# Does Punishing Sanctions Busters Work? Sanctions Enforcement and U.S. Trade with Sanctioned States

Bryan R. Early University at Albany-SUNY bearly@albany.edu

Timothy M. Peterson Arizona State University tim@timothypeterson.org

Note: Accepted for publication in *Political Research Quarterly*. A complete replication archive can be found at: https://www.dropbox.com/s/owk5si5fzo5a8po/Enforcement\_PRQ\_Replication.zip?dl=1

## Abstract

How can the government agencies responsible for enforcing economic sanctions enhance their effectiveness? This study explains how and why sanctions enforcement actions undertaken by sender governments can discourage their firms from trading with the states they sanction. Specifically, we examine how the penalties imposed against sanctions violators by the U.S. Department of Treasury's Office of Foreign Asset Control (OFAC) affect U.S. firms' trade with target states. We argue that, because U.S. firms are responsive to the risk being penalized and the disruptions that penalties create, U.S. trade with sanctioned states will be lower in the aftermath of OFAC enforcement actions. The penalties' frequency and severity will magnify those negative effects. We hypothesize that OFAC enforcement actions taken against both U.S. and foreign sanctions violators will negatively impact U.S. trade with targets. Analyzing data from 2003-2015, we find that OFAC's sanctions enforcement actions decrease U.S. trade with sanctioned states in numerous ways.

#### Introduction

Given the scarce resources that governments devote to implementing economic sanctions, how can the agencies responsible for enforcing sanctions enhance their effectiveness? The strategies that sanctions enforcement bodies employ vis-à-vis firms can play an important role in shaping the severity of the costs that sanctions targets experience. Increasing the consequences firms face for sanctions violations and their perceived risks of being caught are both mechanisms by which senders can influence firms' responses to sanctions (Morgan and Bapat 2003; Early and Preble 2020b). Sender governments can influence the risks their firms perceive in doing business with partners in sanctioned states via the penalties they impose against sanctions violators. Importantly, the positive relationship between the economic costs sanctions impose on targets and the success of sanctioning efforts is one of the strongest empirical findings in the sanctions literature (Bapat et al. 2013). Improved sanctions enforcement can thus contribute to a higher likelihood of sanctions succeeding. Our study seeks to uncover how the penalties imposed against sanctions violators by enforcement bodies within sender governments affects sanctions' disruptive effects on trade with target states.

While intuitive linkages exist between the enforcement, consequences, and effectiveness of economic sanctions, the topic of enforcement has received surprising little attention (Morgan and Bapat 2003; Bapat and Kwon 2015). Efforts to study how governments obtain private sector compliance with their sanctions have provided initial insights into what kinds of enforcement strategies governments can employ (Morgan and Bapat 2003; Early 2016; Early and Preble 2020a; Bapat et al. 2020). To date, however, no empirical studies have examined how the use of specific enforcement policies affects the behavior of the private sector actors whose behaviors

sanctions are intended to alter. One of the key reasons why enforcement-related variables have not been included in many of the major sanctions datasets (e.g., Hufbauer et al. 2007; Morgan et al. 2014) is that few governments make robust investments in enforcing sanctions.

In this study, we explore the impact of the sanctions enforcement strategies employed by the United States government. The U.S.'s superpower status, its dominant place in the international financial system, and its propensity to employ sanctions more than any other government (Hufbauer et al. 2007; Morgan et al. 2014; Farrell and Newman 2019) allow and motivate it to invest in sanctions enforcement more than other countries. Given that the U.S. is responsible for such a significant proportion of the sanctions adopted, understanding how it implements sanctions and the consequences they have makes it a critical case to understand within the sanctions literature. While most senders do not currently invest as much as the U.S. in enforcing sanctions, its strategies could be a model for other greater powers seeking to enhance their sanctions' effectiveness in the future.

Our study specifically examines the impact that sanctions enforcement actions taken by U.S. Department of Treasury's Office of Foreign Asset Control (OFAC) have on U.S. firms' trade with the targets of U.S. sanctions. We theorize that more frequent and more severe OFAC enforcement actions against sanctions violators will promote greater compliance with sanctions and, more broadly, discourage U.S. firms from trading with states sanctioned by the U.S. government. Our analysis disaggregates enforcement actions between those that should directly affect U.S. firms' risk calculus for trading with a target states versus those that will contribute to their systemic risk evaluations. We expect that U.S. firms will be most sensitive to OFAC enforcement actions against U.S. firms for violating sanctions against a particular trade partner, but that their risk assessments will also consider punishments against foreign firms for violating sanctions with that state. We also theorize that the penalties imposed by OFAC against U.S. firms for violations of other sanctions regimes will contribute to U.S. firms' evaluations of the risk climate for trading with sanctioned states. We expect that OFAC's financial penalties must be sufficiently large to negatively impact U.S. trade with sanction states and that, after that threshold is met, larger-sized penalties will generally have stronger and more consistent effects.

We test our theory with a quantitative analysis of U.S. trade with sanctioned states from 2003-2015. While this approach does not give us firm-level insights on how sanctions enforcement actions affect their behavior (e.g., Webb 2020; Allen 2021), it allows us to test the macrolevel implications of our theory using a measure that has salient implications for the aggregate costs sanctions impose on their targets. Our observations include all states subject to U.S. economic sanctions of any magnitude. We employ data on imports and exports between the U.S. and target states as our dependent variables, combining it with data on the civil financial penalties imposed on firms as part of OFAC enforcement actions (Early and Preble 2020a; Sanctions-Alert.com 2018). We explore the impact of OFAC penalties at three different minimum thresholds of severity, \$500,000-plus, \$1 million-plus, and \$25 million-plus, allowing us to evaluate how penalties' severity affects their impact. Our analysis reveals that OFAC enforcement actions have strong, consistently negative effects on U.S. imports from and exports to target states when OFAC penalizes U.S. firms for violating sanctions against the target. We also find that OFAC penalties against U.S. firms for violating other sanctions regimes depress U.S. exports to targets. The impact of penalizing sanctions violators thus reverberates beyond the immediate sanctions

regime it involves. Lastly, the results show that, when OFAC imposes \$1 million-plus penalties against third parties for violating a particular sanctions regime, those enforcement actions are associated with reductions of U.S. imports from that target. In sum, our findings indicate OFAC enforcement actions serve as force-multipliers that increase the disruptions experienced by and risks perceived by U.S. firms in doing business with the targets of U.S. sanctions.

Our findings contribute in important ways to the literature on economic coercion and international political economy. Via OFAC's enforcement actions, we find that the U.S. Government can improve domestic compliance with its sanctions and lead to so-called "overcompliance" in discouraging allowable trade with sanctioned states. As our analysis uncovers, OFAC can discourage U.S. trade with the states it sanctions through punishing both U.S. and foreign firms for their violations. Importantly, our study shows that sanctions enforcement actions also have broader systemic deterrent effects (Peterson 2013, 2014; Miller 2014). Punishing sanctions busters for violating sanctions thus appears to be a cost-effective strategy for enhancing the effectiveness of sanctioning efforts. Our analysis suggests that developing a more nuanced understanding of how sender governments-and not just the U.S.-enforce their sanctions represents a crucial future step for sanctions research (Bapat et al. 2020). Finally, our findings have salient implications for U.S. policymakers. OFAC's penalties can make U.S. sanctions more effective than potentially anticipated, and they can leverage the penalties employed against third-party sanctions violators to make the domestic effects of their sanctions more severe.

#### The Adverse Economic Effects of Economic Sanctions

Economic sanctions are dual-edged swords that harm the economic welfare of both the sender governments that impose them and their targets. As Morgan (2015) notes, sender governments have become steadily better at finding ways to minimize the costs sanctions impose on themselves; but, even so, meaningful sanctions are almost never costless. Indeed, Martin (1992) argues that the costs senders bear in imposing sanctions help demonstrate the government's resolve in a sanctions dispute. Hufbauer, Schott, Elliot, and Oegg (2007) estimate that the costs of economic sanctions to senders such as the U.S. can amount to tens of billions of dollars. Hufbauer, Elliot, Cyrus, and Winston (1997) also show that economic sanctions cost the U.S. economy as many as 200,000 jobs in the late 1990s. In addition to the direct losses caused by reduced market access, contemporary U.S. sanctioning policies place a compliance burden on companies (Arnold 2016). Companies are responsible for ensuring they comply with sanctions, and increasingly treat sanctions as another form of government regulation requiring investments in compliance and risk management. Sanctions thus impose additional costs of doing business on firms, which can vary depending on the nature of a company's business activities. Finally, sender governments also incur broad costs associated with investments in creating the regulatory and institutional infrastructure necessary to implement sanctions, as well as the ongoing costs associated with monitoring compliance and punishing violations (Morgan and Bapat 2003). Resources for managing sanctions are generally scarce (Early 2016); and governments may make strategic decisions about the particular sanctioning efforts they want to invest more in enforcing (Bapat and Kwan 2015; Early and Preble 2020b).

