along various dimensions related to defensive ownership, including whether an oligarch is himself in the (observable) ownership chain; the distance to the oligarch, when present; and whether the chain includes a foreign or "offshore" firm. Our analysis finds some form of defensive ownership among more than two-thirds of oligarch-controlled firms. As we subsequently show, there is substantial variation across observable firm characteristics, suggesting that the benefits and costs of defensive ownership — which we do not observe directly — are related to those characteristics.

We are especially interested in comparing the ownership patterns of oligarchs who were more or less connected to the incumbent regime in 2004 ("Blue" and "Orange" oligarchs, respectively). Theoretically, as we discuss, such connections may either decrease or increase the incentive to protect holdings through defensive ownership. In principle, one could adjudicate between these two possibilities by regressing firm-level measures of defensive ownership on the political connections of the controlling oligarch. In practice, political connections are measured imperfectly and may be endogenous to the decision

[2]We follow Guriev and Rachinsky (2005, p. 132), who define an oligarch as a "businessman. . . who controls sufficient resources to influence national politics," though our focus on political connections acknowledges that some oligarchs have more influence than others.

to obscure the ultimate owner, create lengthy ownership chains, and establish holding companies in foreign jurisdictions.

We exploit two distinct features of our research setting to identify the causal effect of connections on defensive ownership. First, taking advantage of Ukraine's sharply defined economic and political geography in 2004, whereby both oligarch groups and political parties were concentrated in particular regions, we instrument the (measured) political connections of a controlling owner on the vote for Viktor Yushchenko (the winning presidential candidate) in the province where the firm is located, controlling for differences across provinces in sectoral composition and the distribution of other firm-level characteristics. Second, we use the time variation provided by the Orange Revolution to compare the change in defensive ownership among Blue and Orange firms from 2004 to 2006, on the assumption that establishing and breaking political connections have frictions, so that connections formed before the Orange Revolution could not be immediately or credibly changed in the period after. The panel analysis is our preferred empirical strategy, though it comes with some tradeoffs, as we discuss.

The empirical estimates from these exercises are consistent with our hypothesis that political connections are related to defensive ownership. We find a negative relationship: firms controlled by Orange oligarchs in early 2004 are substantially less likely to have an oligarch in the ownership chain and perhaps less likely to have an owner registered abroad. The former relationship especially is precisely estimated and robust to instrumenting political connections on vote for Yushchenko in the firm's province. Furthermore, we find that the sudden political turnover resulting from the Orange Revolution created a reversal in these patterns, as firms controlled by Blue oligarchs (who lost their connections) added foreign owners, including especially offshore-registered "investors."

It is important to emphasize that we do not have direct measures of property risk for the firms in our sample. Nonetheless, even in an ideal world in which such data had been collected for our sample around the Orange Revolution, we would not necessarily expect to find a relationship between defensive ownership and security of property rights. To the extent that political connections and defensive ownership are substitutes, the latter merely provides the security already afforded by the former.

Our paper is related to the burgeoning literature on firms' political connections, with origins in the seminal work of Fisman (2001) and Faccio (2006), among others. Within that literature, our contribution relates especially to research on oligarchs and other politically connected owners in postcommunist countries, including Earle and Gehlbach (2015), Treisman (2016), and Lamberova and Sonin (2018). Guriev and Rachinsky (2005) and Gorodnichenko and Grygorenko (2008) in particular assemble and analyze data on oligarch-owned firms in Russia and Ukraine, respectively. Our data are different in

various respects, including in that we identify ownership chains both before and after a major political shock. More fundamentally, the questions we ask of the data are different: rather than examine the relative productivity of oligarch-owned firms, we highlight a strategy — defensive ownership — that has received little previous attention, with an emphasis on the role of political connections in this behavior.

Our work also has connections to a vast literature on the political economy of foreign direct investment (for reviews, see Jensen *et al.*, 2012 and Pandya, 2016) and its inverse, capital flight (e.g., Alesina and Tabellini, 1989; Frieden, 1991; Lensink *et al.*, 2000), including in the post-Soviet region (Tikhomirov, 1997). Within this literature, a few scholars have explored the role of foreign investment in protecting the property rights of domestic firms. Markus (2015), for example, highlights the role of foreign owners as "backdoor lobbyists" for their domestic partners, Betz and Pond (2019) demonstrate that domestic firms seek foreign investment to take advantage of the protections provided by international investment agreements, and Chernykh (2011) shows that foreign-owned firms in Russia are not targeted for nationalization. We depart from the implicit assumption in this work that foreign investors are genuine; in our setting, they may instead be shell companies controlled by a domestic oligarch. We examine the role of such arrangements in defending assets against seizure by local actors.

Finally, our paper is related to the growing literature on how wealthy individuals and corporations hide their assets through offshores and opaque ownership chains. Journalists have mined such sources as the Panama and Paradise Papers for anecdotes on these practices (e.g., Obermayer and Obermaier, 2016). Scholars, in turn, have explored such topics as the willingness of corporate service providers to set up anonymous shell companies (Findley *et al.*, 2014); the role of banks in facilitating offshore transactions (Chernykh and Mityakov, 2017); the relationship between petroleum rents and hidden wealth (Andersen *et al.*, 2017); and the implications of offshore assets for inequality, as in Zucman (2015) and (for Russia) Novokmet *et al.* (2018). Although tax avoidance and evasion are frequently examined as motives for such behavior (e.g., Zucman, 2014), the existing literature largely ignores the role of *arbitrary* taxation, whereby the tax burden for individual taxpayers is under the discretion of state officials. When taxes are arbitrary, as in countries such as Ukraine, the incentive to pursue defensive ownership strategies may depend on a taxpayer's political connections — a possibility that we explore.

Motivation and Theoretical Framework

In 2004, ten years before he was elected to the presidency, Ukrainian oligarch Petro Poroshenko was known as the "chocolate king" of Ukraine. Poroshenko

controlled numerous assets in the confectionery sector, in addition to holdings in automobile manufacturing, media, and other industries. Collectively, these assets were described as belonging to the business group UkrPromInvest, but this colloquial understanding obscured a wide range of complicated ownership arrangements, as we will show, with control often exercised through offshore entities.

Perhaps not coincidentally, Poroshenko was aligned in 2004 with the "Orange" forces led by opposition politician Yulia Tymoshenko and presidential candidate Viktor Yushchenko. To general surprise, and after days of street protests against allegations of electoral fraud, Yushchenko won the presidency. With his political connections strengthened by this outcome, Poroshenko could have chosen to adjust the manner in which he held his assets — either in a more or even less transparent direction. In fact, as we document in this paper, there was little change in Poroshenko's use of foreign entities between 2004 and 2006.

Contrast Poroshenko with Donetsk industrialist Rinat Akhmetov, who is Ukraine's richest person. Prior to the Orange Revolution, Akhmetov's System Capital Management (SCM) was established to be comparatively transparent, with relatively short ownership chains that typically led to Akhmetov himself. In a postcommunist environment of generally abysmal corporate governance, SCM stood out for its "Western" structure.

The quintessential "Blue" oligarch, Akhmetov was the chief sponsor of former Donetsk governor and current prime minister Viktor Yanukovych during the 2004 presidential campaign. Yanukovych was the presumed successor to President Leonid Kuchma. Following Yanukovych's defeat in the Orange Revolution, Akhmetov was perceived to be at particular risk. Prosecutors initiated a criminal investigation into Akhmetov's possible connections with organized crime (Katchanovski, 2008), and incoming Prime Minister Tymoshenko launched a noisy campaign in favor of "reprivatization" — that is, the nationalization and subsequent privatization of previously privatized enterprises (Åslund, 2005). (The threat was credible: One of Akhmetov's key holdings — the Kryvorizhstal steel producer, which he co-owned with former President Kuchma's son-in-law Viktor Pinchuk — was reprivatized to Mittal Steel in 2005.) In apparent response to these developments, "[s]ome of the group's assets were resold through offshore companies, which sought to complicate the establishment of a real owner in case the government made a decision to re-privatize" (Paskhaver *et al.*, 2006, p. 41).

For oligarchs such as Poroshenko and Akhmetov, defensive ownership has both benefits and costs.[3] On the one hand, indirect ownership helps to protect the oligarch against a range of threats. By creating an obscure legal target,

[3]In the online appendix (page A1), we provide a formal theoretical framework with which to examine statements in this and the following paragraphs.

defensive ownership raises the cost of hostile takeovers in collaboration with corrupt state officials (what in Ukraine and neighboring countries is known as *raiderstvo*) or even outright nationalization. In the language of contract theory, even if the ultimate owner of a firm is "observable," the absence of "verifiability" may complicate legal assault. Complex ownership chains and offshore holding companies can also facilitate the transfer of profits and assets out of reach of tax authorities or those who would seize a firm. Finally, foreign owners — even if only conduits for "round trip" investment — can provide access to foreign courts (Sharafutdinova and Dawisha, 2017) and the protection of bilateral investment treaties and treaties with investment provisions (Betz and Pond, 2019; Ginsburg, 2005), though possibly at the risk of exposing prior corruption (Kalyanpur, 2020).

As the example of Rinat Akhmetov suggests, all of these benefits are potentially greater for owners without strong political connections. Akhmetov arguably had little need of elaborate ownership arrangements so long as he had the protection of those in power. The "complication" of Akhmetov's ownership chains came after his candidate lost in the 2004 presidential election.

