The Price of Doing Business: How Startup Costs Improve Government Treatment of Foreign Firms*

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Abstract

We argue that a host government treats foreign firms better if those foreign firms have fewer replacements. We identify a key structural determinant of replaceability: the costs foreign firms must incur in order to begin production. Since the host government can only take from foreign firms that actually produce in its market, it must treat foreign firms better when their startup costs are high, lest the government drive all foreign firms out. Our innovative theoretical model adapts contemporary trade theory; applies it to the novel setting of foreign investment; and provides insights about the understudied relationship between foreign and domestic firms. Most importantly, it endogenizes market entry and exit, establishing the importance of entry despite scholars' long-time focus on exit. Our analysis uses cross-national firm-level data on taxes and production outcomes in up to 284 disaggregated industries, and we provide a new industry-level measure of political risk.

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1 Introduction

A canonical argument in political economy is that an individual who can more profitably exit from an institution has more power to secure her preferred outcome within that institution (Hirschman, 1970). This leverage is particularly important in international relations, because the anarchic nature of the international system allows states to act independently and violate existing cooperative agreements (Voeten, 2001). In international political economy, firms investing abroad are particularly interested in maintaining exit options in order to avoid poor treatment by the host government. Under the well-known logic of the "obsolescing bargain," foreign firms that cannot credibly remove their investments from the host country see their contracts with the host state erode over time (Vernon, 1971). A foreign firm's economic power vis-à-vis a host government is thus shaped by its asset mobility—how easily it can recoup the value of its initial investment and divert it to more profitable pursuits. Yet the scholarly literature's focus on exit and asset mobility comes with limits. Whatever their asset mobility, foreign firms may be attractive targets for mistreatment if many other firms are eager to enter the market. Put differently, the government has more leeway to extract rents from foreign firms that are more easily replaceable. High replaceability enables worse government treatment of foreign firms in the market.

Consider the golf course the Trump Organization operates in Scotland. Exit is surely possible, but the Trump Organization's services are also quite replaceable—especially in the home of golf. After a large offshore windfarm within sight of the course was proposed in 2012, Donald Trump wrote to the Scottish Prime Minister that the "monstrous turbines" would turn the country into "a third world wasteland that global investors will avoid."[1] Trump has has tweeted sixty times, complained to the Scottish Parliament, taken a court case to the UK Supreme Court, and pressed onetime UKIP leader Nigel Farage to cancel the project.[2] Nonetheless, the Scottish government approved the plans, the first of eleven planned turbines went up in April 2018, and the Trump Organization continues to invest.

To establish the importance of replaceability and market entry, we examine government treatment of foreign firms using a firm-level political economy model of FDI in a host state with multiple industries. Importantly, our model accounts for not just foreign but also for understudied domestic firms in a host state. We model a host government that regulates its own market, and can take rents from foreign firms using taxation or other policies that discriminate between domestic

[1] Drury, Colin. "World's Most Powerful Wind Turbine Goes Up Off Scottish Coast—Despite Trump's Opposition." *The Independent*. 11 April 2018.

[2] Griffiths, Brent. "Trump Tweeted About Scottish Wind Farm 60 Times." *Politico*. 22 November 2016.

and foreign firms. We allow both foreign and domestic firms to enter and exit the market over time in response to government policies and changing economic conditions. To enter the market, a firm must pay one-time *startup costs* to establish new production, such as building a factory or buying basic machinery. We measure startup costs with data on listed firms in up to 284 disaggregated industries, in up to 212 host states (2008-2016). We conceptualize startup costs as exogenous to government treatment, although we consider biases introduced by the impact of politics at entry. If a firm that produces in the market subsequently exits, it can take back the portion of these startup costs that are mobile assets, such as equipment that can be redeployed in other activities or markets. Industries vary in both startup costs and asset mobility, and both of these attributes can vary across domestic and foreign firms.

Our theory allows us to generate precise expectations about host government treatment of foreign firms, as well as attributes and economic outcomes of firms that choose to produce in a market. We begin by examining the impact of government treatment of foreign firms on production decisions by both foreign and domestic firms. Our model shows that foreign firms facing higher takings must be more productive to enter and survive in the market. Yet because higher takings from foreign firms reduce foreign competition, less productive domestic firms can also enter the market and are relatively more likely to survive. Thus, government treatment affects the observed productivity of both foreign and domestic firms by shaping which firms select into and out of market competition. We then explore the impact of startup costs on production decisions by foreign firms, as well as indicators of their market success. When firms in a given industry must pay higher startup startup costs to begin producing goods and services in a given host state, entry is more cost-prohibitive. Thus, foreign firms that exit the market are less likely to be replaced by new foreign firms that enter the market. As a result, the host government does what it can to offset the burden of startup costs in these industries, by offering favorable treatment to foreign firms that limits the costly burden of entry. This logic generates our main, novel hypothesis: for foreign firms, higher startup costs are associated with better government treatment.

A key concern in research on government treatment is that it is not possible to perfectly observe all aspects of the relationship between a host government and a foreign firm, in which political risks can manifest in a variety of ways. Only some foreign firms make their complaints about government treatment public by suing host states in international arbitration or by leaning on public diplomatic support from their home state. Thus, causal statements about government treatment, as either an explanatory or a dependent variable, are difficult to assess empirically,

particularly with observational data. We choose to measure government treatment of foreign firms through their tax burdens, an unquestionably important indicator that has been underused in research on political risk. We aggregate industry-country-year tax burdens for 20,786 listed foreign firms and show that, on average, higher foreign tax burdens increase the divergence between foreign and domestic firm productivity, and foreign firms in higher startup-cost industries enjoy lower taxes.

Importantly, we also leverage the selection effects in our model to conduct indirect tests of observable implications of our theory. Namely, given that foreign and domestic firms are selecting to both enter and exit the market over time, we can examine the impact of startup costs on average firm productivity and revenue. We provide empirical evidence that, per our model, higher startup costs are associated with higher average productivity for foreign firms in mobile industries. This implication of our model reaffirms that our focus on the implications of startup costs on market entry is a complement to expectations about asset mobility and exit. Our model also shows that higher startup costs will be associated with higher average revenue for foreign firms, both because these firms will receive more favorable treatment from a host government, and because selection effects ensure that only more productive firms are willing and able to bear the startup costs at entry.

This paper adapts existing theoretical models of international trade with firm heterogeneity (Melitz, 2003; Melitz and Redding, 2014), which a spate of important political science scholarship has tied to the politics around trade policy (Gulotty, 2017; Baccini, Pinto and Weymouth, 2017; Kim, 2017; Osgood et al., 2017; Owen and Quinn, 2016; Queralt, 2017). Our formal model substantially expands on prior trade models by modeling government policies and both market entry and exit as strategic decisions. We expect these modeling innovations to be applicable to a variety of work in political economy. We apply our innovations on modern international trade theory in a novel substantive realm: the study of the political economy of FDI. Further, this paper makes a key empirical contribution by identifying, measuring, and disseminating a previously unexamined determinant of cross-country and cross-industry variation in government treatment: the average startup costs paid by firms that enter a market. Taken together, we establish how structural constraints on producing abroad shape the extent to which host governments can pursue their domestic agendas while still attracting FDI. The price of doing business abroad can skew better government treatment toward the biggest, most productive multinationals, while at the same time establishing exogenous constraints on domestic entrepreneurship, a normatively crucial goal in developing countries.

2 Structural Determinants of Government Treatment of Foreign Firms

When firms invest abroad, they expose themselves to possible mistreatment by the government of the host (receiving) state. This problem is most acute for firms that make longer-term investments and acquire at least some managerial control over operations abroad through FDI. Host governments that are eager for the positive developmental effects of FDI have reason to lure investors in with the promise of favorable treatment and, increasingly, investment incentives (Jensen and Malesky, 2018; Jensen, Malesky and Walsh, 2015). Yet even if a government is genuine when making these promises, sometimes shocks like changes in government composition or economic conditions can lead a host government to break its prior promises. For example, the host government may erode the value of foreign investments by altering social and environmental requirements or rolling back incentives.[3] Moreover, foreign firms can suffer from (perceived) mistreatment even if the host government's actions do not clearly break a promise in an unlawful or illegitimate manner. For example, foreign firms may chafe at facing high and increasing tax burdens. Indeed, foreign firms are typically among the wealthiest actors in a given host state, making them attractive targets for governments seeking to raise revenue.

The classic understanding of government-foreign firm relations conceptualizes political risk as stemming from the erosion of government treatment of foreign firms over time. Particularly, (formal or informal) contracts "obsolesce" when a foreign firm's assets are immobile, because firms that cannot easily recoup their initial investment and exit the market are natural targets for government mistreatment (Vernon, 1971). A robust literature has drawn out the implications of this argument for natural resource industries and other industries with immobile, site-specific investments (Frieden, 1994; Jensen and Johnston, 2011; Hajzler, 2012). Foreign firms in immobile industries understand this dynamic and, for decades, have written international arbitration clauses into their thick contracts with host governments, invoked bilateral investment treaties, and purchased political risk insurance to protect their assets (Jensen, 2008; Graham, Johnston and Kingsley, 2016).

An additional research literature has focused on the effects of host states' political institutions and domestic politics on political risk. Scholars have demonstrated the influence of many

[3] In 2017, Nissan filed for international investment arbitration against India, seeking USD750 million in promised but unpaid tax incentives from the government of Tamil Nadu. "Nissan sues India over outstanding dues; seeks over USD770 million," *The Economic Times*. 1 December 2017.

such factors, including: regime type; federalism; government turnover (especially between capital- or labor-friendly parties); benefits for unskilled workers; dependence on international institutions like the IMF or the World Bank; and variation in the set of investors present in a given host country (Jensen, 2006; Li, 2009; Pandya, 2010; Pinto, 2013; Biglaiser, Lee and Staats, 2016; Jensen et al., 2012). Nonetheless, the structural characteristics of FDI remain key to understanding how host governments treat foreign firms. For example, Graham, Johnston and Kingsley (2017) explain how financial investments are subject to transfer risk, or the risk that the host government imposes controls on currency conversion. —- argue that the structure of supply chains and, in particular, the number of partners that a foreign firm has in a given host state is an important determinant of government treatment. Note that such arguments are complements to the expectation that asset mobility is a core structural feature that shapes dynamics between host governments and foreign firms.

