Political Beta

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Abstract

Using a framework akin to portfolio theory in asset pricing, we introduce the concept of "political beta" to model firm-level export diversification in response to global political risk. The main implication of our model is that a firm is less responsive to changes in political relations with a destination market when that country contributes less to (has lower political beta) or even hedges against (has negative political beta) the firm's total political risk. This result follows the diversification logic of portfolio theory, in which an investor values a given asset depending on the asset's comovement with his/her overall investment portfolio. We find patterns consistent with our model using disaggregated Russian firm-by-destination-country data during 1999-2011: trade is positively correlated with political relations, though the effect is far weaker for trading partners whose political relations with Russia are relatively uncorrelated with those of other partners in a firm's export portfolio. Our results highlight the importance of viewing firms' political relations as an undiversifiable source of risk, and more generally points to the value of modeling firms' treatment of risks as a portfolio diversification problem.

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1. Introduction

Risk is a fundamental input into models of firm investment behavior. A large macro literature builds off the fundamental insight that greater uncertainty raises firms' required return on investment and uses the resultant insights to explain aggregate economic fluctuations (e.g., Bloom, 2009). Not all risks are created equal, however. Some risks can be traded and as such, can be managed by financial instruments.[1] Others, many of which are important risk factors faced by firms (particularly in the international operations context), are not tradable.

In this paper, we frame a firm's management of such risks as analogous to an investor's portfolio choice problem. To this end, we build a model of firm operations/investment, drawing on insights from the rich literature in finance on optimal risk diversification dating back to seminal contributions by Sharpe (1964), Lintner (1965), and Merton (1973). We focus on political risk, a setting that is well-suited to thinking about a firm's portfolio of activities, and an area in which, to our knowledge, the model and insights we develop are new as a way of explaining firm choices.

It is very common for multinational firms to cite political exposure as a rationale for geographic diversification. Such concerns are exemplified by discussion of Russian oil companies' efforts to broaden their export options as the country's political relations with Europe – its traditional market – have deteriorated. A pipeline to the east has facilitated export opportunities in Asia, and China is now its second-largest market (after Germany), one with political frictions that are relatively uncorrelated (or possibly even negatively correlated) with those of Europe.[2] Indeed, the message of our paper is that – in line with portfolio theory – international political risk can be modeled as a set of interdependent risks: a market is particularly valuable if it is relatively uncorrelated with others in a firm's "portfolio."[3]

The model we deploy formalizes this "political hedging" intuition, focused on export decisions, which correspond to our empirical application. We assume that exporting to a

[1] Hoberg and Moon (2017) find that operational hedging can be of value managing tradable risks as well.

[2] See https://www.forbes.com/sites/kenrapoza/2015/04/07/heres-where-russia-shipped-oil-last-year-as-ukraine-europe-diversifies/ (last accessed March 25, 2020)

[3] Our view is well-summarized by the description of Ford Motor Company's management of its global currency risk, provided by an official at the company's treasury department: "Ford has managed foreign exchange risk associated with each currency exposure on an independent basis. Recently, we've developed a portfolio view of foreign exchange exposures across the company to assess and manage risk more holistically." See https://www.risk.net/awards/2443153/corporate-risk-manager-of-the-year-ford-motor-company (last accessed March 25, 2020).

destination has two benefits – it increases current revenues, and also serves as "investment" by lowering costs in the next period. Political relations between the home and destination countries also affect profits, and the firm must make current export decisions with no knowledge of future political conditions. Our model yields the straightforward prediction that exports are positively correlated with the warmth of political relations. It also yields a more nuanced "political hedging" result, which is that export behavior responds less to changes in political relations with countries whose political ties are less positively (or even negatively) correlated with those of the firm's other export markets.

To test this model empirically, we use firm-by-destination-country administrative data from Russia for all exporting companies during 2001-2011, combined with a measure of bilateral political relations based on United Nations voting records (Gartzke, 2010). In particular, we use Russia's shifting political relationships over this period to study how firms respond to evolving political risks that potentially impact the ease with which they can engage in trade with particular countries. Our sample comprises more than 300,000 firm-destination-year-level observations on exports by around 50,000 firms across 180 export destination countries. Utilizing such granular data allows us to observe the response of an individual exporter to political relations between Russia and a given destination market, which is essential to assessing the (non-diversifiable) contribution of a given export market to the overall political risk "portfolio" for a firm's export markets.

Using an augmented gravity trade model, we find support for both of our primary predictions in the data. First, we verify that international trade is highly responsive to political relations. Even with the inclusion of a rich set of controls and fixed effects, we show that as political relations between Russia and a given country deteriorate, companies decrease their exports into that country. The effect we document is sizeable – a one standard deviation decline in our political relations index is associated with an 8 percent reduction in exports.

Second, to test our "political risk portfolio" theory, we explore whether this response to shifting political relations varies as a function of the market's contribution to the overall political risk portfolio. To do so, we calculate a *firm-specific* "political β," which captures the extent to which a destination country's political relationship with Russia tends to comove with Russian relations with other destination countries. More precisely, we define political β in a manner that parallels that of the empirical asset pricing literature: as the regression coefficient of political

relations for a given export destination with the (weighted) average political relations of all export destinations for a given firm. As with the standard asset pricing β, our measure captures how much a given "holding" (in our case an export market) adds to the firm's total systematic/non-diversifiable risk (Sharpe, 1964; Lintner, 1965).[4]

Consistent with our model, we find that shifts in political relations with a given market lead to significantly smaller changes in exporting to low political β destinations, since these markets provide a political hedging benefit for the firm's export portfolio. This result highlights the importance of the interaction of country-level political risk in a given firm's (political) portfolio.[5] Notably, as in standard portfolio theory, we find that it is *not* the volatility of political relations with a given country, per se (political σ), that has an effect on firm's exporting behavior, but rather the non-diversifiable (at the firm-level) component of that country risk (political β). That is, idiosyncratic/diversifiable (at the given firm-level) political risk does not matter.[6]

Finally, we present results based on an aggregated version of our trade data to demonstrate that the political risk management and diversification patterns that we uncover from our firm-by-destination-level analysis cannot be detected using more aggregated trade data. The intuition behind this need for firm-level data is that destination-specific political risk cannot readily be traded among firms within the same country.[7] As such, the risk characteristics of a given market derived from country-level data are unlikely to reflect the (differential) assessment of that risk by individual firms.

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[4] As described in Section 4.2 below, the overall political portfolio is specific to a given firm since different firms export to different sets of destinations (and/or export different shares of total exports to the same destinations). As a result, political β is thus specific to a given country-by-firm pair. A country that serves as a hedge destination (i.e. with low or negative political β) for one exporter might be a high political β market for other exporters. In the example above, China is a low β market, whereas China would be a high β market for a firm that exports to, say, China, Vietnam, and the U.S.

[5] For example, suppose a firm predominantly exports to Britain and the U.S., while also sending a lesser share of its exports to China. Because Russia's relations with the U.S. and Britain (as well as with Western economies, more generally) tend to be highly correlated, each of these destinations will have a high β, relative to the China market β. In this case, the same change in political relations would have a higher impact on exports to the U.S. and Britain (high β destinations for this firm) than on exports to China. China, representing a low, or even negative, β destination for this firm, acts as a political risk hedge for the firm. Ceteris paribus, the firm would therefore respond less to contemporaneous fluctuations in political relations with China since it values the hedging potential of the Chinese market.

[6] We would like to thank John Cochrane for highlighting this point.

[7] In theory, investors might diversify this risk in aggregate. This is impractical in our setting, since very few of the firms in our sample are publicly traded, a fact that holds, albeit to a lesser degree, in the U.S. and other Western economies.

Our work borrows ideas from asset pricing theory to bring new insights and evidence to the study of both political economy and international trade. Most directly, we contribute to the literature on how firms navigate global political risks, particularly non-tradable ones. To our knowledge, we are the first to model these risks as representing an interconnected portfolio of (non-tradable) exposures, rather than seeing political risk as reflected in average exposure. For example, Desai, Foley, and Hines (2008) show that U.S. firms have lower leverage if they operate in highly volatile foreign markets, and Hoberg and Moon (2017) show that multinationals manage currency risks in countries where there are limited foreign exchange hedging possibilities by using the suppliers from the same country as their destination market.[8]

We expand this literature by showing that there is a potentially important interaction between a country's risks and a firm's overall portfolio. Moreover, we provide a conceptual underpinning for this addition. In doing so, we provide a bridge from the canonical contributions in portfolio theory (Sharpe, 1964; Lintner, 1965; and Merton, 1973) to the modeling of firms' operational risks. While we focus on global political risk in this paper, one may think about a similar framework being applied to other types of systematic (non-tradable) risk exposure.

Finally, we contribute to the body of work that examines the impact of political frictions on economic relations. Recent contributions include Michaels and Zhi (2010), who examine substitution away from French inputs following a worsening in political relations between the US and France in 2003; Fisman, Hamao, and Wang (2014), who measure the adverse impact on stock returns of Chinese (Japanese) firms involved in operations in Japan (China), respectively; and Fouka and Voth (2016), who document the decrease in demand for German products in Greece during the 2010-2014 Greek debt crisis and find that the effect is more pronounced in the areas that suffered more at the hands of the Nazis during the Second World War.

Our paper highlights that individual firm responses to these political shocks depend on firms' overall export portfolios, and that this consideration is essential for a fuller examination of how political risk is managed by individual firms.

The rest of the paper is structured as follows. The second section provides the motivation and theoretical underpinnings of the paper. The third section describes the data used in our

[8] A related literature in management and strategy looks at overlapping questions related to multinational investment decisions and the political environment. See, e.g., Henisz (2000) for an early and influential contribution. As with the economics and finance literature in this area, the strategy literature models risks as separable rather than as a portfolio.

analysis. The fourth section details our results. The fifth section considers important extensions. The sixth section provides robustness checks and the seventh section concludes.

2. A model of the management of political risk

We present a model of political risk based on export decisions by a firm that produces in a single country, as this description fits our empirical setting. Our model may straightforwardly be applied to political risk in the sourcing of inputs, as well as other types of systematic risk exposure that cannot readily be hedged by the firm.

2.1 Setup of a Russian exporter's problem

Consider an exporting company that "lives" for two periods. For simplicity, we abstract from the choice of destinations and assume that the firm exports to some fixed set of N countries, indexed by j. Denote A_t^j as the level of political relations between the firm's home country (for concreteness and in line with our data, we refer to Russia as the home country throughout this section) and country j in period $t = 1,2$. Without loss of generality, assume that higher values of A^j reflect better political relations.

The firm's information set is structured as follows. The level of current (period $t = 1$) political relations with all markets A_1^j is known, but political relations in the second period are not revealed until $t = 2$. The firm decides how much to export to country j in any given period after observing the contemporaneous level of political relations, $\{A_1^j\}_{j=1}^N$. Denote the firm's exports in period $t = 1$ into country j as Q_1^j, while profits received from market j in period $t = 1,2$ are denoted as π_t^j.

Finally, we assume that the firm makes an investment in relationship-specific capital in the first period that affects the firm's profitability in the second period. We posit that such investment is plausibly related to first period exports into a given market. For example, higher exports at $t = 1$ could lead to better brand recognition, better relations with retailers, and so forth, which increases the demand (and/or reduces selling costs) in the second period. For simplicity, we represent this investment and first-period exports Q_1^j by the same variable. Thus, second period profits π_2^j depend on both second period political relations A_2^j and first period exports Q_1^j. Finally, we assume that

current investment in relationship-specific capital enters multiplicatively in the second period profit function:[9]

$$\pi_2^j = \phi(Q_1^j)\pi_2(A_2^j) \quad (1)$$

Profits in the first period depend on exports in the first period Q_1^j and first period political relations A_1^j:[10]

$$\pi_1^j = \pi_1(A_1^j, Q_1^j) \quad (2)$$

Under our chosen normalization, higher A_1^j means better political relations such that $\frac{\partial^2 \pi_1}{\partial A_1^j \partial Q_1^j} > 0$; that is, better political relations increase the marginal revenue and/or reduce the marginal cost of exporting.

The firm is risk averse and maximizes the sum of the current profits it receives from all markets j plus the expected value of (the sum of) future profits minus the variance of future profits in all markets. Put formally, the exporter maximizes the following objective:[11]

$$\Pi = \sum_j \pi_1 \left(A_1^j, Q_1^j\right) + \theta \sum_j \phi(Q_1^j)\, E_1\left[\pi_2(A_2^j)\right] - \frac{\delta^2}{2} Var_1\left[\sum_j \phi(Q_1^j)\pi_2(A_2^j)\right] \quad (3)$$

The second and third terms are analogous to the standard utility function of an investor in the asset pricing literature, who cares only about the mean and variance of returns: $U(\mu, \sigma^2) = \theta\mu - \frac{\delta^2}{2}\sigma^2$ (see, e.g., Sharpe, 1964).

2.2. Solution of the exporter's problem: Political risk diversification

The first order conditions for a firm's choice of exports into a particular market j can be written as:

$$\frac{\partial \pi_1}{\partial Q_1^j} + \phi'(Q_1^j)\left\{\theta\, E_1\left[\pi_2(A_2^j)\right] - \delta^2\, cov_1\left[\pi_2(A_2^j), \sum_i \phi(Q_1^i)\pi_2(A_2^i)\right]\right\} = 0. \quad (4)$$

[9] For example, this could result under demand with constant (but with potential variation across markets) price elasticity and an investment in relationship-specific capital that affects either the marginal cost of selling in the market or the demand for the product without changing the elasticity.

[10] Profit functions could differ across markets as well with $\pi_2^j = \pi_2^{(j)}(A_2^j)$ and $\pi_1^j = \pi_1^{(j)}(A_1^j, Q_1^j)$. We omit superscripts j for these profit functions to simplify the notation.

[11] One can think of this two-period problem as a short-cut for the multiperiod model, in which there is no uncertainty about contemporaneous profits, but there is a stochastic component in future profitability due to the uncertainty in political relations.