In principle, however, one could imagine the opposite relationship, as connections reduce the legal exposure and opportunity costs associated with defensive ownership, in which case "Orange" rather than "Blue" oligarchs might have increased defensive ownership after 2004.[4] There are various costs to establishing complicated ownership chains and offshore holdings: direct payments to lawyers and bankers for their time and, perhaps more importantly, discretion; the legal and reputational risk that the details of nontransparent and potentially illegal arrangements will be discovered, even if generally suspected by prosecutors and the general public; and the opportunity costs of reduced access to outside finance and foregone restructuring, to the extent that lenders and investors are as put off by opaque ownership as they are by nontransparent accounting (Diamond and Verrecchia, 1991; Francis *et al.*, 2005; Leuz and Verrecchia, 2000).[5] (Former Ukrainian Economy Minister Tymofiy Mylovanov recently noted that some oligarchs' businesses are "not auditable. . . you can never imagine that they will be able to sell their business to anyone."[6] Although

[4]Indeed, as documented by the Panama Papers, Poroshenko moved quickly after assuming the presidency in 2014 to establish a new offshore holding company for his Roshen Confectionery Corporation. The shocking, if not necessarily surprising, revelation of this arrangement weakened Poroshenko's government at a critical moment: see https://www.reuters.com/article/us-panama-tax-ukraine-idUSKCN0X1158.

[5]Shleifer and Vishny (1993) similarly argue that the secrecy associated with corruption induces various economic distortions. In principle, outside finance could be *more* available, to the extent that oligarchs shelter their ownership in major financial centers. As we demonstrate below, however, the major change in defensive ownership after the Orange Revolution was an increase in the number of Blue firms with owners registered in offshore jurisdictions specializing in secrecy, not finance.

[6]In conversation with Francis Fukuyama, at an event organized by the Center for Governance and Markets at the University of Pittsburgh. YouTubevideo(_mwTmZhCM7A).

general, his statement readily applies to our context, in that identifying current owners is a key part of due diligence in any sale.) At least some of these costs are likely smaller for connected owners, who, for example, may have protection from prosecution for tax evasion and access to politically directed credits (e.g., Haber *et al.*, 2008; Menaldo, 2016).[7]

Ultimately, the relationship between defensive ownership and political connections is an empirical question, though the discussion here suggests interpretations of each possible result. If, as the example of Rinat Akhmetov suggests, better connected oligarchs shelter less — implying a relationship of substitutes — then our theoretical framework implies that the impact of connections on the risk of seizure is large relative to the effect of connections on the cost of defensive ownership. When oligarchs with better connections shelter more, the converse is true, and defensive ownership and political connections are complements in protecting property. In the following sections, we describe the data and empirical strategy we use to estimate this relationship.

Our theoretical framework (further developed in the online appendix) clarifies the "scope" conditions under which we would expect to see *any* relationship between defensive ownership and political connections. An important condition is that the security of property be responsive to defensive ownership. Moreover, either the security of property or the cost of defensive ownership should depend on an oligarch's political connections. Both conditions are plausibly met in our research setting: Ukraine around the time of the Orange Revolution in 2004.

Identifying and Characterizing Ownership Chains

We seek to identify the ownership chains of key enterprises in Ukraine circa early 2004, prior to the Orange Revolution that transferred power from political forces loyal to the outgoing president, Leonid Kuchma, to Viktor Yushchenko, the ultimate winner in December of the 2004 presidential election. To do so, we begin with lists of oligarch-controlled firms compiled by two Ukrainian news organizations, Delo and *Ukraïns'ka Pravda*, in 2003 and 2004.[8] Although there is some possibility of misattribution of beneficial ownership by these organizations, most cases are uncontroversial, and these lists likely represent the "best guess" of the business and journalistic community. For the vast majority of firms in the lists, the two sources agree about the attribution of

[7] In related work, Chaney *et al.* (2011) find that earnings transparency is associated with the cost of capital only for firms that are not politically connected.

[8] "TOP-100. Reitingi luchshikh kompanii Ukrainy [Top 100: Ratings of the Best Ukrainian Companies]," special edition of *Invest Gazeta*, June 24, 2003 and July 26, 2004. "Khto i chym volodiie v Ukraïni [Who Owns What in Ukraine]," *Ukraïns'ka Pravda*, July 17, 2003.

firms to particular oligarchs or oligarch groups.[9] Moreover, Delo continued to provide such lists in later years, and there are few cases where the controlling oligarch is listed as changing from 2004, implying both that the journalists saw no need to change their judgments and that ownership changes were rare.

For 442 firms mentioned in these two reports, we have been able to establish unique identification codes issued by the Ukrainian statistical agency Derzhkomstat. We use these codes, together with data on official ownership that we describe below, to trace ownership back to oligarchs, other individuals, and domestic, offshore, and other foreign legal entities. Table 1 summarizes the source of information for firms in our overall sample and various subsamples as described below.

Having established a list of oligarch-controlled firms circa 2004, we identify ownership chains using data from two public databases: the Single Registry (henceforth, SReg), from Derzhkomstat, and the Joint-Stock Company Registry (henceforth JSCReg), from the Stock Market Infrastructure Development Agency, or SMIDA. In principle, SReg logs all ownership transactions of registered firms in Ukraine, whereas JSCReg provides information on ownership stakes of at least 10 percent for joint-stock companies (only). In practice, the quality of information in JSCReg is generally higher than that in SReg, which includes many obvious errors and omissions and with which it is typically difficult to establish the full set of a firm's owners at any given point in time (and thus changes in the set of owners over time). That said, not all firms in our sample — and not all of their corporate owners — are joint-stock companies. Moreover, if an individual has an ownership stake (of at least 10 percent) in a joint-stock company, JSCReg only records that fact — it does not provide the individual's identity.

Based on these considerations, we use JSCReg as our primary source of information but turn to SReg in two cases: (1) for Ukrainian firms not listed in JSCReg, and (2) for individual owners indicated but not identified in JSCReg.

Table 1: Sample composition.

	Delo	*Ukraïns'ka Pravda*	Total	Number of oligarch groups
Original list	291	351	442	34
Present in JSCReg or SReg	264	295	376	29
+ sector and controls	239	251	329	26
+ at least 1 identified owner	215	229	299	26

[9]For 21 firms, there are discrepancies between the two news organizations. We manually checked each of these using other news reports and official registries, based upon which we assigned group control using our best judgment.

Using the search algorithm described in detail in the online appendix (page A2), we trace the 442 oligarch-controlled firms in our sample back to their ultimate (official) owners — either foreign firms, at which point the trail goes cold, or individuals. (At each step of the process, we eliminate owners such as state agencies and charities that could generate spurious ownership links.) In this manner, we reconstruct the ownership chains of Delo/*Ukraïns'ka Pravda* firms at two main points in time: in April 2004, eight months prior to the Orange Revolution, and in November 2006, two years after.[10] We also perform an additional search in 2002 for use in the "placebo" tests described below.

Not all oligarchs on the Delo or *Ukraïns'ka Pravda* list are identified through these ownership links. For example, neither of the two main members of the Energo group, Viktor Nusenkis and Gennady Vasiliev, turn up in the search. Similarly, we observe only two of the seven members of Kyiv-Seven group — Ihor and Hryhory Surkis — in the ownership chain of any firm. Figure 1 illustrates the ownership networks in 2004 of the two prominent business groups described above: UkrPromInvest (Petro Poroshenko) and System Capital Management (Rinat Akhmetov). Foreign entities are relatively more common, and the oligarch himself much less so, in the ownership chains of firms in the former network.

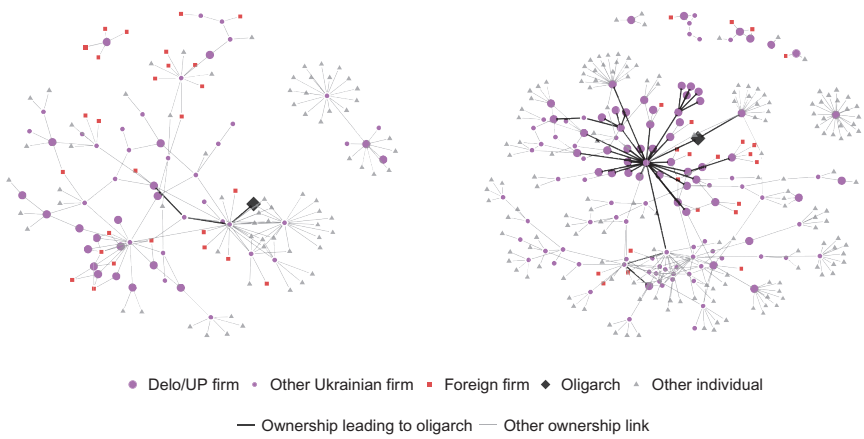

Figure 1: Representative ownership networks.

Note: Ownership networks in 2004 for UkrPromInvest (Petro Poroshenko) and System Capital Management (Rinat Akhmetov), respectively.

[10]There are at most a few record dates available for JSCReg in any given year. April 2004 is the last record date before the onset of the 2004 presidential campaign, whereas November 2006 is approximately two years after the 2004 presidential election.

As indicated in Table 1, we are unable to find a corresponding record in either JSCReg or SReg for approximately 15 percent of the firms in the Delo/*Ukraïns'ka Pravda* sample. This missingness is systematic: lower for Blue firms (approximately 10 percent) than for Orange and Gray firms (approximately 19 percent for each), as defined below. System Capital Management and UkrPromInvest are again illustrative cases: we are able to identify registry records for 57 of 62 firms in the former, "Blue" group, but only 22 out of 32 firms in the latter, "Orange" group. To the extent that missing registry data reflects "extreme" attempts to obscure ownership — an assumption that we cannot test directly — this pattern is broadly consistent with our theoretical framework, which in this case would imply that political connections and defensive ownership are substitutes rather than complements.