The onset of sanctions imposes disruption costs on their targets, severing otherwise profitable business relationships and forcing parties in target states to find new commercial partners. Beyond the initial disruption, sanctions weaken the target states' terms of trade, forcing parties in the target to pay more for imports they used to acquire from the sender, while receiving less for the exports they must redirect to new customers (Kaempfer and Lowenberg 1999).<sup>1</sup> While parties in the target states may be able to forge new relationships in third-party states (Early 2015; Barry and Kleinberg 2015), those new trade relationships will almost always be less profitable for targets. Economic sanctions have thus been found generally to have a significant negative effect on their targets' economies, especially in the case of U.S. and United Nations (UN) Security Council sanctions (Neuenkirch and Neumeier 2015). Economic sanctions increase the likelihood of target states experiencing financial crises (Peksen and Son 2015), and can increase growth of targets' illicit economies (Andreas 2005; Early and Peksen 2019).

Research has shown that economic sanctions can have significant and lasting negative effects on the commercial relationships between sender and target states. Estimates suggest that economic sanctions have disrupted billions of dollars-worth of potential trade between the U.S. and the states it has sanctioned (Hufbauer et al. 1997; Hufbauer 2007). Afesorgbor (2019) finds that imposed economic sanctions have a negative effect on trade between sender and target states. Finally, Lektzian and Souva (2003) show that trade flows between senders and targets do not recover immediately after sanctions are removed, and that political factors such as regime type can influence the time until recovery.

Firms within targets and senders whose commerce is affected by sanctions have several options to prevent the loss of profitable relationships: they can try to exploit legal loopholes in sanctions policies, continue their trade via smuggling or illicit relationships, or forge sanctionsbusting relationships via third-party intermediaries (Early 2015; 2016; Barry and Kleinberg 2015). The continued interest of sender firms in doing business with target states is at heart of the compliance challenges associated with sanctions. Sanctions increase costs and enhance the risks that sender firms face for continuing business with partners in target states. If firms perceive the profitability of transactions to be sufficiently high, and the risks and/or penalties of being caught are low, they may circumvent sanctions on behalf of partners in target states. They will use legal channels or loopholes when possible or illicit methods if necessary (Early 2015; 2016; Early and Peksen 2018). Sender governments thus face a dilemma in determining how to allocate resources in implementing and enforcing their sanctions in order to convince private sector actors to comply (Morgan and Bapat 2003; Early and Preble 2020a; 2020b). While Early (2015: 214) advises that "[h]arsh, credible, and consistently employed penalties will likely be needed to deter firms from engaging in the otherwise highly lucrative business of sanctions-busting," understanding how to use scarce resources to do that represents a significant challenge.

#### How Enforcement Actions Shape Firms' Response to Sanctions

Economic sanctions disrupt commerce by restricting or prohibiting otherwise profitable transactions, creating uncertainty in commercial relationships, and increasing the transaction costs associated with doing business. Due to the latter two effects, economic sanctions can harm commercial transactions far beyond the specific types of transactions they forbid. Yet, the primary effects of sanctions centers on their ability to convince private sector actors that they must stop doing business with commercial partners subject to economic restrictions. The incentive structures facing firms and governments with respect to sanctions creates both complementary and diverging interests. Governments wish to make their sanctions effective while imposing as few costs on their own businesses as possible (Bapat and Kwon 2015). Firms want to survive and retain profitability. To the extent they can do so via complying with governmental regulations and policies, they will generally seek to comply with them. In this section, we present our explanation for how and why government investments in sanctions enforcement alter firm's incentives to comply with sanctions.

Economic sanctions rarely achieve success immediately (van Bergeijk and Marrewijk 1995), partly because achieving high levels of domestic sanctions compliance may not occur immediately—or at all. Sanctions enforcement actions can play a key role in bringing firms' behavior in line with sanctions policies. Punishing sanctions violators to promote compliance is crucial to imposing meaningful costs on sanction targets. As such, sanctions enforcement actions are not necessarily a sign that a sanctioning effort is failing or will fail; rather, they are often a steppingstone towards making ongoing sanctioning efforts maximally effective. Not all governments possess the resources or political incentives to enforce their economic sanctions proactively, though. It takes resources to enforce sanctions, and punishing firms for non-compliance may engender broader political resentment against sanctioning efforts. Thus, even governments that have the prerogative to engage in robust enforcement of their sanctions have incentives to minimize potential political backlash against those actions.

In the U.S., OFAC is charged with the responsibility to implement U.S. sanctions and take civil enforcement actions against parties that violate them. OFAC has broad discretion in investigating both domestic and foreign sanctions violations and in determining the nature of penalties imposed for sanctions violations it uncovers (Early and Preble 2020a; 2020b). It employs sanctions enforcement actions strategically to raise awareness of compliance obligations and to influence firm risk perceptions for sanctions violations. Since 2003, the OFAC has published summaries of its sanctions enforcement actions online. When sanctions infractions become news stories, it can raise awareness among relevant parties about sanctions requirements and provide OFAC with an opportunity to share lessons-learned from those cases. The imposition of large financial penalties (Early and Preble 2020a; 2020b) can also be leveraged by enforcement bodies to scare companies into reevaluating the perceived risks of non-compliance with sanctions requirements.

OFAC's sanctions enforcement strategies have evolved over the past two-decades. During the early and mid-2000s, OFAC employed an "fishing" strategy that emphasized catching a lot of small-time violators that, on average, yielded small civil penalties as punishments. Starting in 2009, though, OFAC shifted towards more of a "whale-hunting" strategy that focused more on targeting foreign financial institutions that violated U.S. sanctions [the whales] and imposing massive fines against them (Early and Preble 2020a). This strategic shift suggests that OFAC realized that simply penalizing more violators was not necessarily better. Focusing on a smaller number of high-profile cases was viewed as a more efficient and effective means of raising awareness of U.S. sanctions requirements and deterring violations. Examples of "whale-hunting" penalties include OFAC enforcement actions taken against Credit Suisse (2009), ING Bank N.V. (2012), HSBC Holdings (2012), and BNP Paribas SA (2014) that all resulted in \$400 millionplus fines. Targeting foreign sanctions violators was also advantageous for OFAC because such fines did not directly harm U.S. firms while still potentially generating similar awareness-raising and deterrent effects. It remains an open empirical question, however, if penalizing foreign sanctions violators violators of U.S. firms.

We assume that firms are complex organizations whose personnel are generally rational and united in the pursuit of profits but that have a range of different risk tolerances and individual goals. This means that the leaders of firms may face principal-agent challenges in securing full buy-in for corporate policies and that the individuals within firms may engage in behaviors not fully in their firms' interests. When the U.S. government adopts sanctions policies that disrupt a firm's business, the firm's leaders could ignore the sanctions, direct their employees to find ways of circumventing them, or commit to having their companies comply with the sanctions. Irrespective of stated corporate policies, individual members of a firm may violate sanctions out of ignorance about the policy requirements or because they see opportunities for individual gains (i.e., commissions or performance bonuses) via sanctions-busting activities. In 2014, for example, OFAC settled apparent violations with Sea Tel for exporting 16 marine antenna systems for use on shipping vessels owned by the sanctioned National Iranian Tanker Company (NITC). While the company had some sanctions compliance policies in place, "a Sea Tel sales manager had reason to know that the antenna systems were destined for NITC and [still] authorized the shipments" (OFAC 2014: 1). Firms that want to ensure their entire organizations comply with sanctions policies must make investments in corporate compliance procedures and per-

sonnel. The recent rise of consultant services (such as, Kharon and Deloitte) and law practices (for example, Gibson Dunn) that specialize in corporate sanctions compliance illustrate the major investments that U.S. businesses have made in this area. Investments in sanctions compliance increase the transaction costs of doing business but help inoculate firms from the reputational risks and costs associated with potentially violating sanctions.

OFAC expects that other firms will observe and glean information from its sanctions enforcement actions-even if those firms are in other economic sectors, the violations involve other sanctions programs, or the penalized firms are based in foreign countries (e.g., Gacki 2019). Yet, at present, the extent to which the deterrent effects of enforcement actions transfer across sectors, commercial flows, and internationally remains an open empirical question. We think that firms involved in trading goods, for example, could have their risk-perceptions about complying with sanctions altered by penalties assessed against financial institutions. As well, many major multinational firms have corporate presences in numerous countries beyond where they are headquartered. Many large U.S. firms, for example, have foreign subsidiaries operating in other locations that may also be required to comply with U.S. sanctions. For example, OFAC (2013) imposed a \$91 settlement with the U.S.-based oil company Weatherford International Ltd and two of its foreign subsidiaries for apparent violations of U.S. sanctions against Cuba, Iran, and Sudan in 2013. Similarly, foreign-owned businesses may have corporate presences in the U.S. that must fully comply with U.S. sanctions policies. This suggests that firms operating within the U.S. may also be sensitive to sanctions enforcement actions taken against foreign sanctions violators.