We too prioritize the role of asset mobility, and our formal model reaffirms its importance in explaining variation in government treatment. However, our main contribution is to identify the political effects of *startup costs*, or the one-time upfront costs of establishing new production. Startup costs can include the costs of buying necessary machinery at the prevailing world price and shipping it to the new location. They can also include the construction costs of building new facilities or the rental costs of acquiring office space. If a firm finds the local infrastructure insufficient to facilitate transport of produced goods, startup costs can include the cost of cutting and paving roads. These kinds of costs can vary greatly across industries, as shown by Figure 1, which draws on our firm-level data.[4] Here, we define startup costs as the average fixed assets (USD millions, ln) reported by a parent firm in a given foreign host state, in the first year in which it reports a subsidiary in that host state.[5] In Figure 1 we average these values across all parent company-country observations, across all host states, and across all years at the 2-digit NAICS industry code level.[6] Figure 1 also compares startup costs with asset mobility, which, unfortunately, has not lent itself to a precise, continuous measure.[7] The standard dichotomous measure that we employ has largely grown out of scholars' intuitions about asset mobility, which may differ somewhat from ours. Nonetheless, variation in Figure 1 suggests that our measure at least has the potential to add explanatory power beyond mobility. In our theoretical model,

[4]Data set from the Bureau van Djik Osiris Industrial and Subsidiary databases (2008-2016). See below for detail.

[5]Below, we consider in detail possible endogeneity to government treatment at entry.

[6]We combine industries for which there are multiple 2-digit codes, such as manufacturing.

[7]Some have proposed fixed assets classified as property, plant, and equipment (PPE) hold promise as a mobility measure, PPE dollar values need not correspond with mobility: some components of PPE can be moved or reused, and these characteristics vary across industries. (For a different argument, see Kerner and Lawrence (2014).)

we conceptualize mobility as a continuous variable, though we replicate the literature with our dichotomous empirical approach.

[Figure 1 goes here.]

Put in our terms, the general contention in the FDI literature is that foreign firms face higher startup costs than domestic firms, because they face the added challenges of obtaining local knowledge, developing local contacts, and generally overcoming the "liability of foreignness" (Zaheer, 1995). Figure 2 demonstrates that industry-level startup costs are consistently higher for foreign firms than for domestic firms in our dataset (listed firms that operate at least one subsidiary in their own home country). Figure 2 supports the notion that government treatment is particularly relevant to foreign firms once they have entered a market, as they already face additional initial costs that disadvantage them relative to domestic competitors.

[Figure 2 goes here.]

Startup costs vary not just by industry and ownership, but also by country. While some countries have an abundance of natural resources and other useful preexisting endowments, others do not. Which specific country attributes contribute to variation in startup costs will depend on the needs of a specific industry. For example, Figure 3 demonstrates variation across countries in foreign firm startup costs in pharmaceutical/medicine manufacturing; we are fortunate to have data at this very disaggregated industry-level (4-digit NAICS) that can quite accurately reflect the importance of particular country endowments to production. Ghana, Angola, and other poor countries have some of the highest startup costs in this industry. These countries have little preexisting infrastructure on which new firms can draw, so startup costs likely include large construction projects to build factories, acquisition of basic equipment from outside the country, and so on. In contrast, the wealthy country of Finland, with considerable preexisting infrastructure, has among the lowest startup costs. Some perhaps surprising countries like Barbados have quite low startup costs in this industry. Such small countries often play host to the financial arms of multinational corporations (in whatever industry), meaning that startup costs are more about renting office space. Variation in the kinds of production foreign firms tend to locate in different host states reinforces our careful attention to identifying empirical analyses off of cross-industry variation within a given host country. In the long-run, host countries that invest in infrastructure, develop natural

resources, or otherwise improve their endowments may be better able to lure in FDI.[8] However, in the short-run, these country attributes are fixed and exogenous.

[Figure 3 goes here.]

We conceptualize startup costs as exogenous to host government behavior. A milling machine has a given price on world markets, exogenous to a given market in a particular host country. The cost of shipping relies on the preexisting ports and roads in a given host country. In one host country, a firm needs roads to be cut to facilitate production; in another, sufficient highways and bridges are already available. We imagine that executives at multinational corporations can and do know the costs of acquiring physical capital and of establishing facilities in a given physical environment. That said, we recognize that a host government can sometimes influence startup costs at the margin, complicating our presumption of exogeneity. For example, a host government might charge a tariff on a milling machine or require a construction permit for a road to be cut. Below, we discuss our approach to the difficult empirical task of separating exogenous costs from simultaneously-observed government treatment.

Exogenous startup costs are theoretically interesting, because they influence political decision-makers via their implications for the replaceability of firms: how easy is it to find an alternative investor to replace a firm that exits the market? Government behavior is influenced by startup costs, because a host government cares about its ability to seize rents in both the short- and long-term. Higher government takings increase the amount that the government receives from each unit of foreign production, but reduces the overall amount of foreign production, because higher takings drive existing firms from the market and make it less attractive for new firms to enter. As foreign startup costs increase, the entry problem becomes exacerbated: entry by new foreign firms becomes even less likely, meaning that a government must lower its takings rate in order to maximize its overall rents. Therefore, the selection processes that are driven by variation in startup costs result in variation in government takings. Market forces implicitly and endogenously affect the host government's treatment of foreign firms.

By modeling interactions at the firm-level, we can provide the theoretical microfoundations for why some firms select into participation in the global economy through FDI and others do not. This approach also comes with empirical benefits. Though we take a novel and, in our judgement, compelling approach to measuring political risk via tax burdens, we cannot be confident that tax

[8] Long-run technological improvements can also change relative startup costs across industries and host countries that vary in access to technology.

burdens characterize the full spectrum of government treatment of foreign firms. However, our model allows us to derive indirect tests of our causal mechanism by examining the attributes of firms that select into FDI, including the productivity of foreign and domestic firms, and foreign firm revenues. Thus, we can use relationships between our variables of interest and standard measures of financial concepts to provide indirect evidence in support of our political economic theory.

3 Theory

Our model of FDI is based on the economic microfoundations of contemporary trade theory, as established in Melitz (2003) and subsequently extended to economies with multiple industries by Melitz and Redding (2014).[9] In these trade models, firms decide whether to produce goods that can be sold in the firm's domestic market and/or exported abroad for sale in foreign markets. Firms differ from one another based on both the unique goods that they produce,[10] and their inherent productivity in producing their good. In every period, a small portion of firms experience an exogenous shock that causes them to "die", or go out of business. Melitz (2003) and subsequent follow-on papers assume that the market has a stationary structure, as the firms that exogenously exit the market are replaced by new firms that endogenously decide to start new production.[11] The main result in Melitz (2003) is that exporting firms must be more productive than firms that just produce for the domestic market, because they must overcome the added exogenous transportation costs for exporting goods to foreign markets.

Rather than modeling trade across countries, we instead model decisions by both domestic and foreign-owned firms about whether to invest in the production of goods within a single market. Just as Melitz (2003) assumes that exporters face added transportation costs, we assume that foreign-owned firms face the potential for discriminatory treatment, in which government takings increase the marginal cost of production for foreign-owned firms. Our theory includes two major innovations that accord with our substantive focus on FDI. First, we assume that government takings are endogenously chosen by a strategic host government (and hence are not exogenous, like Melitz's transportation costs). Second, we assume that firms endogenously choose whether to exit the market (unlike Melitz, which assumes that a small portion of firms exogenously dies). Domestic and foreign-owned firms thus both enter and exit the market over time in response to changes in

[9] These microfoundations are used in almost all contemporary trade theory models that introduce firm-level heterogeneity.

[10] That is, firms engage in monopolisitic competition, per Dixit and Stiglitz (1977).

[11] This concept of market stationarity with firm-level entry and exit was earlier developed in Hopenhayn (1992).

their firm-level productivity, which we allow to fluctuate over time. Other factors that affect entry and exit decisions are: the startup cost of beginning production, the mobility of capital that has previously been invested in production, and the treatment provided by the host government to foreign investors.

3.1 Model Primitives and Structure

We focus on the economy of a single country that has $J+1$ industries and a labor force of size L. We assume that industry $j=0$ produces a homogenous good, which serves as our numeraire good. We assume that all other sectors ($j=1,\ldots,J$) produce differentiated goods. Firms can be either domestically- or foreign-owned, and each firm can produce a unique good from a set of industry-level varieties, $v \in V_j$. Whether a firm actually produces its good is an attribute of equilibrium behavior. At any given point in time, there are both domestic and foreign firms that are currently producing for the market; we describe these producing firms as being "in" the market. Similarly, there are also domestic and foreign firms that are not currently producing for the market; we describe these latent firms as being "out" of the market.

We assume that consumers have a preference for a variety of goods within an industry, and let $\sigma > 1$ denote the constant elasticity of substitution across goods within an industry. We let $q_j(v)$ denote the quantity of consumption of a specific variety v in industry j, and we let w_j denote the relative weight that consumers place on goods across industries, such that $\sum_j w_j = 1$. Consumer utility from aggregate consumption (across all industries) is:

$$U = \sum_{h=0}^{J} w_j \log Q_j \quad \text{where: } Q_j \equiv \left[\int_{v \in V_j} q_j(v)^{\frac{\sigma-1}{\sigma}} \, dv \right]^{\frac{\sigma}{\sigma-1}} \tag{1}$$

The index Q_j represents consumer utility from consuming the goods produced by industry j using the standard functional form in the monopolistic competition literature, as first introduced by Dixit and Stiglitz (1977). Consumers must optimize their utility subject to the budget constraint:

$$\sum_{j=0}^{J} \int_{v \in V_j} p_j(v) \, q_j(v) \, dv \leq R \tag{2}$$

where $p_j(v)$ is the price of good v in industry j, and R is aggregate revenue.