For each firm in the Delo/*Ukraïns'ka Pravda* sample, we characterize the ownership chain by variables representing the degree of defensive ownership. We consider several alternative measures. The first, most obvious, indication of defensive ownership is the absence of the controlling oligarch himself (all are men) in the ownership chain (*No oligarch in chain*).[11] (When there is more than one oligarch in the controlling group, this variable takes a value of one if we observe *none* of the members of the group.) We code the oligarch as absent if our algorithm identifies no direct owners meeting the various criteria described above, but report robustness to instead dropping such firms from the sample, implying a sample of 299 rather than 329 firms. A second, related measure is the length of the shortest path to an oligarch, which captures the idea that longer chains serve to obscure ownership. For the regressions reported below, we define *Distance from oligarch* as $1 - \frac{1}{S}$, where S is the smallest number of steps in the chain to an oligarch; when no oligarch is present, we let S go to infinity, so that distance takes a value of one. (The corresponding variable S is unbounded.) As defined, higher values imply more defensive ownership, as with the variable oligarch in chain.

A third measure of defensive ownership is whether a foreign corporate entity appears in the ownership chain (*Foreign in chain*), as foreign conduits for control are frequently motivated by the desire to protect assets from seizure. A fourth, related variable (*Offshore in chain*) focuses only on corporate owners located in an "offshore" jurisdiction (for the majority of firms with such an owner, Cyprus or the British Virgin Islands, but other locations are also common; see Table A1 in the online appendix), as defined by Ukrainian law.[12]

[11] For 12 firms in the regression sample, we observe an oligarch in the ownership chain but not the controlling oligarch identified by Delo or *Ukraïns'ka Pravda*. We conservatively assume that such oligarchs are indeed not controlling owners. Below we report robustness to relaxing this assumption.

[12] The relevant decree (N106-p) was approved on March 11, 2000. We classify an owner as offshore if it is registered in a country or territory that has ever appeared on the list associated with this decree.

The latter variable, which is more likely to represent "round trip" investment by the controlling oligarch, is thus nested in the former. As we cannot infer anything about presence of foreign or offshore entities in the ownership chain when there are no identifiable owners, we drop firms with missing ownership data when examining these outcomes, implying a somewhat smaller regression sample (299 vs. 329 firms) for these two measures of defensive ownership.

Table 2 summarizes the incidence of these forms of defensive ownership for firms in the regression sample we define below; Table A2 in the online appendix provides detailed information by oligarch. There is substantial apparent defensive ownership among the firms in our regression sample: out of 329 firms, for only 96 We are able to trace the ownership chain back to the controlling oligarch, implying that 71 percent of firms obscure oligarch ownership in this way. Even among those firms with a visible oligarch in the ownership chain, few own directly — only 4 percent of the sample — with the others controlling the firm at least to some extent through intermediaries. Moreover, 63 percent of the firms in the sample with formal ownership data have among their "ultimate owners" at least one foreign entity. Of these, two-thirds (126 firms) have owners from "offshore" countries, likely reflecting stronger efforts to shelter assets.[13]

Table 2: Measures of defensive ownership, 2004.

	Share	Number
No oligarch in chain	0.708	233
Oligarch in chain	0.292	96
Oligarch in chain, 1 step	0.040	13
Oligarch in chain, $\leq$2 steps	0.173	57
Oligarch in chain, $\leq$3 steps	0.274	90
Oligarch in chain, $\leq$4 steps	0.289	95
Foreign in chain	0.629	188
Offshore in chain	0.421	126

Note: Shares based on regression sample of 329 firms (oligarch in chain) and 299 firms (foreign/offshore), respectively. Distance to oligarch (defined in text): mean 0.855, standard deviation 0.254.

[13]Absence of an oligarch from the ownership chain does not merely reflect presence of a foreign entity. Of the 203 firms with identifiable owners but no oligarch in chain, 64 do not have a foreign owner, while an oligarch is present in the ownership chain of 49 of the 188 firms with a foreign owner.

Political Connections and Other Data

Our primary interest is the degree to which ownership chains reflect more or less defensive ownership, depending on the political connections of the controlling oligarch. Here we describe these connections and other variables used in our analysis.

Political connections are relatively clearly delineated in Ukraine during the period just before the Orange Revolution of 2004. On one side (*Orange*, following the symbology of the Orange Revolution) are the oligarchs who supported Viktor Yushchenko in the presidential election; on the other, those who supported Viktor Yanukovych (leader of the Party of Regions, whose color was *Blue*), outgoing President Leonid Kuchma's preferred successor. We designate oligarchs not clearly aligned with either candidate as *Gray*. To assign "color" codes to the oligarch groups represented in the Delo/*Ukraïns'ka Pravda* sample, we utilize information from a variety of sources: an expert survey administered at a conference of Ukraine specialists; an interview with Serhiy Leshchenko, Ukraine's premier investigative journalist and from 2014 to 2019 a member of parliament;[14] further interviews with various policymakers and specialists in Kyiv; the *Ukraïns'ka Pravda* report discussed above; a review of numerous other news reports; and our own expert knowledge. Although some sources were silent on particular oligarchs, there was little outright disagreement. The resulting classification of oligarchs according to their political connections before the Orange Revolution is as follows:

- *Orange*: Aval, Brinkford (David Zhvania), Finansy i Kredyt (Kostyantyn Zhevago), Orlan, Pryvat (Ihor Kolomoyskyy), Oleksandr Tretiakov, UkrPromInvest (Petro Poroshenko).
- *Blue*: Andriy Derkach, Energo (Victor Nusenkis), Anatoliy and Igor Franchuk, Interpipe (Viktor Pinchuk), Vasyl Khmelnytskyi, Andriy and Serhiy Kliuev, Kyiv Seven, "Old Donetsk," Radon, System Capital Management (Rinat Akhmetov), Dmytro Tabachnyk, TAS (Serhiy Tihipko), Ukrinterproduct (Oleksandr Leshchinskyi).
- *Gray*: Basis, Oleksandr Feldman, Intercontact, ISD (Serhiy Taruta), UkrSotsBank (Valeriy Khoroshkovskyi), UkrSybBank (Oleksandr Yaroslavsky).

It is notable that only two firms in our sample are co-owned by oligarch groups of different "color", implying that the color groups are distinct not only politically, but also in terms of ownership; we code these two firms as Gray.[15]

[14] Serhiy Leshchenko is known abroad for having publicized the "black ledger of the Party of Regions" that, inter alia, implicated Paul Manafort in criminal activity.

[15] Joint control by multiple owners is uncommon in Ukraine, as in most developing countries (La Porta *et al.*, 1999), so typically there is a single controlling owner of each firm.

Table 3: Political connections and control variables.

Panel A: Indicators		
	Share	Number
Blue	0.502	165
Orange	0.295	97
Gray	0.204	67
Privatized	0.620	204
Panel B: Continuous variables		
	Mean	SD
Employment	2180	5350
TFP	0.36	1.41
Vote for Yushchenko	0.43	0.33

Note: Shares and summary statistics based on regression sample of 329 firms.

Table 3 shows that firms controlled by Blue oligarchs account for 50 percent of the sample, whereas those controlled by Orange and Gray oligarchs constitute 30 and 20 percent, respectively.[16]

In estimating the effect of political connections on the behavior of oligarch-controlled firms, we condition on observable firm-level characteristics. In principle, the benefits of defensive ownership may be increasing in the value of the assets, as measured by the size (*Log employment*) and *Total factor productivity* (TFP) of the firm. Conversely, assaults on large firms may imply substantial spillovers to other domestic enterprises, raising the cost of seizure even in the absence of defensive ownership (Johns and Wellhausen, 2016). At the same time, size may be related to the cost of defensive ownership, as intermediaries extract larger compensation to obscure the beneficial ownership of a firm.

We draw firm-level data from Derzhkomstat, which supplies annual enterprise performance data, balance sheets, and financial results for firms in all sectors. Employment, output (annual net sales after indirect taxes), and material cost come from the enterprise performance statement. For firm-year observations missing output data in the enterprise performance statement, we use net sales after indirect taxes from the financial results statement. Capital stock comes from the balance sheet and is constructed as the mean of the

[16]The preponderance of Blue firms may reflect the expectation that the incumbent regime (Kuchma/Yanukovych) would remain in power, with enough oligarchs aligning with the opposition to equalize expected rents. Below we discuss various empirical strategies to account for the possible endogeneity of political connections.

start-of-year and end-of-year values of tangible assets. We deflate output, capital, and material cost with a GDP deflator. All variables are measured as of 2004 unless missing, in which case we use the last available nonmissing value (but not before 2002).

Employment is measured as the average number of employees in a given year. Total factor productivity is estimated with the following equation on the sample of all firms in the economic data (i.e., not only the oligarch-controlled firms in our sample) from 2002 to 2006:

$$Y_{ijt} = f_j\left(K_{ijt}, L_{ijt}, M_{ijt}\right) + \psi_{jt} + u_{ijt}, \tag{1}$$

where i indexes firms, j indexes 10 sectors,[17] and t indexes years. The variables Y, K, L, and M denote sales, capital, employment, and material cost, respectively, while ψ_{jt} represents sector-year fixed effects. We assume an unrestricted Cobb–Douglass production function f_j, in which we allow all coefficients to vary by sector. TFP in 2004 is measured as the 2004 residual from this equation.