We theorize that firms will adjust their assessments of risk associated with violating U.S. sanctions as a function of the number and severity of enforcement actions by OFAC. While enforcement actions resulting in enormous fines can yield significant publicity and deterrent effects, such cases arise infrequently and require substantial investments of time and resources by OFAC to pursue (Early and Preble 2020b). Rosenberg and Tama (2019: 11) argue that it is valuable to pursue enforcement involving both large and smaller-sized penalties to communicate that all firms are expected to comply with U.S. sanctions. For the purpose of raising awareness and deterring violations, we expect that OFAC penalties will still have to be fairly significant to generate publicity and serve as powerful enough deterrents to discourage trade with the targets of U.S. sanctions. If the penalties are sufficiently large, though, we theorize that the number of enforcement actions that OFAC takes should factor into firms' risk calculus. When OFAC more stridently enforces U.S. sanctions, it will disincentive business leaders from deliberately engaging in illegal sanctions-busting activities and encourage them to invest in corporate sanctions compliance policies to reduce their risks of unintentional violations. Increased levels of domestic compliance with U.S. economic sanctions will have the aggregate effect of reducing U.S. trade with sanctioned states.

Beyond the pressure OFAC enforcement actions place on firms to comply with U.S. sanction policies, they can also have a broader chilling effect on U.S. trade with sanctioned states. Fears over OFAC enforcement may contribute to higher levels of risk-aversion about doing business with partners in sanctioned states (Early and Preble 2020b). Even targeted sanctions against specific actors (individuals, businesses, or government agencies) will increase the risk of doing business with their entire states they are a part of, as firms will have to ensure their trans-

actions do not involve any sanctioned parties. This means that even when many transactions with target states are still allowed, doing business in those states become costlier and riskier. For some firms, the potential downside risks of doing business in sanctioned states will lead them to voluntarily cease operating in or doing business with parties from those states altogether. This practice is known as "de-risking" or "over-compliance." It has become prevalent in the financial sector and has spread elsewhere, like the IT sector (Flores 2019).

Foreign firms' responses to OFAC enforcement actions can also increase U.S. firms' costs of doing business with target states. For example, the substantial penalties OFAC imposed against foreign banks for violating U.S. sanctions have increased the difficulty that U.S. firms have in obtaining financing for commercial transactions with partners in target states. By targeting the financial institutions that facilitate international trade with sanctioned states, OFAC can make it harder for both illicit sanctions-busting trade and legal trade with those states. Increasing the sanctions compliance levels of specific economic sectors, like the financial industry, can thus raise the transaction costs for all the sectors that depend upon them. Ferrell and Newman (2019) have argued that the U.S. Government's "weaponization" of its dominant status in the international financial networks has given it substantial leverage in forcing firms to comply with U.S. sanctions. As they note (2019: 67-68), this leverage helped freeze Iranian banks out of the international financial system in the early 2010s-making it substantially harder for Iranian companies to finance commercial transactions with foreign partners. By focusing its enforcement on this "choke-point" in how international trade occurs (Ferrell and Newman 2019), OFAC substantially raised the difficulty of conducting both sanctions-violating and legitimate trade with Iran (such as, pharmaceuticals, medical equipment, and food). This complementary mechanism

of making trade with targets more costly and difficult reinforces the deterrent effects that OFAC's enforcement actions have. It also highlights how OFAC enforcement actions in nontrade related sectors can affect decisions made by U.S. firms about trading with sanctioned states.

#### Hypothesizing the Direct and Systemic Effects of OFAC Enforcement Actions

OFAC enforcement actions imposed against firms for sanctions violating involving a particular target should constitute a direct deterrent to other firms trading with that target, but other OFAC enforcement actions can also have deterrent effects. We classify OFAC enforcement actions into three categories that U.S.-based firms should consider when deciding whether to do business with a target state. The first category involves enforcement actions against U.S. firms for violating sanctions against that specific trade partner, which should directly affect U.S. firms' risk calculus for trading with that state. The second category involves OFAC enforcement actions that punish third-party firms for violating sanctions against a target with which U.S. firms are considering trading. In the last category, U.S. firms may be influenced by OFAC's enforcement actions punishing U.S. firms for violations involving *other* sanctions regimes. We expect that enforcement actions from the first category will have the strongest and most consistent effect on U.S. firms trade with sanctioned target states, but that enforcement actions in the latter two categories can also discourage trade with target states.

U.S. firms evaluating the risks of doing business with a sanctioned trade partner should be most cautious when OFAC enforcement actions were taken against U.S.-based firms for violating sanctions against that state. For example, U.S.-based PanAmerican Seed Company settled an OFAC enforcement action in 2016 over apparent violations of the "Iranian Transactions and Sanctions Regulations" for \$4,320,000 (OFAC 2016). A simple Google search ("PanAmerican Seed Company sanctions violations") reveals that information about the enforcement action was publicized in the U.S. news media, U.S. legal blogs, and relevant U.S. trade journals and websites. U.S. companies considering doing business with Iran would thus have ample exposure to information about this case, which should directly affect their perceptions of the risks involved in doing business with Iran. The more that firms observe such penalties and the greater those penalties are, the greater the risks they will ascribe to doing business with the particular target state. Based on this logic, we would expect that the enforcement action would have a negative effect on other U.S. firms' trade with Iran.

**Hypothesis 1**: The more frequently OFAC imposes sufficiently large financial penalties for sanctions violations against U.S. firms over commerce with a U.S.-sanctioned target, the lower the subsequent U.S. trade with that state will be.

OFAC enforcement actions taken against foreign firms that do business with a particular target state can also inform U.S. firms' risk perceptions about trading with it, albeit less directly (Peterson 2013, 2014). These penalties can provide U.S.-based firms with information about OFAC's aggressiveness in pursuing enforcement actions related to specific sanctions programs. Indeed, research shows that the extent to which OFAC imposes penalties associated with particular sanctions varies by presidential administration (Early and Preble 2020a; 2021). Large multinational firms with corporate presences in the third-party states where the enforcement actions are imposed may be especially sensitive to the implications of those penalties for their U.S.-based operations. Enforcement actions against third-party firms for violating the U.S. sanctions

against a target will also increase the transaction costs and uncertainty that U.S. firms face in doing business with that state. According to this logic, OFAC's \$375 million settlement with the United Kingdom's HSBC Holdings for apparent violations of U.S. sanctions against Iran would diminish U.S. firms' trade with Iran as well (OFAC 2012b).

This type of enforcement action has particular value, as OFAC can make foreign firms pay the costs associated with deterring sanctions violations and hurt the foreign firms' competitiveness relative to their U.S. rivals. Imposing penalties against foreign firms also minimizes the amount of domestic political backlash OFAC could otherwise experience for punishing U.S. firms severely for violating U.S. sanctions. Along those lines, Early and Preble (2020a: 31) find that OFAC imposes significantly higher financial penalties against foreign firms than against U.S. firms. Punishing foreign sanctions violators may thus allow the U.S. to realize the benefits of imposing harsh penalties against violators while minimizing the domestic resentment such actions would engender if taken against U.S. firms. This logic suggests that extra-territorial sanctions provisions have valuable benefits that sender governments can exploit for enforcement purposes.

**Hypothesis 2**: The more frequently OFAC imposes sufficiently large financial penalties for sanctions violations against non-U.S. firms over commerce with a U.S.-sanctioned target, the lower the subsequent U.S. trade with that state will be.

OFAC enforcement actions can also affect the perception of the systemic risks involved in trading with sanctioned states. We theorize that U.S. firms will also pay attention to OFAC enforcement actions taken against U.S. firms for sanctions violations involving other target states besides the one with which they are considering trading. The willingness of OFAC to punish U.S. firms for violating other sanctions regimes, and how much those penalties are for, signal the general risks associated with trading with *any* target of U.S. sanctions. Such cases provide U.S.-based firms with information about OFAC's general enforcement practices, such as the size of the penalties OFAC is willing to impose, that offer additional insight into the risks involved in trading with sanctioned states. According to this logic, the \$7,772,102 settlement that OFAC reached with U.S.-based Zoltek Companies, Inc. in 2018 for apparent violations of the U.S.'s "Belarus Sanctions Regulations" would have a chilling effect on U.S. trade with entities in other sanctioned states (OFAC 2018). This implies that any enforcement action taken against U.S. firms for sanctions should have a systemic effect on the sanctions-related risks that all other U.S. firms perceive about doing business sanctioned states.

**Hypothesis 3:** The more frequently that OFAC imposes sufficiently large financial penalties against U.S. firms for violating sanctions with other states sanctioned by the U.S., the lower the subsequent U.S. trade with a particular target will be.