The game takes place over discrete time periods. At the start of every period, there are four

different groups of firms in each industry. First, there are both foreign and domestic firms that are already "in" the market because they produced goods in the previous period. Second, there are both foreign and domestic firms that are "out" of the market because they did not produce goods in the previous period. In each period t, the game begins when each firm decides whether to pay a small informational cost, $\beta > 0$, to learn its type for that period, φ. This type variable corresponds to the firm's productivity in producing its unique good. Each firm's type variable is independently and identically distributed across both players and times. We assume that Nature chooses a firm's type (i.e. productivity) according to the Pareto distribution. A firm cannot produce without first learning its type.[12]

The government then announces a takings rate for each industry, τ_j, which corresponds to the amount per unit of production that the government takes from each foreign firm in industry j.[13]. After hearing the government's announcement, each firm decides whether to produce its good in that period. Those firms that are currently "out" of the market (meaning that they did not produce in the previous period) can choose to either remain out—without incurring any additional costs or generating any revenue in the market—or enter the market and begin producing goods for sale. As shown in Figure 4, firms that are "out" of the market must pay a startup cost, κ_i, in order to enter the market and establish production facilities.[14] We allow the startup costs faced by domestic firms, κ_d, to differ from the startup costs faced by foreign firms, κ_f.[15] In contrast, firms that are "in" the market at the beginning of the time period (because they established production facilities in prior periods) can decide either to stay in the market and produce goods in period t, or to take their mobile capital and leave the market. We measure mobility as the share $\mu_i \in [0, 1]$ of startup costs that a firm can take when it leaves the market. We allow the mobility of domestic firms, μ_d to differ from the mobility of foreign firms μ_f.[16] We assume that this decision about whether to stay or leave the market must be made prior to the actual production of goods in any given period.[17] Over time, we allow firms to move both in and out of the market multiple times;

[12]The cost of learning type can vary across foreign and domestic firms, across firms that were "in" or "out" of the market in the previous period, and across industries. If the information cost varies across firms that are "in" and "out", the magnitude of this different must be limited, as detailed in the Appendix. This informational cost can be arbitrarily small, but is necessary in models of market competition to ensure that there is stability in a market's size over time.

[13]To simply our presentation, we assume that this taking does not apply to domestic firms. Empirically, we measure the takings rate as the amount taken in tax per production as accounted for by pretax income.

[14]Throughout this discussion we suppress the notation for different industries for the sake of clarity.

[15]For the results we present here, we do not need to make any assumptions about which type of investor has higher startup costs.

[16]For the results we present here, we do not need to make any assumptions about which type of investor has higher mobility.

[17]So if a firm produces goods in a given period, it must wait until the next period before it can again decide

that is, we do not assume that firms "die" based on exogenous and unexplained shocks, as in Melitz (2003). A firm's decision to exit a market can always be reversed in a future period, albeit after paying the informational cost (to learn its productivity for that period) and the startup cost (to re-enter the market).

[Figure 4 goes here.]

We assume that production uses only one input, domestic labor, and there is a fixed production cost in each period, $c > 0$, which is measured in terms of a unit of labor. For a firm with a productivity φ, we let $p(\varphi)$ denote the price and $q(\varphi)$ denote the quantity of the differentiated good produced by the firm. The profit function for a domestic firm is accordingly:

$$\pi_d(\varphi) = p_d(\varphi)q_d(\varphi) - \left[\frac{q_d(\varphi)}{\varphi} + c\right]$$

Higher levels of productivity therefore correspond to lower unit production costs. Since a foreign firm must pay an additional per unit taking to the government, its profit function is:

$$\pi_f(\varphi) = p_f(\varphi)q_f(\varphi) - \left[\frac{q_d(\varphi)(1+\tau)}{\varphi} + c\right]$$

Note that this profit function assumes that more productive firms can both produce goods and pay the government takings rate at a lower cost in units of labor.

3.2 Equilibrium Behavior

The full derivation of equilibrium behavior is included in the Appendix. We begin by examining market behavior after the government has announced its takings rate for each industry:

Proposition 1. *For any given takings rate, $\tau \geq 0$, there exist types x_i and y_i, for $i = d, f$, such that $0 < x_i < y_i$. Firms that are in the market decide to exit if $\varphi < x_i$, and stay and produce if $x_i \leq \varphi$. Firms that are out of the market decide to stay out if $\varphi < y_i$, and enter and produce if $y_i \leq \varphi$.*

As shown in Figure 5, those firms that are already "in" the market will find it profitable to stay and produce as long as they have moderate or high levels of productivity ($x_i < \varphi$). If a firm that is already in the market has low productivity for the period, it cannot compete profitably

whether to exit. This accords with the definition of startup costs as the fixed assets necessary to produce goods.

against the other firms in the market; accordingly, it will exit, taking its mobile capital with it. However, those firms that are "out" of the market will only enter and pay the accompanying startup cost if they have high levels of productivity ($y_i < \varphi$). If their productivity is either low or moderate, they cannot profitably pay the entry cost and compete against other firms in the market.[18]

[Figure 5 goes here.]

To understand strategic behavior by the government, we must first understand how changing the takings rate for an industry affects economic outcomes. When the government increases the takings rate, it increases the unit cost of production for foreign firms. This increase in production cost means that each foreign firm produces less and earns lower revenue. Since production is less lucrative, existing foreign firms are more likely to leave the market, and potential foreign firms are less likely to enter. The aggregate effect of these changes is that there is less aggregate production by foreign firms, but those foreign firms that do survive in the market are more productive. Simply put, higher government takings drives less productive foreign firms out of the market by raising cutpoints x_f and y_f. This selection effect raises the average productivity of those foreign firms that choose to produce.

While the (foreign) takings rate does not directly affect domestic firms, the changing behavior of foreign firms alters overall market conditions and thereby affects domestic firms. Since higher takings reduces the number of foreign firms in the market (by increasing x_f and y_f), it also reduces the variety of goods that are produced by foreign-owned firms. Because consumers prefer to consume a variety of goods, they will value the diverse goods produced by domestic firms. Accordingly, higher government (foreign) takings reduces market competition from foreign firms, allowing less productive domestic firms to enter and making them more likely to survive in the market. This corresponds to a decrease in cutpoints x_d and y_d. This selection effect lowers the average productivity of domestic firms that produce in the market. Both of these implications—about average foreign productivity and average domestic productivity—explicitly take into account what is observable by researchers, given the strategic behavior of firms in the market.[19]

Proposition 2. *A higher government takings rate from foreign firms is associated with higher average foreign productivity and lower average domestic productivity.*

[18] Low- or moderate-productivity firms cannot increase their productivity to profitable levels within a given period; for example, catching up to more productive firms via learning-by-doing is not possible.

[19] It is possible that these selection effects change the dynamics of collective action among and between foreign and domestic firms that produce in the market, which is an important topic for future research.

Given these market effects, we can now consider the host government's decision about how much to take from foreign firms. Since the takings rate applies to each unit of foreign production, the utility to the host government of the takings rate for an industry is simply:

$$W(\tau) = \tau Q_f$$

When choosing the optimal rate, the government must balance the benefit of increasing the takings rate against the cost of decreasing the number of units produced by foreign firms. The host government can find a unique takings rate that balances these two competing factors in order to maximize its own utility.

Proposition 3. *There exists an equilibrium in which the host government chooses an optimal takings rate from foreign firms, and foreign and domestic firms operate in the resulting market equilibrium.*

3.3 Comparative Statics

Our model yields a wealth of possible comparative statics. Our main interest lies in the political effect of startup costs on government takings:

Proposition 4. *For foreign firms, higher startup costs are associated with a lower average government takings rate.*

The magnitude of foreign startup costs affects both entry and exit decisions by foreign firms. Holding asset mobility constant, when startup costs are low, it is relatively easy for new foreign firms to enter, and existing foreign firms have relatively little incentive to leave. Accordingly, cutpoints x_f and y_f are relatively low, and the government has a broad base of foreign firms from which it can take. As foreign startup costs increase, entry becomes less desirable for foreign firms that are out of the market: new foreign firms must be more productive to pay the higher startup costs, meaning that cutpoint y_f increases. At the same time, exit becomes more desirable for foreign firms that are already in the market. These firms must be more productive to be willing to stay, meaning the cutpoint x_f increases. This leads to an overall reduction in the base of foreign firms from which the government can take. To offset this decrease, the government is best off if it lowers its takings rate in order to keep more foreign firms in the market. These dynamics ensure that high startup costs indirectly protect foreign firms: since it is more difficult to replace foreign firms when startup costs are higher, the government will treat them more favorably by taking less.

Unfortunately, it is difficult to accurately observe and measure the full spectrum of government treatment of foreign firms, which means we cannot avoid tradeoffs in empirical testing. It is therefore of paramount importance that our theoretical model allows us to state the implications of our theory for other standard, measurable economic outcomes. We next consider the average productivity of foreign firms that have selected into producing in the host country and, hence, are observable to researchers:

Proposition 5. *For foreign firms, higher startup costs are associated with higher average productivity when foreign asset mobility is high.*

Startup costs have both a direct economic effect and an indirect political effect on which foreign firms decide to produce. The direct economic effect of high startup costs is to deter low productivity foreign firms from entering the market. Simply put, a firm must be more productive in order to recoup the initial cost of entering the market. However, since governments can only take from those foreign firms that actually produce, high startup costs also cause the government to take less, per Proposition 4. So high startup costs have an indirect political effect by lowering government takings, which in turns allows less productive firms to produce, per Proposition 2. Which effect is stronger—the direct economic effect or the competing indirect political effect—depends on assumptions about the basic characteristics of the market. However, when a foreign firm's mobility is relatively high, the level of government takings has a relatively small effect on firm decision-making. This means that the direct economic effect outweighs the indirect political effect of high startup costs. In industries with high foreign mobility, higher startup costs will be associated with higher levels of productivity for those foreign firms that choose to produce in the host economy.

We can additionally indirectly assess our theory using firm revenues, which are observable in our data. The overall impact of startup costs on firm-level revenues is positive for those foreign firms that are willing to produce:

Proposition 6. *For foreign firms, higher startup costs are associated with higher revenues.*

Since high startup costs deter new foreign firms from entering a market, they reduce competition and increase prices for consumers. However, startup costs are only paid when a firm enters a market, meaning that they are sunk costs by the time that a foreign firm begins actual production: they do not affect production costs after a foreign firm has entered the market. By increasing prices without increasing the production costs for those firms that have already entered

the market, higher startup costs directly lead to higher revenues for foreign firms. Additionally, foreign startup costs indirectly increase firm revenues even further by pressuring the government to provide more favorable treatment. Both the direct and indirect effects of startup costs therefore lead to higher revenue for foreign firms.