The intuitive interpretation of these conditions is the following: exporting an additional unit of product Q_1^j in some market j in period $t = 1$ produces two types of benefits. First, it affects contemporaneous marginal profits (CMP_j) from this market (the first part of (4) above)

$$CMP_j = \frac{\partial \pi_1}{\partial\, Q_1^j} \tag{5}$$

Second, it changes the future marginal benefit (FMB_j) of selling to country j as follows:

$$FMB_j = \phi'(Q_1^j)\left\{\theta\, E_1[\pi_2(A_2^j)] - \delta^2\, cov_1\left[\pi_2(A_2^j), \sum_i \phi(Q_1^i)\pi_2(A_2^i)\right]\right\} \tag{6}$$

At the optimum, the exporter equates to zero the sum of contemporaneous marginal profit CMP_j and the future marginal benefit FMB_j from the investment in country j's relationship-specific capital.[12]

The future marginal benefit term FMB_j is, in turn, comprised of two components:

$$FMB_j = EP_j - COV_j \tag{7}$$

The first term relates to the impact of current exports, Q_1^j, on future expected profits in market j:

$$EP_j = \theta\phi'(Q_1^j)E[\pi_2(A_2^j)] \tag{8}$$

The second term (with a negative sign) reflects the impact of current exports into j, Q_1^j, on the variance of future profits from *all* markets/countries:

$$COV_j = \delta^2\phi'(Q_1^j)\, cov\left[\pi_2(A_2^j), \sum_i \phi(Q_1^i)\pi_2(A_2^i)\right] \tag{9}$$

We note that this latter term, COV_j, depends on the covariance of political relations between Russia and country j with the weighted average of political relations between Russia and all export destinations of a given exporting firm. It is not the (future) variance of political relations with country j that matters for the behavior of exporter i, but rather this country's contribution to the overall (political) risk faced by the exporter. A market j that has a higher covariance with the overall political "portfolio" of current export destinations of the firm (i.e., countries that tend to move *together* with other export destinations of the firm) tends to have a *lower* future marginal benefit FMB_j (as measured at $t = 1$) for the firm. By contrast, markets that tend to comove less

[12] Since current period marginal profit is equal to the difference between current marginal revenue and marginal cost, this condition could be reformulated as the sum of contemporaneous marginal revenue and future marginal benefit from exporting today where it is equated to the current marginal cost of the product.

with (or even move against) the firm's other export markets will have (ceteris paribus) a higher future marginal benefit FMB_j for the firm.

This result is akin to the diversification argument from portfolio theory in asset pricing. In assessing the benefits of holding a particular financial asset, an investor cares about non-diversifiable risk contained in that asset, which is measured by the asset's comovement with the market portfolio: the market β of the asset matters to the investor rather than the total risk (variance) of this asset in isolation. It is important to note that in our context, there is no common political market portfolio, since political risk is not traded. As a result, all country covariances (and resulting political βs) are firm- and country-specific.[13,14] An interesting consequence of this construct is that the same export market might be perceived as lower (systematic) risk by some exporters and high (systematic) risk by others, depending on their overall political "portfolios" of destination countries for different exporting firms.

2.3. Primary empirical predictions

Our model provides several testable empirical predictions. We focus on explaining the logic that delivers these predictions in the main text and relegate detailed proofs and derivations to Appendix A1.

Consider an exporter whose behavior is described by the model in Sections 2.1-2.2. Assume that political relations with one of the firm's export destinations deteriorate. We are interested in studying the effect on firm exports into this market, and the heterogeneity in this response as a function of the firm's broader portfolio of export markets.

Our first prediction is that, on average, a worsening of political relations with destination country j leads to a reduction in exports to j. That is, if export market j experiences an adverse political shock, companies will reduce exports into j since the contemporaneous marginal profit

[13] One can easily transform this covariance into the time-series regression coefficient ("political β") by dividing the covariance COV_j in (9) by the variance of the overall political relations portfolio, $\sum_i \phi\left(Q_1^i\right)\pi_2(A_2^i)$. In the analysis below, we always include firm-specific fixed effects to control for differences in political portfolios "held" by different exporters. For robustness, we also show results using covariances instead of βs. Results are very similar qualitatively.

[14] In our empirical analyses, we calculate political βs using a rolling time window over past periods (to approximate moments conditional on the time t information set, as, in principle, all moments in first order conditions (4) are time $t = 1$, specific). Political βs, therefore, are firm-country-time-period specific.

of exporting is lower.[15] One can think of this decline as demand-driven, with local consumers and businesses substituting away from Russian products when political relations with Russia worsen, as in Michaels and Zhi (2010) or Canayaz and Darendeli (2019). Alternatively, the decline in political relations might increase effective production costs due to trade restrictions, sanctions, or tariffs initiated by the government (either the Russian government or country j's government). In either case, current period marginal profits CMP_j of exporting to country j decline, therefore the firm reduces its exports to country j.

The intuition for this result is very straightforward, and, indeed, is a natural result in a simpler model that ignores the firm's risk portfolio. We now turn to the more nuanced prediction of the model, which accounts for the fuller set of risks faced by the exporter:

> ***The value of political hedging and export behavior****: The negative response of exports to a deterioration of political relations is greater in magnitude (i.e., more negative) for destinations whose political relations comove with the political relations of an exporter's other markets, and smaller in magnitude (i.e., less negative) for destinations whose political relations comove less with (or even move against) the political relations of an exporter's other export destinations.*

This prediction follows from the exporter's first order conditions in equation (4) in Section 2.2, which capture the tradeoff between the current marginal profits (in equation (5) from exporting to a given market j, CMP_j), and the future marginal benefits (in equation (6) from exporting as a result of the firm's investment in market j , FMB_j).

As the expression for FMB_j demonstrates, export markets that have a *higher* degree of comovement in political relations with other export destinations of a firm (i.e., a higher value for the COV_j term in equation (9)) provide *smaller* future marginal benefits to the firm, FMB_j (see equations (6), (7)). By the same argument, future marginal benefits from exporting today tend to be *higher* (all else equal) in the case of countries that comove *less* with (or even move against) the political relations of other export destinations with the home country. As such, the response to a

[15] Mathematically, under the assumed normalization (higher A_1^j means better political relations), contemporaneous marginal profits $CMP_j = \frac{\partial \pi_1}{\partial Q_1^j}$ decrease when A_1^j decreases, thus resulting in decreased exports into country j, Q_1^j.

change in contemporaneous political relations, A_1^j, with market j will be *smaller* for countries that comove *less* with (or move against) other export destinations of the firm.[16]

In summary, a destination market that comoves less with (or moves against) other export destinations of a given firm represents a valuable hedge against future political risk for the firm. The exporter thus responds less to a worsening in current political relations, tolerating a decrease in current profits because of the market's hedging potential against future political risks.

A given export market j therefore may serve as a hedge or be a source of undiversifiable political risk, depending on a firm's other exposures. We assume that political risk is not tradable (as least not *easily* tradable). As a result, different agents cannot share or trade this risk to create a common "total" political market portfolio pooling the political risks of all countries, as is the case in traditional portfolio theory, where the overall market portfolio serves as a common yardstick against which to measure an individual asset's contribution to systematic risk. Rather, a firm's assessment of a country's contribution to systematic/undiversifiable risk is measured by the country's comovement with the set of export destination countries for that particular firm.

3. Data

3.1. Company-level exports

Our dataset contains exports of goods by all companies located in Russia to more than 180 countries. The data are derived from a database of individual customs forms for export transactions submitted to the Russian Customs Services over the years 2001 – 2011.[17] Firms with operations in Russia must complete these customs forms every time a transaction occurs involving a product (in our case, an export) that (legally) crosses the Russian border.[18] Russian customs forms provide the following information about each transaction: 1) a description of the shipment (type, value, and weight of the goods), 2) identifying information for the Russian exporting firm (firm name,

[16] Note that the volatility of political relations of Russia with a given export market itself does not enter into the firm's calculation. Only the systematic/undiversifiable component of the volatility results in a differential response. Diversifiable risk (i.e., the one offset by variation in political relations with other export destinations) does not elicit a differential response.

[17] While more recent data are available, they are prohibitively expensive, as they are primarily sold to businesses as a commercial product.

[18] These datasets are available for purchase from several online vendors in Russia: see e.g. www.russbd.com. Aggregated versions of these statistics are available from the Russian Customs Service as well. These data were initially made public when it was leaked from the Federal Customs Service of Russia. Similarly obtained datasets have already been used in prior research on the Russian economy. Though the Russian government does not publicly admit that the data were ever leaked, it is willing to support and use research utilizing this data to aid in the design of its policy. See, e.g., Braguinsky et al (2014), Mironov and Zhuravskaya (2016), Chernykh and Mityakov (2017).

address, taxpayer number), and 3) information about the foreign (non-Russian) counterpart of the export transaction (i.e., the importer).

We use company identification numbers to identify individual exporters in our sample and aggregate all (values and weights of) exports to a particular country by a given Russian exporter within each year. This aggregation leads to our sample of 346,819 firm-by-destination country-year level observations with positive exports over 2001-2011 period. Our sample comprises approximately 50,000 unique firms with 180 destination markets.

3.2. Political relations

Our proxy for political relations between Russia and an individual export destination is the "Affinity of Nations Index" (Gartzke 2010), which aims to quantify the similarity of countries' preferences based on relative voting positions of country pairs in the UN General Assembly since 1946. Alesina and Dollar (2000) argue that UN votes are a reliable indication of the political alliances between countries, because the pattern of those votes is strongly correlated with alliances and the coincidence of economic and geopolitical interests. Records for United Nations General Assembly voting include entries equal to one of the following for each issue/year: "yes", "no", "abstain", "absent" or "nonmember." The Affinity of Nations Index for bilateral pairs of countries (i.e., Russia and each exporting nation) adopted in this paper utilizes the first three possible answers and quantifies it as follows: 1 = "yes"; 2 = "abstain"; 3 = "no". Our measure of political relations is calculated using the numerical representation of the response as denoted above in the following equation:

$$AF \quad = 1 - 2\frac{d}{d_{max}} \tag{10}$$

where *d* is the sum of metric distances between votes by bilateral pairs in a given year and d_{max} is the largest possible metric distance for those votes. The resulting index, which lies between -1 and 1, follows the "*S*" measure as in Signorino and Ritter (1999). Positive (Negative) values of the index correspond to (dis)similarity in UN voting for the two countries in the bilateral pair. Unlike other indexes based on alliance portfolios, indexes based on UN voting provide significant time-series variation in political distance. Following Dreher and Sturm (2012) and the majority of the literature, we focus on all votes (that is, both key and non-key votes).

Table 1 contains summary statistics for all variables used in our analysis.

[Insert Table 1 here]

Before we turn to our results, it is useful to examine how the Affinity Index relates to well-documented and discrete changes in political relations, and describe how its (within-country) distribution might provide some context for interpreting the magnitude of the effects we document below. Figure 1 plots the Affinity Index over 2001-2011 for Russia's relations with several key neighbors and global powers. The Affinity Index shows that conflicting UN votes between Russia and Ukraine increase sharply after the 2005 Orange Revolution, as reflected by a drop of the Affinity Index by about 0.2. Frictions with Georgia are similarly reflected in the Affinity Index, which declines by 0.1 in 2007, and drops again in 2008, the year Russia officially recognized the calls for independence by two Georgian regions. The index bounces back with the normalization of Russian-Georgian relations in 2011 (e.g., citizens of each country were again allowed to visit the other without a visa by 2012).

[Insert Figure 1 here]

We now turn to examine how Russia's relations with major world powers are reflected in the Affinity Index. Looking first at Germany, we observe a gradual but persistent decline in political relations (by 0.15) between Russia and Germany after 2005. This was the year that Angela Merkel, who took a tough stance on Russia during her time in office, became the German Chancellor. The increase in disagreement between Russia and the United States (US) during the presidency of George W. Bush (2001-2008) was even more dramatic: the Affinity Index fell by 0.25, while a "reset" in political relations between the US and Russia in 2008-2009 under President Obama led to an increase in the Affinity Index of 0.2. We may contrast these rather tumultuous relationships with the Chinese-Russian Affinity Index, also shown in Figure 1, which was remarkably stable throughout the period we study.

4. Main results

4.1. Baseline impact of political relations on international trade.

We start our analysis by examining the relationship between a country's political relations with Russia and Russian firms' exports to that destination.

To this end, we employ the gravity equation, a standard workhorse model in international trade. In its classical form, the gravity equation links the (log of the) amount of trade between

countries to their economic sizes and the (log of the) distance between the two, where "distance" could mean not only geographical distance between the countries, but also other factors that might be impediments to international trade (Tinbergen, 1962). In the multiplicative constant elasticity form, the gravity equation can be written as:

$$Q_{i,j,t} = \frac{\left(Y_t^{(j)}\right)^{\gamma_1} \left(Y_t^{Russia}\right)^{\gamma_2}}{\left(D_t^{(j)}\right)^{\delta}} e^{\alpha+\eta_{i,j,t}} \quad (11)$$

where $Q_{i,j,t}$ are total exports of Russian firm *i* into country *j* in year *t*. $Y_t^{(j)}$ and Y_t^{Russia} denote the GDP of country j and Russia in year t, respectively. $D_t^{(j)}$ is the "distance" between Russia and country *j*.

In our paper, we focus on political relations as a factor affecting trade between Russia and some other country, using the Affinity Index, $AF_{j,Russia,t}$, as a measure of the "distance" between Russia and country j in year t. We consider the following log-linearized version of the gravity equation:

$$\ln Q_{i,j,t} = \alpha + \delta AF_{j,t-1} + \gamma \ln Y_{j,t} + \rho X_{i,t} + a_{i,(t)} + f_j + \phi_t + \eta_{ijt} \quad (12)$$

Here, $Q_{i,j,t}$ is the total exports by firm i into country j in year t (in current USD).[19] $A_{j,t-1}$ is the measure of political relations between Russia and country j in year $t-1$ proxied by the Affinity Index, as described in Section 3.2 above. Since we look exclusively at Russian exporters, we omit the subscript *Russia* from the Affinity Index for simplicity.

We include export country fixed effects, f_j, in our specifications to absorb time-invariant country-level heterogeneity that might affect trade (notably geographical distance is absorbed by these fixed effects). Thus, the coefficient on the Affinity Index, δ, should be interpreted as the change in the overall level of exports associated with a change in the political relations within a particular country. Positive δ indicates higher trade when political relations improve.

We also control for firm-level heterogeneity by including firm fixed effects, a_i. In some specifications, we additionally control for more flexible firm-year fixed effects $a_{i,t}$, which account

[19] In all of our analyses, we consider trade flows as measured in US dollars. By Russian law, every good crossing the border is reported not only in the currency of the contract, but also according to its "statistical value", which is equal to the current dollar value of goods crossing the border. Time fixed-effects included in all regressions account for US inflation.

for potential productivity shocks (and hence the ability to export) at the firm-level. We use two-way clustered standard errors, clustering on firm and export destination, for all of our analyses.

As is standard in gravity models, we include the log of a country's GDP and population. We also control for the size of the Russian exporting company by including the log of its assets.[20] Year fixed effects, ϕ_t, are included to account for various aggregate time shocks (notably, these fixed effects absorb the log of Russian GDP).