### **Research Design**

Our research design focuses on analyzing the macro-level implications of our theory rather than on how sanctions enforcement actions affect the behaviors of individual firms (e.g., Webb 2020). While this approach does not enable us to distinguish between the effects of the complementary compliance-based and deterrence-based mechanisms of our theory, it will allow us to assess whether—and in what circumstances—firm-level research is needed to parse the individual effects of our theoretical mechanisms. As such, we test our hypotheses with yearly data (2003-2015) on U.S. trade with all<sup>2</sup> states subject to U.S. sanctions of any magnitude. Our data set begins in 2003 because that is the first year OFAC began publishing its sanctions enforcement penalties and ends in 2015 due to the availability of our control variables. Our unit of analysis is the U.S.-dyad, where we pair each state in the system with the U.S. under the condition that U.S. sanctions are ongoing against that state.<sup>3</sup>

Our dependent variable captures bilateral trade. We use data from the Atlas of Economic Complexity (AEC) (The Growth Lab at Harvard University 2019). The AEC takes raw data on trade in goods from the United Nations Comtrade database and cleans it to account for inconsistencies in reporting. We code separate DVs for imports to the U.S. from the sanctioned state and exports from the U.S. to the sanctioned state. We log the trade variables after first adding one to preserve the observations involving no trade. *A priori*, we do not have any theoretical expectations for how sanctions enforcement actions could affect U.S. imports and exports differently.<sup>4</sup> Using the disaggregated trade data will provide finer-grained results, giving our findings more policy-relevance and providing insights that can contribute to more nuanced theory-building in the future.

Our primary explanatory variables capture the magnitude of civil penalties for violations of U.S.-imposed sanctions. One of the trends linked to greater investment in sanctions compliance is the substantial increase in the size of OFAC penalties for sanctions violations starting in 2009 (Early and Preble 2020a). While the number of OFAC civil penalties declined significantly in recent years, the average size of the penalties increased dramatically. According to Early and

Preble (2020), this change reflects OFAC's strategic shift to a "whale-hunting" strategy that emphasized the pursuit of a smaller number of high-profile cases that could result in larger penalties. Given this history, we contend that it is necessary to evaluate the magnitude as well as the frequency of the penalties OFAC employed in order to fully understand the impact of the agency's enforcement actions. We assume that firms' behaviors will not be affected by smallersized penalties and leave out penalties imposed for under \$500,000 from our analysis.

We take data on civil penalties from OFAC, coding the state receiving the penalty (i.e., the home-state of firms that violated U.S. sanctions) as well as the U.S.-sanctioned state with which illicit trade was conducted. To test hypotheses 1-3, we code variables that capture OFAC enforcement actions across the three specific categories highlighted by our theory. First, we count dyadic penalties: those imposed on U.S. firms for sanctions violating transactions with a specific target—i.e., country 2 (c2) in the U.S.-c2 dyad. There are fewer of these penalties in comparison to our other categories. To test hypothesis 2, we count penalties imposed against non-U.S. (henceforth foreign) firms for sanctions violating transactions with c2 in the U.S.-c2 dvad. To test hypothesis 3, we count penalties specifically imposed on U.S. firms for sanctions violating transactions with a U.S.-sanctioned state other than c2 in the U.S.-c2 dyad.<sup>5</sup> Given that larger penalties might be more salient to firms, we code this aggregate variable at three different penalty thresholds: \$500,000, \$1 million, and \$25 million.<sup>6</sup> Figure 1 presents counts of OFAC enforcement actions for each penalty threshold from 2003 to 2015. It separately depicts penalties imposed on firms in the U.S. vs. those paid by foreign firms and color-codes the various penalty sizes.

#### [Figure 1 about here]

We control for factors that could otherwise induce spurious correlation, and for gravity covariates that (also) improve model fit. First, we control for political affinity with two dummy variables. Specifically, we recode the Peace Scale (Klein, Goertz and Diehl 2008) such that values less than 0.5 are coded as an adversarial dyadic relationship and values above 0.5 are coded as dyadic friendship. Values equal to 0.5—defined by the authors as negative peace—compose the reference category.<sup>7</sup> As such, these control variables account for underlying political relationships that likely influence both the likelihood that sanctions exist and are enforced, and business expectations regarding the sustainability of trade.<sup>8</sup> Similarly, given that regime type could influence the extent of enforcement and the broader trading environment, also code a variable equal to 1 when c2 is a consolidated liberal democracy, defined as scoring 7 or above on the Polity IV combined revised democracy score.

We also control for the most common gravity indicators, using data from CEPII (Mayer and Zignago 2011). Specifically, we include a measure of the logged, average (populationweighted) distance between the U.S. and c2, as well as a dummy variable indicating direct contiguity. To capture demographic proximity, we include dummy variables for common language and colonial history. We also control for each state's logged GDP (in constant dollars). To capture membership in economic institutions, we include dummy variables indicating c2's membership status in GATT/WTO and the European Union.<sup>9</sup>

We estimate auto-distributed lag (ADL) models with heteroskedasticity-consistent standard errors.<sup>10</sup> We use the following process to determine the optimal lag length for the dependent

variable, our key explanatory variables, as well as the GDP variables (which are the only control variables to demonstrate considerable variation within a given dyad over time).<sup>11</sup> First, we use code to run models with every combination of lags up to four, saving the model output. Second, we conduct Breusch-Godfrey (BG) tests for serial correlation of orders 1 through 4. Third, among the subset of models where we fail to reject the BG null hypotheses of white noise residuals, we select the model with minimum AIC.<sup>12</sup> All models are estimated in R version 4.0.4 using the plm package version 2.2-4. The supplemental appendix presents additional information about these models as well as alternate specifications

#### Analysis

We find strong evidence that OFAC civil penalties are associated with subsequently lower U.S. trade with U.S.-sanctioned states (c2 in the U.S.-c2 dyad). Table 1 presents models examining the association between OFAC civil penalties and U.S. imports from sanctioned states. The three models represent three different thresholds of penalty size. Each model includes a number of lags, but we focus on the sign and statistical significance of the contemporaneous (year t) key explanatory variables.<sup>13</sup> Regardless of the threshold, results look consistent: the coefficient for dyadic penalty count (i.e., the number of penalties imposed on U.S. firms for violation of sanctions against c2) is negative and statistically significant in all three models. Conversely, the coefficient for count of U.S.-firm penalties with respect to third-party sanctions regimes (not c2 in the U.S.-c2 dyad) is not significant in any of models 1-3. Notably, the coefficients for the count of enforcement actions against foreign firms for sanctions violations against c2 are negative and

significant in two of the three models in Table 1—only failing to attain statistical significance when the variable counts smaller penalties (with a threshold of \$500,000 or more). This finding suggests that U.S. firms considering imports from a given U.S.-sanctioned state might reconsider if foreign firms have faced OFAC scrutiny for similar behavior.

#### [Table 1 about here]

Table 2 replicates the analysis from Table 1 but uses exports to the U.S.-sanctioned state (c2) as the dependent variable. Once again, we find largely consistent results across the three models, though the results differ from those examining U.S. imports. We once again find that dyadic penalties (of at least \$1 million in the case of exports) are associated with lower trade. The impact of the other categories of enforcement actions is different for exports, though. Enforcement actions against foreign firms for violating U.S. sanctions against c2 have no statistically significant effects on U.S. exports to c2. Yet, when OFAC penalized U.S. firms for sanction violations with respect to third-party sanctions regimes (not c2), we find a consistently negative association with U.S. exports to c2. This result suggests firms pay more attention to the overall *domestic* risk environment created by OFAC penalties for sanctions violations when considering whether to export to a specific U.S.-sanctioned state.

#### [Table 2 about here]

In order to illustrate our substantive results, Figure 2 plots the immediate impact of an OFAC civil penalty on U.S.-target trade, using estimates from Models 1-6. We plot estimates along with 90% and 95% confidence intervals, the former indicated by the whisker closer to the estimate. Given that our dependent variables are logged, we can calculate the predicted percent-

age deviation from baseline U.S.-target imports or exports associated with the presence of recent penalties using the formula:  $\exp(\beta \times \operatorname{count}) - 1 \times 100.^{14}$  Estimates and confidence intervals are graphed on the y-axis, while the x-axis indicates the relevant penalty threshold, separately for U.S. imports and exports. We color-code the three different penalty types. Black estimates and confidence intervals reflect the predicted percentage deviation from baseline U.S.-target trade following from a single dyadic penalty (i.e., count = 1). Red indicates the presence of a single U.S. firm penalty for violation of a sanction against a third party; and blue indicates a single foreign-firm penalty for violating sanctions against this particular sanction target—i.e., c2 in the U.S.-c2 dyad.

