Deindustrialization and the Demand for Protection

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Abstract
Current explanations of demand for anti-dumping protections focus on the role of the business cycle, and fluctuations in real exchange rates. However, empirical evidence supporting these explanations is based primarily on the experience of industrialized countries. Here, we examine anti-dumping petitions in a broader sample of thirty-four industrialized and middle income countries from 1978–2015. We also propose a new determinant of demand for anti-dumping petitions—changes in the pattern of industrial production between developed and developing economies over this period have contributed to deindustrialization in advanced economies and premature industrialization some developing countries. These changes threaten established industries and motivate them to demand protection.

Keywords: protectionism, antidumping, deindustrialization; trade, political institutions

Countries employ antidumping protection measures twice as often today as they did in 1995 (see figure 1). As trade volumes increase, countries apparently resort to antidumping protections more readily. Certainly, governments' implementation of these tariffs occurs in response to domestic industries' demand for them. So what factors drive firms to initiate antidumping petitions in the first place? Existing literature focuses on three explanations: real exchange rate appreciations, changes in the business cycle, and retaliation. Empirical evidence for these explanations is based mostly on the experience of advanced economies.[1] Taken as a whole, however, non-advanced economies now implement more antidumping measures on an annual basis than do high-income economies, and on average implement these measures at the same rate as advanced economies (see figure 1). In this paper, we take up the task of reevaluating existing explanations of demand for antidumping protections against a broader sample of both advanced and middle income countries and develop an alternative theory to explain the demand for antidumping protections that helps account for regional variation in demand.

We argue that the global dynamics of trade liberalization and global production chain integration over the past forty years explain the relatively high average demand for antidumping measures in European, North American, South Asian, and African countries, as compared to the relatively low demand for protection in East Asian countries. Beginning in the mid-to-late 1970s, many advanced economies experienced a period of deindustrialization as corporations shifted their production processes, whether in part or in whole, to developing economies in East Asia. The globalization of consumer product supply chains helped facilitate the development of many countries, especially in East Asia. Additionally, some countries still in the process of developing economically have also experienced the effect of deindustrialization, a phenomenon that Dani Rodrik (2016) calls premature deindustrialization. According to Rodrik, the causes of deindustrialization are twofold: economic globalization, which facilitates quicker shifts in corporations' supply chains depending on the costs of production, and technological innovations, which have made production more efficient and less

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[1]Niels and Francois (2006) explore the case of Mexico, and Feinberg and Reynolds (2006) include developing countries in their smaller cross-sectional panel data on antidumping measure implementation.

(a) Total Annual Implementation of Antidumping Measures 1995-2018.

(b) Average Annual Implementation of Antidumping Measures 1995-2018
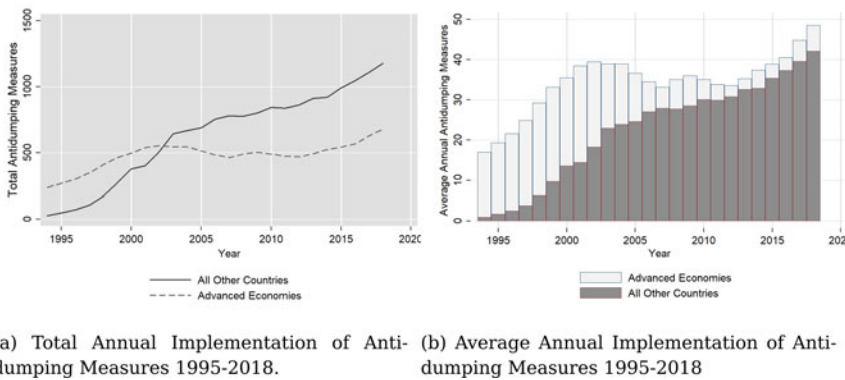
Figure 1: Total and Average Annual Implementation of Antidumping Measures by Advanced and Other Economies. Source: World Trade Organization.

dependent on human labor. We propose that as countries experience deindustrialization, firms are more likely to demand antidumping protection measures.

We evaluate the effects of deindustrialization, the business cycle, real exchange rate fluctuations, retaliation, and domestic institutions on demand for antidumping protections using a data set on antidumping petitions that covers thirty-four countries from 1978–2015. We find evidence suggesting deindustrialization, real exchange rate movements, and retaliation all motivate demand for antidumping protections.