The preceding specification captures the intensive margin of exports that derives most directly from our gravity trade model. Modern trade literature also emphasizes the importance of the extensive margin, i.e., the firm-level decision to trade or not (see Keith and Mayer, 2014). Hence, we additionally show results in which the outcome is an indicator variable capturing whether or not firm i exports to country j in year t. For these specifications, we use a linear probability model. Because of the preponderance of firm-country pairs that have zero trade throughout our sample period (the median firm exports to a total of 4 countries during 2001-2011), we restrict our sample in the extensive margin analysis to firm-country pairs that have non-zero trade in at least one year during our time period. Finally, we also combine the intensive and extensive margins in a specification that uses $ln(\$2{,}000 + Q_{i,j,t})$, where \$2,000 is chosen such that the gap between the median value of the dependent variable and 25th percentile is approximately the same as the gap between the median and 75th percentile.[21]

Regression results that capture the intensive margin of trade in equation (12) are presented in Panel A of Table 2. Across all specifications, our results indicate that as political relations between Russia and a given export destination worsen, Russian companies significantly reduce their exports into that country. In most specifications, the point estimate on Affinity Index is significant at the 5 percent level or stronger, and the coefficients imply economically large effects. As one measure of its magnitude, the within-country standard deviation in the Affinity Index is 0.20, implying that a one standard deviation decline in its value is associated with a decrease in exports into that country of around 8 percent (=0.38*0.2).

[Insert Table 2 here]

[20] The results are similar if we omit these controls.

[21] This approach is used to address the problem of the choice in trade flow units of measurement for a fixed additive constant. In results available from the authors, we show that the patterns we describe do not depend on the choice of constant within a broad range of values.

In columns (2) and (3), we include higher order lags of the Affinity Index. We find that the two-year lag has some explanatory power, though its coefficient is less than half that of the one-year lag. In the remainder of our analysis, we focus on the one-year lagged Affinity Index. We add firm-year fixed effects in columns (4) – (6) and find that our results are invariant to the addition of these controls.

In Panel B of Table 2, we show results for the extensive margin of trade. The patterns are broadly similar to those in Panel A, implying both intensive and extensive margins of adjustment. For completeness, we include a specification that captures both intensive and extensive margins in Panel C, employing $\log(\$2{,}000 + Q_{i,j,t})$ as the dependent variable, which generates results that are qualitatively similar to those in Panels A and B.

Figure 2 documents the relationship between political frictions and exports across the full distribution of the Affinity Index using a binned scatterplot after 'partialling out' the main controls employed in Table 2 (i.e., firm, year, and country fixed effects, as well as controls for firm assets and country GDP and population). The graph shows an overall positive relationship across the full distribution of the (one-year lagged) Affinity Index.

[Insert Figure 2 here]

The relationship we document in Table 2 and Figure 2 is in line with findings from prior studies that find a positive relationship between political relations and bilateral trade and investment (see e.g., Michaels and Zhi, 2010; Fisman, Hamao, and Wang, 2014; Fouka and Voth, 2016). We now turn to evaluating the more subtle prediction of our model, which emphasizes the *differential* response of trade to political relations as a function of a trading partner's diversification value to a firm's overall export portfolio.

4.2. Diversification of political risk

The main prediction of our model in Section 2 is that due to the diversification of political risk across all of a firm's destination markets, what matters to the firm is not the overall volatility/variance of political relations with an individual country, but rather the covariance/comovement of those relations with the firm's other export destination. We now turn to examining this prediction in the data.

A market that comoves less with or even moves against (in terms of political relations) other destination markets is more valuable to the firm since such a market can provide a political

risk hedge for the firm (i.e., political relations with this market will remain relatively stable – or even improve – when political relations with other export markets in its "political portfolio" deteriorate). This provides a political hedging benefit for the firm (FMB_j in equation (6) is higher since COV_j in equation (9) is lower or negative). As a result, the response to a contemporaneous worsening in political relations for such a market will be attenuated relative to other export destinations.

4.2.1. Measuring a country's contribution to company-level risk: political β

Following the asset pricing literature, we measure a country's contribution to the overall political risk facing an exporting firm using the regression coefficient of political relations for a given country on the weighted average of political relations over all of its export destination countries.[22]

$$\beta_{j,i} = \frac{cov\left(AF_{j,t}, WAF_{i,t}\right)}{var\left(WAF_{i,t}\right)} \tag{13}$$

Here $AF_{j,t}$ is the Affinity Index between Russia and country j in year t and $WAF_{i.t}$ is the (weighted) average of AF for a given exporting firm i in year t, where averaging is taken over all countries with which the firm trades.

We wish to assess whether there is a differential response to changes in political relations, $AF_{j,t}$, based on the contribution of country j to the firm's overall political risk, which is proxied by $\beta_{j,i}$, a firm-specific political β. In particular, we estimate the following specification:

$$\ln Q_{i,j,t} = \gamma_0 AF_{j,t-1} + \gamma_1 \beta_{j,i} + \gamma_2 \beta_{j,i} AF_{j,t-1} + \delta_1 \ln Y_{j,t} + \delta_2 X_{i,t} + a_i + \left(f_j\right) + \phi_t + \eta_{i,j,t} \tag{14}$$

Unfortunately, we cannot calculate political β in exact accordance with equation (13), and then estimate the regression in (14). The problem, standard in asset pricing models more generally, is that in our model, $WAF_{i.t}$ is a weighted average of political relations, with weights reflecting the amount of exports Q_{ijt} that firm i sends to destination j. However, Q_{ijt} is also the dependent variable in equation (14).

[22] This approach to the measurement of systematic risk follows portfolio theory. However, we perform a robustness check using covariances rather than time series regression coefficient βs and find similar results. See Table A3.3 in Appendix A3.

To deal with this simultaneity problem, we use a rolling pre-ranking approach akin to that commonly employed in asset pricing (see, e.g., Black, Jensen, and Scholes (1972), or Fama, French (1992) for classical expositions). More precisely, consider a given firm i. We construct political βs for firm i in year t by using information on both political relations and firm trade prior to year t as follows. First, we use the exports of firm i into all countries from time $t-5$ to $t-1$ and define weights for the firm's overall political portfolio as:[23]

$$w_{j,i}^{EW}(t) = \frac{1}{N_i(t)} \tag{15a}$$

$$w_{j,i}^{VW}(t) = \frac{\sum_{\tau=t-5}^{t-1} Q_{i,j,\tau}}{\sum_{j'} \left(\sum_{\tau=t-5}^{t-1} Q_{i,j',\tau}\right)} \tag{15b}$$

Here $N_i(t)$ is the number of countries with which firm i traded during the years $t-5$ to $t-1$. $w_{j,i}^{EW}(t)$ assigns equal weights to all countries with which firm i has traded in the previous 5 years, thus, giving us an analogue to the equally-weighted portfolio in the asset pricing literature. $w_{j,i}^{VW}(t)$ is equal to the share of exports by firm i to country j over the 5 years preceding year t in the total amount of firm i exports over the same period. $w_{j,i}^{VW}(t)$ thus, giving us the analogue to the value-weighted portfolio in asset pricing.

We then use these weights to define the equally-weighed (EW) and value weighted (VW) political portfolios of company *i* in year $\tau < t$ as:

$$WAF_{i,\tau}^{K} = \sum_{j} w_{j,i}^{K}(t) AF_{j,\tau}\,, K \in \{EQ, VW\} \tag{16}$$

As such, $WAF_{i,\tau}^{K}$ is defined as a proxy for the total amount of political risk the given exporting firm i faces in year $\tau < t$.

Finally, for each year $t = 2006, \ldots, 2011,$ we use information on the political relations for country j ($AF_{j,\tau}$) and firm i's political portfolio ($WAF_{i,\tau}^{K}$) over $\tau = \{t-14, \ldots, t-2\}$ to calculate

[23] Note that because we use a five-year lag, and because our export data are available for 2001-2011, we may calculate theses weights for t=2006,…,2011.

the (equally-weighted and value-weighted) political $\beta(t)$s as the slope coefficients from the following time series regression:[24, 25]

$$AF_{j,\tau} = \alpha_i^K(t) + \beta_{j,i}^K(t) WAF_{i,\tau}^K + \epsilon_{j,i,\tau}, \tau = t-15, t-2 \quad (17)$$

or equivalently:

$$\beta_{j,i}^K(t) = \frac{cov_{t-14,t-2}\left(AF_{j,\tau}, WAF_{i.\tau}^K\right)}{var_{t-14,t-2}\left(WAF_{i,\tau}^K\right)}, K \in \{EW, VW\} \quad (18)$$

where $cov_{t-14,t-2}$ and $var_{t-14,t-2}$ denote sample analogues to covariance and variance, taken over $t-14$ to $t-2$.[26]

Defined in this way, $\beta_{j,i}^K(t)$ describes the degree of comovement between political relations for a given country with Russia, $AF_{j,\tau}$, with the overall political risk exporter *i* faced, $WAF_{i.\tau}^K$, over the periods preceding t: (i.e., $t-14$ to $t-2$). The average value of political βs thus defined are generally in the range of 0.6-0.8 with a standard deviation of 1.2-1.5. Most of the political βs (98 percent of observations) fall within the -2.7 to $+3.3$ range.

This rolling pre-ranking approach results in time-varying political βs, since we use a rolling 13-year window (e.g., for $t = 2006$ we run the time-series regression in equation (14) over $\tau = 1992-2004$ and for $t = 2011$ we run a time-series regression over $\tau = 1997-2009$). We allow for the firms to (gradually) change their assessment of a country's risk contribution to their

[24] Since we use the Affinity Index lagged by one year (AF_{t-1}) in our regressions, we only use information on $AF_{j,\tau}$ from $t-14$ to $t-2$ in calculating $\beta(t)$ to avoid overlap in our calculation for each year t. Inasmuch as political relations for Russia only became available in 1992 due to the collapse of the Soviet Union (i.e., in 1991), we use the $t-14$ time frame to measure $\beta(t=2006)$ for the first year in our estimation period.

[25] We thus use the firm's exports over a 5-year trailing window to calculate portfolio weights $w_{j,i}^K(t)$, but use information about political relations over a longer period prior to year $t-1$ to run time-series regressions of political relations of country j, $AF_{j,\tau}$, on firm's political portfolio, $WAF_{i.t}^K$. We use a larger time window for political relations as we feel that using only 5 years to run a time-series regression might produce very noisy estimates of regression coefficients β. At the same time, we hope that using only 5 years of exports might be sufficiently long to evaluate firm's "dependence" on a given country in its portfolio.

[26] Since we use estimation both at the extensive and intensive margins, we need to calculate political β not only for the exporters destination countries, but also for all potential destination markets of the exporter. In the end, we had to run about 500,000 regressions to calculate political βs for a particular weighting approach. We utilized the High Performance Computing Cluster at FSU to perform those calculations. We would like to thank FSU Research Computing Center for the generous allotment of compute time.

political portfolios depending on new information about political relations between that country and Russia.[27]

We emphasize that $\beta_{j,i}^{K}(t)$ is specific not only to a given country j, but also to firm i: the same country j might have different political βs for different firms, depending on other countries (and the amount of exports into those countries) with which firm i trades. To illustrate the specificity of $\beta_{j,i}^{K}(t)$ to a particular firm, consider the βs for two firms that export to both Belarus and Finland. Russia's political relations with Belarus tend to move against those of Western European nations, while relations with Finland tend to be positively correlated with those of other European countries. Consider Firm 1, which in addition to exporting to Belarus and Finland also exports to other countries in Western Europe. In Firm 1's portfolio, Belarus would have a negative β, while Finland's β would be positive. Now consider Firm 2, which exports to Kazakhstan and Uzbekistan in addition to Belarus and Finland. Since these two countries' relations with Russia are positively correlated with those of Belarus and negatively correlated with those of Finland, the hedging benefits of Belarus and Finland are reversed, relative to Firm 1. That is, Belarus provides a hedging benefit for Firm 1 and is a source of non-diversified political risk for Firm 2, while Finland is a political hedge for Firm 2 and a source of non-diversified risk for Firm 1.

The main prediction of our model is that Firm 1 will respond less to the changes in political relations with Belarus than Finland, while Firm 2 will respond less to changes in relations with Finland than Belarus.

4.2.2. Evidence of political risk diversification: Heterogeneity with respect to political β

We now test the main prediction of our model using the following empirical specification over the period $t = 2006 - 2011$ using $\beta_{i,j}(t)$ calculated on the basis of the rolling pre-ranking approach described above:

$$\ln Q_{ijt} = \gamma_0 AF_{j,t-1} + \gamma_1 \beta_{i,j}(t) + \gamma_2 \beta_{i,j}(t) AF_{j,t-1} + \delta_1 \ln Y_{j,t} + \delta_2 X_{i,t} + a_{i,(t)} + f_{j,(t)} + \phi_t + \eta_{ijt} \quad (19)$$

The main coefficient of interest in this model is γ_2, which captures the differential impact of Russian political relations with country j, depending on j's comovement (or lack thereof) with the

[27] In a robustness check we use fixed-year political βs (β_{2006}) and use them as constant βs for all years 2006-2011. The results are similar. See Table A3.1 in Appendix A3.

overall political risk faced by firm i. The political risk diversification logic outlined above suggests that γ_2 should be positive, so that the main positive effect of the Affinity Index, γ_0, is attenuated for lower-β destinations.

As before, we include firm fixed effects, a_i, and year fixed effects, $\phi_{t,}$ to absorb firm-specific fixed heterogeneity and aggregate time shocks. We also include country fixed effects, f_j, to exploit within-country changes in political relations as identifying variation. In some specifications, we include more flexible country X year fixed effects, $f_{j,t}$, to absorb country-year specific shocks, such as demand fluctuations related to real business cycles shocks, exchange rate shocks, and so forth. Finally, in some specifications we further include firm X year fixed effects, $a_{i,t}$, to account for potential firm-level shocks hitting Russian exporters in a given year. As noted above, we use two-way clustering on firms and destinations.

Table 3 contains estimation results of equation (19) for progressively more demanding specifications, using value-weighted political betas, $\beta_{i,j}^{VW}(t)$. We present results based on equally-weighted betas, $\beta_{i,j}^{EW}(t)$, in Table 4. Panel A reports results for the intensive margin of trade exactly as shown in (19), while Panels B and C provide the extensive and combined margin ($\log(\$2000 + Q)$) results respectively. Across all specifications in all panels, we find that γ_2>0, significant at the 1 percent level of significance, implying both intensive and extensive margin effects. Within each panel, the point estimates are quite similar in all specifications, including those with country and firm fixed effects only (Column 1), country X year and firm fixed effects (Column 2), country and firm X year fixed effects (Column 3), and finally those that include both country X year and firm X year fixed effects (Column 4). Thus, our results indicate that an exporter responds less to the changes in political relations for destinations that have higher hedging potential for the particular exporter, i.e., destinations that comove less with (or even move against) other destination countries with which the firm trades.