# [Figure 2 about here]

A few notable patterns emerge. First, predicted reductions in imports tends to be greater than predicted reductions in exports (though, confidence bounds are also wider with respect to imports). For five of the six cases, dyadic penalties are associated with a negative and significant reduction in predicted trade—nearing a 100% reduction in imports when OFAC penalties are at least \$25 million. Conversely, predicted exports are lower only by approximately 25% averaged across models 4-6. Penalties against foreign firms for violating sanctions against c2 are associated with reductions in imports from c2 averaging over 50%. Mirroring this finding, penalties against U.S. firms for violation of sanctions against some third party are associated with approximately 20% lower exports to c2. From a policy perspective, those latter results show that OFAC enforcement actions that punish violations outside a particular U.S.-target dyad also can discourage trade within that dyad. This means that OFAC enforcement actions taken to penalize violations of a particular sanctions regime serve as force-magnifiers that strengthen sanctions' negative impact on U.S. trade (most consistently exports) with other sanctioned states.

Our results also suggest that the size of financial penalties imposed as part of OFAC's enforcement actions influences their impact on U.S. trade with sanctioned states. For the categories of enforcement actions that are significant in any of the threshold analyses, their effects are more consistently statistically significant when higher penalties are imposed. There were very few dyadic OFAC enforcement actions involving \$25 million-plus penalties, but they had potent, negative effects on U.S. exports and imports with c2. When lower penalty-threshold cases were incorporated into that dependent variable at \$500k-level, the variable's effect washed out. As well, OFAC enforcement actions against foreign firms only had a negative impact on U.S. imports from c2 when restricting the pool of cases to those that involved larger-sized penalties. Indeed, our research design is premised on the notion that small penalties (less than \$500k) do not have widespread deterrent effects and, as such, did not warrant inclusion in our analysis. To confirm, we re-ran our analysis using a variable that includes penalties of any size. The results included in the appendix show that we find no consistent association between OFAC enforcement actions that include smaller-sized penalties and U.S.-c2 trade. Our findings indicate that enforcement actions involving higher penalties have a more consistently negative impact on U.S. trade with sanctioned target states than ones involving smaller financial penalties. This suggests that OFAC would not benefit from simply maximizing the number of penalties it could take against violators without taking into consideration how large the resulting financial penalties associated with them are.

In summary, our findings suggest that OFAC's enforcement actions play a powerful role in supplementing the impact and potential effectiveness of U.S. sanctions policies. Our results offer the strongest support for our first hypothesis that OFAC enforcement actions will discourage U.S. trade with a target when they penalize U.S. firms for violations of that sanctions regime. The results provide weaker but still meaningful support for hypothesis 2, revealing that OFAC enforcement actions taken against third-party firms for violating sanctions against a target diminish U.S. imports to that target when the penalties are over \$1 million. Notably, this indicates that OFAC obtains some domestic benefits from punishing foreign firms. Finally, our analysis indicates that OFAC enforcement actions against U.S. firms for all other sanctions regimes have a systemic effect on discouraging U.S. exports to particular sanctioned states. While the latter two effects are not as strong or consistent as dyadic penalties against targets, they indicate that OFAC enforcement actions also affect firms' behavior in other sanctions regimes and countries. OFAC's enforcement actions thus exacerbate the negative economic effects that U.S. sanctions have on their targets' trade in a myriad of ways.

## Conclusion

Our findings demonstrate that OFAC can increase the potency of U.S. sanctions by punishing firms that violate sanctions—both domestically and in third-party states. Our study demonstrates that sanctions enforcement actions meaningfully changes the trade behavior of firms and enhance the adverse economic impact they have on target states. We find that, while even one OFAC penalty could influence firm behavior and hold consequences for aggregate trade volumes, repeated penalties amplify this effect. While taking enforcement actions against a U.S. firm for violating sanctions involving a particular target have the strongest negative effects on U.S. trade with that state, OFAC penalties against foreign firms and against U.S. firms for violating other sanctions regimes also can diminish some trade flows. Our analysis further indicates that that larger-sized penalties have more consistently strong, negative effects than smallersized ones. In sum, OFAC enforcement actions appear to be a potent tool for enhancing the effectiveness of U.S. sanctions policies.

Our findings contribute in important ways to understanding how and why economic sanctions work, and the strategies sender governments can adopt to make them more effective. Our study reveals that the degree to which the U.S. government follows through with enforcing its sanctions influences how severely they disrupt U.S. trade with targets. More than that, we show that firms appear to reference OFAC's overall level of sanctions enforcement not just with respect to the specific sanctioned state they are considering doing business. How much senders' enforcement bodies penalize firms for violations also matters. Sanctions enforcement strategies that emphasize pursuing cases that result in larger-sized penalties appear as if they will be more effective than ones that penalize small-time violations. Senders' enforcement actions need not all be "whale-hunting"-sized penalties (e.g., Early and Preble 2020a; 2020b), but our analysis suggests that at least around \$500,000 to \$1 million appears to where penalties become meaningful. For policymakers, our findings suggest that sender governments receive a significant return on their investments in enforcing sanctions. Sender governments that want to make their sanctioning efforts more effective should not just broaden their sanctions' scope on paper, but also invest more in enforcing existing sanctions. Importantly, the trade-reducing effects of sanctions enforcement actions affect both specific sanctions programs and other sanctions programs more broadly.

Our study suggests numerous paths for additional research on sanctions enforcement. As a follow-on to our macro-level study, we think that future research conducted at the firm-level would provide greater nuance in understanding the mechanisms by which sanctions enforcement actions affect firm behavior. Our analysis further confirms the reputation effects associated with U.S. sanctions (Peterson 2013, 2014), illustrating that U.S. firms' behavior is influenced by enforcement actions taken against foreign sanctions violators or violators of other sanctions programs. For OFAC, the effects of being tough on sanctions violations in other contexts carries over. An important extension of this project could explore the impact of OFAC enforcement actions on third-party trade with the targets of U.S. sanctions. If OFAC enforcement actions can also deter third-party trade with the targets of U.S. sanctions, they would be markedly more powerful than even our analysis suggests.

#### Works Cited

- Afesorgbor, Sylvanus. 2019. "The impact of economic sanctions on international trade: How do threatened sanctions compare with imposed sanctions?" *European Journal of Political Economy* 56(C): 11-26.
- Akoto, William, Timothy M. Peterson, and Cameron G. Thies. 2019. "Trade Composition and Acquiescence to Sanction Threats." *Political Research Quarterly*. Online first. https://journals.sagepub.com/doi/full/10.1177/1065912919837608
- Allen, Jeff. 2021. "Do Targeted Trade Sanctions Against Chinese Technology Companies Affect US Firms? Evidence from an Event Study." *Business and Politics* 1-14. DOI: <u>https:// doi.org/10.1017/bap.2020.21</u>.
- Andreas, Peter. 2005. "Criminalizing Consequences of Sanctions: Embargo Busting and Its Legacy." *International Studies Quarterly* 49 (2): 335–360.
- Barry, Colin and Katja B. Kleinberg. 2015. "Profiting from Sanctions: Economic Coercion and US Foreign Direct Investment." *International Organization* 69(4): 881-912.
- Bapat, Navin, and Bo Ram Kwon. 2015. "When Are Sanctions Effective? A Bargaining and Enforcement Framework." *International Organization* 69 (1): 131–62.
- Bapat, Navin, Bryan Early, Julia Grauvogel, and Katja Kleinberg. 2020. "The Design and Enforcement of Economic Sanctions." *International Studies Perspectives*.
- Biersteker, Thomas J., Sue E. Eckert, and Marcos Tourinho, eds. 2016. *Targeted Sanctions: The Impacts and Effectiveness of United Nations Action*. Cambridge: Cambridge University Press.
- Boschee, Elizabeth, Jennifer Lautenschlager, Sean O'Brien, Steve Shellman, James Starz and Michael Ward. 2015. "ICEWS Coded Event Data." Harvard Dataverse, V25. https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/28075.
- Caruso, Raul. 2003. "The Impact of International Economic Sanctions on Trade: An Empirical Analysis." *Peace Economics, Peace Science and Public Policy* 9(2):1-34.
- Crescenzi, Mark J. C. 2003. "Economic Exit, Interdepend ence, and Conflict." *Journal of Politics* 65(3): 809–832.
- Drezner, Daniel. 2000. "Bargaining, Enforcement, and Multilateral Sanctions: When Is Cooperation Counterproductive?" *International Organization* 54 (1): 709–731.
- Drezner, Daniel. 2011. "Sanctions sometimes smart: targeted sanctions in theory and practice." International Studies Review 13 (1), 96-108
- Early, Bryan R. 2009. "Sleeping with Your Friends' Enemies: An Explanation of Sanctions-Busting Trade." *International Studies Quarterly* 53 (1): 49–71.
- Early, Bryan. 2015. Busted Sanctions: Explaining Why Economic Sanctions Fail. Stanford: Stanford University Press.