The macroeconomic determinants of antidumping filings

Despite the dramatic decrease in traditional trade barriers (tariffs and import quotas), the specter of protectionism remains present on the world stage. Many of these trade-stifling policies presently masquerade under a vast array of "fair-trade" (e.g., antidumping) duties and other regulations designed to evade existing trade agreements built on the principle of most-favored nation (MFN) status and treatment.[2] Antidumping laws have been linked to attempts by rent-seeking firms to cartelize industries and engage in monopolistic pricing.[3] While traditional trade barriers (e.g., tariffs and import quotas) may have been on the decline globally, antidumping measures appear to be on the rise.

The antidumping filing process has long been characterized by bureaucratic procedures. For example, antidumping petitions in the United States are filed with the Department of Commerce and the International Trade Commission (ITC).[4] Firms claiming injury due to "unfair" pricing practices (e.g., dumping) may file a petition with the Commerce Department and the ITC. If the petitioner has legal standing, the Commerce Department investigates for evidence that dumping has occurred.[5] If the department finds that dumping has occurred, it calculates the dumping margin, which is the difference between the export price and the normal value divided by the export price (168). The ITC plays a role in attempting to ascertain whether any "material injuries" were sustained by the firm as a result of foreign dumping. If the ITC affirms that injuries were sustained (alongside an affirmative ruling by the Commerce Department), then the Commerce Department will issue an antidumping duty to offset foreign dumping (or countervailing duties if foreign subsidies are present).[6] Antidumping filing follows a similar process in the European Union, where the European Commission is charged with investigating allegations of dumping and imposing protective measures.

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[2]Nivola, 1986; Ethier and Fischer, 1987; Gould and Gruben, 1997; Baldwin, McLaren, and Panagariya, 2000; Gandolfo, 2014.

[3]Messerlin, 1990; Hindley and Messerlin, 1996. For example, Messerlin (1990) finds that the European chemicals industry in the 1980s essentially captured and manipulated antidumping policy to support an economic cartel.

[4]Irwin, 2015, 165–66.

[5]Specifically, the Commerce Department attempts to determine whether or not a foreign exporter prices their product at less than "fair value." Sales are said to be less than fair value if the export price falls below "normal" value (that is, below prices charged in the US market) (Irwin, 2015, 167–69).

[6]Commission et al., 2008.

Previous research has noted and investigated the rapid proliferation of antidumping suits and duties around the globe.[7] Much of this literature argues that retaliatory motives are the key driving factor underlying the proliferation of antidumping measures.[8] For example, Vandenbussche and Zanardi (2008, 93) find that retaliatory motives are "at the heart of the [antidumping] proliferation." Feinberg and Reynolds (2006, 877) find strong evidence suggesting that "retaliation was a significant motive" in explaining the rapid proliferation of antidumping laws and measures. In their 2018 article, they find that:

> Only 3 percent of investigations were later challenged under the [WTO's dispute settlement understanding], while countries targeted by these petition filed counter-antidumping petitions in response to as many as 27 percent of the investigations. This suggests that countries find it easier or more effective to retaliate via the [antidumping] process. (2018, 1,251)

Retaliatory motives are empirically salient and important, but do not entirely explain firm behavior in filing for antidumping protection. A firm in Country B may file for antidumping protection in retaliation against Country A's antidumping measures, but this does not entirely explain why Country A would have imposed the devices in the first place.[9] In order to retaliate against another country, antidumping duties must first be imposed by another country. Solely attributing the phenomena to retaliatory motives merely pushes the problem back a step.

Other scholars have found positive associations between antidumping petitions and macroeconomic determinants, giving the greatest attention to the effect of GDP growth, the business cycle, unemployment, and import growth.[10] According to these explanations, recessions and economic downturns are characterized by higher demands for antidumping duties and protectionist trade barriers. These studies also emphasize that import growth should be the most direct determinant of antidumping petitions, as it signals increased competition from foreign companies, which domestic producers may construe as dumping. Theoretically, these arguments cannot fundamentally explain why firms would only demand antidumping tariffs and duties during economic downturns when they would always benefit from protection.[11] Empirically, the data in support of the business cycle hypothesis is mixed.[12] While providing theoretically invaluable contributions to the literature, macroeconomic determinants and business cycles alone do not fully explain the demands for antidumping measures.