[Insert Tables 3 and 4 here]

The estimated coefficients imply an effect of considerable magnitude. Focusing first on the intensive margin, the coefficient, γ_0, indicates that political relations, $AF_{j,t-1}$, for a country that has no comovement with the other countries in an exporter's political portfolio ($\beta = 0$) is approximately 0.34, implying that for a (within-country) one standard deviation decrease in political relations, exports to that country will decrease by around 7 percent (=0.34*0.2). For a

destination with a large hedging value, e.g., $\beta = -2$ (roughly 2 standard deviations less than the mean value of $\beta \sim$ 0.6), political relations would decline to 0.06 (=0.34-2*0.14), implying a negligible 1 percent change in trade for a one standard deviation change in the Affinity Index. By contrast, for high systematic political risk destinations with, e.g., $\beta = 2$ (which is roughly 1.5 standard deviations greater than the mean value of β), the marginal impact would be 0.62 (=0.34+2*0.14), implying a 12 percent change in trade for a one standard deviation change in the Affinity Index.

Figure 3 presents binned scatterplots to show the (intensive margin) relationship between political relations and trade for firm-destination observations that are above versus below $\beta = 0.6$, the sample mean. The scatterplots are based on residualized data to control for the same set of fixed effects and controls as in Table 3. The two scatterplots show sharply contrasting relationships: for high-β destinations, the correlation between political relations and trade is positive (Panel A), whereas the relationship is much attenuated for low-β destinations (Panel B).

[Insert Figure 3 here]

In summary, we argue that political β seems to capture some salient aspects of how exporting firms manage political risk. Our results can be seen as capturing the same diversification logic that drives standard portfolio choice models, in which investors' valuation of assets varies as a function of their contribution to the investor's overall systematic risk. In our case, we show that exporters put greater value on destinations with higher hedging potential (i.e., those with lower or negative β), as evidenced by the smaller decrease in exports in response to a deterioration in political relations between Russia and low β markets. By contrast, exporters are more willing to contract their operations in response to similarly adverse shocks to political relations for destinations that do not have such hedging potential (i.e., high β ones).

5. Extensions

5.1. Overall vs systematic risk: political β versus political σ.

In Section 4, we documented that exporters have a differential response to changes in political relations between Russia and a given export destination depending on the comovement of that country's political relations with those of all export markets, i.e., the overall political risk faced by the exporter. One may argue, however, that higher β countries might also have political relations that are simply more volatile. Put differently, our finding that exporters tend to respond more to

the changes in political relations with high β countries might be driven by exporters' responsiveness to markets with higher volatility of political relations.[28]

Before exploring the role of political risk volatility directly, we begin by pointing out that this alternative explanation cannot account for our findings on political β in the most stringent specifications – destination volatility is a country-year variable that is absorbed by county X year fixed effects in Tables 3 and 4. Nonetheless, we explore the potential role of volatility in explaining export patterns that might be correlated with political risk diversification. To this end, we calculate the standard deviation of political relations, σ_j, for each country j, and analyze the heterogeneity of the response to political β while also including interactions with "political σ." As in the case of political β, we use the rolling pre-ranking approach for political σ, i.e., we use the $\tau = t - 14$ to $t - 2$ time window in calculating $\sigma_j(t)$, defined as the standard deviation of political relations, $AF_{j,\tau}$. Political $\sigma_j(t)$ is thus time-varying and country j specific, but it is common across all firms in a given year. We then consider the following empirical specification for $t = 2006$ to 2011:

$$\ln Q_{i,j,t} = \gamma_0 AF_{j,t-1} + \gamma_1 \sigma_j(t) + \gamma_2 \sigma_j(t) AF_{j,t} + \gamma_3 \beta_{i,j}(\mathrm{t}) + \gamma_4 \beta_{i,j}(\mathrm{t}) AF_{j,t-1} + \\ + \delta \ln Y_{j,t} + \delta X_{i,t} + a_i + f_{j,(t)} + \phi_t + \eta_{i,j,t} \qquad (20)$$

As before, we consider specifications with country a_i and firm fixed effects, f_j. We also include firm X year fixed effects in some specifications. We cannot, however, include country X year fixed effects since political σ is country X year specific.

We present estimation results for equation (20) at the intensive margin in Table 5. In the first two columns we omit political β and its interaction term and look only at the heterogeneity of the effect of political relations, $AF_{j,t-1}$, depending on the variance of a country's political relations (calculated over preceding years as described above): political σ. We find some evidence that firms tend to respond more to the changes in political relations with higher political σ countries in specifications that do not include political β. The coefficients, γ_2, on interactions between the

[28] It is impossible for a country to have higher beta
without having sufficiently high variance of political relations. The converse is not true, however. High variance countries might have lower (or even negative) beta, which makes it even more important to disentangle the contributions of these two channels.

Affinity Index, $AF_{j,t-1}$, and political σ are positive and significant, both in statistical and economic senses.

[Insert Table 5 here]

Once we include political βs and their interactions with the Affinity Index, the implied effect of political σ declines considerably, becoming small in magnitude and statistically insignificant, implying that there is no heterogeneous response to political relations depending on political σ once political β is considered (at least at the intensive margin). In more flexible specifications that include firm X year fixed effects (Column 4 and Column 6), γ_2 even flips sign. At the same time, political βs and their interactions, both from the value-weighted approach and from the equally-weighted approach, are positive and have the same magnitudes as in Table 3. In Appendices A2.1 and A2.2, we document the intensive and combined margins of our volatility analyses. In both cases, the coefficient on the $AF * \sigma$ interaction declines substantially in magnitude with the inclusion of our β interaction. Though it remains somewhat large in some specifications, it is never statistically significant. Of greater relevance for our paper is the interaction term, $AF * \beta$, which is virtually unchanged implying that, to the extent that volatility explains firms' export choices, it is independent of the idea of risk portfolio management that is at the heart of our paper.

Overall, the results in this subsection likewise echo the diversification logic from the asset pricing literature: it is not the overall risk of an asset that investors care about (variance of an asset's return), but rather the systematic risk this asset contributes to an investor's portfolio (covariance of that asset return with a market portfolio). In our case, since political risk is not traded, there is no common market portfolio but rather each firm has its own political portfolio. Still, the diversification logic remains. Exporting firms respond differentially to political relations with high vs low *systematic* political risk countries (proxied by high versus low political β) rather than total political risk (proxied by high versus low political σ).

5.2. Accounting for foreign exchange risk

In our main analyses, we measured trade flows in current US dollars. By Russian law, every good that crosses the country's border is reported not only in the currency of the contract, but also in "statistical value," which is equal to the good's dollar value at the current dollar exchange rate. Furthermore, because most international trade at the time of our analysis was conducted in

convertible currencies such as US dollars and Euros, we do not expect exchange rate considerations to confound our analysis. Nevertheless, we rerun our regressions in Table 2 (excluding those that include country X year fixed effects) including the log of country exchange rates and found similar results. See Appendix A6, Table A6.1.

We further assessed whether there is evidence in our data that would indicate diversification of FOREX risk, akin to our specification (19) and Tables 3 and 4. Specifically, for each firm we defined FOREX β as the degree of comovement between a given currency and the overall portfolio of currencies to which a firm is exposed through its international trade operations. We use the rolling pre-ranking approach described in Section 4 in which, for each year $t = 2004 - 2011$, based on *monthly* information from the past 2 years of currency movements and firm trade to calculate the FOREX β used in our regression in year t. [29] That is, we consider the following empirical specification:[30]

$$\ln Q_{ijt} = \gamma_1 \beta_{i,j}^{P}(t) + \gamma_2 \beta_{i,j}^{P}(t) AF_{j,t-1} + \gamma_1^{FX} \beta_{i,j}^{FX}(t) + \gamma_2^{FX} \beta_{i,j}^{FX}(t) \log FX_{j,t} + \\ + \delta_1 \ln Y_{j,t} + \delta_2 X_{i,t} + a_{i,t} + f_{j,(t)} + \phi_t + \eta_{ijt} \quad (21)$$

Here $\beta_{i,j}^{P}$ is the political β used in our main text Tables 3 and 4 above and $\beta_{i,j}^{FX}(t)$ is FOREX β, which shows the degree of comovement of a given currency with the overall effective currency portfolio an exporting firm is exposed to through its (past) trade. Since we include country X year fixed effects in all specifications, all country-year specific variables are absorbed: in particular, this includes the level of political relations $AF_{j,t-1}$ and the log of the foreign exchange rate, $\log FX_{j,t}$.

Estimation results in Table 6 show evidence of political risk diversification even after accounting for FOREX risk (i.e., the coefficient on political β is similar to the corresponding estimates in Tables 3 and 4). Turning to the FOREX risk itself, we find that firms tend to respond differentially to variation in foreign exchange rate with a given country j, $\log FX_{j,t}$, depending on that country's comovement (or lack thereof) with currencies of other destination countries of the exporter (Specifications 1 and 2). This effect, however, seems to be driven by outliers. Once we

[29] Analogous to our previous analysis, we use $t - 14$ through $t - 2$ for our rolling pre-ranking. In contrast to our previous analysis we use monthly (instead of annual) measures. This is due to the fast-moving nature of foreign exchange movements.

[30] In contrast to our analysis involving political relations, we assume that FOREX movements immediately affect trade, so we do not lag foreign exchange rate by one year. We instead use the (log of) contemporaneous mean annual value, $\log FX_{j,t}$.

exclude firms with values of FX β in absolute values higher than 4 (less than 1% of observations), the coefficients γ_2^{FX} become negligible.

[Insert Table 6 here]

Taken together, the results of this subsection illustrate that the firm's responses to political relations and its hedging of political risk (documented in the main text above) are separate forms of risk facing exporting firms. That is, we cannot explain our results using a lens of firm risk management of foreign exchange rate risk. We conjecture that the lack of a significant differential response of firms to FOREX shocks as a function of FOREX β may be because FOREX risks *can* be hedged quite easily by financial instruments or by the currency chosen in a contract (a la Hoberg and Moon (2017)).[31] In contrast, political risk is not easily traded across companies (as noted earlier, most of the companies in our sample, as in many other countries, are not publicly traded, which further complicates the exchange of risk at the individual investor level). As a result, the adjustment of trade flows to manage political risk is a plausible hedging strategy.

5.3. Aggregate data analysis

In both our theoretical model and its empirical implementation, we have emphasized that the construction of political β is specific to a given exporting firm. As a result, having firm-by-country level data is essential to our analysis. Given that firm-by-country trade data are less readily available than aggregated data, we consider whether the patterns we observe can plausibly be detected via comparable analyses on data at the country-level.

To conduct this more aggregated analysis, we define a country's political β based on equation (18), though in this case there is no subscript i, as the β is defined over aggregate exports. We present these results in Table 7. In contrast to our firm-specific analyses, we find that while there remains a positive *direct* relationship between political relations and trade, there is no discernable heterogeneous response with respect to the political βs calculated using aggregated data. This highlights both the novelty and importance of our approach.[32]

[31] It is also worth noting that with extreme values (i.e., outliers) of FX β include Iran, Iraq, Turkey, and Turkmenistan, i.e. countries (with the possible exception of Turkey) whose currencies are not traded. Operational hedging might thus be a more appropriate risk management technique for exposure to non-tradable currencies. It is interesting to observe that specifications 1 and 2, which include these observations, indicate operational hedging of FOREX risk.

[32]The statistical power of the analysis on aggregated data is may also be lower due to the smaller number of observations.

[Insert Table 7 here]

We argue that this lack of explanatory power of an aggregate political β is intuitive since the management of political risk, which is not easily tradable, most plausibly takes place at the firm level. Each firm is exposed to a *distinct* set of destination markets and adjusts its "political portfolio" according to its markets' contribution to the firm's *own* overall political risk. Trade flows and political βs measured from the aggregated data would miss the political risk diversification patterns undertaken at the individual firm level. The results of this analysis highlight that a proper analysis of political risk management necessarily requires data at the firm-destination level, which is the level of disaggregation at which political risk management is likely to take place.

To further highlight the distinction between aggregated versus firm-level data analysis, we plot the firm-by-country political βs (used in our main analysis above) over country political βs obtained from the country-level Russian exports that we obtained by aggregating our firm-level export data. This is documented in Figure 4, which shows no clear relationship between political βs measured using firm-level data, and βs constructed from aggregate trade flows.

[Insert Figure 4 here]

6. Robustness and further discussion

6.1. Endogeneity of political relations

One concern with the political risk diversification results we present in Section 4.2 is the potential endogeneity of political relations and trade. For example, one may make a case for reverse causality, to the extent that trade shocks in Russia lead to political frictions (e.g., oil-dependent countries may be particularly friendly with Russia when demand for oil is high). However, our specifications that include country X year fixed effects effectively control for all country-year level unobservables that might drive such endogeneity between *aggregate* trade flows and political relations.[33] The identifying variation in those regressions comes from the differential contribution of the same country to systematic political risk for different Russian exporting firms. Yet in these

[33] Note that country X year fixed effects also absorb variation in country demand for imports depending on real-business-cycles shocks, exchange rate fluctuations, etc. We also explicitly include exchange rates in our specifications without country X year fixed effects and the same patterns emerge.

specifications we find heterogeneity with respect to political β that is similar – in sign as well as magnitude – to what we observe in other specifications.

6.2. Using Poisson pseudo-maximum-likelihood

We have used log-linear specifications for our gravity trade model throughout, using $log(\$2{,}000 + Exports)$ to manage the problem of zeros in specifications that capture the intensive and extensive margins of trade simultaneously. In Appendix Table A5.1, we show results that use Poisson pseudo-maximum-likelihood (PPML) estimation instead (See Silva and Tenreyro (2006)). A number of caveats are in order, however. First, in order to obtain convergence, we are required to drop countries that have relatively few (<100) observations. For the same reason, we are also unable to include firm-year fixed effects, which is our preferred specification. Finally, given the numerical estimation involved in executing PPML with many fixed effects, the rescaling and rounding of small observations may cause further complications in interpreting our results.

The implied role of β is comparable in magnitude to that of our log-linear results, though the point estimate on the interaction is not significant at standard levels ($p = 11\%$ and $p = 6\%$ in more flexible specifications 2 and 4).