Table 3 provides summary statistics for these variables. The average number of employees is 2180, implying that the oligarch-controlled firms in our data are very large, accounting for 10.2 percent of private-sector employment in 2004. Oligarch-controlled firms are especially concentrated in manufacturing (48 percent), wholesale and retail (13 percent), and mining and quarrying (7 percent).

Finally, a special feature of transition economies is that vulnerability to expropriation may be related to the manner in which assets were acquired (Denisova *et al.*, 2009; Frye, 2006, 2017). In the Ukrainian context in particular, asset acquisition through a nontransparent privatization process might expose the new owners to charges of corruption or favoritism, which could be used as a rationale by state actors or rival oligarchs to justify raids. Alternatively, acquisition through privatization may be more transparent than setting up shell companies and transferring assets to *de novo* firms, so that privatized firms involve less defensive ownership than others. Although there is little information available on the details of the privatization process at the firm level, our data permit us to distinguish privatized from *de novo* firms. (There are no fully state-owned firms in our sample.) Following Brown *et al.* (2018), we use data on state ownership from the State Property Fund Registry (SPFR) and property form codes from the performance statement, classifying firms as *Privatized* if they were ever state-owned according to either of these sources.

[17] Agriculture, forestry, and fishing; mining and quarrying; manufacturing; construction and utilities; wholesale and retail; accommodation and food service; transport and communication; financial and insurance services; real estate; and education, health, and sport.

Empirical Strategy

Our baseline estimating equation is

$$\begin{aligned} O_i &= \beta_1 ORANGE_i + \beta_2 GRAY_i + \beta_3 SIZE_i + \beta_4 TFP_i \\ &\quad + \beta_5 PRIVATIZED_i + SECTOR_i\boldsymbol{\gamma} + u_i, \end{aligned} \tag{2}$$

where i indexes firms. The variable O_i is a firm-level measure of defensive ownership: no oligarch in chain, distance to oligarch, foreign in chain, or offshore in chain. The effects of $ORANGE_i$ and $GRAY_i$ are estimated relative to the excluded category $BLUE_i$. The variable $SIZE_i$ is measured as the log of employment, and TFP_i and $PRIVATIZED_i$ are defined as above, all measured in 2004. We include a full set of sector fixed effects (which absorb the constant), as previously defined, capturing any differences across sectors related to the cost of seizing or protecting assets, including the nature of capital in the industry.[18]

Estimation of Equation (2) is complicated by two related issues. First, notwithstanding our substantial investment in understanding Ukraine's political economy, political connections may be measured with error. Recall is faulty, and some oligarchs may "mix" across political parties, which our classification would not fully capture. Second, as alternative means of protecting property, defensive ownership and political connections are jointly determined, such that the latter may be endogenous to the former.

We follow two strategies to address these concerns. First, we estimate Equation (2) by two-stage least squares, instrumenting $ORANGE_i$ on the province-level *Vote for Yushchenko* in the "do-over" second round of the 2004 presidential election. As in Earle and Gehlbach (2015) and Korovkin and Makarin (2018), this instrumental-variables strategy exploits the stark political-economic geography of Ukraine in 2004, whereby business groups and political parties were concentrated in particular regions (Hale, 2005; Lankina and Libman, 2019). The origins of this divide lay in Soviet-era administrative-industrial clans, which following privatization and the incorporation of new oligarchs provided the financial resources for embryonic political parties (Kudelia and Kuzio, 2015; Puglisi, 2003). Figures 2 and 3 illustrate this variation. Blue firms are overwhelmingly located in the east of the country, where Yanukovych won enormous majorities in the 2004 presidential election. Orange and Gray firms, in contrast, are more uniformly distributed across provinces.

The relationship between an instrumental variable and the potentially endogenous variable need not be causal, of course, for the instrument to be valid, though it is worth emphasizing that even if oligarchs encourage their employees

[18] Our sample of oligarch-controlled firms is large enough to examine within-sector variation in defensive ownership but not heterogeneous effects of political connections by sector.

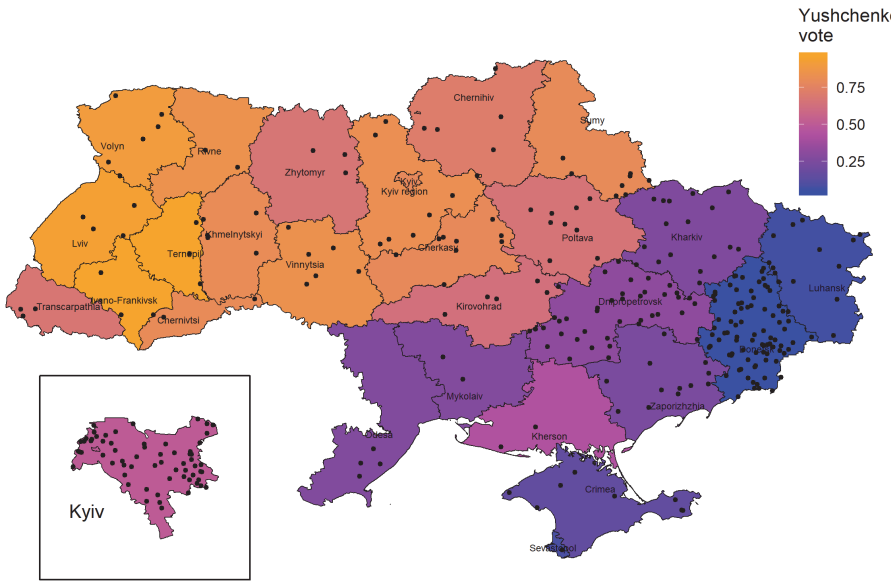

Figure 2: Vote for Yushchenko in 2004.

Note: Vote for Yushchenko in the "do-over" second round of the 2004 presidential election. Each point represents an oligarch-controlled firm. Points are jittered within provinces for legibility

to vote for one candidate or the other (as in Russia; see, e.g., Frye *et al.*, 2014), roughly 90 percent of Ukrainian employment lies outside of our sample. What is necessary for identification is that vote for Yushchenko be correlated with defensive ownership only through the political connections of a firm's owner, whatever the "direction" of the correlation between vote for Yushchenko and political connections.[19] In principle, this exclusion restriction would be violated if firms in provinces supported by Yushchenko were systematically more or less likely to shelter assets because of the nature of their business activities. (Western and central Ukraine are much less heavily populated by heavy industry than the east of the country.) We control for such tendencies through the inclusion of sector fixed effects in all regressions. A separate concern is that provinces that supported Yushchenko might have different local political economies than those that supported Yanukovych, which could induce differences in defensive ownership independent of the political connections of local enterprises. Although we are aware of no data that would allow us to

[19]Below we report robustness to instrumenting instead on share of the population speaking Russian as a native language, which is highly correlated with voting in the 2004 presidential election.

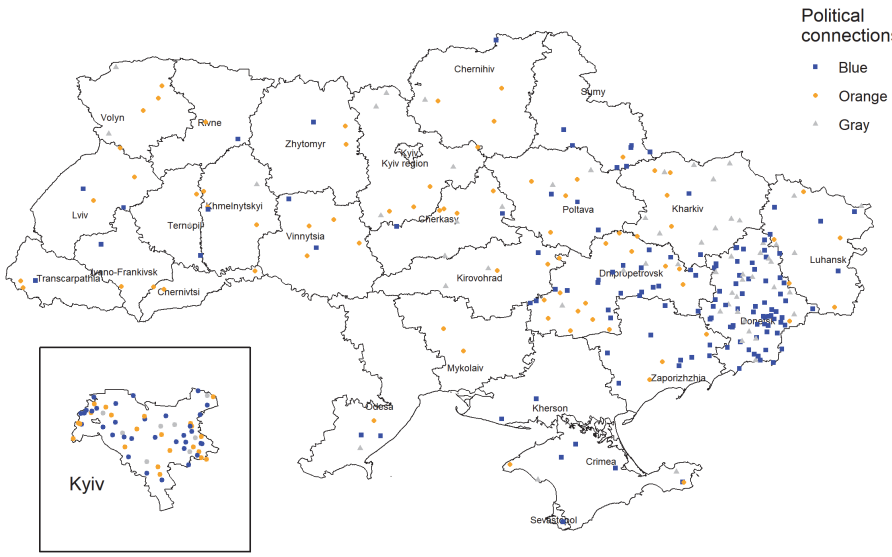

Figure 3: Political connections of oligarch-controlled firms.
Note: Points are jittered within provinces for legibility.

test this proposition directly,[20] in practice any inherent regional differences in business environment are likely muted by an important institutional feature: provincial governors — the most important local political actor in any region — are not elected but instead selected directly by the president.

One word of caution: If the exclusion restriction holds, the effect of $ORANGE_i$ (relative to $BLUE_i$) but not $GRAY_i$ is identified in this instrumental-variables specification. Indeed, as Figure 4 illustrates, vote for Yushchenko is essentially uncorrelated with $GRAY_i$, after conditioning on covariates and sector fixed effects, whereas it is strongly (but not perfectly) correlated with $ORANGE_i$. Ukraine's political–economic geography is structured around a divide that in 2004 expressed itself as a contest between Orange and Blue actors, not those unaffiliated with either camp.

Second, we exploit the shock to political connections produced by the Orange Revolution. This is our preferred specification, though as we discuss below it comes with some limitations. Yushchenko's ultimate victory in the 2004 presidential election was unanticipated, giving oligarchs little time to adjust to the new political environment. We assume that frictions in changing connections from one side to another mean that the connections formed prior

[20]The widely employed Business Environment and Enterprise Performance Survey (BEEPS) does not include region identifiers for waves before 2004.