- Early, Bryan. 2016. "Confronting the Implementation and Enforcement Challenges Involved in Imposing Economic Sanctions," p. 43-69. In Natalino Ronzitti's, ed., *Coercive Diplomacy, Sanctions and International Law.* Boston: Brill Nijhoff.
- Early, Bryan and Dursun Peksen. 2019. "Searching in the Shadows: The Impact of Economic Sanctions on Informal Economies." *Political Research Quarterly* 72(4): 821-834.
- Early, Bryan and Marcus Schulzke. 2019. "Still Unjust, Just in Different Ways: How Targeted Sanctions Fall Short of Just War Theory's Principles." *International Studies Review* 21(1): 57-80.
- Early, Bryan and Keith Preble. 2020a. "Going Fishing Versus Hunting Whales: Explaining Changes in How the U.S. Enforces Economic Sanctions." *Security Studies*. DOI: https:// doi.org/10.1080/09636412.2020.1722850.
- Early, Bryan and Keith Preble. 2020b. "Enforcing US Economic Sanctions: Why Whale Hunting Works." *The Washington Quarterly* 43(1): 159-175.
- Flores, Leonardo. 2019. "The Embargo Deepens as Adobe and Oracle Leave Venezuela." Global Research (October 14). Available at: <u>https://www.globalresearch.ca/adobe-oracle-leave-venezuela/5691888</u>.
- Farrell, Henry, and Abraham L. Newman. 2019. "Weaponized Interdependence: How Global Economic Networks Shape State Coercion." *International Security* 44(1): 42-79.
- Gacki, Andrea. 2019. "Speech ABA Standing Committee on National Security Law," June 13. American Bar Association. Washington, DC.
- Hufbauer, Gary, Kimberly Elliot, Tess Cyrus and Elizabeth Winston. 1997. "US Economic Sanctions: Their Impact on Trade, Jobs, and Wages." Washington, DC: Peterson Institute for International Economics.
- Hufbauer, Gary, Jeffrey Schott, Kimberly Elliot, and Barbara Oegg. 2007. *Economic Sanctions Reconsidered. 3rd ed.* Washington, DC: Peterson Institute for International Economics
- Kaempfer, William H. and Anton D. Lowenberg. 1988. "The Theory of International Economic Sanctions: A Public Choice Approach." *The American Economic Review* 78: 786-793.
- Keampfer, William, and Anton Lowenberg. 1999. "Unilateral vs Multilateral Sanctions: A Public Choice Perspective." *International Studies Quarterly* 43: 37-58.
- Kirshner, Jonathan. 1997. "The Microfoundations of Economic Sanctions." *Security Studies* 6 (3): 32–64.
- Klein, James P., Gary Goertz and Paul F. Diehl. 2008. "The Peace Scale: Conceptualizing and Operationalizing Non-Rivalry and Peace." *Conflict Management and Peace Science* 25 (1): 67–80.
- Lektzian, David and Mark Souva. 2003. "The Economic Peace Between Democracies: Economic Sanctions and Domestic Institutions." *Journal of Peace Research* 40(6): 641–660.
- Lektzian, David, and Glen Biglaiser. 2013. "Investment, Opportunity, and Risk: Do U.S. Sanctions Deter or Encourage Global Investment?" *International Studies Quarterly* 57: 65-78.

- Lopez, George. 1999. "More Ethical than Not: Sanctions as Surgical Tools." *Ethics & International Affairs* 13 (March): 143-148.
- McLean, Elena, and Taehee Whang. 2014. ``Designing foreign policy: Voters, special interest groups, and economic sanctions.'' *Journal of Peace Research* 51 (5): 589-602.
- Mayer, Thierry and S. Zignago. 2011. "Notes on CEPII's distances measures: the GeoDist Database." CEPII Working Paper 2011-25. Accessed June, 2018. http://www.cepii.fr/ PDF\_PUB/wp/2011/wp2011-25.pdf.
- Miller, Nicholas L. 2014. "The Secret Success of Nonproliferation Sanctions." *International Organization* 68: 913–944.
- Morgan, Clifton, and Navin A. Bapat. 2003. "Imposing Sanctions: States, Firms, and Economic Coercion." *International Studies Review* 5 (4): 65–79.
- Morgan, T. Clifton. 2015. "Hearing the Noise: Economic Sanctions Theory and Anomalous Evidence." *International Interactions*, 41(4): 744-754
- Morgan, T. Clifton, Navin Bapat, and Yoshiharu Kobayashi. 2014. "Threat and imposition of economic sanctions 1945–2005: Updating the TIES dataset." *Conflict Management and Peace Science* 31:541-558
- Neuenkirch, Matthias and Florian Neumeier. 2015. "The Impact of UN and US Economic Sanctions on GDP Growth." *European Journal of Political Economy* 40: 110-125.
- Peksen, Dursun, and Byunghwan Son. 2015. "Economic Coercion and Currency Crises in Target Countries." Journal of Peace Research 52: 448-462.
- Peterson, Timothy M. 2013. "Sending a Message: The Reputation Effect of US Sanction Threat Behavior." *International Studies Quarterly* 57 (4): 672–682.
- Peterson, Timothy M. 2014. "Taking the Cue: The Response to US Human Rights Sanctions against Third Parties." *Conflict Management and Peace Science* 31 (2): 145–167.
- Peterson, Timothy M. 2020. "Reconsidering Economic Leverage and Vulnerability: Trade Ties, Sanction Threats, and the Success of Economic Coercion." *Conflict Management and Peace Science* 37 (4): 409-429.
- OFAC. 2009. "Economic Sanctions Enforcement Guidelines." *Federal Registrar* 7(215). Washington, DC: U.S. Department of Treasury. Available at: <u>https://www.treasury.gov/resource-center/sanctions/Documents/fr74\_57593.pdf</u>.
- OFAC. 2012a. "Enforcement Information for April 25, 2012." Washington, DC: U.S. Department of Treasury. Available at: https://www.treasury.gov/resource-center/sanctions/CivPen/Documents/04245012\_sandhill.pdf
- OFAC. 2013. "Enforcement Information for November 26, 2013." Washington, DC: U.S. Department of Treasury. Available at: <u>https://www.treasury.gov/resource-center/sanctions/</u> <u>CivPen/Documents/20131126\_weatherford.pdf</u>.
- OFAC. 2014. "Enforcement Information for April 2, 2014." Washington, DC: U.S. Department of Treasury. Available at: <u>https://www.treasury.gov/resource-center/sanctions/CivPen/</u> <u>Documents/20140402\_sea\_tel.pdf</u>.

- OFAC. 2016. "Settlement Agreement between OFAC and PanAmerican Seed Company." Washington, DC: U.S. Department of Treasury. Available at: <u>https://www.treasury.gov/re-</u> <u>source-center/sanctions/CivPen/Documents/20160913\_panam.pdf</u>.
- Rosenberg, Elizabeth and Jordan Tama. 2019. "Strengthening the Economic Arsenal." *Center for New American Security* (16 December). Available at: <u>https://www.cnas.org/publications/</u> <u>reports/strengthening-the-economic-arsenal</u>.
- The Growth Lab at Harvard University. 2019. "Growth Projections and Complexity Rankings, V2" [Data set]." https://doi.org/10.7910/dvn/xtaqmc.
- van Bergeijk, Peter and Charlesvan Marrewijk. 1995. "Why do sanctions need time to work? Adjustment, learning and anticipation." *Economic Modelling* 12(2): 75-86.
- Webb, Clayton. 2020. "Re-examining the Costs of Sanctions and Sanctions Threats Using Stock Market Data." *International Interactions*. DOI: <u>https://doi.org/</u><u>10.1080/03050629.2020.1788549</u>.
- Yang, Jiawen, Hossein Askari, John Forrer, and Lili Zhu. 2009. "How Do US Economic Sanctions Affect EU's Trade with Target Countries?" *The World Economy* 32(8): 1223-1244.

## **Bio statements:**

Bryan R. Early is an Associate Professor of Political Science and the Associate Dean for Research at the University at Albany, SUNY's Rockefeller College of Public Affairs Policy. Dr. Early is also the founding director of the Project on International Security, Commerce, and Economic Statecraft (PISCES). He has published 30 peer-reviewed articles on economic sanctions, strategic technologies, shadow economies, and political violence. His book *Busted Sanctions: Explaining Why Economic Sanctions Fail* (Stanford University Press, 2015) explores the causes and consequences of sanctions-busting behavior.

Timothy M. Peterson is an Associate Professor in the School of Politics and Global Studies at Arizona State University. His research spans the topics of foreign policy, international political economy, armed conflict, and human rights. Research topics include the use and consequences of sanctions, the link between international economic ties and politics, and the effects of variation in democratic institutional design. His first book was been published by Stanford University Press; and his work can be found in journals including *British Journal of Political Science, Journal of Conflict Resolution*, and *Journal of Peace Research*.