6.3. Alternative measures of political β

In Section 4, our political β is defined as the covariance of a given country's political relations with the overall political portfolio of a company, which we calculate as the (weighted) average of political relations with all export destinations of that firm. Defined in this way, a company's political portfolio contains all countries, including the one for which political β is calculated. To ensure that our results are not driven by biases that stem from this approach (or other features of our method of calculating political portfolios), we consider in our final set of robustness checks alternative approaches to measuring political β.

In our first alternative, when calculating political β for some country j^*, we exclude the contribution of that country to the overall political portfolio faced by firm i (with appropriate rebalancing so that portfolio weights in equations (15) sum to unity). The resulting political βs show the degree of comovement of political relations (with Russia) of a given destination country j^* and the (weighted) average political relations of *other* export destination markets (with Russia) of firm i, excluding country j^* itself.

We then re-estimate specifications in equation (19), studying the heterogeneity of the political relations' impact depending on those βs. Estimation results are presented in Appendix A3, Tables A3.1 and A3.2. Results are qualitatively similar to those discussed above.

Next, to ensure that our findings do not result from the specifics of our rolling pre-ranking approach, we instead, take the political βs calculated in 2006 and used them throughout the entire period. (This modification naturally reduced the number of observations, as companies that did not export prior to 2006 are automatically excluded from the analysis.) The results are presented in Table A4.1 of Appendix A4 and are both qualitatively and quantitatively similar to those presented in the main text.

Next, as per our model, instead of political β (a time-series regression coefficient, which, as we have emphasized throughout, is a more standard approach in the literature to measure systematic risk) we use the covariance of political relations between a country and the firm's political portfolio as the measure of systematic political risk. The results in Table A4.4 are again similar to those in the main text.

Finally, to ensure that our results are not driven by extreme outliers in β values, we restrict our sample to observations with absolute value of β less than 5. We further considered only observations with positive β out of concerns that negative β countries for different firms might actually be the same pariah countries that always demonstratively go against international community in their international voting and, as a result, political relations with them might have a smaller impact on economic outcomes such as trade.[34] In all cases we observe patterns that are similar to those described in the main text. These results may be found be found in Appendix A4 Tables A4.2 and A4.3.

7. Conclusion

In this paper we propose and test a model of firm management of non-tradable political risk through operational hedging in the context of international trade. The main message of our model is that one can use insights from portfolio theory to develop a framework for analyzing firms' response to risk. We show in particular that a firm's valuation of a given export destination depends on its comovement (or lack of it) with other markets in a firm's "political portfolio".

[34] This logic is actually already refuted by our results in Tables 5, 7 with country X year fixed effects, since identification in those specifications comes from the same country being low vs high political β for different firms.

Using a novel dataset on Russian firms' exports into different destination markets, we find patterns consistent with our model. First, we show that a worsening political relation between Russia and some export destination country reduces exports of Russian firms into that country considerably.

Second, and perhaps more importantly, we find a notable heterogeneity in exporters' response to changes in political relations with their home nation (i.e., Russia) and their export destination markets that is indicative of a diversification of political risk. Namely, a given exporter responds less to the changes in political relations with "hedge" markets, i.e., those that move against other markets in the firm's "political portfolio" and, thus, have the potential to protect this exporter from future fluctuations in political relations. This result is analogous to a well-known diversification logic embedded in standard asset pricing models, where an investor cares only about the systematic risk a given asset contributes to his/her overall portfolio. Highlighting the distinction between the management of tradable and non-tradable risks, we show that no such patterns are observed in the management of foreign exchange risk.

Finally, we demonstrate that the political risk diversification patterns we describe cannot be detected in the aggregate data, which highlights both the novelty and importance of our findings. This non-result is quite intuitive in the sense that the optimization and risk management decisions happen at the firm-level. Thus, measures of a given market's political risk calculated from aggregated data cannot reveal the systematic risk this market presents to a *given firm*.

While our focus has been on firm responses to global political risk, our approach may be applied to risk mitigation strategies more generally. For example, one might think about product diversification strategies as a function of relative comovement in demand. Moving beyond analysis of firm behavior, our approach may be suited to understanding individual or household "portfolio choice," which also involves non-tradeable risk management. There exists a deep literature on household risk-sharing and risk-mitigation in underdeveloped economies (see, e.g., Rosenzweig and Stark, 1989, and Townsend, 1994 for classic contributions) that incorporate considerations of correlation of risks within and across households, and our framework may be helpful as a bridge from this literature to portfolio choice. We leave this and other applications for further work.

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Tables

Table 1: Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Panel A: Zero trade observations excluded					
Log exports	346,819	11.399	2.293	4.611	24.944
Affinity Index (t-1)	332,283	0.572	0.263	-0.548	1.000
Log firm assets	346,819	18.614	2.749	6.370	29.051
Log country GDP	346,819	12.216	2.115	2.985	16.559
Log country population	346,819	2.685	1.909	-4.477	7.221
Year	346,819	2006	2.944	2001	2011
The following variables are defined only over 2006-2011					
Value-weighted political β	135,161	0.570	1.180	-23.802	43.613
Equally-weighted political β	135,161	0.829	1.498	-14.517	20.644
Value-weighted political β (country excl)	132,336	0.305	1.210	-14.843	43.613
Equally-weighted political β (country excl)	132,336	0.441	1.536	-14.517	20.644
Political σ	145,607	0.092	0.047	0.017	0.263
Panel B: Zero trade included					
1(exports>0)	819,171	0.425	0.494	0.000	1.000
Log ($2,000+exports)	819,171	9.259	2.382	7.601	24.944
Affinity Index (t-1)	774,897	0.559	0.267	-0.548	1.000
Log firm assets	819,171	18.851	2.658	6.370	29.051
Log country GDP	819,171	12.097	2.208	2.985	16.559
Log country population	819,171	2.532	1.991	-4.477	7.221
Year	819,171	2006	2.998	2001	2011
The following variables are defined only over 2006-2011					
Value-weighted political β	403,470	0.481	1.215	-23.802	43.613
Equally-weighted political β	403,470	0.803	1.519	-33.540	21.729
Value-weighted political β (country excl)	382,629	0.269	1.247	-23.388	57.501
Equally-weighted political β (country excl)	382,629	0.396	1.580	-33.540	29.084
Political σ	442,360	0.095	0.049	0.017	0.272

Notes: The sample in Panel A includes all Russian exporting firm-by-country observations over 2001-2011 with value of exports greater than $100. The sample in Panel B is a balanced panel of all exporting firm-by-country observations over 2001-2011 with at least one positive value of exports. Affinity Index is Affinity of Nations Index of a given country with Russia from Gartzke (2010). Log firm assets are obtained from the SPARK-Interfax database. Log country GDP (chained real GDP) and log country population are from PennWorld Tables. Political βs and σs are constructed for the 2006-2011 period as described in the main text Section 4.2 and 5.1, respectively.

Table 2: Baseline effect of political relations on exports

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Intensive margin: Dependent variable: log exports						
Affinity Index(t-1)	0.382**	0.271	0.297**	0.405**	0.261	0.295**
	(0.184)	(0.172)	(0.150)	(0.187)	(0.162)	(0.138)
Affinity Index (t-2)		0.114	0.135		0.125	0.147
		(0.117)	(0.106)		(0.138)	(0.130)
Affinity Index (t)			-0.136			-0.145
			(0.189)			(0.177)
Observations	316,812	314,254	314,254	251,817	249,260	249,260
R-squared	0.516	0.516	0.516	0.557	0.558	0.558
Panel B: Extensive margin: Dependent variable: 1(exports>0)						
Affinity Index (t-1)	0.268***	0.177*	0.179**	0.279***	0.181*	0.186**
	(0.100)	(0.097)	(0.081)	(0.097)	(0.094)	(0.076)
Affinity Index (t-2)		0.184***	0.186**		0.190***	0.193***
		(0.069)	(0.073)		(0.065)	(0.069)
Affinity Index (t)			-0.008			-0.020
			(0.114)			(0.110)
Observations	760,988	753,214	753,214	734,608	726,583	726,583
R-squared	0.170	0.171	0.171	0.231	0.232	0.232
Panel C: Intensive & Extensive margins: Dependent variable log($2000+export)						
Affinity Index (t-1)	1.133**	0.740	0.769**	1.159**	0.730*	0.781**
	(0.477)	(0.452)	(0.371)	(0.459)	(0.430)	(0.342)
Affinity Index (t-2)		0.786**	0.804**		0.823**	0.852**
		(0.349)	(0.357)		(0.334)	(0.345)
Affinity Index (t)			-0.124			-0.202
			(0.522)			(0.502)
Observations	760,988	753,214	753,214	734,608	726,583	726,583
R-squared	0.225	0.226	0.226	0.270	0.270	0.270
Add'l firm/country ctrls.	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm X Year FE	No	No	No	Yes	Yes	Yes

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. "Affinity Index" is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Additional controls included in all specifications are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 4-6 include firmXyear fixed effects. Two-way clustered robust standard errors at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table 3: Diversification: Heterogeneity with respect to political β: Value-weighted approach

	(1)	(2)	(3)	(4)
Panel A: Intensive margin				
Affinity Index(t-1) X political β	0.117***	0.122***	0.131***	0.138***
	(0.040)	(0.042)	(0.037)	(0.039)
Affinity Index(t-1)	0.347**		0.408**	
	(0.163)		(0.162)	
Political β	0.174***	0.179***	0.178***	0.183***
	(0.024)	(0.024)	(0.022)	(0.022)
Observations	134,657	134,582	133,903	133,819
R-squared	0.505	0.510	0.560	0.565
Panel B: Extensive margin				
Affinity Index(t-1) X political β	0.019***	0.020***	0.021***	0.022***
	(0.005)	(0.005)	(0.005)	(0.005)
Affinity Index(t-1)	0.179		0.191	
	(0.169)		(0.167)	
Political β	0.024***	0.025***	0.024***	0.025***
	(0.003)	(0.004)	(0.003)	(0.004)
Observations	398,842	398,801	390,632	390,591
R-squared	0.183	0.205	0.225	0.247
Panel C: Extensive & intensive margins				
Affinity Index(t-1) X political β	0.141***	0.143***	0.156***	0.158***
	(0.038)	(0.038)	(0.035)	(0.035)
Affinity Index(t-1)	0.810		0.880	
	(0.776)		(0.772)	
Political β	0.154***	0.160***	0.153***	0.159***
	(0.024)	(0.024)	(0.024)	(0.024)
Observations	398,842	398,801	390,632	390,591
R-squared	0.246	0.265	0.271	0.290
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Firm X year FE	No	No	Yes	Yes
Country X year FE	No	Yes	No	Yes

Notes: The sample consists of a company-by-destination country export observations in Russia over 2006-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking value-weighted approach as described in the main text. Additional controls included in all specifications are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects. Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table 4: Diversification: Heterogeneity with respect to political β: Equally-weighted approach

	(1)	(2)	(3)	(4)
	Panel A: Intensive margin			
Affinity Index(t-1) X political β	0.045***	0.051***	0.049***	0.055***
	(0.012)	(0.012)	(0.011)	(0.012)
Affinity Index(t-1)	0.355**		0.405***	
	(0.158)		(0.148)	
Political β	0.063***	0.066***	0.064***	0.067***
	(0.007)	(0.007)	(0.007)	(0.007)
Observations	134,657	134,582	133,903	133,819
R-squared	0.496	0.500	0.551	0.555
	Panel B: Extensive margin			
Affinity Index(t-1) X political β	0.010***	0.013***	0.010***	0.012***
	(0.002)	(0.002)	(0.002)	(0.002)
Affinity Index(t-1)	0.184		0.197	
	(0.172)		(0.169)	
Political β	0.006***	0.007***	0.007***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	398,842	398,801	390,632	390,591
R-squared	0.179	0.201	0.220	0.242
	Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political β	0.068***	0.079***	0.068***	0.079***
	(0.012)	(0.013)	(0.011)	(0.013)
Affinity Index(t-1)	0.849		0.922	
	(0.794)		(0.790)	
Political β	0.049***	0.054***	0.049***	0.054***
	(0.008)	(0.008)	(0.007)	(0.008)
Observations	398,842	398,801	390,632	390,591
R-squared	0.239	0.257	0.263	0.281
Add'l firm/country ctrls.	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Firm X year FE	No	No	Yes	Yes
Country X year FE	No	Yes	No	Yes

Notes: The sample consists of a company-by-destination country export observations in Russia over 2006-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls included in all specifications are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects. Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table 5: Diversification: Political β vs. political σ. Intensive margin only.