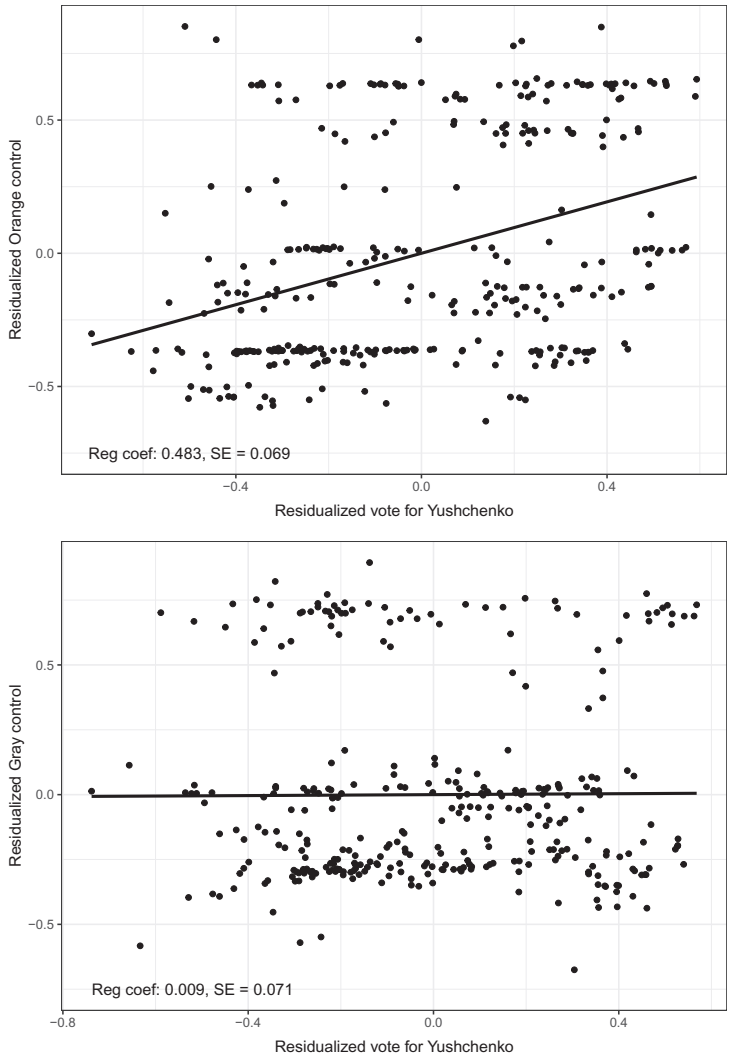

Figure 4: Relationship between vote for Yushchenko and political connections.

Note: Partial residual plots illustrating the relationship between province-level vote for Yushchenko and control by Orange (top panel) and Gray (bottom panel) oligarchs, respectively.

to the Orange Revolution are costly to alter and therefore persist for some time after 2004. In the slightly jumbled formulation of one business leader interviewed in 2010 as part of a related project, it is "difficult to move from one cart to another... Ukrainians are zero-sum players. They remember who

helped you in the past." Another business leader emphasized that owners do adjust to changes in political leadership, but that it takes time.

Consider, then, the following equation to be estimated on a two-period panel:

$$\begin{aligned} O_{it} &= \beta_1 ORANGE_i + \beta_{11} ORANGE_i \cdot t + \beta_2 GRAY_i + \beta_{21} GRAY_i \cdot t \\ &\quad + \beta_3 SIZE_i + \beta_{31} SIZE_i \cdot t + \beta_4 TFP_i + \beta_{41} TFP_i \cdot t \\ &\quad + \beta_5 PRIVATIZED_i + \beta_{51} PRIVATIZED_i \cdot t \\ &\quad + SECTOR_i \boldsymbol{\gamma} + SECTOR_i \boldsymbol{\gamma}_1 \cdot t + \alpha_i + u_{it}, \end{aligned}$$

where $t \in \{0, 1\}$ indexes periods and all variables are measured at $t = 0$. In the regression results we report below, $t = 0$ corresponds to 2004 and $t = 1$ to 2006; essentially, we have stacked two separate equations for 2004 and 2006 into a single regression. The fixed effect α_i captures time-invariant firm (and thus provincial and oligarch) characteristics, such as might be present if firms in particular regions or controlled by particular oligarchs are more likely to engage in defensive ownership. Then differencing the equation for $t = 0$ from that for $t = 1$ gives

$$\begin{aligned} \Delta O_i &= \beta_{11} ORANGE_i + \beta_{21} GRAY_i + \beta_{31} SIZE_i + \beta_{41} TFP_i \\ &\quad + \beta_{51} PRIVATIZED_i + SECTOR_i \boldsymbol{\gamma}_1 + \epsilon_i. \end{aligned} \tag{3}$$

where ΔO_i is the change in defensive ownership from $t = 0$ to $t = 1$ and $\epsilon_i \equiv u_{i1} - u_{i0}$.

One complication in estimating Equation (3), as discussed above is that it is difficult to identify changes in ownership with SReg. We address this concern in two ways. First, we restrict attention to our latter two measures of defensive ownership: (change in) foreign or offshore in chain. We thus ignore the presence of oligarchs in the ownership chain, which can be identified only with SReg. Second, we also report results in which we characterize ownership chains using data only from JSCReg. The latter approach comes with a tradeoff: although changes in defensive ownership may be measured with greater precision using JSCReg, the resulting sample is approximately 20 percent smaller.

In what follows, we report standard errors corrected to account for clustering of error terms by oligarch, which is the level of treatment assignment.

Results

2004 Cross Section

Columns 1–4 in Table 4 report results from cross-sectional regressions for our first two measures of defensive ownership: the absence of oligarch in the

(observed) ownership chain, and the distance to oligarch in the ownership chain (where absence takes the highest possible value). For each outcome, the OLS estimate of the difference between Orange and Blue firms is positive and statistically significant at conventional levels. The point estimate in the first regression (Column 1) implies that oligarchs politically affiliated with Viktor Yushchenko and his allies are 29 percentage points more likely to be absent from the observed chain, relative to oligarchs associated with the incumbent regime and Viktor Yanukovych — approximately four tenths the unconditional mean of 71 percent. Similarly, Orange-affiliated oligarchs are further removed in the ownership chain than are Blue-affiliated oligarchs (Column 3). The latter result is driven substantially by the former: the point estimate for Orange in Column 3 is about 60 percent smaller when the sample is limited to firms with an oligarch somewhere in the chain. For both measures of defensive ownership, the coefficient on Gray is also positive, but much smaller and statistically indistinguishable from zero.

The corresponding instrumental-variables regressions, in which we exploit plausibly exogenous variation in political connections related to Ukraine's political–economic geography, produce similar qualitative results. For both outcomes (Columns 2 and 4), the estimated coefficient on Orange is somewhat larger than in the corresponding OLS regression, which may reflect measurement error in the underlying classification of political connections. In each case, the estimated difference between Orange and Blue firms remains significant at conventional levels. The associated reduced-form estimates in the final rows of the table imply that moving from 4.2 percent vote for Yushchenko (Donetsk) to 96 percent (Ternopil) — the full range of the variable — increases the probability that no oligarch is observed in the ownership chain by approximately 22 percentage points.[21]

As discussed above, we check robustness to (a) dropping firms with no identifiable owners, (b) coding the presence of any oligarch in the ownership chain — not just the controlling oligarch identified by Delo or *Ukraïns'ka Pravda* — and (c) using share of the population speaking Russian as a native language rather than vote for Yushchenko as an instrumental variable. Tables A4–A6 in the online appendix report results from these exercises. In each case, estimated magnitudes and statistical significance are very similar to those in our baseline specifications.

Following the strategy in Earle and Gehlbach (2015), we also check robustness to including controls for "macroregion" (western, eastern, southern, and central), as defined by Clem and Craumer (2005), which may capture geographic concentration in foreign economic ties and other characteristics. Results from this exercise, which we provide in Table A7 of the online appendix, suggest a slightly lower — but still significant — effect of Orange on the

[21] We report first-stage results in Table A3 in the online appendix.

presence and distance of oligarch in the ownership chain; the point estimates for Gray are nearly identical. (As our instrumental variable is measured at the province level, we report results from OLS regressions only.) Similarly, across all specifications in Table 4, the estimated effect of political connections on defensive ownership is nearly identical after conditioning on whether a firm was an exporter in 2004, as recorded by Derzhkomstat; we report results from this robustness check in Table A8 in the online appendix.

Among the three control variables, the estimated effect of privatized is uniformly positive and statistically significant, in line with the idea that a nontransparent privatization weakens the legitimacy of ownership, to which the controlling oligarch responds by sheltering assets. Neither employment size nor TFP is significantly associated with presence or position of oligarch in the ownership chain.

Columns 5–8 in Table 4 present cross-sectional results for our second set of measures of defensive ownership: presence of a foreign or offshore entity in the ownership chain. The estimated coefficient on Orange is consistently positive, but precisely estimated only for the instrumental-variables regression with foreign in chain as the outcome. The first-stage F-statistic is somewhat lower than in Columns 2 and 4, and marginally lower than the conventional cutoff of 10, though as Angrist and Pischke (2008, p. 209) note, just-identified two-stage least squares (as here, with a single endogenous regressor and single instrument) is approximately unbiased even in the presence of weak instruments. In contrast to our results for oligarch in chain, the OLS estimates imply that Gray firms are least likely to have foreign or offshore owners, with the difference between Gray and Blue firms statistically significant for offshore in chain. As discussed above, the differential effect of Gray is unidentified in the instrumental-variables regressions.