Address: Coor Hall 6664 976 S. Forest Mall Tempe, AZ 85281 Email: tim@timothypeterson.org

|  | Model 1: 500k threshold   | DV = log U.S. imports<br>Model 2: 1m threshold | Model 3: 25m threshold   |  |
|--|---------------------------|--|--------------------------|--|
| LDV t-1  | $0.69^{***}$ (0.44, 0.95) | $0.63^{***}$ (0.25, 1.00)                      | 0.54* (-0.03, 1.11)      |  |
| LDV $t-2$  | -0.07 (-0.61, 0.46)       | -0.11 (-0.61, 0.39)                            | 0.02 (-0.64, 0.69)       |  |
| LDV t-3  | $0.32^{**}(0.07, 0.57)$   | 0.39*** (0.20, 0.59)                           | $0.32^{***}(0.13, 0.51)$ |  |
| Dvadic penalty t   | -1.38*** (-2.15, -0.61)   | -1.33** (-2.46, -0.19)                         | -4.51*** (-7.75, -1.27)  |  |
| Dvadic penalty <i>t</i> -1                                   | 0.58 (-0.83, 1.99)        | 1.30 (-0.56, 3.16)                             | -2.92 (-8.30, 2.46)      |  |
| Dvadic penalty $t-2$   | 0.48(-2.36, 3.32)         | $-2.56^{*}(-5.20, 0.08)$                       |                          |  |
| Dvadic penalty <i>t</i> -3                                   | -3.10*** (-5.30, -0.89)   | -2.10*** (-3.52, -0.68)                        |                          |  |
| Dvadic penalty $t-4$   | $1.41^{***}$ (0.40, 2.42) | $2.20^{*}(-0.03, 4.42)$                        |                          |  |
| US-third penalty $t$   | 0.02 (-0.02, 0.05)        | 0.01 (-0.08, 0.09)                             | 0.01 (-0.03, 0.05)       |  |
| US-third penalty <i>t</i> -1                                 | (,)                       | 0.05 (-0.02, 0.11)                             | (,)                      |  |
| Foreign-c2 penalty t   | -0.33 (-1.05, 0.39)       | -1.16*** (-1.99, -0.33)                        | $-0.95^{*}(-1.97, 0.07)$ |  |
| Foreign-c2 penalty <i>t</i> -1                               | 0.89 (-0.49, 2.27)        | 1.28** (0.13, 2.43)                            |                          |  |
| Foreign-c2 penalty t-2                                       | 0.33 (-0.38, 1.04)        | 0.01 (-0.49, 0.52)                             |                          |  |
| Foreign-c2 penalty t-3                                       | 0.21 (-0.48, 0.89)        | 1.08** (0.07, 2.08)                            |                          |  |
| Foreign-c2 penalty t-4                                       | -2.03*** (-2.95, -1.11)   | -2.10** (-3.77, -0.42)                         |                          |  |
| US GDP t   | 6.17*** (2.02, 10.33)     | 5.62 (-1.29, 12.53)                            | 6.89** (0.08, 13.70)     |  |
| US GDP t-1   | -9.38** (-16.67, -2.08)   | -9.57* (-20.87, 1.74)                          | -10.31* (-20.69, 0.06)   |  |
| C2 GDP t   | 0.25 (-0.61, 1.11)        | -0.17 (-1.14, 0.81)                            | 0.06 (-0.98, 1.11)       |  |
| C2 GDP <i>t</i> -1   | 0.31 (-0.79, 1.41)        | 1.08 (-0.67, 2.83)                             | 0.66 (-1.39, 2.71)       |  |
| C2 GDP <i>t</i> -2   | -0.74 (-1.76, 0.28)       | -0.74 (-1.93, 0.44)                            | -0.60 (-2.16, 0.96)      |  |
| C2 GDP <i>t-3</i>  | 0.66* (-0.03, 1.34)       | 0.31 (-0.56, 1.18)                             | 0.06 (-0.80, 0.92)       |  |
| C2 GDP <i>t</i> -4   | -0.39 (-1.29, 0.52)       | -0.37 (-1.31, 0.57)                            | -0.06 (-1.23, 1.12)      |  |
| US ally  | 0.09 (-0.09, 0.27)        | 0.11 (-0.09, 0.32)                             | 0.10 (-0.10, 0.30)       |  |
| US rival   | -0.04 (-0.27, 0.20)       | 0.02 (-0.24, 0.28)                             | -0.05 (-0.39, 0.29)      |  |
| C2 democracy   | 0.09 (-0.06, 0.25)        | 0.10 (-0.06, 0.26)                             | 0.06 (-0.10, 0.22)       |  |
| log Distance   | 0.23 (-0.12, 0.57)        | 0.16 (-0.13, 0.45)                             | 0.17 (-0.14, 0.48)       |  |
| Contiguity   | 0.39* (-0.04, 0.82)       | 0.35* (-0.06, 0.75)                            | 0.41* (-0.03, 0.86)      |  |
| C2 EU  | 0.02 (-0.08, 0.13)        | 0.02 (-0.10, 0.15)                             | -0.01 (-0.18, 0.16)      |  |
| C2 GATT/WTO  | 0.01 (-0.13, 0.15)        | 0.09 (-0.04, 0.21)                             | 0.13 (-0.07, 0.32)       |  |
| Common language  | -0.01 (-0.12, 0.09)       | 0.00 (-0.12, 0.12)                             | 0.00 (-0.15, 0.15)       |  |
| Constant   | 72.09* (-6.80, 150.98)    | 90.09 (-19.60, 199.79)                         | 78.21 (-17.03, 173.45)   |  |
| Observations   | 604                       | 604  | 604                      |  |
| Adjusted R <sup>2</sup>                                      | 0.933                     | 0.932  | 0.908                    |  |
| Breusch–Godfrey: order 1                                     | 1.07 (p = 0.3)            | 0.36 (p = 0.55)                                | 0.42 (p = 0.51)          |  |
| Breusch–Godfrey: order 2                                     | 1.1 (p = 0.58)            | 1.04 (p = 0.59)                                | 2.1 (p = 0.35)           |  |
| Breusch–Godfrey: order 3                                     | 5.54 (p = 0.14)           | 1.56 (p = 0.67)                                | 7.42 (p = 0.06)          |  |
| Breusch-Godfrey: order 4                                     | 6.15 (p = 0.19)           | 2.06 (p = 0.72)                                | 7.71 (p = 0.1)           |  |
| * p less than 0.1, ** p less than 0.05, *** p less than 0.01 |                           |  |                          |  |

# Table 1: Coefficients and 95 percent confidence intervals for ADL models with heteroskedasticity-consistent standard errors: DV = log U.S. imports