3.4 Robustness

How robust are our results? We should begin by noting that the model above explicitly includes asset mobility and allows foreign firms to exit the market in response to alleged mistreatment by the host government. As such, our theoretical account is a complement to the standard obsolescing bargain logic, not a substitute for it. Our model highlights that while the previous literature's focus on asset mobility and exit has yielded important insights, it has also caused us to overlook the equally important impact of startup costs and market entry. Readers who are substantively interested in asset mobility can use our modeling framework to derive implications that are consistent with prior research. Here we have chosen to emphasize our new findings, rather than simply restating logic that has been well-explored previously.

Readers might note that when we endogenized government behavior, we adopted a relatively simplistic objective function for the host government: we assumed that the host government seeks to simply maximize takings from foreign firms. These higher takings benefit domestic firms, but indirectly harm consumers within the country by reducing market competition. In a model extension (that is available upon request), we allow the host government to trade-off the direct benefits it receives from its takings against the indirect impact of these takings on consumer welfare. Not surprisingly, when the host government places more weight on consumer welfare, it extracts less from foreign firms. However, all of the basic results in our model continue to hold. We are careful in our empirical analysis below to account for possible variation across countries in their responsiveness to consumer welfare. As detailed below, host country and year fixed effects account for host country- and time-specific characteristics. Other state-level controls, particularly regime type and commitments to international investment law speak to within-country over-time variation in the host government's weighting of consumer welfare.

Our main substantive interest is in Proposition 4, which states that for foreign firms, higher startup costs should be associated with lower government takings. The argument that supports this logic is contingent on both (1) changes in startup costs in the country being observed, and (2) existing investors being able to recover a portion of their capital and redeploy it elsewhere. That

is, when we consider the impact of increasing startup costs in a given country, we assume that investors have a credible exit option: they can recover a portion of their initial capital and engage in other profitable activities. These dynamics should be different if we consider the impact of startup costs in alternative markets or economic activities. Imagine an investor who has deployed her capital in a given country A. If startup costs increase in a different country B, then the real value of her mobile capital should decrease: the foreign investor will have a less credible exit option, which means that her firm will be a more attractive target for mistreatment. This suggests that there may be important competitive dynamics across countries that are currently missing in our model.[20] While high startup costs at home can discipline a host government, high startup costs in other markets may allow a host government to increase takings at home (since exit is a less desirable option). These kinds of competitive dynamics lie outside the framework of our current work, but pose an interesting possibility for future research.

Another limitation of our modeling framework is that we focus on government takings at the industry-level. We do not, for example, allow the host government to microtarget its treatment at the firm-level. It is unclear how relaxing this assumption would affect our results. A sophisticated government could ameliorate some of the entry and exit dynamics that drive our results by targeting firms for mistreatment based on their productivity. From a substantive perspective, it is unclear to us whether such behavior would be feasible, as a host government is unlikely to know the precise productivity of individual firms, which can change over time. But a host government could target firms based on production levels, revenues, or other observable attributes. We have chosen not to pursue the line of inquiry because our intuition is that forward-looking firms could anticipate possible microtargeting and adjust their production accordingly. While the distortions that would be created by such a scenario would be important for understanding consumer welfare and economic outcomes, we do not have any reason to believe that they would invalidate our substantive interest in political outcomes; namely, the impact of startup costs on government treatment of foreign firms.

4 Empirics

Our formal results allow us to construct a set of hypotheses. The first two hypotheses are direct claims about government behavior.

Hypothesis 1. *A higher government takings rate from foreign firms will increase average foreign*

[20] We thank — — for highlighting this point.

productivity and decrease average domestic productivity within each industry. (Proposition 2)

Hypothesis 2. *For foreign firms, higher startup costs will be associated with a lower government takings rate within each industry. (Proposition 4)*

We do our best to measure government takings so as to provide evidence consistent with Hypotheses 1 and 2; yet proxy measures of government treatment can only go so far. Therefore, our next two hypotheses involve standard, observable attributes of firms that select into FDI, which we can use to indirectly test our political-economic theory.

Hypothesis 3. *For foreign firms that are mobile, higher startup costs will be associated with higher average firm productivity within each industry. (Proposition 5)*

Hypothesis 4. *For foreign firms, higher startup costs will be associated with higher revenues at the firm-level. (Proposition 6)*

To empirically assess our theoretical argument, we must measure multiple outcomes of interest, including startup costs, government takings, and firm- and industry-level financials. To do so, we use financial data collected in the Bureau van Dijk Osiris databases on industrial firms and their subsidiaries (2008-2016).[21] Our data include 86,906 publicly listed parent companies worldwide (on 200 stock exchanges) that report financials for at least one subsidiary in addition to the parent firm.[22] Firms originate in 149 home states and invest in 212 host states. We use data on firms in up to 232 disaggregated industries, measured at the 4-digit NAICS industry code level. For example, we analyze cement/concrete manufacturing (4-digit), rather than nonmetallic product manufacturing (3-digit) or manufacturing (2-digit).

We must measure several concepts separately for foreign and domestic firms. The same parent company can be both domestic (in one country) and foreign (in one or multiple countries). A foreign firm reports financials for a subsidiary in a given host country, but its parent company's recorded home address is in a different country; there are 20,786 foreign firms in the data. A domestic firm must also own a subsidiary, but both the parent address and the subsidiary address are located in the same country. There are 86,859 domestic firms in the data.[23] Given that both being listed and operating a subsidiary are indicators of success, our sample of domestic firms is

[21] Bureau van Dijk Osiris Industrial and Osiris Subsidiary. `bvdinfo.com`. Accessed July 2017.

[22] In the parlance often used for firm-level data, we mean that a firm that operates a subsidiary has at least one establishment in a given country. The Osiris databases also include some "important" domestic, unlisted firms in their databases. However, "important" is not well-defined, so we drop these firms.

[23] Thus, 47 of the total 86,906 listed parent companies in the data are foreign but are never domestic.

biased toward more competitive firms. This bias makes it more difficult for us to identify expected differences in productivity between foreign and domestic firms (Hypothesis 1).

4.1 Measuring Startup Costs

Our main variable of interest is STARTUP COSTS. The underlying concept we hope to measure is the minimum, break-even amount that a firm needs to invest in order to begin production in a given industry and country. We proxy for this using the dollar value of fixed assets in the first year a firm operates a subsidiary in a given industry-country, recorded in firm income (P/L) statements. We then aggregate individual firm observations to measure startup costs by 4-digit industry-country (USD millions, ln). Averaging across firms in a given industry-country, and taking the natural log, increases our confidence that our operationalization gets closer to the break-even point by mitigating the effects of outliers. STARTUP COSTS varies by industry-country but not by year. We see this as appropriate given our short time window (2008-2016). In the long run, changes in the technology employed in a given industry or endowments in host states could change startup costs, but in the short-run, we conceptualize them as fixed.

Recall that in our theoretical model, we assume that startup costs are exogenous to government treatment. Thus, we must address the empirical possibility that government treatment could affect the value of fixed assets upon entry. We know that host governments sometimes set regulations that constrain firms' investment decisions, such as local content requirements or required domestic equity in foreign-owned firms. Of particular concern is the contention that firms that expect better government treatment could choose to invest more upon entry—for example, by building a bigger factory.[24] If that were the case, then fixed assets upon entry would be not an exogenous measure but would be exactly determined by expected government treatment. We have several defenses of our measurement approach in response to endogeneity concerns. One reason we choose to use fixed assets as our measure of startup costs is that we see it as the measure of a firm's initial investment that is least vulnerable to endogeneity. Contrast choices over fixed assets with choices firms make over incurring variable costs at entry. Firms have an interest in responding flexibly to expected government treatment, because government treatment varies over time. Firms can more flexibly respond to variation in government treatment through changes in variable costs, for example by hiring or firing workers. In contrast, shedding or constructing new buildings in response to changing expectations about government treatment is costly. In our data, the low

[24] We thank — — for highlighting this point.

correlation between employees and fixed assets in the first year of operation (0.24 for foreign firms, 0.15 for domestic) suggests that firm decisions on incurring initial variable and fixed costs are not interchangeable.

Moreover, probing the data gives us confidence that the ordering of our startup cost measures is intuitive. For example, comparing across industries, startup costs are particularly high in utilities and particularly low in services (Figure 1). The foreign startup cost for information stands out as particularly high; this includes telecommunications (517), which can involve massive investments in infrastructure to facilitate cell phone networks.[25] One source of endogenously lowered startup costs could be government-provided investment incentives for foreign firms at entry. However, in the data any such dynamic is not lowering fixed assets to the point that they disrupt the expected foreign-to-domestic relationship, which is that engaging in FDI is more expensive than investing at home (Dunning, 1993). Per Figure 2, startup costs in the data are consistently higher for foreign firms than for domestic.

In short, we see empirical corroboration that fixed assets upon entry can speak to our concept of startup costs. Finally, as described below, our modeling strategy uses extensive fixed effects to further mitigate endogeneity concerns.

4.2 Measuring Government Takings Rate: Taxes

Our main political variable of interest is the government takings rate, which in our formal model is based on a straightforward transfer from the firm to the government. Our best approximation is to focus on taxes reported in firm income (P/L) statements. We note that by choosing to measure taxes, we are measuring indirect takings but not takings in which the government gains benefits from the firm directly. For example, instead of collecting taxes, the government could expropriate foreign property and, as owner, earn direct returns on production.[26] As we fully acknowledge, our theory is best tested with a measure of the full set of transfers—indirect and direct, monetary and otherwise—from foreign firms to a host government. Nonetheless, in the absence of such a measure, we see taxes as a particularly useful second-best for both theoretical and empirical reasons. Theoretically, tax burdens are a key component of political risk, in that political decisions over taxes clearly shape expected returns, yet their examination has been largely excluded from the literature. Empirically, accusations of illegitimate indirect takings, including shifts in tax burdens,

[25] Given that such investments are site-specific, we further criticize standard binary breakdowns of mobility that assume away heterogeneity in mobility within aggregated industries (see again Figure 1).