An alternative strand of empirical literature argues that aggregate antidumping petitions vary systematically with movements in exchange rates.[13] The main proposition of this literature is that industries file antidumping petitions in response to fluctuations in the real exchange rate. Both import-competing firms and export-oriented firms that are harmed by exchange rate appreciations should therefore be more likely to file higher quantities of antidumping petitions to protect themselves from foreign competition, ceteris paribus. The real exchange rate hypothesis has enjoyed robust theoretical and empirical support when tested against alternative arguments advanced in the literature on the political economy of antidumping measures. We find additional empirical evidence suggesting that changes in the real exchange rate correlate with the level of antidumping petitions filed, particularly in developing economies. Figure 2

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[7]See Zanardi, 2004; Nelson, 2006; Egger and Nelson, 2011.

[8]Debapriya and Panda, 2006; Feinberg and Reynolds, 2006, 2018; Hartigan and Vandenbussche, 2013.

[9]In particular, firms in Country A are likely engaging in rent-seeking behavior; they lobby for antidumping measures to protect themselves from foreign competition and employ monopolistic pricing. The benefits of these policies are concentrated, whereas the costs are diffused. See Olson, 1965; Feinberg and Hirsch, 1989.

[10]See Knetter and Prusa, 2003; Feinberg, 2005; Jallab, Gbakou, and Sandretto, 2008; Irwin, 2005. Strange (1979) and McKeown (1984), for example, both propose that tariff levels in the international system would be most affected by global growth.

[11]From these theoretical standpoints, it is unclear as to why rational firms would forgo the perceived benefits derived from protectionism during periods of economic prosperity (Oatley, 2010).

[12]E.g., Coughlin, Terza, and Khalifah, 1989; Bohara and Kaempfer, 1991; Oatley, 2010. Bown and Crowley (2013) find empirical evidence to support the argument. Rose (2013), Kim (2013), and Drezner (2014) note a considerable absence of trade protectionism in the midst of the Great Recession. Additionally, Oatley (2015) and Lake and Linask (2016) suggest that protectionism could be pro-cyclical.

[13]McKinnon and Fung, 1993; Oatley, 1997; Niels and Francois, 2006; Oatley, 2010; Broz and Werfel, 2014; Oatley and Gallantucci, 2019. Also see Eichengreen and Irwin (2009), for a similar argument. Irwin (2005) also gives some credence to the role of exchange rates in driving antidumping petition filings in the United States.

presents data on the average annual real exchange rate and total annual antidumping petitions filed in advanced and developing countries. Two trends are evident in this figure. First, since 1990, developing economies have experienced more exchange rate appreciation than have advanced economies. Secondly, this difference in the level of exchange rate appreciation roughly tracks the change in the total number of petitions filed in these two groups of countries over the same period.

While the robust empirical support of the effect of the real exchange rate is logical and helps to explain the increase in demand for antidumping petitions in developing countries as a whole, a closer examination of regional-specific trends and antidumping petitions reveals some remaining variation in demand for protection yet to be explained. Figure 3 presents the average real exchange rate and the average number of antidumping petitions filed in each year, by region. In this figure, we observe slightly more depreciation than appreciation in the currencies of countries in North America and Europe. Indeed, they have slightly more stable exchange rates. And yet, demand for protection in these regions varies considerably, and even peaks a few times during periods of currency depreciation. Aggregate demand for antidumping petitions in these regions has also remained higher than in other regions despite currency depreciation. Part of the answer to these anomalies is certainly that the advanced economies in these regions started with higher exchange rate values than most of the developing countries in other regions. But we notice anomalous trends in other regions as well.

In East Asian countries, demand for antidumping petitions remained flat even during the period of highest exchange rate appreciation in 1990s. In South Asian countries (e.g., India and Pakistan), whose currencies were not especially appreciated relative to other developing countries, demand for antidumping petitions has been relatively high, and the correlation between exchange rate appreciation and the number of antidumping petitions is least clear. In fact, it appears as though appreciation has been accompanied by a drop in demand for protection. Middle Eastern countries have experienced significant appreciation but have consistently filed a low number of antidumping petitions. The relationship between exchange rates and currency appreciation appears tighter in Sub-Saharan African countries, but demand for protection has tapered off even though appreciation has resumed somewhat. It is therefore likely that additional variables contribute to demand for antidumping protections.