Unlike the results reported in Columns 1–4, we find no evidence that privatized firms are more (or less) likely to shelter assets through the use of foreign or offshore owners. Large firms, however, are significantly more likely to have foreign owners — but not those in offshore jurisdictions — in the ownership chain.

Panel

We now turn to our preferred empirical strategy, which exploits time variation from the shock to political connections that accompanied the Orange Revolution of 2004. As discussed above, data constraints imply that we are only able to estimate the effect of political connections on changes in presence of a foreign or offshore entity in the ownership chain — not changes in presence or position of oligarch in the chain. For similar reasons, we also examine ownership changes using ownership information from JSCReg only.

Table 4: Defensive ownership, 2004.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No oligarch in chain		Distance to oligarch		Foreign in chain		Offshore in chain	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Orange	0.290	0.534	0.134	0.202	0.130	0.519	0.168	0.319
	(0.095)	(0.247)	(0.054)	(0.116)	(0.137)	(0.315)	(0.125)	(0.310)
Gray	0.170	0.263	0.095	0.121	−0.191	−0.044	−0.243	−0.186
	(0.129)	(0.137)	(0.060)	(0.065)	(0.138)	(0.153)	(0.104)	(0.160)
Employment	−0.001	−0.001	−0.001	−0.001	0.048	0.051	0.022	0.023
	(0.014)	(0.014)	(0.007)	(0.007)	(0.022)	(0.023)	(0.022)	(0.022)
TFP	0.021	0.024	0.004	0.005	0.011	0.014	−0.005	−0.004
	(0.018)	(0.018)	(0.011)	(0.011)	(0.017)	(0.018)	(0.016)	(0.017)
Privatized	0.214	0.212	0.115	0.114	0.014	0.001	−0.085	−0.090
	(0.077)	(0.087)	(0.039)	(0.039)	(0.090)	(0.098)	(0.100)	(0.101)
Sector FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	329	329	329	329	299	299	299	299
First-stage F-stat		10.09		10.09		9.11		9.11
Vote for Yushchenko		0.258		0.098		0.241		0.148
(reduced form)		(0.109)		(0.056)		(0.144)		(0.151)

Note: Dependent variable is absence of controlling oligarch in ownership chain (columns 1–2), $1 - 1/(\text{steps to oligarch})$ (columns 3–4; see text for details), presence of foreign entity in ownership chain (columns 5–6), and presence of offshore entity in ownership chain (columns 7–8). The excluded political affiliation is Blue. Province-level vote for Yushchenko in do-over second round of 2004 presidential election instruments Orange in Columns 2, 4, 6 and 8; the effect of Gray is unidentified in these regressions. In parentheses, heteroskedasticity-robust standard errors that correct for correlation of error terms at oligarch level.

Table 5: Number of firms with foreign and offshore entities in ownership chain.

	Baseline		JSCReg only	
	2004	2006	2004	2006
Foreign	188	212	131	135
Blue	99	116	66	70
Orange	63	64	48	48
Gray	26	32	17	17
Offshore	126	172	76	102
Blue	65	95	35	55
Orange	50	49	36	35
Gray	11	28	5	12

Note: Analysis based on regression sample of 299 firms (first two columns) and 229 firms (last two columns), respectively.

Our hypothesis is that incentives for defensive ownership switched for Orange and Blue firms after the Orange Revolution, given that oligarchs affiliated with Victor Yushchenko were better connected after he assumed the presidency, whereas the value of connections to Victor Yanukovych declined after the political turnover. Table 5 provides preliminary evidence of such changes. Seventeen firms controlled by Blue oligarchs added foreign owners between 2004 and 2006, according to our baseline data; in contrast, only one Orange and six Gray firms did so. The change is even more striking when looking at foreign owners located in offshore jurisdictions, which are more likely to be conduits for "round trip" investment than genuine foreign investors.[22] Thirty Blue firms added such owners (versus 17 Gray firms; the number of Orange firms with offshore owners actually declined by one) — larger numbers than added foreign owners in general, implying that the oligarchs who controlled some of these firms added offshore owners when they already had foreign owners in nonoffshore jurisdictions.[23] The differences are even more pronounced if we only use ownership information in JSCReg. With this

[22]To the extent that there was foreign direct investment following the Orange Revolution, it was in the steel sector — a direct consequence of the reprivatization of Kryvorizhstal — and banking (e.g., Matuszak and Sarna, 2013). The latter represents a small portion of our sample, and is in any event controlled for through the inclusion of sector fixed effects in our regression estimates (see Equation (3)).

[23]Cyprus joined the European Union in 2004, which in principle could have increased the attractiveness of offshore ownership in that country (though being subject to EU laws and regulations could instead have had the opposite effect). As we demonstrate in Table A1 in the online appendix, however, there was also substantial movement after the Orange Revolution into other offshore jurisdictions, including the British Virgin Islands, Belize, and Gibraltar. With the exception of Energo, for which a single firm transitioned to offshore ownership after the Orange Revolution, no Blue oligarch added Cyprus-based entities alone.

Table 6: Ownership transitions, 2004 to 2006.

	DO → FO	DO → OFF	NOFF → OFF	FO → DO
Baseline				
All	0.333	0.279	0.500	0.069
Blue	0.444	0.352	0.529	0.071
Orange	0.190	0.143	0.308	0.048
Gray	0.250	0.250	0.600	0.115
JSCReg only				
All	0.296	0.255	0.436	0.191
Blue	0.412	0.353	0.484	0.258
Orange	0.222	0.167	0.250	0.083
Gray	0.138	0.138	0.500	0.235

Note: Proportion of firms transitioning to/from: domestic ownership only (DO), foreign ownership (FO), foreign but only nonoffshore ownership (NOFF), and foreign offshore ownership (OFF). Analysis based on regression sample of 299 firms (top panel) and 229 firms (bottom panel), respectively.

restriction, four Blue firms added foreign owners, whereas 20 added offshore owners.

Table 6 unpacks these changes, showing transition rates (gross flows) across ownership types from 2004 to 2006 by firm color/affiliation. For our baseline data, the hazard rate for a Blue firm to move from domestic to foreign (44.4 percent) is much higher than for an Orange firm (19.0 percent), and the movement from nonoffshore foreign ownership to offshore is particularly striking: more than half (52.9 percent) of Blue firms with nonoffshore ownership become offshore in this short two-year period. On the other hand, one might have expected Orange firms to engage in less defensive ownership in 2006 compared to 2004, but we find that few firms of any political affiliation with foreign ownership in 2004 change to completely domestic ownership by 2006: only 4.8 percent of Orange firms switch from foreign to domestic, for example. This result is consistent with the costs of defensive ownership being largely sunk, so that they cannot be recovered by reversing course. Even if politically well-connected in 2006, Orange oligarchs may have been influenced by their recent experiences in opposition and perceived that the regime could shift again — as indeed it did.[24] We observe similar patterns if we identify changes in ownership using data from JSCReg only, though with this restriction we

[24] As discussed above, the Delo/*Ukraïns'ka Pravda* lists suggest little change in *controlling* ownership from 2004 to 2006, implying that the patterns we observe are only superficially "capital flight" of the sort commonly argued to follow from political uncertainty (e.g., Alesina and Tabellini, 1989; Lensink *et al.*, 2000), including in the post-Soviet region (Tikhomirov, 1997).

Table 7: Change in defensive ownership, 2004 to 2006.

	(1)	(2)	(3)	(4)
	Change in foreign		Change in offshore	
	Baseline	JSCReg only	Baseline	JSCReg only
Orange	−0.116	−0.050	−0.219	−0.198
	(0.089)	(0.123)	(0.062)	(0.080)
Gray	−0.023	−0.035	0.084	−0.026
	(0.098)	(0.129)	(0.085)	(0.098)
Employment	−0.005	−0.016	0.005	−0.008
	(0.010)	(0.011)	(0.017)	(0.019)
TFP	−0.007	−0.013	0.008	0.010
	(0.009)	(0.009)	(0.009)	(0.019)
Privatized	−0.020	−0.029	0.101	0.056
	(0.063)	(0.089)	(0.059)	(0.074)
Sector FEs	Yes	Yes	Yes	Yes
Observations	299	229	299	229

Note: Dependent variable is change in presence of foreign entity (columns 1–2) and offshore entity (columns 3–4) in ownership chain, 2004 to 2006. The excluded political affiliation is Blue. In parentheses, heteroskedasticity-robust standard errors that correct for correlation of error terms at oligarch level.

observe a substantial proportion of Blue firms transitioning from foreign to domestic ownership (25.8 percent) in addition to those who transition from nonoffshore foreign to offshore ownership (48.4 percent).

Table 7 presents more systematic evidence of these trends, based on the differenced Equation (3). The estimated coefficient on the Orange dummy is consistently negative, and it is statistically significant at conventional levels when change in presence of offshore owners is the dependent variable. The point estimates in the latter regressions imply a relative decline of approximately 20 percentage points in the probability that Orange firms have an offshore entity in the ownership chain, reflecting (as demonstrated above) an absolute *increase* in the likelihood that firms controlled by Blue oligarchs would engage in such defensive ownership.[25] Notably, we find no evidence that any of our covariates has an effect on changing ownership patterns after the Orange Revolution. It was the value of connections to Yushchenko and Yanukovych, respectively, not the effects of size, productivity, or privatization status, that changed when the presidency turned over in January 2005. Table 8 provides an additional check on our results: "placebo" regressions analogous to those in Table 7, but

[25]The behavior of Gray firms also diverged from that of Orange firms following the Orange Revolution — the difference is significant for Columns 1, 3, and 4 — though to a generally smaller degree than is the case for Blue firms, as Gray firms' weaker connections would imply.