[26] One driver of the government's decision to take via taxes or take via ownership is its expectation that it has the technology and intangible assets necessary to produce efficiently and profitably absent foreign ownership.

have come to characterize the vast majority of public investor-state disputes (Pelc, 2017).

While firms report taxes in a variety of ways, our theory is based on actual takings by the government, or the cash tax expense. Cash tax expense is effectively the amount paid out of the firm's "checking account" and into the government's coffers in a given year. It consists of the firm's income tax expense, plus tax payable and deferred taxes at the beginning of the year, less tax payable and deferred taxes remaining at the end of the year. Unfortunately, cash tax expense is not recorded in standard income statements. We are able to back it out for 52.7 percent of foreign firms in the data, due to missingness on tax payable and deferred taxes. We calculate the average annual cash tax expense (USD millions, ln) for foreign firms by 4-digit industry-country-year, and shift the data to avoid logging negative values.[27] As explained below, we use weighted least squares to account for variation in the underlying number of observations built into our averaged measures. Once aggregated, we have unique observations of foreign cash tax expense for 31.9 percent of industry-country combinations in the data in which foreign firms are present (2008-2016). These data constraints further underscore the importance of the indirect tests of our theoretical model that rely on standard measures in income statements, for which we have effectively full coverage.

Our ultimate measure of interest is the Effective cash tax rate, which is Cash tax expense divided by the firm's taxable income. Pretax income is a firm's revenue minus the costs of goods sold. Scaling government takings is particularly important, because heterogeneous trade theory establishes that larger firms are more likely to produce abroad. Naturally, larger firms would pay more taxes. Thus, to test our novel predictions about the relationship between government takings and production decisions, we must account for size. Consistent with best practices in accounting, pretax income is the appropriate measure for size in our context.[28] To test our model's predictions, we again calculate averages across foreign firms by industry-country-year, and again shift the data and take the natural log.

4.3 Additional Measurement and Design Choices

We further rely on accounting standards in measuring productivity as the Return on assets, which is a firm's net income divided by its total assets. To generate our productivity measures of interest, we average by industry-country-year and again shift the data and take the natural log. We do this separately for foreign firms and domestic firms. Our final dependent variable, foreign

[27] We suggest that scholars interested in investment incentives consider firm-level data on negative tax expenses.

[28] Results are robust to scaling by Earnings before tax, which is income before corporate tax and unusual/exceptional after-tax items, but after depreciation, amortization, and deducting interest expenses. See replication files.

firm Revenue, is equivalent to sales, or the amount earned from a firm's main activities. Our theory generates implications for revenue at the firm-level, which is the total revenue reported by the listed parent company in a given host country. At least part of a parent company's total revenue in a host country can be traced to the subsidiaries the parent company operates in the host country.[29] Helpfully, our data are granular enough that we can also assess our theory with subsidiary-level revenue.

A key control variable is Mobile, which is the standard dichotomous measure of mobility versus immobility based on intuitions about industry, per the literature (see again Figure 1). Unfortunately, this dichotomous measure leaves heterogeneity within broad industry categories unmeasured. For example, mobility certainly varies between a steel mill and a textile mill, but both are categorized under (mobile) manufacturing. As discussed above, the absence of a continuous measure of mobility constrains scholars' (including our) ability to fully test theoretical implications. Nonetheless, we expect coefficients on even the imprecise Mobile to track the logic of the obsolescing bargain. Most importantly, we expect that Startup costs are a key explanatory variable even when controlling for mobility.

Unmeasured heterogeneity across industries, with regard to mobility or many other characteristics, could bias our estimations. For example, a firm's potential to have a high Return on Assets is determined in part by its capitalization. The more capital-intensive a firm, the more difficult it is to achieve a high ROA. To address cross-industry heterogeneity, we first measure industry at a very disaggregated level (4-digit NAICS). Next, in every specification we include fixed effects for Industry (3-digit).[30] Thus, our cross-industry comparisons are nested within an already disaggregated industry that allows us to compare across groups of firms that are likely to have similar mobility, capital-intensity, and other characteristics. For example, our identification process leverages variation across pharmaceutical/medicine manufacturing (NAICS 3254) and an industry like pesticide, fertilizer, and other agricultural chemical manufacturing (NAICS 3253), while controlling for chemical manufacturing (NAICS 325).

There are a number of other potential sources of unmeasured heterogeneity that we address with further fixed effects. Host state accounts for country-specific characteristics that could bias our estimates; for example, countries differ in endowments and institutions that could influence our outcomes of interest. This heterogeneity is also an important reason we measure startup costs by

[29] A parent company could also earn revenues through royalties or other activities that may not be reported on the income statement of a particular subsidiary.

[30] Results are also robust to including 2-digit fixed effects.

country-industry. We control for the HOME STATE of each firm, which speaks to possible variation in treatment resulting from bilateral dynamics. YEAR fixed effects account for annual shocks that could interfere with our estimations, such as effects of the Great Recession. These extensive fixed effects also relate to endogeneity concerns. Accounting for host state, home state, year, and the overarching 3-digit industry, we expect any endogenous component of STARTUP COSTS to be randomly distributed across 4-digit industries. We see it as reasonable to expect that, within the agricultural industry of crop production (111), a given host state's influence on fixed assets upon entry (among firms from the same home state, in a given year) would not be systematically related to the choice of farming vegetables and melons (1112) or fruit and tree nuts (1113). Additionally, we include time-varying country-level covariates. BITs (Bilateral Investment Treaties) counts the cumulative number of international investment agreements ratified by the host state, expected to correlate with the government's overall attitude toward and treatment of FDI. We also include FDI NET INFLOW PER GDP, DEMOCRACY (-10 to 10 Polity IV scale), TRADE PER GDP, and GDP PER CAPITA (ln).[31]

Recall that many of our variables of interest are averages. As we theorize, firms enter and exit the market, which means that industry-country-year observations are based on different sets of firms at different times.[32] Thus, it is appropriate to account for heterogeneity in the samples that feed into observations per our unit of analysis. In so doing, we also address missing data that can cause variation in the precision of our averaged measures. The best approach is to rely on the long-standing strategy of weighted least squares. Our empirical target is a population, and weighting moves our data sample closer to measures of that population. Employing weighted least squares allows us to more accurately account for nonrandom variation in the precision of our underlying data (Angrist and Pischke 2009: 92).[33] Finally, we are able to indirectly test our political expectations with firm-level data rather than averaged industry-level data, per Hypothesis 4. This allows us a further opportunity to find support for our model while mitigating aggregation problems. Our regressions use robust standard errors clustered by host state.

[31] Sources: UNCTAD, the World Bank World Development Indicators, and the Polity project.

[32] One could interpret our theoretical model as having implications for the number of firms underlying each observation, which would make the precision of our averaged measures endogenous to the theory. However, note that the same ownership structure could extend over different actors' decisions to select in or out of production, so we avoid inferences based on counts of the number of different named parent companies. We thank — — for discussion of this point.

[33] In general, outcomes of interest are robust to using ordinary least squares, although significance varies. See replication files.

4.4 Regression Results

In testing Hypothesis 1, we expect the coefficient for Effective cash tax rate (foreign) to be positive for foreign firms and negative for domestic firms, as the government takings rate from foreign firms has opposing effects on productivity (Return on Assets) by ownership. Table 1 shows results. Models 1 and 4 include only our variable of interest and fixed effects; Models 2 and 5 add industry-level covariates; and Models 3 and 6 add country-level covariates. In all models, the sign on Effective cash tax rate (foreign) is as predicted: it is positive for foreign firms (Models 1-3) and negative for domestic firms (Models 4-6). The coefficient on Effective cash tax rate (foreign) achieves significance at conventional levels in the fully specified foreign model (Model 3) and in the domestic model with industry-level controls (Model 5). Thus, results are consistent with the theoretical model, which provides us confidence, first, because taxes are an imperfect proxy for government treatment. Second, recall that our sample of domestic firms is biased toward more-productive firms, as each domestic parent company in the sample must be listed and have a subsidiary in the home country, in addition to the parent company's official headquarters. We find the consistent negative signs and at or near significance in Models 4-6 particularly compelling given this skewed sample. Regarding control variables, Startup costs (foreign) are associated with lower productivity and Startup costs (domestic) are associated with higher productivity, whereas the relationships for Mobile are flipped. While our theoretical models does not generate clear predictions for these variables in this context, we note that the flipped signs reinforce that these variables are not measuring the same underlying concept.

[Table 1 goes here.]

In our tests of Hypothesis 2, government behavior is now the outcome to be explained. Note that in Table 2 we have split the ratio that measures the government takings rate, using Foreign cash tax expense on the left-hand side and Pretax income on the right-hand side. Why? In Table 1, we tested the effect of tax expenses per income on outputs per inputs. In that case, per our theory, a rate (of takings) determines a rate (of return). In contrast, per Hypothesis 2, the outcome of interest is government behavior. As emphasized above, it is key to our theory that we find a political effect of startup costs that does not operate through firm size. It should not be that firms in industries with high startup costs are simply bigger. Thus, if we use the takings rate as the dependent variable, our concern is that startup costs could generate change in the ratio via changes in the denominator (income) rather than the numerator (the amount the government

takes). To accurately test our theory, we must uncover a political effect of startup costs when holding income in a country-industry-year steady. This requires us to control for size rather than scale the dependent variable by size.[34]

[Table 2 goes here.]

See Table 2 for results. As before, Model 1 is a stripped-down specification, Model 2 adds industry-level covariates, and Model 3 adds country-level covariates. In all models, we find the hypothesized negative association between Startup costs (foreign) and foreign cash tax expense at the industry level, with a high degree of confidence and a consistent coefficient size. The association holds even when controlling for Pretax income in Models 2 and 3.[35] These strong results provide support for what we see as the key political takeaway of our model that introduces the importance of replaceability at entry. Table 2 also highlights our contribution as a complement to predictions about the effect of Mobile. Both the literature and our model predict that the coefficient on Mobile should be negative and significant. While true in Model 2, the sign flips in Model 3. Though we emphasize again how rough our mobility measure is, these results suggest that obsolescing bargain expectations are not fully robust in this setting. When included side-by-side with mobility, our theoretically novel (continuous, and precise) measure of startup costs offers improved explanatory power.