	(1)	(2)	(3)	(4)	(7)	(8)
	Dependent variable: log exports					
Affinity Index(t-1) X country political σ	2.095**	2.413**	0.661	0.743	1.051	1.220
	(0.900)	(1.065)	(1.114)	(1.325)	(1.131)	(1.301)
Affinity Index(t-1) X country political β			0.117***	0.131***	0.045***	0.048***
			(0.041)	(0.037)	(0.012)	(0.011)
Affinity Index(t-1)	0.165	0.177	0.274	0.324	0.232	0.264
	(0.165)	(0.177)	(0.196)	(0.223)	(0.187)	(0.203)
Country political σ	0.234	-0.076	-0.990	-1.391	-0.561	-0.872
	(0.695)	(0.712)	(0.853)	(0.902)	(0.874)	(0.884)
Country political β			0.175***	0.179***	0.063***	0.064***
			(0.024)	(0.022)	(0.007)	(0.007)
Observations	144,940	144,043	134,657	133,903	134,657	133,903
R-squared	0.498	0.554	0.505	0.560	0.496	0.551
Measurement of political β	NA	NA	*Value-weighted*		*Equally-weighted*	
Add'l firm/country ctrls.	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm X year FE	No	Yes	No	Yes	No	Yes

Notes: The sample consists of a company-by-destination country export observations in Russia over 2006-2011. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is the log of the total amount of exports (in current USD) being sent by a given firm into a given destination country. Affinity Index is Gartzke (2010) Affinity of National Index calculated on the basis of similarity of a country's votes in the UNGA with Russia in a given year. Country political β is calculated by a rolling pre-ranking value-weighted (equally-weighted) approach, as described in the main text. Country political σ is the rolling past 12 years' variance of Affinity Index for a given country. Additional controls included in all specifications are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. In addition, specifications 2, 4 and 6 include firm X year fixed effects. Standard errors (in parentheses) are calculated by bootstrap with 1000 repetitions (with two-way clustering at the firm and country levels). ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table 6: Accounting for tradable risk: Forex β

	(1)	(2)	(3)	(4)
	Dependent variable: log exports			
	Panel A: Intensive margin			
Log FX rate X FX β	0.046***	0.052***	0.003	0.005
	(0.010)	(0.010)	(0.018)	(0.019)
Affinity Index(t-1) X political β	0.050*	0.052*	0.045*	0.047*
	(0.027)	(0.026)	(0.026)	(0.025)
FX β	0.447***	0.487***	0.547***	0.599***
	(0.053)	(0.051)	(0.068)	(0.066)
Political β of country	0.159***	0.164***	0.155***	0.159***
	(0.016)	(0.014)	(0.015)	(0.013)
Observations	132,978	132,172	132,715	131,901
R-squared	0.524	0.579	0.526	0.581
	Panel B: Extensive margin			
Log FX rate X FX β	0.007***	0.007***	-0.000	-0.000
	(0.002)	(0.002)	(0.004)	(0.004)
Affinity Index(t-1) X political β	0.008**	0.008***	0.008**	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)
FX β	0.068***	0.074***	0.084***	0.093***
	(0.010)	(0.011)	(0.014)	(0.015)
Political β of country	0.024***	0.024***	0.023***	0.024***
	(0.003)	(0.003)	(0.003)	(0.003)
Observations	386,357	378,519	385,713	377,871
R-squared	0.214	0.257	0.215	0.258
	Panel C: Intensive & Extensive margins			
Log FX rate X FX β	0.044***	0.049***	0.002	0.003
	(0.011)	(0.012)	(0.024)	(0.027)
Affinity Index(t-1) X political β	0.065**	0.064***	0.061**	0.060***
	(0.025)	(0.023)	(0.025)	(0.023)
FX β	0.452***	0.493***	0.554***	0.607***
	(0.065)	(0.068)	(0.094)	(0.099)
Political β of country	0.152***	0.154***	0.148***	0.150***
	(0.019)	(0.019)	(0.018)	(0.017)
Observations	386,357	378,519	385,713	377,871
R-squared	0.280	0.307	0.282	0.309
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Country X year FE	Yes	Yes	Yes	Yes
Firm X year FE	No	Yes	No	Yes
Log firm assets	Yes	Yes	NA	NA
Log country GDP, population	Absorbed	Absorbed	Absorbed	Absorbed
FX β condition	Any	Any	FX $\lvert\beta\rvert$<4	FX $\lvert\beta\rvert$<4

Notes: The sample consists of a company-by-destination country export observations in Russia over 2006-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index calculated on the basis of

similarity of a country's votes with Russia in a given year. Country political and FOREX βs are calculated by a rolling pre-ranking equally-weighted approach as described in the main text on the basis of past 2 years monthly data. Log FX is the log of the Russian Ruble per unit of currency exchange rate. Foreign exchange data are from International Financial Statistics (IFS). Additional controls included in all specifications are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

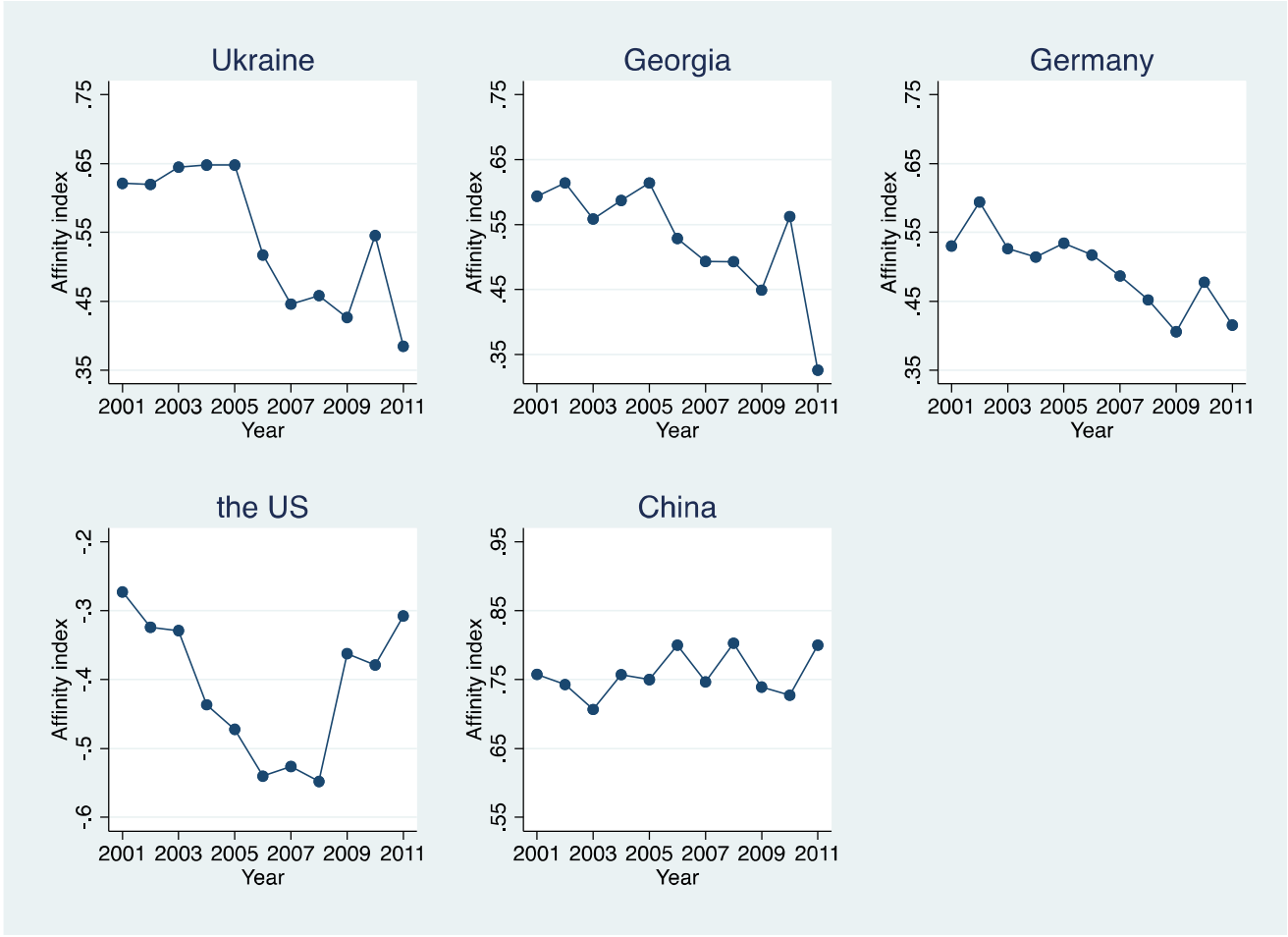
Table 7: Using Russian exported aggregated by destination country-year-level data.

	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Value-weighted β			
Political β X Affinity Index	0.081	-0.040	-0.122	-0.470	-0.075	-0.491
	(0.268)	(0.034)	(0.212)	(0.389)	(0.049)	(0.304)
Affinity Index	1.416	-0.085	1.569**	2.326**	-0.071	2.089***
	(0.885)	(0.107)	(0.665)	(0.922)	(0.111)	(0.690)
Political β	-0.291	0.009	-0.189	-0.027	0.020	-0.019
	(0.179)	(0.023)	(0.143)	(0.251)	(0.032)	(0.200)
Observations	810	851	851	802	843	843
R-squared	0.927	0.558	0.947	0.928	0.559	0.947
			Panel B: Equally-weighted β			
Political β X Affinity Index	0.163	0.029	0.266	0.583	0.002	0.529
	(0.271)	(0.034)	(0.216)	(0.422)	(0.052)	(0.330)
Affinity Index	1.525*	-0.093	1.646**	1.324	-0.069	1.397*
	(0.898)	(0.107)	(0.672)	(0.975)	(0.119)	(0.747)
Political β	-0.101	-0.005	-0.152	-0.221	0.004	-0.248
	(0.168)	(0.021)	(0.133)	(0.258)	(0.032)	(0.202)
Observations	810	851	851	803	844	844
R-squared	0.926	0.559	0.946	0.925	0.560	0.945
Margin	Intensive	Extensive	Both	Intensive	Extensive	Both
Sample	All	All	All	$\lvert\beta\rvert < 4$	$\lvert\beta\rvert < 4$	$\lvert\beta\rvert < 4$
Destination & origin countries						
(log) GDP, pop-n	Yes	Yes	Yes	Yes	Yes	Yes
Importing country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Data is a balanced panel of country-level exports from Russia over 2006-2011 with zeros imputed for missing trade observations. Dependent variable in specifications 1 and 4 is log of total Russian exports into a given country. Dependent variable in specifications 2 and 5 is a dummy for positive Russian exports into a given country. Dependent variable in specifications 3 and 6 is log of $175,000+ total Russian exports into a given country. Sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. Affinity Index is Gartzke (2010) Affinity of National Index calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking (equally-weighted/value-weighted) approach using monthly data as described in the main text. Additional controls included in all specifications are log destination country GDP (chained real GDP) and log of destination country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects and time fixed effects are included in all regressions but not reported. Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

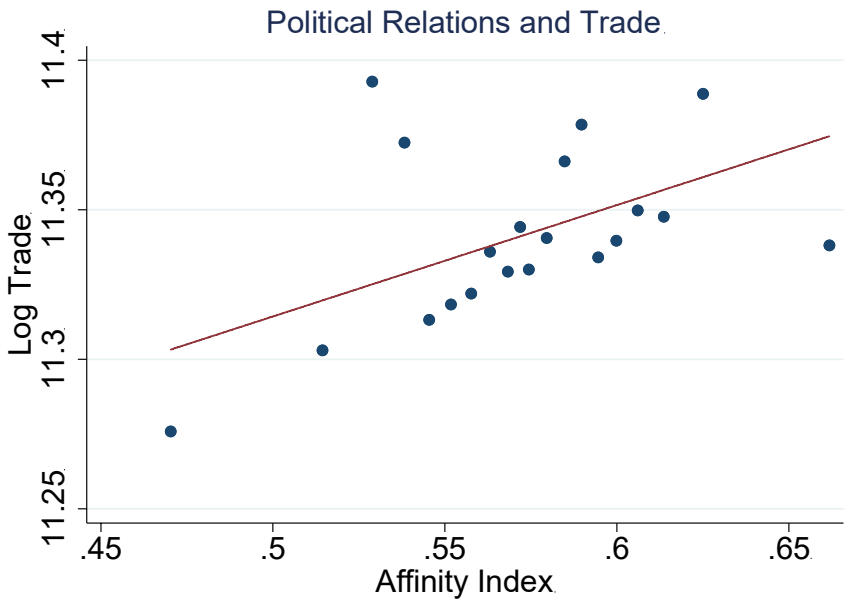
Figures

Figure 1: Russian political relations over time



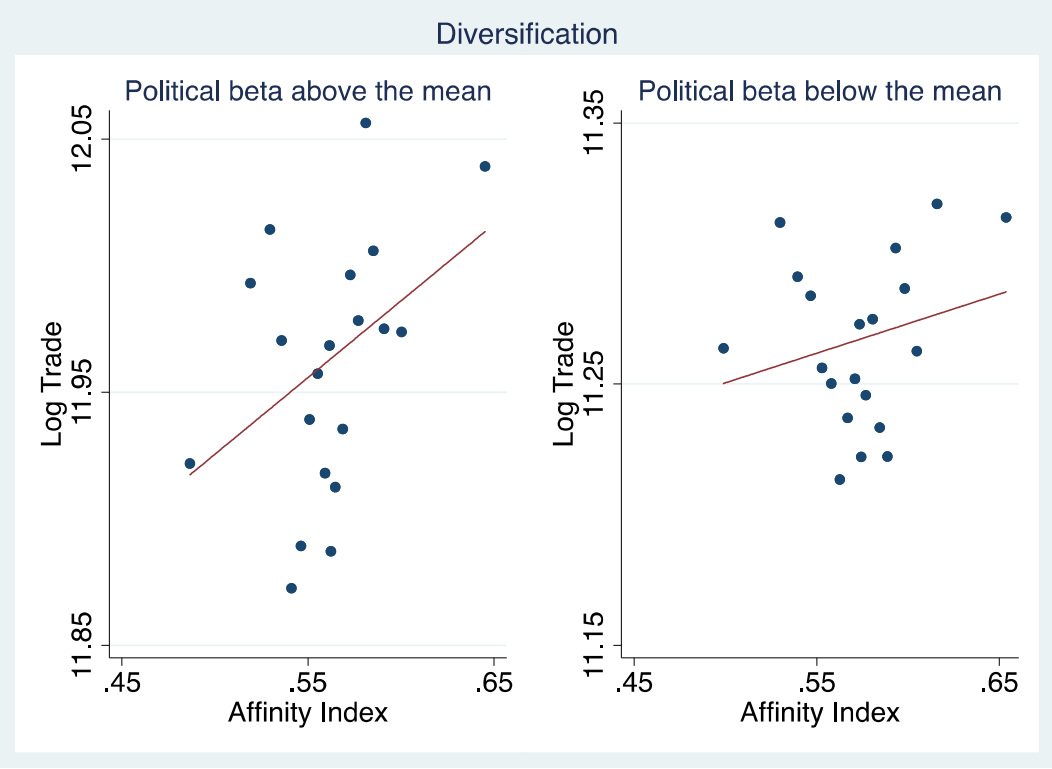
Notes: These figures show the evolution of the Gartzke (2010) Affinity Index over time between Russia and a particular country over 2001-2011.