Table 8: Change in defensive ownership, 2002 to 2004 (placebo).

	(1)	(2)	(3)	(4)
	Change in foreign		Change in offshore	
	Baseline	JSCReg only	Baseline	JSCReg only
Orange	0.020	−0.042	0.136	0.025
	(0.140)	(0.122)	(0.124)	(0.077)
Gray	0.042	0.003	0.032	−0.008
	(0.146)	(0.117)	(0.137)	(0.062)
Employment	−0.017	0.003	−0.025	0.000
	(0.026)	(0.024)	(0.025)	(0.028)
TFP	0.021	0.013	0.012	0.028
	(0.016)	(0.030)	(0.017)	(0.034)
Privatized	−0.209	−0.019	−0.247	−0.068
	(0.116)	(0.083)	(0.130)	(0.097)
Sector FEs	Yes	Yes	Yes	Yes
Observations	284	207	284	207

Note: Dependent variable is change in presence of foreign entity (columns 1–2) and offshore entity (columns 3–4) in ownership chain, 2002 to 2004. The excluded political affiliation is Blue. In parentheses, heteroskedasticity-robust standard errors that correct for correlation of error terms at oligarch level.

with change in defensive ownership from 2002 to 2004 — that is, the two years before the Orange Revolution. There is no evidence that the trends reported above predated the Orange Revolution.[26]

As a final exercise, we examine the presence of foreign and offshore entities in the ownership chains of all firms in JSCReg for which we have formal ownership data, a sample of over 7000 enterprises, for which we infer political connections — not observed directly for the vast majority of these firms — from the province-level vote for Yushchenko in 2004. Although comparatively few firms in this larger sample have a substantial stake in *national* politics, the results from this exercise are broadly consistent with those from the sample of oligarch-controlled firms for which we can observe political connections directly, with point estimates more precisely estimated in the panel than the cross-sectional setting (see Tables A9 and A10 in the online appendix).

Overall, our results suggest that firms controlled by oligarchs less connected to the incumbent regime were more likely to shelter assets through a variety of methods prior to 2004, with the relationship strongest for oligarch in chain. We also find considerable evidence that the greater use of defensive ownership

[26] As discussed, we measure defensive ownership in 2004 prior to the start of the presidential campaign, implying that our data would not capture any change in defensive ownership over the latter half of 2004 as polls increasingly suggested that Yushchenko could win.

by Orange oligarchs before the Orange Revolution declined or even reversed following the Orange Revolution, when the connections of Blue oligarchs lost much of their value.

Conclusions and Discussion

This paper sheds light on a common but understudied phenomenon: the sheltering of assets through opaque ownership chains and foreign entities. We argue that, in an environment of generally weak property rights, defensive ownership can help to protect property from seizure by private and state actors. Both the benefits and costs of this strategy may depend on the controlling owner's political connections.

Our empirical analysis focuses on Ukraine before and after the 2004 Orange Revolution, which resulted in the first real political turnover since the fall of the Soviet Union in 1991. Property rights were weak and a small number of oligarchs with varying political connections controlled hundreds of highly valuable firms. Combining information from investigative journalists on such control with rich data on legal ownership ties, we explore the relationship between political connections — which can also be used to protect property — and various measures of defensive ownership.

We find that oligarchs who were in opposition to the ruling group before the Orange Revolution were more likely to shelter assets through a variety of mechanisms: by relying on related individuals or entities, such that the oligarch is either absent from the ownership chain entirely or distant from the firm he controls, and perhaps through the use of foreign owners. At the same time, we observe that oligarchs who were close to the regime in 2004 reversed course after the Orange Revolution, turning to foreign and particularly offshore entities to protect their suddenly vulnerable assets.

From the perspective of our theoretical framework, these results clearly demonstrate the substitutability of political connections and defensive ownership in protecting property. Seemingly less important is the alternative mechanism, whereby connected owners might have fewer worries about legal exposure or access to finance, which if predominant would imply a positive correlation between political connections and defensive ownership — opposite to what we find.

Our research setting — Ukraine just before and after the Orange Revolution — is characterized by general insecurity of property rights and unanticipated political turnover. An interesting question is whether our findings would generalize to other environments. Would, for example, the ownership chains of firms controlled by the Koch brothers, Jeff Bezos, or Michael Bloomberg change depending on who held the U.S. presidency? In an environment of strong institutions, political connections may be relatively unimportant for

securing property rights (Fisman *et al.*, 2012). The same is tautologically true of defensive ownership: when property rights are strong, there is little need to augment them. The value of strong ties to a particular faction is also attenuated when political turnover is frequent, in which case firms may diversify connections among competing political groups. The lack of genuine turnover in Ukraine since the fall of the Soviet Union may have created a situation whereby Blue oligarchs were under-diversified, allowing us to observe latent relationships that would be harder to perceive in other contexts.

Our work is also relevant to a somewhat different question — why it is that Ukraine's oligarchs do not organize collectively to improve property rights. After all, democratization and other regime change is often driven by intraelite conflict, as rising elites act to protect their holdings from autocratic rulers and their vassals (Ansell and Samuels, 2014; North and Weingast, 1989). Yet there was little improvement in property rights or the rule of law more generally after the Orange Revolution (Markus, 2016; Pop-Eleches and Robertson, 2014).

One possibility is that politically connected oligarchs may mistakenly assume that they will retain the protection of those in power, only to find that the connections on which they relied have disappeared. When regime change occurs quickly, as in Ukraine during the Orange Revolution, outgoing elites may find it difficult to influence the design of new institutions to protect their interests (Albertus and Menaldo, 2018). From this perspective, Blue oligarchs' greater use of defensive ownership arrangements after the Orange Revolution may have been a second-best solution to the problem of protecting their property, given the constraint of having been caught flat-footed.

Sonin (2003) offers a different answer: the rich benefit from weak property rights, as they can exploit such weakness to expropriate other economic actors (see also Hoff and Stiglitz, 2004). Nonetheless, this strategy is risky, to the extent that they are subject to predation by other members of the political or economic elite. Our work, and that of others cited above, suggests that such risks can be reduced through private actions to protect property, such as sheltering assets behind proxies, shell companies, and offshore firms. To the extent that these strategies are successful, the risk of actual expropriation may be relatively small.

Such behavior may be not only individually rational, but also collectively optimal, from the perspective of the oligarchy. The consequences for the broader economy, however, are potentially ruinous. Many owners are not able to take advantage of the various strategies to protect property commonly employed by oligarchs. For these nonoligarch actors, an equilibrium of weak institutions implies reduced incentives to invest, seek out new markets, and otherwise take actions to improve economic performance.

References

Acemoglu, D. and S. Johnson. 2005. "Unbundling Institutions". *Journal of Political Economy*. 113(5): 949–95.

Albertus, M. and V. Menaldo. 2018. *Authoritarianism and the Elite Origins of Democracy*. New York: Cambridge University Press.

Alesina, A. and G. Tabellini. 1989. "External Debt, Capital Flight and Political Risk". *Journal of International Economics*. 27(3–4): 199–220.

Andersen, J. J., N. Johannesen, D. D. Lassen, and E. Paltseva. 2017. "Petro Rents, Political Institutions, and Hidden Wealth: Evidence from Offshore Bank Accounts". *Journal of the European Economic Association*. 15(4): 818–60.

Angrist, J. D. and J.-S. Pischke. 2008. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Ansell, B. and D. Samuels. 2014. *Inequality and Democratization*. New York: Cambridge University Press.

Åslund, A. 2005. "The Economic Policy of Ukraine after the Orange Revolution". *Eurasian Geography and Economics*. 46(5): 327–53.

Betz, T. and A. Pond. 2019. "Foreign Financing and the International Sources of Property Rights". *World Politics*. 71(3): 503–41.

Brown, J. D., J. S. Earle, S. Shpak, and V. Vakhitov. 2018. "Is Privatization Working in Ukraine? New Estimates from Comprehensive Manufacturing Firm Data, 1989–2013". *Comparative Economic Studies*. 61(1): 1–35.

Bueno de Mesquita, B. and H. L. Root, eds. 2000. *Governing for Prosperity*. New Haven: Yale University Press.

Chaney, P. K., M. Faccio, and D. Parsley. 2011. "The Quality of Accounting Information in Politically Connected Firms". *Journal of Accounting and Economics*. 51(1–2): 58–76.

Chernykh, L. 2011. "Profit or Politics? Understanding Renationalizations in Russia". *Journal of Corporate Finance*. 17(5): 1237–53.

Chernykh, L. and S. Mityakov. 2017. "Offshore Schemes and Tax Evasion: The Role of Banks". *Journal of Financial Economics*. 126(3): 516–42.

Clem, R. S. and P. R. Craumer. 2005. "Shades of Orange: The Electoral Geography of Ukraine's 2004 Presidential Elections". *Eurasian Geography and Economics*. 46(5): 364–85.

Denisova, I., M. Eller, T. Frye, and E. V. Zhuravskaya. 2009. "Who Wants to Revise Privatization? The Complementarity of Market Skills and Institutions". *American Political Science Review*. 103(2): 284–304.