To reinforce our political results, we explore the implications of our model for economic relationships between startup costs, productivity, and revenue. Again, these tests are particularly useful, because while they do not directly measure political relationships, support for Hypotheses 3 and 4 provides important corroboration for the political dynamics we predict per Hypotheses 1 and 2. First, Hypothesis 3 specifies the expected relationship between startup costs and productivity for mobile foreign firms. We find support in Table 3: within the overarching category of mobile industries, higher Startup costs (foreign) are significantly associated with higher average industry-level Return on assets. Results in Table 3 are particularly important, because the underlying causal mechanism operates through the takings rate but does not require us to measure or control for the takings rate. Our theory establishes that startup costs have a direct economic effect by deterring entry by low-productivity foreign firms. At the same time, deterred entry

[34] Signs are as expected but significance is not robust if we mis-specify the model and use the ratio as the dependent variable.

[35] While insignificant, the signs on income are negative; this reinforces how the relationship between actual tax expense is more complicated than raw taxes demanded. For example, bigger firms may have more opportunities to adjust actual tax payments over time.

reduces replaceability and thus leads the government to take less. But when firms are mobile, the government is already taking less because of the obsolescing bargain dynamic, such that any additional political effect of startup costs should be dominated by the economic effect. The positive coefficient on STARTUP COSTS (FOREIGN) is consistent with this reasoning. Moreover, this evidence in support of Hypothesis 3 further establishes that startup costs can explain variation of interest beyond mobility alone.

[Table 3 goes here.]

Finally, evidence in Table 4 tests Hypothesis 4, the relationship between STARTUP COSTS (FOREIGN) and foreign firm revenue. Higher industry-level STARTUP COSTS (FOREIGN) are associated with significantly higher foreign firm-level REVENUE in Models 1-3. The coefficient is positive for foreign subsidiary-level revenue as well, although it misses significance. Again, this evidence supports a key implication of our theoretical model without requiring us to measure government takings. Because higher startup costs deter new foreign firm entry, they reduce competition, increase prices for consumers, and lead to higher revenues for those firms "in" the market. The government, too, is pressured to provide more favorable treatment to foreign firms given the fewer available replacements. Both mechanisms lead to higher revenues. Importantly, this expectation holds at the level of the firm, so we find support for the theory without needing to calculate industry-level averages for the dependent variable. Results on MOBILE are mixed, again reinforcing the importance of our theoretical expectations derived from theorizing endogeneous entry.

[Table 4 goes here.]

Results of interest are robust to a number of different modeling choices, three of which are worth particular emphasis. First, to alleviate the concern that government treatment varies systematically with corruption, results are robust to controlling for a continuous measure of corruption, or splitting the sample by high or low corruption (World Bank WDI). Second, as is standard, we assume in our formal model that consumers prefer variety, such that the elasticity of substitution across goods within an industry (σ) is greater than 1. For robustness, we include a measure of σ at the 4-digit NAICS level in all specifications (Broda and Weinstein, 2006; Kim and Zhu, 2016). This limits the sample size, but results of interest are in general stable. Results in Table 3 do not replicate, which suggests there is a systematic difference in the role of the elasticity of substitution in the subset of mobile industries.[36]

[36] See replication files.

Third, while we already account for firm size in our specifications, we endeavor to do more to control for firm-level characteristics. Our results are robust to including fixed effects for FIRM STATUS, placing each firm in one of five categories: active and listed; active but delisted; in insolvency proceedings; in bankruptcy; or in liquidation. This allows us to compare within groups of firms enjoying similar levels of success. However, recall that firms must be active and listed to be present in the sample; any other firm status occurs after the firm has incurred startup costs in the host country. If we think of startup costs as the "treatment" that shapes outcomes of interest, then any status other than active and listed is post-treatment. Thus, while we see FIRM STATUS as the least bad alternative with regard to post-treatment bias among other possible firm-level controls, we exclude it in our main results.[37]

In sum, we are reassured by direct support for the political components of our theory, which are our focus. We find compelling evidence that higher foreign startup costs are associated with more favorable government treatment, and that the selection effects generated by higher foreign takings raise average foreign productivity and lower average domestic productivity. We do so by using a novel measure of government treatment—the average industry-level tax burdens facing foreign firms in a given country-year. Our confidence in the theory is further strengthened, because we find strong support via indirect tests focused on economic implications of our political arguments. Finally, our theory explains variation in outcomes of interest beyond that possible with a sole focus on asset mobility. Endogenizing entry is thus not only theoretically but also empirically important.

5 Conclusion

Our main contribution in this paper is to draw out the political effects of startup costs on host governments' treatment of foreign firms. Our approach highlights that market entry conditions can play just as important a role as asset mobility and market exit, which have been the focus of previous scholarship. When startup costs are high, host governments must take less lest they deter existing and potential foreign firms. Both direct and indirect empirical tests of our argument support our main conclusion: when it is more expensive to enter a market and start up new production, those foreign firms that are capable of doing so enjoy reduced political risk.

One implication of our theory pertains to technology. If different technologies advance at

[37] See replication files. For example, managerial decisions over hiring practices would be made in the context of known startup costs, making employee-based measures post-treatment.

different rates, today's ranking of low and high startup costs will likely someday change. Our theory implies that the distribution of political risk across industries would change as well. Consider the startup costs of small-scale, manual-labor-based farming in the past versus the large-scale, capital-intensive farming of the present. Our theory is consistent with both today's lower risk of agricultural land expropriation in the United States, as well as the fact that highly productive multinational corporations now dominate the agricultural industry. Our approach can thus provide insight into both variation in political risk across countries and changing patterns of political risk over long time horizons.

Our theory also pushes a new research frontier that emphasizes government tradeoffs between promoting foreign versus domestic firms. This tradeoff is especially salient as domestic firms originating in developing countries become multinationals. Competition between foreign and domestic firms is also important given normative concerns about the impact of FDI and international investment law on the advancement of domestic entrepreneurship in developing countries.

In this article, we defend our measure of startup costs: it is simply far more expensive to drill a new offshore oil well than it is to rent office space to start a software company. We aim to identify effects of exogenous industry-level variation in startup costs that outweigh endogenous adjustments at the margin. Future research might examine the impact of host governments' efforts to endogenously manipulate startup costs at entry, for example, via investment incentives (Jensen and Malesky, 2018). Additionally, one could consider the differences in political risk generated by variation in government treatment at entry and variation generated over the long-run as bargains obsolesce. Our approach suggests that, so long as replaceability is high, adverse treatment expected in the long-run can in fact come quickly.

Big, multinational corporations might protest our findings. These multinationals make headlines with outspoken complaints about the vicissitudes of government treatment in a globalized era. For example, the biggest multinationals find the most success in international litigation against sovereign host states. Foreign investors with over US$1 billion in annual revenues, and especially investors with over $10 billion, win more compensation, more often than smaller firms when they sue host states over adverse treatment in Investor-State Dispute Settlement (ISDS) investment arbitration proceedings (Van Harten and Malysheuski, 2016). But the perception that big, productive multinationals (the ones that can afford the legal teams necessary to sue under ISDS) face all or even most investor-state conflict is flawed. Their observable complaints are the result of deep and layered selection effects. We argue that these loud multinationals are exactly

the productive firms in expensive industries that in fact enjoy lower levels of political risk. In stark contrast, foreign firms that operate in industries with lower startup costs have lower revenues, are less productive, and face more political risk.

Appendix

Full derivations and proofs will be included in an Online Appendix. We have included a copy of this document with our submission for the anonymous reviewers.

References

Angrist, Joshua and Jorn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*. Princeton University Press.

Baccini, Leonardo, Pablo M. Pinto and Stephen Weymouth. 2017. "The Distributional Consequences of Preferential Trade Liberalization: Firm-Level Evidence." *International Organization* 71:373–395.

Biglaiser, Glen, Hoon Lee and Joseph L. Staats. 2016. "The Effects of the IMF on Expropriation of Foreign Firms." *The Review of International Organizations* 11:1–23.

Broda, C. and D. Weinstein. 2006. "Globalization and the Gains from Variety." *Quarterly Journal of Economics* 121.

Dixit, Avinash K. and Joseph E. Stiglitz. 1977. "Monopolistic Competition and Optimum Product Diversity." *American Economic Review* 67:297–308.

Dunning, John. H. 1993. *Multinational Enterprises and the Global Economy*. Workingham: Addison-Wesley Publishing Company Inc.

Frieden, Jeffry A. 1994. "International Investment and Colonial Control: A New Interpretation." *International Organization* 48:559–593.

Graham, Benjamin A.T., Noel P. Johnston and Allison F. Kingsley. 2016. "A Unified Model of Political Risk." *Advances in Strategic Management* 34:119–160.

Graham, Benjamin A.T., Noel P. Johnston and Allison F. Kingsley. 2017. "Even Constrained Governments Take: The Domestic Politics of Transfer and Expropriation Risks." *Journal of Conflict Resolution* .

Gulotty, Robert. 2017. "Narrowing the Channel: The Politics of Global Supply Chains." Book manuscript.

Hajzler, Christopher. 2012. "Expropriation of Foreign Direct Investments: Sectoral Patterns from 1993 to 2006." *Review of World Economics* 148:119–149.

Hirschman, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press.

Hopenhayn, Hugo A. 1992. "Entry, Exit, and Firm Dynamics in Long Run Equilibrium." *Econometrica* 60:1127–1150.

Jensen, Nathan. 2008. "Political Risk, Democratic Institutions, and Foreign Direct Investment." *Journal of Politics* 70:1040–1052.

Jensen, Nathan M. 2006. *Nation-States and the Multinational Corporation: A Political Economy of Foreign Direct Investment*. Princeton University Press.

Jensen, Nathan M. and Edmund J. Malesky. 2018. *Claiming Credit for Investment Attraction: Politics and the Use of Firm-Specific Fiscal Incentives*. Cambridge University Press.

Jensen, Nathan M., Edmund J. Malesky and Matthew Walsh. 2015. "Competing for Global Capital or Local Voters? The Politics of Business Location Incentives." *Public Choice* 164:331–356.