|                                | Model 4 <sup>,</sup> 500k threshold                         | $DV = \log U.S.$ exports<br>Model 5: 1m threshold | Model 6 <sup>.</sup> 25m threshold                      |  |
|--------------------------------|---|---|---|--|
|                                |   |   |   |  |
| LDV t-1                        | 0.80*** (0.68, 0.93)  | 0.82*** (0.70, 0.94)                              | 0.82*** (0.70, 0.93)                                    |  |
| LDV t-2                        | 0.12** (0.01, 0.24)   | 0.10 (-0.03, 0.22)                                | 0.10 (-0.02, 0.22)                                      |  |
| LDV <i>t-3</i>                 | -0.04 (-0.18, 0.10)   | -0.03 (-0.17, 0.11)                               | -0.04 (-0.18, 0.10)                                     |  |
| LDV t-4                        | 0.09* (-0.01, 0.19)   | 0.09* (-0.01, 0.18)                               | 0.09* (-0.01, 0.19)                                     |  |
| Dyadic penalty <i>t</i>        | -0.07 (-0.19, 0.05)   | -0.65*** (-0.84, -0.45)                           | -0.25*** (-0.38, -0.12)                                 |  |
| Dyadic penalty <i>t</i> -1     | -0.01 (-0.12, 0.09)   | -0.33*** (-0.52, -0.14)                           |   |  |
| Dyadic penalty <i>t</i> -2     | -0.09 (-0.28, 0.09)   |   |   |  |
| Dyadic penalty <i>t</i> -3     | -0.28*** (-0.47, -0.08)                                     |   |   |  |
| US-third penalty <i>t</i>      | -0.15*** (-0.25, -0.06)                                     | -0.40*** (-0.59, -0.22)                           | -0.14*** (-0.19, -0.09)                                 |  |
| US-third penalty <i>t</i> -1   | 0.01 (-0.01, 0.03)  | -0.28*** (-0.41, -0.15)                           | 0.09** (0.01, 0.17)                                     |  |
| US-third penalty $t-2$         | 0.14*** (0.05, 0.24)  | 0.12*** (0.06, 0.18)                              | $0.27^{***}(0.07, 0.47)$                                |  |
| US-third penalty <i>t-3</i>    | -0.12*** (-0.18, -0.06)                                     |   | 0.16 (-0.06, 0.38)                                      |  |
| US-third penalty $t-4$         |   |   | 0.30* (-0.03, 0.62)                                     |  |
| Foreign-c2 penalty t           | 0.00 (-0.05, 0.06)  | -0.01 (-0.13, 0.10)                               | -0.05 (-0.19, 0.09)                                     |  |
| Foreign-c2 penalty <i>t</i> -1 | $0.10^*$ (-0.00, 0.20)                                      | 0.10 (-0.02, 0.22)                                | 0.17*** (0.07, 0.26)                                    |  |
| Foreign-c2 penalty $t-2$       | 0.04(-0.13, 0.21)   | 0.00(-0.12, 0.13)                                 | 0.01(-0.12, 0.13)                                       |  |
| Foreign-c2 penalty t-3         | $0.18^{***}(0.09, 0.27)$                                    | $0.19^{***}(0.09, 0.28)$                          | $0.18^{***}$ (0.05, 0.32)                               |  |
| US GDP l                       | -1/.20 (-28.99, -5.42)                                      | 0.25(-1.88, 2.59)<br>2.22*(0.00, 6.54)            | -1/.43 (-29.33, -3.37)<br>17 88*** (11.70, 24.06)       |  |
| US GDP I-I                     | 47.01 (21.45, 72.00)<br>52.08*** (77.07, 27.08)             | 3.23 (-0.09, 0.34)                                | 1/.88 (11.70, 24.00)<br>26.12*** (50.47, 21.80)         |  |
| US GDP $t = 3$                 | -32.90 (-77.97, -27.90)<br>10.26*** (0.80, 28.72)           | -51.50 (-42.50, -20.45)<br>15 25*** (8 00 22 41)  | -30.13 (- $30.47$ , - $21.80$ )<br>0 86*** (5 00 13 82) |  |
| US GDP $t-4$                   | 19.20 (9.80, 28.72)   | 15.25 (6.07, 22.41)<br>15.40*** (6.83, 23.97)     | 9.80 (5.90, 15.82)                                      |  |
| $C^2 GDP t$                    | 0 50*** (0 25 0 74)   | $0.48^{***} (0.24, 0.72)$                         | $0.49^{***}$ (0.25, 0.72)                               |  |
| $C^2 GDP t_{-1}$               | -0.33** (-0.59 -0.06)                                       | -0.32** (-0.58 -0.06)                             | $-0.36^{**}(-0.63, -0.08)$                              |  |
| C2 GDP t-2                     | -0.13 (-0.41, 0.15)   | -0.09 (-0.35, 0.18)                               | -0.08 (-0.35, 0.19)                                     |  |
| C2  GDP  t-3                   | $0.27^{**}(0.00, 0.54)$                                     | 0.21 (-0.06, 0.49)                                | $0.24^{*}(-0.02, 0.51)$                                 |  |
| C2 GDP $t-4$                   | -0.27** (-0.53, -0.01)                                      | -0.24* (-0.51, 0.03)                              | $-0.26^{*}(-0.52, 0.01)$                                |  |
| US ally                        | -0.01 (-0.06, 0.04)   | -0.01 (-0.06, 0.04)                               | -0.01 (-0.06, 0.04)                                     |  |
| US rival                       | -0.03 (-0.10, 0.05)   | 0.00 (-0.10, 0.10)                                | -0.04 (-0.11, 0.03)                                     |  |
| C2 democracy                   | 0.02 (-0.03, 0.08)  | 0.02 (-0.03, 0.07)                                | 0.02 (-0.03, 0.07)                                      |  |
| log Distance                   | -0.02 (-0.07, 0.04)   | -0.03 (-0.09, 0.02)                               | -0.02 (-0.07, 0.04)                                     |  |
| Contiguity                     | 0.06 (-0.03, 0.14)  | 0.04 (-0.04, 0.12)                                | 0.06 (-0.03, 0.14)                                      |  |
| C2 EU                          | -0.02 (-0.08, 0.04)   | -0.02 (-0.08, 0.04)                               | -0.01 (-0.08, 0.05)                                     |  |
| C2 GATT/WTO                    | -0.03 (-0.08, 0.02)   | -0.02 (-0.07, 0.03)                               | -0.03 (-0.08, 0.03)                                     |  |
| Common language                | 0.04 (-0.02, 0.10)  | 0.04 (-0.01, 0.10)                                | 0.04 (-0.01, 0.10)                                      |  |
| Constant                       | 91.59*** (28.52, 154.65)                                    | -59.09* (-122.89, 4.71)                           | 602.79** (73.36, 1,132.21)                              |  |
| Observations                   | 604   | 604   | 604   |  |
| Adjusted R <sup>2</sup>        | 0.986   | 0.986   | 0.985   |  |
| Breusch–Godfrey: order 1       | 0.35 (p = 0.55)   | 0.56 (p = 0.46)                                   | 0.39 (p = 0.53)   |  |
| Brougeh Godfrey: order 2       | 2.55 (p = 0.51)<br>2.24 (p = 0.51)                          | 2.02 (p = 0.50)<br>2.03 (p = 0.57)                | 1.9/(p=0.57)  |  |
| Breusch-Godfrey: order 4       | 2.34 (p = 0.51)<br>4.42 (p = 0.25)                          | 2.03 (p = 0.57)<br>3.41 (p = 0.40)                | 2 (p = 0.57)<br>4 21 (p = 0.38)                         |  |
| Dicustii-Obulley. Uluel 4      | ч.ч2 (р = 0.33)   | (p - 0.49)  | -1.21  (p = 0.36)                                       |  |
|                                | * p less than 0.1, ** p less than 0.05, *** p less than 0.0 |   |   |  |

# Table 2: Coefficients and 95 percent confidence intervals for ADL models with heteroskedasticity-consistent standard errors: DV = log U.S. exports



Figure 1: Yearly counts of OFAC civil penalties



Figure 2: Predictions from Models 1-6 1 with 90% (narrower whiskers) and 95% (wider whiskers) confidence intervals

## Endnotes

<sup>1</sup> The opportunity costs facing targets (and senders) vary, with consequences for underlying leverage and vulnerability (Crescenzi 2003, Peterson 2020).

 $^{2}$  Financial sanctions likely compose the strongest and farthest-reaching lever of U.S. coercion, with the ability to disrupt all forms of commerce. We thus include them in our analysis because we expect they also affect firms' ability to participate in international trade.

<sup>3</sup> Given that the commonly used sanctions data are unavailable after 2005 (Morgan, Bapat and Kobayashi 2014), we identify U.S.-sanctioned states using the ICEWS events data (Boschee et al. 2015). To convert ICEWS events into early indicators of sanction presence, we code running counts of code 163: "Impose embargo, boycott, or sanction" for all cases where the source is the U.S. government and the target is the target government. We also code running count of code 085: "Ease economic sanctions, boycotts, or embargoes." The appendix provides further details.

<sup>4</sup> McLean and Whang (2014) show that the public—which would likely be consumers of imports—might have a role in putting sanctions on the U.S. government's agenda. Firms—particularly export firms—might be better able to overcome collective action problems to lobby for trade policy that protects their bottom line.

<sup>5</sup> The appendix includes models that aggregate these three penalty types to create a single, yearly measure of OFAC penalty counts.

<sup>6</sup> These thresholds follow from consideration of common penalty sizes in the OFAC data, along with author judgement regarding penalty magnitudes that would capture firm attention. We operationalize penalty counts because we do not expect linear relationship between each dollar in penalties and the subsequent level of U.S. trade with its sanctioned states. We think that the frequency of OFAC enforcement actions also matters beyond total observed penalty. The appendix presents additional models with a \$50 million threshold, with which we find consistent results.

<sup>7</sup> While these variables do not account for dyadic alliances *per se*, the authors note that the highest values of positive peace capture common membership in a security community.

<sup>8</sup> One might consider the lack of a variable for sanction severity to be a problem given that more severe sanctions might lead both to more OFAC enforcement and a greater reduction in U.S.-target trade; this would constitute a classic instance of spurious correlation. Ultimately, a yearly measure of severity is difficult to obtain. For example, TIES costs variables are coded holistically for the entire duration of the episode and thus are analytically post-treatment for our study. However, our political affinity measure could reduce the prospect of this spurious correlation given that, as Drezner (1998) notes, sanctions would be most successful—and yet are least likely to be employed—against friendlier states. The appendix presents models including the frequency of ICEWS sanctions mentions as a measure of sanction severity against c2.

<sup>9</sup> U.S. values are constant for level of democracy, GATT/WTO membership, EU membership, and land area, and so we omit these indicators from the models.

<sup>10</sup> For all models, we reject the null hypothesis of constant error variance in Breusch-Pagan tests.

<sup>11</sup> Given that trade composes part of GDP, simultaneity could be an issue in our models. However, results were generally consistent in alternate models where we lagged all explanatory variables by one period.

<sup>12</sup> We also compare BIC across models. Often, the model with the lowest AIC also has the lowest BIC. When in disagreement, it is always the case that the minimum BIC favors models with fewer lags. We prefer to minimize AIC given that, particularly with our small sample size, BIC might penalize added lags that are useful to capture the dynamics underling our the relationship between OFAC penalties and trade.

<sup>13</sup> We do not have theoretical reasons to expect a long-run equilibrium between OFAC penalties and trade flows. However, we do calculate the long-run multiplier for each model in the appendix. <sup>14</sup> Given the same transformation, confidence bounds are not symmetric around estimates.