Figure 2: Baseline effect



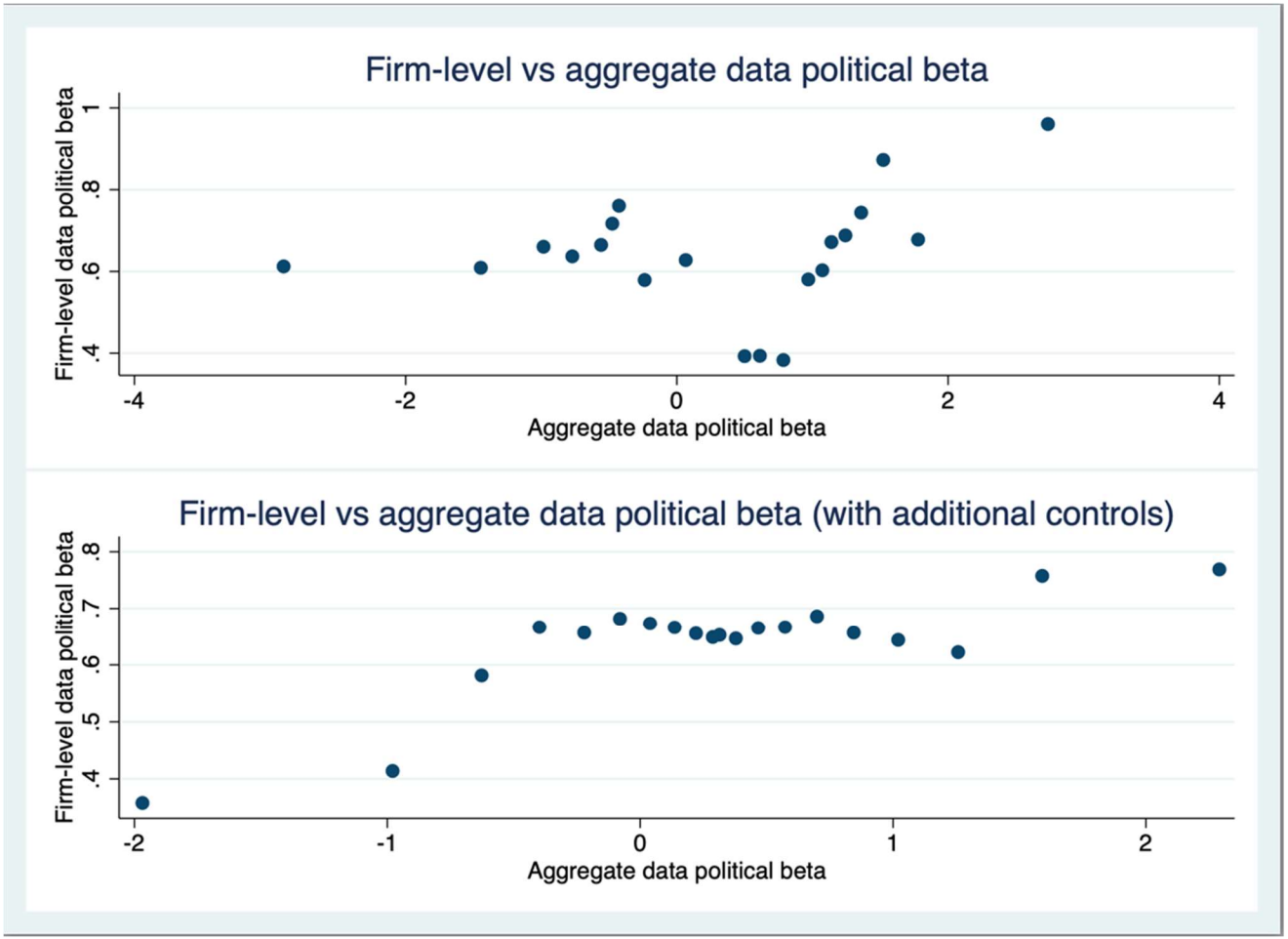
Notes: This figure shows the bin scattered relation between Affinity Index for Russia and a given country and Russian firms' exports into that country. Affinity Index is Gartzke's (2010) measure of similarity of votes in the UN General Assembly. Higher numbers mean better political relations. Country fixed effects, exporting company fixed effects, year fixed effects, firm's log of assets, and country's log of GDP are partialled out.

Figure 3. Political beta effect



Notes: These figures show the relation between the Affinity Index for Russia and a given country and Russian firms' exports into that country. The heterogeneity here is by the degree of similarity of a given country to other countries in a firm's political portfolio of countries. We restrict observations to countries with at least 3 trading partners. Affinity Index is Gartzke measure of similarity of votes in the UN General Assembly. Higher values mean better political relations. Country fixed effects, exporting company fixed effects, year fixed effects, firm's log of assets, and country's log of GDP are partialled out.

Figure 4: Political βs from aggregated vs firm-level data



Notes: This graph shows scattered bin-plots of firm-level political β over respective aggregated data political βs. The top graph does not include any additional controls, while the bottom graph controls for exporting firm fixed effects, country's log GDP per capita and log population.

Appendix A1: Derivations of empirical predictions (for online publication only)

Prediction 1: *Deteriorating political relations between Russia and a given country results in fewer exports into that country by Russian exporters.*

This prediction follows from the proposition below:

Theorem 1: *Consider an exporter selling in N markets in periods 1 and 2. Assume that contemporaneous ($t = 1$) political relations with one of the markets changes by dA_1^j. Then the response, dQ_1^j, in the given export market j while keeping the exports to other markets, $Q_1^i, i \neq j$, constant, would be the same in sign as $\frac{\partial^2 \pi_1^j}{\partial A_1^j \partial Q_1^j}$.*

Proof: The result follows by totally differentiating the first order condition to the exporter's problem (4), while assuming that $dQ_1^i = 0, i \neq j$:

$$\frac{dQ_1^j}{dA_1^j} = -\frac{1}{\Delta_j}\frac{\partial^2 \pi_1^j}{\partial A_1^j \partial Q_1^j} \qquad (A1.1)$$

Where Δ_j is the partial second derivative of the objective function with respect to Q_1^j, which is negative due to the respective second order conditions. **Q.E.D.**

Prediction 2: *The magnitude of the drop in exports in response to a decrease in political relations is greater in magnitude in the case of destinations whose political relations tend to comove with political relations of an exporter's other export destinations and smaller in magnitude (i.e., less negative) for destinations whose political relations tend to move less with (or even against) the political relations of an exporter's other export destinations.*

This prediction comes from the following intuitive idea. In our multiperiod setup, exports into a given market today produce two types of benefits for a given exporting firm: (i) contemporaneous – through the impact on current profits of this firm and (ii) future benefits accrued from higher current exports increasing demand for the product of this firm in the future.

Denote $\mathrm{P}(Q)$ current profits of selling the good and $C(Q)$ future benefits, then

$$\max \mathrm{AP}(Q) + BC(Q) \qquad (A1.2)$$

$$AP'(Q) + BC'(Q) = 0 \qquad (A1.3)$$

$$\frac{dQ}{dA} = \frac{-P'(Q)}{AP''(Q) + BC''(Q)} \qquad (A1.4)$$

When the benefits accrued in the future are smaller, the effect of any shocks to demand today would become larger as decisions regarding exports would be determined primarily by current profits, i.e. keeping other things equal $\frac{dQ}{dA}$ larger when B is smaller. Or,

$$\frac{\partial}{\partial B}\left(\frac{dQ}{dA}\right) \leq 0 \qquad (A1.5)$$

In the theorem below we show that the value of future benefits is lower in the case of markets that tend to comove with other markets in the firm's political portfolio (i.e. markets that expose the given exporter to higher systematic political risk).

Theorem 2: *Consider an exporter selling in N markets in periods 1 and 2. Assume that contemporaneous ($t = 1$) political relations with one of the markets changes by dA_1^j. Assume that investment in relationship-specific investment exhibit decreasing returns to scale: $\phi''(Q_1^j) < 0$. The response, dQ_1^j, in the given export market j, while keeping the exports to other markets, $Q_1^i, i \neq j$, constant would be **lower** in the case of markets that tend to comove **less** (in terms of political relations) with other export destination countries of the firm.*

Proof: From the First Order Conditions to the exporter's problem, we have:

$$\frac{dQ_1^j}{dA_1^j} = -\frac{1}{\Delta_j}\frac{\partial^2 \pi_1}{\partial Q_1^j \partial A_1^j} \qquad (A1.6)$$

where Δ_j is the term corresponding to a given market in the Second Order Conditions. In turn, this term is equal to the second derivative of the objective functions w.r.t. Q_1^j.

$$\Delta_j \equiv \frac{\partial^2 \pi_1}{\left(\partial Q_1^j\right)^2} + \frac{\partial}{\partial Q_1^j}\left(\phi'(Q_1^j)\left[\theta\, E\left[\pi_2\left(A_2^j\right)\right] - \delta^2\, cov\left(\pi_2(A_2^j), \sum_i \phi(Q_1^i)\pi_2(A_2^i)\right)\right]\right) \qquad (A1.7)$$

One can rewrite Δ_j as:

$$\Delta_j = \frac{\partial^2 \pi_1}{\left(\partial Q_1^j\right)^2} + \phi''(Q_1^j)\{\theta E\left[\pi_2\left(A_2^j\right)\right] - \delta^2\, CV_j\} - \delta^2\left[\phi'^2(Q_1^j) - \phi''(Q_1^j)\phi(Q_1^j)\right]\sigma^2(\pi_2(A_2^j)) \qquad (A1.8)$$

where

$$CV_j = cov\left(\pi_2(A_2^j), \sum_{i \neq j} \phi(Q_1^i)\pi_2(A_2^i)\right) \quad (A1.9)$$

reflects the degree of comovement of market j with other markets in the exporter's portfolio of countries.

It is obvious that keeping other things equal,

$$\frac{\partial}{\partial CV_j}\left(\frac{dQ_1^j}{dA_1^j}\right) \geq 0 \quad (A1.10)$$

That is, the response to political relations is larger for countries that tend to comove more with other countries in the exporter's portfolio. Similarly, the response is smaller for countries that tend to comove less, or even move against other countries the firm exports to. **Q.E.D.**

Appendix A2: Extensive margin results for political σ ((for online publication only)

Table A2.1: Diversification: Political β vs. political σ. Extensive margin only

	(1)	(2)	(3)	(4)	(7)	(8)
	Dependent variable: 1(exports>0)					
Affinity Index(t-1) X country political σ	0.708	0.679	0.495	0.476	0.548	0.548
	(0.627)	(0.570)	(0.647)	(0.601)	(0.647)	(0.599)
Affinity Index(t-1) X country political β			0.019***	0.021***	0.010***	0.009***
			(0.005)	(0.005)	(0.002)	(0.002)
Affinity Index(t-1)	0.081	0.104	0.115	0.131	0.114	0.128
	(0.184)	(0.179)	(0.189)	(0.185)	(0.187)	(0.183)
Country political σ	0.257	0.302	0.098	0.139	0.151	0.200
	(0.365)	(0.388)	(0.375)	(0.389)	(0.378)	(0.395)
Country political β			0.024***	0.023***	0.006***	0.006***
			(0.003)	(0.003)	(0.001)	(0.001)
Observations	430,352	416,558	398,842	390,632	398,842	390,632
R-squared	0.192	0.230	0.183	0.225	0.179	0.220
Measurement country political β	NA	NA	*Value-weighted*		*Equally-weighted*	
Add'l firm/country ctrls.	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm X year FE	No	Yes	No	Yes	No	Yes

Notes: The sample consists of a balanced panel of company-by-destination country export observations in Russia over 2006-2011. The panel includes all country-by-destination country pairs with at least one positive trade observation over 2001-2011, zero trade observations are imputed. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is a dummy for positive values of exports (in current USD) being sent by a given firm into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index calculated on the basis of similarity of a country's votes in the UNGA with Russia in a given year. Country political β is calculated by a rolling pre-ranking value-weighted (equally-weighted) approach, as described in the main text. Country political σ is the past 12 years' variance of Affinity Index for a given country. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. In addition, specifications 2, 4 and 6 include firm X year fixed effects. Standard errors (in parentheses) are calculated by bootstrap with 1000 repetitions (with two-way clustering at the firm and country levels). ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table A2.2: Diversification: Political β vs. political σ. Intensive & extensive margins

	(1)	(2)	(3)	(4)	(7)	(8)
	Dependent variable: log ($2,000+exports)					
Affinity Index(t-1) X country political σ	4.571*	4.450*	3.118	2.923	3.469	3.377
	(2.670)	(2.473)	(2.794)	(2.683)	(2.788)	(2.672)
Affinity Index(t-1) X country political β			0.140***	0.154***	0.066***	0.066***
			(0.037)	(0.034)	(0.012)	(0.011)
Affinity Index(t-1)	0.232	0.349	0.411	0.507	0.404	0.492
	(0.812)	(0.802)	(0.845)	(0.841)	(0.838)	(0.833)
Country political σ	1.007	1.213	0.040	0.207	0.335	0.549
	(1.417)	(1.548)	(1.441)	(1.559)	(1.451)	(1.576)
Country political β			0.153***	0.152***	0.048***	0.047***
			(0.023)	(0.023)	(0.007)	(0.007)
Observations	430,352	416,558	398,842	390,632	398,842	390,632
R-squared	0.245	0.268	0.247	0.271	0.239	0.263
Measurement country political β	NA	NA	*Value-weighted*		*Equally-weighted*	
Add'l firm/country ctrls.	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm X year FE	No	Yes	No	Yes	No	Yes

Notes: The sample consists of a balanced panel of company-by-destination country export observations in Russia over 2006-2011. The panel includes all country-by-destination country pairs with at least one positive trade observation over 2001-2011, zero trade observations are imputed. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is the log of ($2,000 + amount of exports) in current USD being sent by a given firm into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index calculated on the basis of similarity of a country's votes in the UNGA with Russia in a given year. Country political β is calculated by a rolling pre-ranking value-weighted (equally-weighted) approach, as described in the main text. Country political σ is a past 12 years' variance of Affinity Index for a given country. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. In addition, specifications 2, 4 and 6 include firm X year fixed effects. Standard errors (in parentheses) are calculated by bootstrap with 1000 repetitions (with two-way clustering at the firm and country levels). ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Appendix A3: Portfolios with country exclusion (for online publication only)

Table A3.1: Diversification: Heterogeneity with respect to political β: Value weighted, country excl

		(1)	(2)	(3)	(4)
		Panel A: Intensive margin			
Affinity Index(t-1) X political β	0.029	0.034	0.030	0.036	
	(0.030)	(0.030)	(0.028)	(0.029)	
Affinity Index(t-1)	0.393**		0.445***		
	(0.162)		(0.154)		
Political β	0.049***	0.050***	0.049***	0.050***	
	(0.012)	(0.012)	(0.012)	(0.013)	
Observations	130,794	130,719	129,444	129,361	
R-squared	0.491	0.496	0.546	0.550	
		Panel B: Extensive margin			
Affinity Index(t-1) X political β	0.004	0.005	0.004	0.005	
	(0.005)	(0.004)	(0.005)	(0.004)	
Affinity Index(t-1)	0.183		0.193		
	(0.168)		(0.165)		
Political β	0.008***	0.011***	0.008***	0.011***	
	(0.002)	(0.002)	(0.002)	(0.002)	
Observations	380,275	380,234	376,817	376,776	
R-squared	0.151	0.173	0.220	0.241	
		Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political β	0.032	0.036	0.033	0.038	
	(0.032)	(0.027)	(0.033)	(0.028)	
Affinity Index(t-1)	0.857		0.932		
	(0.781)		(0.772)		
Political β	0.047***	0.058***	0.048***	0.058***	
	(0.011)	(0.014)	(0.012)	(0.015)	
Observations	380,275	380,234	376,817	376,776	
R-squared	0.206	0.225	0.259	0.278	
Year FE	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	
Firm X year FE	No	No	Yes	Yes	
Country X year FE	No	Yes	No	Yes	

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table A3.2: Diversification: Heterogeneity with respect to political β: Equally-weighted country excl.