Jensen, Nathan M., Glen Biglaiser, Quan Li, Edmund Malesky, Pablo M. Pinto, Santiago M. Pinto, and Joseph L. Staats. 2012. *Politics and Foreign Direct Investment*. University of Michigan Press.

Jensen, Nathan M. and Noel P. Johnston. 2011. "Political Risk, Reputation, and the Resource Curse." *Comparative Political Studies* 44:662–688.

Kerner, Andrew and Jane Lawrence. 2014. "What's the risk? Bilateral investment treaties, political risk and fixed capital accumulation." *British Journal of Political Science* 44:107–121.

Kim, In Song. 2017. "Political Cleavages within Industry: Firm-level Lobbying for Trade Liberalization." *American Political Science Review* 111:1–20.

Kim, In Song and Feng Zhu. 2016. "concordance: Concordance Utilities for International Trade Research." available at the Comprehensive R Archive Network (CRAN). `http://CRAN.R-project.org/package=concordance`.

Li, Quan. 2009. "Democracy, Autocracy, and Expropriation of Foreign Direct Investment." *Comparative Political Studies* 42:1098–1127.

Melitz, Marc. 2003. "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity." *Econometrica* 71:1695–1725.

Melitz, Marc J. and Stephen J Redding. 2014. Heterogeneous Firms and Trade. In *Handbook of International Economics*, ed. Gita Gopinath, Elhanan Helpman and Kenneth Rogoff. Elsevier pp. 1–54.

Osgood, Iain, Dustin Tingley, Thomas Bernauer, In Song Kim, Helen V. Milner and Gabriele Spilker. 2017. "The Charmed Life of Superstar Exporters: Survey Evidence on Firms and Trade Policy." *Journal of Politics* 79:133–152.

Owen, Erica and Dennis P. Quinn. 2016. "Does Economic Globalization Influence the US Policy Mood?: A Study of US Public Sentiment, 1956?2011." *British Journal of Political Science* 46:95–125.

Pandya, Sonal S. 2010. "Labor Markets and the Demand for Foreign Direct Investment." *International Organization* 64:389–409.

Pelc, Krzysztof J. 2017. "What Explains the Low Success Rate of Investor-State Disputes?" *International Organization* 71:559–583.

Pinto, Pablo. 2013. *Partisan Investment in the Global Economy.* Cambridge University Press.

Queralt, Didac. 2017. "Protection Not for Sale, But for Tax Compliance." *International Studies Quarterly* 61:631–641.

Van Harten, Gus and Pavel Malysheuski. 2016. "Who Has Benefited Financially from Investment Treaty Arbitration? An Evaluation of the Size and Wealth of Claimants." *Osgoode Legal Studies* Research Paper No. 14/2016.

Vernon, Raymond. 1971. *Sovereignty at Bay: the Multinational Spread of U.S. Enterprises.* Basic Books.

Voeten, Eric. 2001. "Outside Options and the Logic of Security Council Action." *American Political Science Review* 95:845–58.

Zaheer, Srilata. 1995. "Overcoming the Liability of Foreignness." *The Academy of Management Journal* 38:341–363.

Figure 1: Startup Costs Vary Within Mobility Categories

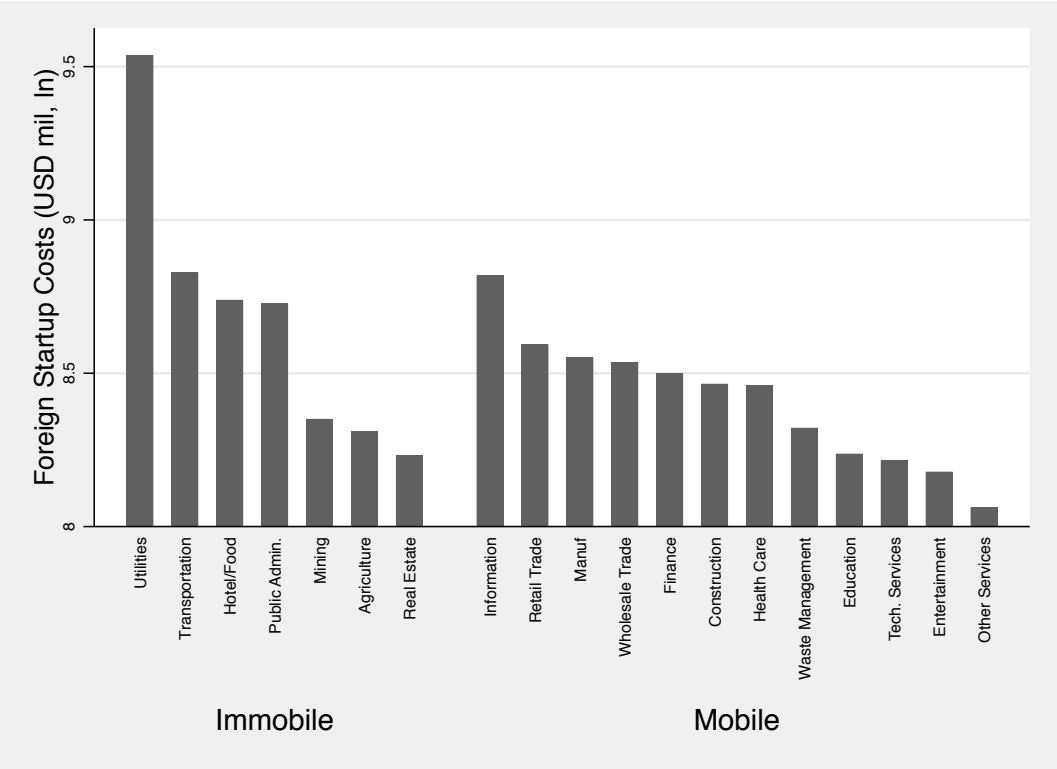

Figure 2: Startup Costs for Foreign Firms are Higher than for Domestic Firms

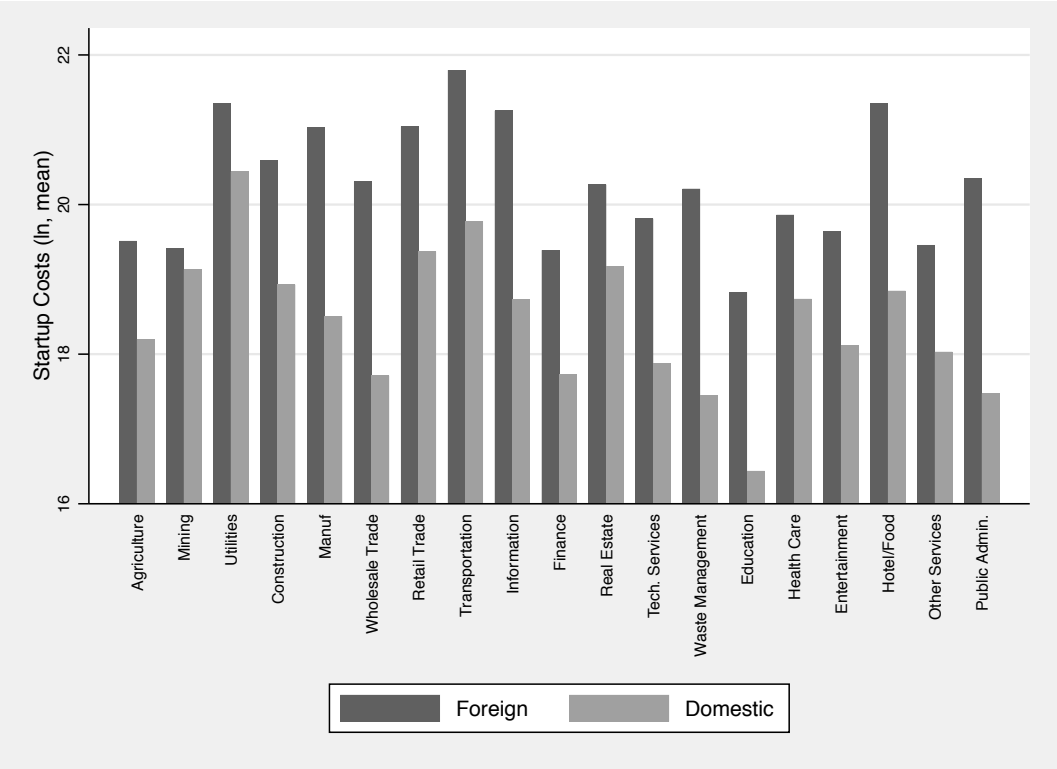

Figure 3: Startup Costs for Foreign Pharmaceutical/Medicine Manufacturers Vary Across Countries