We propose that another contributing factor to demand for antidumping protection is the structure of international trade, particularly the shifts in global supply chain integration that have occurred over the past few decades. As traditional protectionist measures have declined, international corporations have integrated their supply chains and outsourced labor-intensive manufacturing processes to labor-abundant countries. It is not unusual for international corporations to import and export intermediate goods into and out of several countries before delivering final products to market. These changes, along with technological innovation, have facilitated deindustrialization in many economies. In turn, we argue that deindustrialization fuels demand for antidumping protections.

How globalization and deindustrialization create demand for antidumping protections

Beginning in the late 1970s, with the proliferation of the fax machine, the telecommunications revolution facilitated a radical transformation in global supply chains. Prior to the 1970s, global supply chains were concentrated in European countries, America, and, to some extent, Japan. To the extent that other countries participated in international trade, they largely exported raw materials to advanced economies for processing. Over the course of the 1980s, global supply chains shifted dramatically, fragmenting across newly industrializing economies in East Asia. Now, intermediate product inputs constitute a large percentage of international trade and many consumer products are produced in multiple stages across multiple countries. A 2010 World Bank Report explains:

> Imported intermediate input content accounts for about one-quarter of OECD economies' exports, and the European Central Bank (ECB) estimates that such imports accounted for about 44 percent of EU exports (or 20 percent for imports from outside of the EU) in 2000, ranging from about 35 percent in Italy to about 59 percent in the Netherlands. In the United States, imported intermediate input content in exports reached about 10 percent in 2005. Among emerging economies, imported content's share in exports is particularly high in China - about 30 percent, or twice that for India and Brazil. (2010, 6)
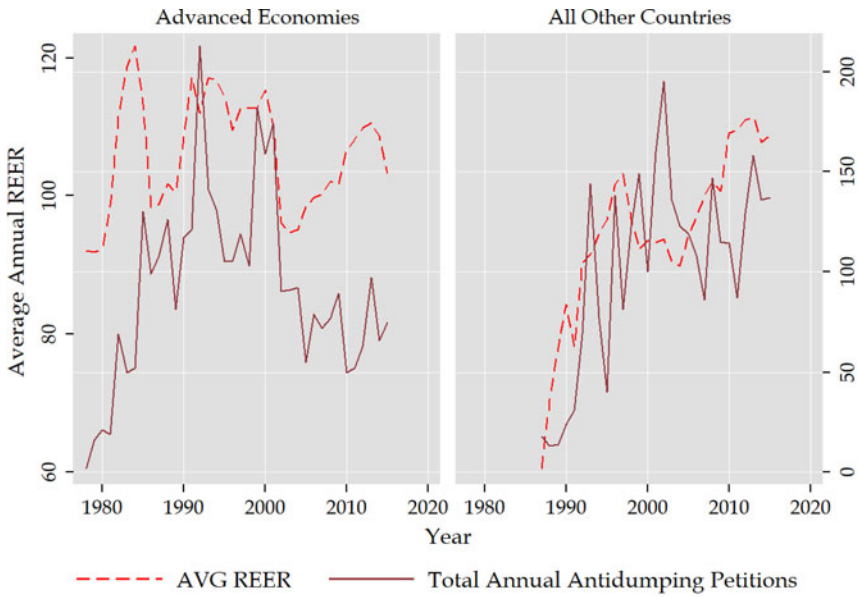
Figure 2: Antidumping Petitions and the Real Exchange Rate in Advanced and Other Economies. Data on antidumping petitions come from the Global Antidumping Database hosted by the World Bank and compiled by Bown (2016). Data on real exchange rates come from Bruegels real (REER) database.
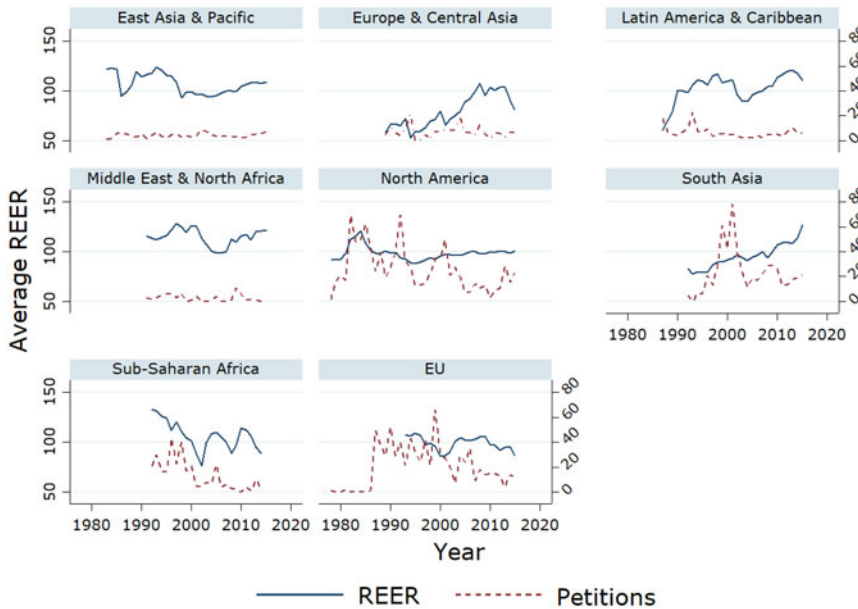
Figure 3: Average REER and Antidumping Petitions by region. Data on antidumping petitions come from the Global Antidumping Database hosted by the World Bank and compiled by Bown (2016). Data on real exchange rates come from Bruegels real (REER) database.