		(1)	(2)	(3)	(4)
		Panel A: Intensive margin			
Affinity Index(t-1) X political β	0.034***	0.038***	0.034***	0.038***	
	(0.011)	(0.012)	(0.012)	(0.013)	
Affinity Index(t-1)	0.396**		0.448***		
	(0.161)		(0.153)		
Political β	0.034***	0.035***	0.034***	0.035***	
	(0.007)	(0.008)	(0.008)	(0.009)	
Observations	130,794	130,719	129,444	129,361	
R-squared	0.491	0.496	0.546	0.550	
		Panel B: Extensive margin			
Affinity Index(t-1) X political β	0.006**	0.007***	0.005**	0.006***	
	(0.002)	(0.002)	(0.002)	(0.002)	
Affinity Index(t-1)	0.184		0.194		
	(0.168)		(0.165)		
Political β	0.006***	0.008***	0.006***	0.008***	
	(0.001)	(0.002)	(0.001)	(0.002)	
Observations	380,275	380,234	376,817	376,776	
R-squared	0.151	0.173	0.220	0.241	
		Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political β	0.043***	0.048***	0.039***	0.044***	
	(0.012)	(0.012)	(0.012)	(0.012)	
Affinity Index(t-1)	0.868		0.942		
	(0.780)		(0.773)		
Political β	0.031***	0.041***	0.033***	0.043***	
	(0.008)	(0.010)	(0.009)	(0.011)	
Observations	380,275	380,234	376,817	376,776	
R-squared	0.206	0.225	0.259	0.278	
Year FE	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	
Firm X year FE	No	No	Yes	Yes	
Country X year FE	No	Yes	No	Yes	

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Appendix A4: Additional robustness checks for political β (for online publication only)

Table A4.1: Diversification: Political β. Fixed 2006 pre-ranking : Value-weighted portfolio.

		(1)	(2)	(3)	(4)
		Panel A: Intensive margin			
Affinity Index(t-1) X political β	0.091***	0.092***	0.090***	0.091***	
	(0.032)	(0.033)	(0.032)	(0.032)	
Affinity Index(t-1)	0.388**		0.414**		
	(0.157)		(0.171)		
Political β	0.131***	0.132***	0.134***	0.135***	
	(0.020)	(0.021)	(0.020)	(0.020)	
Observations	111,691	111,613	111,056	110,968	
R-squared	0.501	0.505	0.556	0.560	
		Panel B: Extensive margin			
Affinity Index(t-1) X political β	0.014***	0.014***	0.014***	0.014***	
	(0.004)	(0.004)	(0.004)	(0.004)	
Affinity Index(t-1)	0.154		0.166		
	(0.153)		(0.153)		
Political β	0.016***	0.016***	0.016***	0.016***	
	(0.003)	(0.003)	(0.003)	(0.003)	
Observations	344,265	344,225	339,095	339,055	
R-squared	0.168	0.186	0.210	0.229	
		Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political β	0.101***	0.102***	0.099***	0.101***	
	(0.027)	(0.027)	(0.026)	(0.026)	
Affinity Index(t-1)	0.736		0.808		
	(0.714)		(0.721)		
Political β	0.103***	0.103***	0.104***	0.103***	
	(0.019)	(0.019)	(0.019)	(0.019)	
Observations	344,265	344,225	339,095	339,055	
R-squared	0.229	0.244	0.256	0.272	
Year FE	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	
Firm X year FE	No	No	Yes	Yes	
Country X year FE	No	Yes	No	Yes	

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table A4.2. Subsamples analysis w.r.t. political β: $|\beta| < 5$, Value-weighted portfolio

		(1)	(2)	(3)	(4)
		Panel A: Intensive margin			
Affinity Index(t-1) X political β		0.120**	0.126**	0.135***	0.142***
		(0.047)	(0.048)	(0.041)	(0.044)
Affinity Index(t-1)		0.325*		0.388**	
		(0.166)		(0.167)	
Political β		0.190***	0.194***	0.193***	0.198***
		(0.027)	(0.028)	(0.025)	(0.026)
Observations		134,239	134,164	133,475	133,391
R-squared		0.120**	0.126**	0.135***	0.142***
		Panel B: Extensive margin			
Affinity Index(t-1) X political β		0.020***	0.021***	0.022***	0.023***
		(0.006)	(0.006)	(0.005)	(0.005)
Affinity Index(t-1)		0.184		0.197	
		(0.172)		(0.169)	
Political β		0.025***	0.027***	0.026***	0.027***
		(0.004)	(0.004)	(0.004)	(0.004)
Observations		397,493	397,452	389,283	389,242
R-squared		0.184	0.206	0.225	0.248
		Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political β		0.151***	0.153***	0.165***	0.167***
		(0.041)	(0.041)	(0.037)	(0.037)
Affinity Index(t-1)		0.832		0.905	
		(0.788)		(0.783)	
Political β		0.164***	0.171***	0.165***	0.172***
		(0.026)	(0.026)	(0.026)	(0.026)
Observations		397,493	397,452	389,283	389,242
R-squared		0.247	0.266	0.272	0.291
Year FE		Yes	Yes	Yes	Yes
Firm FE		Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes
Firm X year FE		No	No	Yes	Yes
Country X year FE		No	Yes	No	Yes

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table A4.3. Subsamples analysis w.r.t. political β: $\beta > 0$, Value-weighted portfolio

		(1)	(2)	(3)	(4)
		Panel A: Intensive margin			
Affinity Index(t-1) X political β	0.269***	0.333***	0.314***	0.421***	
	(0.073)	(0.079)	(0.073)	(0.074)	
Affinity Index(t-1)	0.176		0.346		
	(0.231)		(0.283)		
Political β	0.145***	0.174***	0.169***	0.226***	
	(0.044)	(0.053)	(0.043)	(0.057)	
Observations	96,233	96,157	92,046	91,964	
R-squared	0.530	0.537	0.591	0.598	
		Panel B: Extensive margin			
Affinity Index(t-1) X political β	0.039***	0.048***	0.044***	0.060***	
	(0.014)	(0.012)	(0.013)	(0.012)	
Affinity Index(t-1)	0.146		0.118		
	(0.196)		(0.178)		
Political β	0.031***	0.030***	0.034***	0.036***	
	(0.009)	(0.008)	(0.008)	(0.008)	
Observations	275,378	275,328	263,528	263,478	
R-squared	0.218	0.243	0.267	0.293	
		Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political β	0.288***	0.349***	0.337***	0.447***	
	(0.093)	(0.089)	(0.089)	(0.087)	
Affinity Index(t-1)	0.615		0.567		
	(0.968)		(0.943)		
Political β	0.190***	0.192***	0.221***	0.250***	
	(0.058)	(0.061)	(0.055)	(0.059)	
Observations	275,378	275,328	263,528	263,478	
R-squared	0.283	0.304	0.312	0.334	
Year FE	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	
Firm X year FE	No	No	Yes	Yes	
Country X year FE	No	Yes	No	Yes	

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Table A4.4: Diversification: Political covariance instead of β.

		(1)	(2)	(3)	(4)
		Panel A: Intensive margin			
Affinity Index(t-1) X political COV	22.952***	26.338***	27.877***	31.101***	
	(6.521)	(7.047)	(7.163)	(7.768)	
Affinity Index(t-1)	0.274*		0.353**		
	(0.163)		(0.165)		
Political COV	55.311***	57.141***	58.077***	59.786***	
	(4.496)	(4.778)	(4.322)	(4.576)	
Observations	134,657	134,582	133,903	133,819	
R-squared	0.509	0.514	0.564	0.568	
		Panel B: Extensive margin			
Affinity Index(t-1) X political COV	3.665***	4.384***	4.303***	4.862***	
	(0.825)	(0.901)	(0.904)	(1.063)	
Affinity Index(t-1)	0.182		0.194		
	(0.168)		(0.165)		
Political COV	7.158***	7.368***	7.488***	7.638***	
	(0.660)	(0.668)	(0.694)	(0.702)	
Observations	398,842	398,801	390,632	390,591	
R-squared	0.185	0.207	0.227	0.249	
		Panel C: Extensive & intensive margins			
Affinity Index(t-1) X political COV	25.691***	29.471***	29.901***	32.802***	
	(6.177)	(6.650)	(6.834)	(7.593)	
Affinity Index(t-1)	0.827		0.897		
	(0.769)		(0.763)		
Political COV	49.132***	50.423***	51.261***	52.202***	
	(4.555)	(4.610)	(4.692)	(4.739)	
Observations	398,842	398,801	390,632	390,591	
R-squared	0.250	0.269	0.275	0.294	
Year FE	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	
Firm X year FE	No	No	Yes	Yes	
Country X year FE	No	Yes	No	Yes	

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political covariance is calculated by a rolling pre-ranking value-weighted approach with country exclusion as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 3 and 4 include firmXyear fixed effects, and specifications 2 and 4 include countryXyear fixed effects . Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Appendix A5: PPML results (for online publication only)

Table A5.1: Political diversification: PPML

	(1)	(2)	(3)	(4)
	Dependent variable: value exports (in $M)			
Affinity Index(t-1) X political β of country	0.098	0.303	0.090	0.129*
	(0.181)	(0.191)	(0.058)	(0.069)
Affinity Index(t-1)	1.006		1.020*	
	(0.649)		(0.544)	
Political β of country	0.575**	0.597**	0.081	0.095*
	(0.253)	(0.279)	(0.051)	(0.051)
Log assets	0.350***	0.356***	0.315***	0.346***
	(0.094)	(0.088)	(0.095)	(0.098)
Log country GDP	1.716***		0.830**	
	(0.486)		(0.386)	
Log country population	1.857		2.055	
	(1.664)		(1.439)	
Observations	389,082	389,082	389,082	389,082
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Firm X year FE	No	No	No	No
Country X year FE	No	Yes	No	Yes
β construction	Value-weighted		Equally-weighted	

Notes: The sample consists of a balanced panel of company-by-destination country export observations in Russia over 2006-2011. The panel includes all country-by-destination country pairs with at least one positive trade observation over 2001-2011, zero trade observations are imputed. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is the level of total exports (in current millions of USD) being sent by a given firm from Russia into a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Country political β is calculated by a rolling pre-ranking equally-weighted approach as described in the main text. Additional controls are the log of firm assets (obtained from SPARK-Interfax database), the log of country GDP (chained real GDP) and the log of country population (from PennWorld Tables). All specifications are estimated by Poisson Pseudo-Maximum Likelihood. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. In addition, specifications 2 and 4 include country X year fixed effects. Standard errors (in parentheses) are calculated by bootstrap with 1000 repetitions (with two-way clustering at the firm and country levels). ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.

Appendix A6: Foreign exchange rate robustness checks (for online publication only)

Table A6.1: FX rate included

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Intensive margin: Dependent variable: log exports					
Affinity Index (t-1)	0.382**	0.270	0.297**	0.408**	0.263	0.297**
	(0.182)	(0.171)	(0.149)	(0.187)	(0.163)	(0.138)
Affinity Index (t-2)		0.117	0.138		0.130	0.152
		(0.116)	(0.105)		(0.138)	(0.130)
Affinity Index (t)			-0.136			-0.143
			(0.189)			(0.178)
Log FX rate	-0.006	-0.002	-0.003	-0.002	0.003	0.003
	(0.023)	(0.022)	(0.022)	(0.024)	(0.023)	(0.023)
Observations	315,991	313,433	313,433	251,039	248,482	248,482
R-squared	0.516	0.516	0.516	0.558	0.558	0.558
	Panel B: Extensive margin: Dependent variable: 1(exports>0)					
Affinity Index (t-1)	0.266***	0.176*	0.178**	0.277***	0.180*	0.185**
	(0.099)	(0.096)	(0.080)	(0.096)	(0.093)	(0.075)
Affinity Index (t-2)		0.185***	0.186**		0.190***	0.193***
		(0.070)	(0.074)		(0.065)	(0.070)
Affinity Index (t)			-0.008			-0.021
			(0.114)			(0.110)
Log FX rate	-0.004	-0.001	-0.001	-0.006	-0.003	-0.003
	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
Observations	758,677	750,903	750,903	732,265	724,240	724,240
R-squared	0.170	0.171	0.171	0.231	0.232	0.232
Panel C: Intensive & Extensive margins: Dependent variable log($2000+export)						
Affinity Index (t-1)	1.125**	0.736	0.764**	1.147**	0.723*	0.775**
	(0.475)	(0.446)	(0.365)	(0.456)	(0.425)	(0.337)
Affinity Index (t-2)		0.787**	0.804**		0.821**	0.850**
		(0.356)	(0.364)		(0.341)	(0.351)
Affinity Index (t)			-0.124			-0.205
			(0.523)			(0.501)
Log FX rate	-0.024	-0.009	-0.010	-0.034	-0.018	-0.020
	(0.049)	(0.051)	(0.051)	(0.047)	(0.050)	(0.050)
Observations	758,677	750,903	750,903	732,265	724,240	724,240
R-squared	0.225	0.226	0.226	0.270	0.270	0.270
Add'l firm/country ctrls.	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm X Year FE	No	No	No	Yes	Yes	Yes

Notes: The sample consists of a company-by-destination country export observations in Russia over 2001-2011. Panel A contains observations only for positive exports (export observations less than $100 value are dropped). Panels B and C contain a balanced panel for all firm-country observations that have traded at least once during 2001-2011, imputing zero trade flows for missing trade observations. The sample excludes exports into localities/affiliated territories that do not have formal representation in the UN and companies with no information about the value of assets. The dependent variable is log of total exports in Panel A, a dummy for positive level of exports in Panel B, and the log of ($2,000+total exports) in Panel C. Exports (in current USD) are being sent by a given firm from Russia into

a given destination country. Affinity Index is Gartzke's (2010) Affinity of National Index, calculated on the basis of similarity of a country's votes with Russia in a given year. Log FX is log of Russian Ruble per unit of currency exchange rate. Foreign exchange data are from International Financial Statistics (IFS). Additional controls included in all specifications are log of firm assets (obtained from SPARK-Interfax database), log country GDP (chained real GDP) and log country population (from PennWorld Tables). All specifications are estimated by OLS. Country fixed effects, firm fixed effects, and time fixed effects are included in all regressions but not reported. Additionally, specifications 4-6 include firmXyear fixed effects. Standard errors 2-way clustered at the exporting firm and at the importing country levels are reported in parenthesis. ***, **, * indicate statistical significance at 1%, 5%, and 10%, respectively.