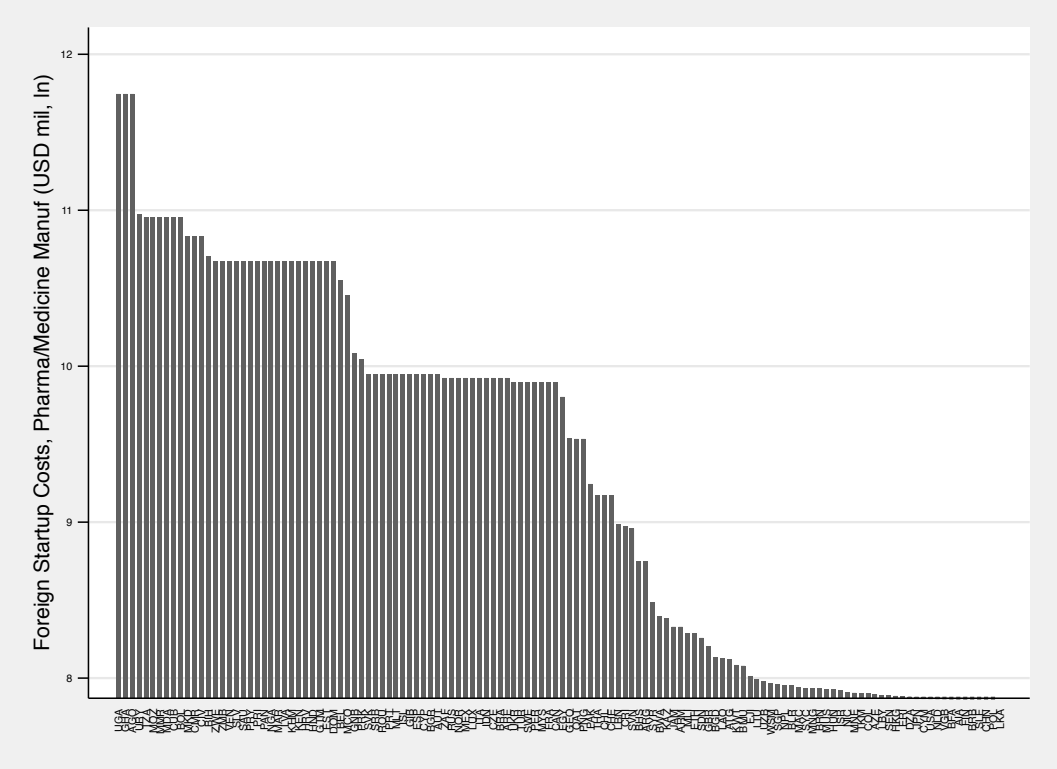

Figure 4: Firm Entry and Exit

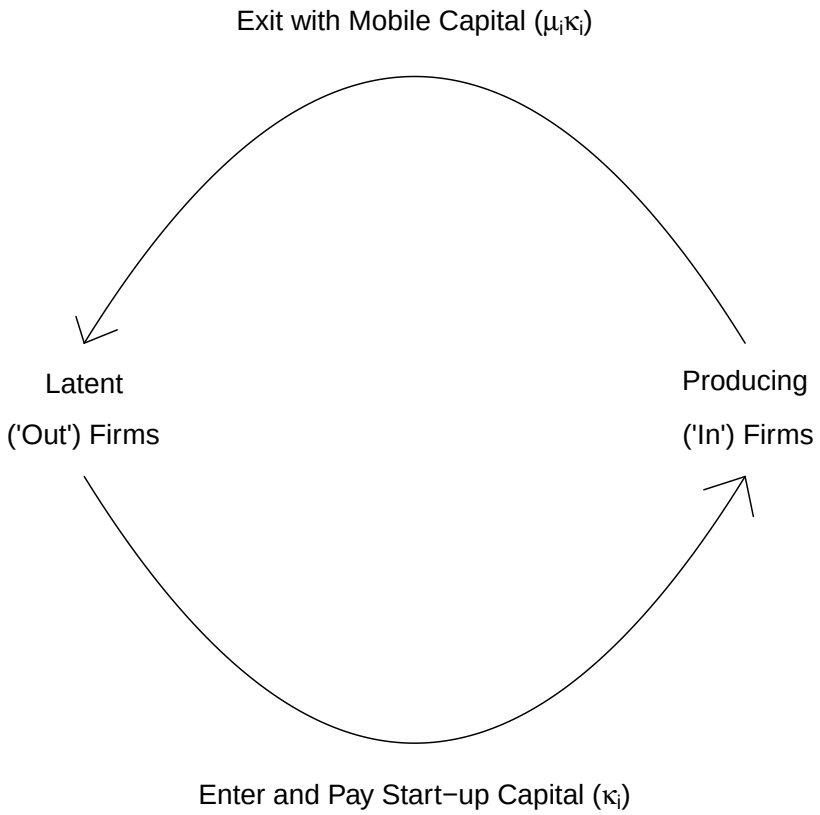

Figure 5: Equilibrium Market Behavior

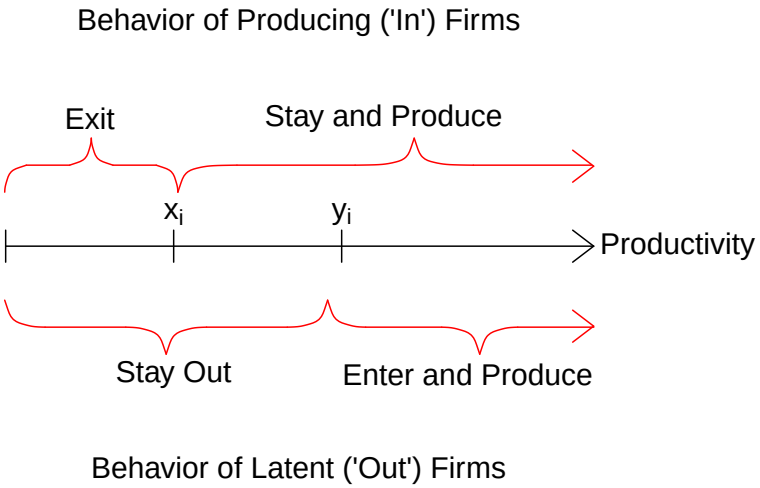

Table 1: With Higher Foreign Takings, Higher Foreign Productivity and Lower Domestic Productivity

	Dependent Variable: Return on Assets (Industry)					
	Sample: Foreign Firms			*Sample: Domestic Firms*		
	(1)	(2)	(3)	(4)	(5)	(6)
Effective cash tax rate (foreign)†	0.00891	0.00888	0.00673*	-0.237	-0.276*	-0.101
	(0.00591)	(0.00590)	(0.00359)	(0.176)	(0.152)	(0.210)
Startup costs (foreign)		-0.000299	-0.00205***			
		(0.000831)	(0.000760)			
Mobile		-0.00902	0.0285***		-0.0940***	-0.0931***
		(0.00687)	(0.00391)		(0.0192)	(0.0235)
BITs			-0.00000266			-0.00665***
			(0.000543)			(0.00222)
FDI net inflow per GDP			-0.000499***			0.000364
			(0.000187)			(0.000483)
Democracy			0.00000548			0.00583***
			(0.000858)			(0.000893)
Trade per GDP			-0.000129			0.000251
			(0.000133)			(0.000570)
GDP per capita			-0.130***			-0.434***
			(0.0278)			(0.0653)
Startup costs (domestic)					0.00961**	0.00892*
					(0.00377)	(0.00475)
Constant	4.535***	4.547***	5.369***	6.880***	7.309***	10.28***
	(0.0665)	(0.0673)	(0.206)	(1.814)	(1.566)	(2.673)
Industry (3-digit)	Yes	Yes	Yes	Yes	Yes	Yes
Host State	Yes	Yes	Yes	Yes	Yes	Yes
Home State	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	188,081	188,081	143,371	305,741	305,736	235,790
Adj. R-squared	0.305	0.305	0.251	0.369	0.387	0.378

† Effective cash tax rate = Cash tax paid/Pretax income.

Weighted OLS. Years covered: 2009-2016. Robust standard errors clustered by host state.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2: For Foreign Firms, Higher Startup Costs Associated with Lower Government Takings

Dependent Variable: Foreign Cash Tax Expense (Industry)			
	(1)	(2)	(3)
Startup costs (foreign)	-0.00776***	-0.00692***	-0.00778***
	(0.000767)	(0.00184)	(0.00261)
Mobile		-0.0143***	0.00596*
		(0.00362)	(0.00334)
Pretax income (industry)†		-0.0215	-0.0208
		(0.0176)	(0.0210)
BITs			-0.0000363
			(0.000670)
FDI net inflow per GDP			-0.000263
			(0.000188)
Democracy			-0.000317
			(0.000549)
Trade per GDP			-0.0000741
			(0.000242)
GDP per capita			-0.0418
			(0.0575)
Constant	25.01***	25.57***	25.81***
	(0.00759)	(0.441)	(0.740)
Industry (3-digit)	Yes	Yes	Yes
Host State	Yes	Yes	Yes
Home State	Yes	Yes	Yes
Year	Yes	Yes	Yes
Observations	188,088	188,088	143,373
Adj. R-squared	0.173	0.193	0.318

† Income = Revenues less the cost of goods sold.

Weighted OLS. Years covered: 2009-2015. Robust standard clustered by host state.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: For Mobile Foreign Firms, Higher Startup Costs Associated with Higher Productivity

	Dependent Variable: Foreign, Mobile Firm Return on Assets (Industry)	
	(1)	(2)
Startup costs (foreign)	0.00436***	0.00267**
	(0.00109)	(0.00108)
BITs		0.00154
		(0.00114)
FDI net inflow per GDP		0.000122
		(0.000192)
Democracy		0.000586
		(0.000600)
Trade per GDP		0.000262***
		(0.0000985)
GDP per capita		-0.0861*
		(0.0446)
Constant	4.563***	5.043***
	(0.0115)	(0.305)
Industry (3-digit)	Yes	Yes
Host State	Yes	Yes
Home State	Yes	Yes
Year	Yes	Yes
Observations	229,140	178,633
Adj. R-squared	0.137	0.096

Weighted OLS. Years covered: 2008-2016. Robust standard errors clustered by host state.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: For Foreign Firms, Higher Startup Costs Associated with Higher Revenues

Dependent Variable: Foreign Firm Revenues				
	(1)	(2)	(3)	(4)
	Firm	*Firm*	*Firm*	*Subsidiary*
Startup costs (foreign)	0.823***	0.174***	0.0269*	0.000496
	(0.0256)	(0.0299)	(0.0151)	(0.00336)
Mobile	-2.536***	-0.478**	0.0608	0.0810**
	(0.537)	(0.223)	(0.0828)	(0.0337)
Total assets (firm)		0.671***	0.823***	0.00607***
		(0.0320)	(0.0102)	(0.00149)
BITs			-0.0126	-0.00602*
			(0.0117)	(0.00331)
FDI inflow per GDP			-0.000762	-0.000444**
			(0.000687)	(0.000200)
Democracy			0.00455	-0.00183
			(0.00827)	(0.00293)
Trade per GDP			0.00107	0.000119
			(0.00111)	(0.000272)
GDP per capita			-0.359	-0.0635
			(0.238)	(0.0760)
Constant	13.91***	5.290***	5.661***	5.390***
	(0.935)	(0.637)	(1.671)	(0.494)
Industry (3-digit)	Yes	Yes	Yes	Yes
Host State	Yes	Yes	Yes	Yes
Home State	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Observations	287,078	287,078	224,147	224,146
Adj. R-squared	0.439	0.825	0.916	0.136

Weighted OLS. Years covered: 2008-2016. Robust standard errors clustered by host state.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$