This evolution in the global supply chain has facilitated deindustrialization. Deindustrialization is the decline of manufacturing, usually measured as industry's or manufacturing's value added or share of employment. Technological innovations that have increased automation in manufacturing have likely been the largest driver of deindustrialization worldwide, but changes in the global supply

chains have also contributed to the trend.[14] Deindustrialization has been concentrated in the advanced economies of North America and Europe, which have smaller and more expensive supplies of labor that have gradually been reallocated to the services sector as North-South trade has facilitated increased imports of manufactured goods.[15]

In the United States, for example, manufacturing's share of employment has fallen steadily since the 1950s, from about one quarter to one tenth, as American corporations operating internationally have moved production overseas and invested in manufacturing technologies that require far less human labor.[16] The 1980s are largely viewed as the hay day of American deindustrialization.[17] America experienced a recession in the early 1980s that was compounded by stiff competition from Japanese manufacturing. As a result, the United States saw steep declines in manufacturing value added and manufacturing's share of employment throughout the decade. A slew of large factory closings in the United States made headlines in the 1980s—Ford, Chrysler, Firestone, the United States Steel Corporation, and Pabst, to name a few. The trend in factory closings was epitomized by GM's factory closings in and around Flint, Michigan, which devastated the town's economy. A similar deindustrialization trend occurred in Great Britain in the 1970s and '80s.[18] Deindustrialization in other advanced economies followed suit.

Interestingly, Rodrik (2016) finds significant declines in manufacturing's share of employment for developing economies in two regions of the Global South: Africa and Latin America. In countries in these regions, Rodrik refers to deindustrialization as "premature" because the process of deindustrialization began at income levels that are a small fraction of the income levels at which deindustrialization began in advanced economies. Like deindustrialization in the Global North, the trend in premature deindustrialization may also be explained in part by patterns of international trade that prevailed after trade liberalization. Many Asian countries quickly replaced import substitution industrialization policies with export-oriented growth strategies, while Latin America and Africa experimented with neoliberal reforms without such a replacement strategy. Export-oriented growth policies gave Asian countries an advantage in manufacturing. Combined with export-oriented industrial policies, liberalization in Asian countries succeeded in helping these countries to attract high levels of foreign direct investment that fostered a booming manufacturing sector. Additionally, some Asian countries were able to utilize their comparative advantage in labor to attract foreign direct investment in manufacturing before many African and Latin American countries implemented substantial trade reforms. In contrast, many African and Latin American countries experienced premature deindustrialization as industries that developed behind tariffs were exposed to import competition from Asia upon liberalization. Rodrik (2016, 4) supports this narrative:

> As developing countries opened up to trade, their manufacturing sectors were hit by a double whammy. Those without a strong comparative advantage in manufacturing became net importers of manufacturing, reversing a long process of "import" substitution. In addition, developing countries "imported" deindustrialization from the advanced countries, because they became exposed to the relative price trends produced in the advanced economies. The decline in the relative price of manufacturing in the advanced countries put a squeeze on manufacturing everywhere, including the countries that may not have experienced much technological progress.