Diamond, D. W. and R. E. Verrecchia. 1991. "Disclosure, Liquidity, and the Cost of Capital". *The Journal of Finance*. 46(4): 1325–59.

Durnev, A. and S. Guriev. 2011. "Expropriation Risk and Firm Growth: A Corporate Transparency Channel". CEPR Discussion Paper No. DP6547.

Earle, J. S. and S. Gehlbach. 2015. "The Productivity Consequences of Political Turnover: Firm-Level Evidence from Ukraine". *American Journal of Political Science*. 59(3): 708–23.

Faccio, M. 2006. "Politically Connected Firms". *American Economic Review*. 96: 369–86.

Findley, M. G., D. L. Nielson, and J. C. Sharman. 2014. *Global Shell Games: Experiments in Transnational Relations, Crime, and Terrorism*. New York: Cambridge University Press.

Fisman, D., R. J. Fisman, J. Galef, R. Khurana, and Y. Wang. 2012. "Estimating the Value of Connections to Vice-President Cheney". *The B.E. Journal of Economic Analysis & Policy*. 13(3): Article 5.

Fisman, R. 2001. "Estimating the Value of Political Connections". *American Economic Review*. 91(4): 1095–102.

Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. "The Market Pricing of Accruals Quality". *Journal of Accounting and Economics*. 39(2): 295–327.

Frieden, J. A. 1991. "Invested Interests: The Politics of National Economic Policies in a World of Global Finance". *International Organization*. 45(4): 425–51.

Frye, T. 2006. "Original Sin, Good Works, and Property Rights in Russia". *World Politics*. 58(4): 479–504.

Frye, T. 2017. *Property Rights and Property Wrongs: How Power, Institutions, and Norms Shape Economic Conflict in Russia*. New York: Cambridge University Press.

Frye, T., O. J. Reuter, and D. Szakonyi. 2014. "Political Machines at Work: Voter Mobilization and Electoral Subversion in the Workplace". *World Politics*. 66(2): 195–228.

Frye, T. and E. Zhuravskaya. 2000. "Rackets, Regulation, and the Rule of Law". *The Journal of Law, Economics, and Organization*. 16(2): 478–502.

Gans-Morse, J. 2017. *Property Rights in Post-Soviet Russia: Violence, Corruption, and the Demand for Law*. New York: Cambridge University Press.

Gehlbach, S., K. Sonin, and E. Zhuravskaya. 2010. "Businessman Candidates". *American Journal of Political Science*. 54(3): 718–36.

Ginsburg, T. 2005. "International Substitutes for Domestic Institutions: Bilateral Investment Treaties and Governance". *International Review of Law and Economics*. 25(1): 107–23.

Gorodnichenko, Y. and Y. Grygorenko. 2008. "Are Oligarchs Productive? Theory and Evidence". *Journal of Comparative Economics*. 36(1): 17–42.

Guriev, S. and A. Rachinsky. 2005. "The Role of Oligarchs in Russian Capitalism". *Journal of Economic Perspectives*. 19(1): 131–50.

Haber, S. H., D. C. North, and B. R. Weingast, eds. 2008. *Political Institutions and Financial Development*. Stanford, CA: Stanford University Press.

Hale, H. E. 2005. "Regime Cycles: Democracy, Autocracy, and Revolution in Post-Soviet Eurasia". *World Politics*. 58(1): 133–65.

Hendley, K., B. W. Ickes, P. Murrell, and R. Ryterman. 1997. "Observations on the Use of Law by Russian Enterprises". *Post-Soviet Affairs*. 13(1): 19–41.
Hendley, K., P. Murrell, and R. Ryterman. 2001. "Law Works in Russia: The Role of Legal Institutions in the Transactions of Russian Enterprises". In: *Assessing the Value of Law in Transition Economies*. Ed. P. Murrell. Ann Arbor: University of Michigan Press, 56–93.
Hoff, K. and J. E. Stiglitz. 2004. "After the Big Bang? Obstacles to the Emergence of the Rule of Law in Post Communist Societies". *American Economic Review*. 94(3): 753–63.
Jensen, N. M., G. Biglaiser, Q. Li, E. Malesky, P. M. Pinto, S. M. Pinto, and J. L. Staats. 2012. *Politics and Foreign Direct Investment*. Ann Arbor: University of Michigan Press.
Johns, L. and R. L. Wellhausen. 2016. "Under One Roof: Supply Chains and the Protection of Foreign Investment". *American Political Science Review*. 110(1): 31–51.
Kalyanpur, N. 2020. "Liberalism as a Last Resort". Unpublished manuscript.
Katchanovski, I. 2008. "The Orange Evolution? The 'Orange Revolution' and Political Changes in Ukraine". *Post-Soviet Affairs*. 24(4): 351–82.
Korovkin, V. and A. Makarin. 2018. "Conflict and Inter-Group Trade: Evidence from the 2014 Russia-Ukraine Crisis". Unpublished manuscript, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3397276.
Kudelia, S. and T. Kuzio. 2015. "Nothing Personal: Explaining the Rise and Decline of Political Machines in Ukraine". *Post-Soviet Affairs*. 31(3): 250–78.
La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 1999. "Corporate Ownership Around the World". *Journal of Finance*. 54(2): 471–517.
Lamberova, N. and K. Sonin. 2018. "Economic Transition and the Rise of Alternative Institutions: Political Connections in Putin's Russia". *Economics of Transition*. 26(4): 615–48.
Lankina, T. and A. Libman. 2019. "Soviet Legacies of Economic Development, Oligarchic Rule, and Electoral Quality in Eastern Europe's Partial Democracies: The Case of Ukraine". *Comparative Politics*. 52(1): 127–76.
Lensink, R., N. Hermes, and V. Murinde. 2000. "Capital Flight and Political Risk". *Journal of International Money and Finance*. 19(1): 73–92.
Leuz, C. and R. E. Verrecchia. 2000. "The Economic Consequences of Increased Disclosure". *Journal of Accounting Research*: 91–124.
Markus, S. 2015. *Property, Predation, and Protection*. New York: Cambridge University Press.
Markus, S. 2016. "Sovereign Commitment and Property Rights: The Case of Ukraine's Orange Revolution". *Studies in Comparative International Development*. 51(4): 411–33.

Markus, S. and V. Charnysh. 2017. "The Flexible Few: Oligarchs and Wealth Defense in Developing Democracies". *Comparative Political Studies*. 50(12): 1632–65.

Matuszak, S. and A. Sarna. 2013. "From Stabilisation to Stagnation: Viktor Yanukovych's Reforms". *Point of View*. 32.

Menaldo, V. 2016. "The Fiscal Roots of Financial Underdevelopment". *American Journal of Political Science*. 60(2): 456–71.

North, D. C. 1981. *Structure and Change in Economic History*. New York: W.W. Norton and Company.

North, D. C., J. J. Wallis, and B. R. Weingast. 2009. *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*. New York: Cambridge University Press.

North, D. C. and B. R. Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England". *Journal of Economic History*. 49(4): 803–32.

Novokmet, F., T. Piketty, and G. Zucman. 2018. "From Soviets to Oligarchs: Inequality and Property in Russia 1905–2016". *Journal of Economic Inequality*. 16(2): 189–223.

Obermayer, B. and F. Obermaier. 2016. *The Panama Papers: Breaking the Story of How the Rich and Powerful Hide Their Money*. London: Oneworld Publications.

Olson, M. 1993. "Dictatorship, Democracy, and Development". *American Political Science Review*. 87(3): 567–76.

Pandya, S. S. 2016. "Political Economy of Foreign Direct Investment: Globalized Production in the Twenty-First Century". *Annual Review of Political Science*. 19: 455–75.

Paskhaver, O., L. Verkhovodova, and K. Ageeva. 2006. *Pryvatyzatsiia ta repryvatyzatsiia v Ukraini pislia 'pomaranchevoi' revoliutsii*. Kiev: Milenium.

Pop-Eleches, G. and G. Robertson. 2014. "After the Revolution: Long-Term Effects of Electoral Revolutions". *Problems of Post-Communism*. 61(4): 3–22.

Puglisi, R. 2003. "The Rise of the Ukrainian Oligarchs". *Democratization*. 10(3): 99–123.

Sharafutdinova, G. and K. Dawisha. 2017. "The Escape from Institution-Building in a Globalized World: Lessons from Russia". *Perspectives on Politics*. 15(2): 361–78.

Shleifer, A. 1997. "Government in Transition". *European Economic Review*. 41(3–5): 385–410.

Shleifer, A. and R. W. Vishny. 1993. "Corruption". *Quarterly Journal of Economics*. 108(3): 599–617.

Sonin, K. 2003. "Why the Rich May Favor Poor Protection of Property Rights". *Journal of Comparative Economics*. 31(4): 715–31.

Szakonyi, D. 2020. *Politics for Profit: Business, Elections, and Policymaking in Russia*. New York: Cambridge University Press.
Tikhomirov, V. 1997. "Capital Flight From Post-Soviet Russia". *Europe-Asia Studies*. 49(4): 591–615.
Treisman, D. 2016. "Russia's Billionaires". *American Economic Review*. 106(5): 236–41.
Volkov, V. 2002. *Violent Entrepreneurs: The Use of Force in the Making of Russian Capitalism*. Ithaca, NY: Cornell University Press.
Zucman, G. 2014. "Taxing across Borders: Tracking Personal Wealth and Corporate Profits". *Journal of Economic Perspectives*. 28(4): 121–48.
Zucman, G. 2015. *The Hidden Wealth of Nations: The Scourge of Tax Havens*. Chicago: University of Chicago Press.