While Latin American countries and African countries (excluding Mauritius and Nigeria) have experienced the worst levels of deindustrialization, Southeast Asian and Pacific countries have largely avoided it. As Rodrik (2016) concludes: "Asia has not only bucked the global trend in manufacturing employment, it has managed to maintain stronger manufacturing performance than would be expected on the basis of its income and demography."[19]

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[14]Rowthorn and Ramaswamy, 1999, 7–8.
[15]Alderson, 1999; Wood, 1995, 13.
[16]Rodrik, 2016, 2–3.
[17]Plunkert, 1990.
[18]Stopford and Turner, 1985.
[19]Rodrik, 2016, 12.

Deindustrialization likely fuels demand for antidumping protections. In advanced countries experiencing deindustrialization, trade liberalization has enabled ambitious corporations to internationalize production and reduce the cost of labor in manufacturing labor-intensive consumer products. However, offshoring and outsourcing have had a major unintended consequence. Once corporations internationalize, outsource, and offshore, their industry-specific knowledge, trade secrets, and intellectual property have become steadily diffused, enabling new foreign competition to emerge and produce cheaper imitations or substitutes for export. These firms have generated intense import competition for firms in advanced economies.[20] For example, Españ (2013, 43) explains the effect of offshoring on US consumer tech companies in the 1980s and 1990s:

> Many Asian companies that for decades acted as OEMs, Original Equipment Manufacturers, learned to master the technology and became global competitors. In the process, many US corporations lost the ability to design and manufacture products they had invented, such as LCD screens or hard drives, becoming importers, increasingly dependent on Asian manufacturers. Several Asian companies evolved from OEMs to ODMs, Original Design Manufacturers, and finally OBMs, Original Brand Manufacturers, like Samsung, Acer or ASUS, and the path is repeating itself in the electronic industry in the case of smart phones, tablets and notebooks, among other products. In the process, U.S. design capabilities and manufacturing skills disappeared.

As a result of offshoring and outsourcing, established industries in advanced economies, whether they have engaged in outsourcing and offshoring or are just competitors of firms that have, have faced increasing competition from imported goods produced by developing country firms with much lower overhead costs. Foreign imports can be sold through a variety of distribution markets in advanced economies for much lower prices. In response to these dynamics, import competing firms in advanced economies that have undergone deindustrialization have become more likely to file for antidumping protections with their national governments.

In middle-income countries in Latin America and Africa that have experienced deindustrialization at lower levels of income, established manufacturing industries became unable to compete with foreign companies after reform. These foreign companies include large, international corporations that have internationalized and fragmented their production chains to take advantage of cheap labor in labor-abundant Asian countries, as well as younger East Asian companies that developed by participating in global supply chains of consumer goods destined for advanced economies. Many manufacturing firms in middle income countries in Africa and Latin America grew up under a shield of tariff protection during the period of import substitution industrialization. Once these countries embraced liberalization, foreign firms were able to out-compete local industry, drive down prices, and motivate local industry to file antidumping petitions.

While political institutions may play an influential role in the actual levels of protectionism, antidumping protections are created via a bureaucratic process, rather than a legal or institutional process, and antidumping petitions are a reflection of raw economic demand for protectionism. We propose simply that deindustrialization and premature deindustrialization, both driven by trends in trade liberalization and global production chains, will increase the number of import-competing firms in a country and motivate these firms to seek antidumping protections.

Preliminary evidence suggests that manufacturing strength aligns reasonably well with trends in demand for antidumping protections. Figure 4 plots the five-year moving average of the change in industry value added as a percentage of GDP against the five-year moving average of the change in antidumping petitions filed for six countries. We expect to see the two series move in continuous counterpoint, so that large negative changes in industry value added (the solid line) correspond to large positive changes in antidumping petition initiation (the dotted line). We should note and acknowledge that deindustrialization occurs more often than increases in industry valued added in the country-years in our data sample, which is apparent in these charts. This is an artifact of technological advancements in manufacturing

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[20]See Buss and Peukert, 2015; Veer, Lorenz, and Blind, 2016.
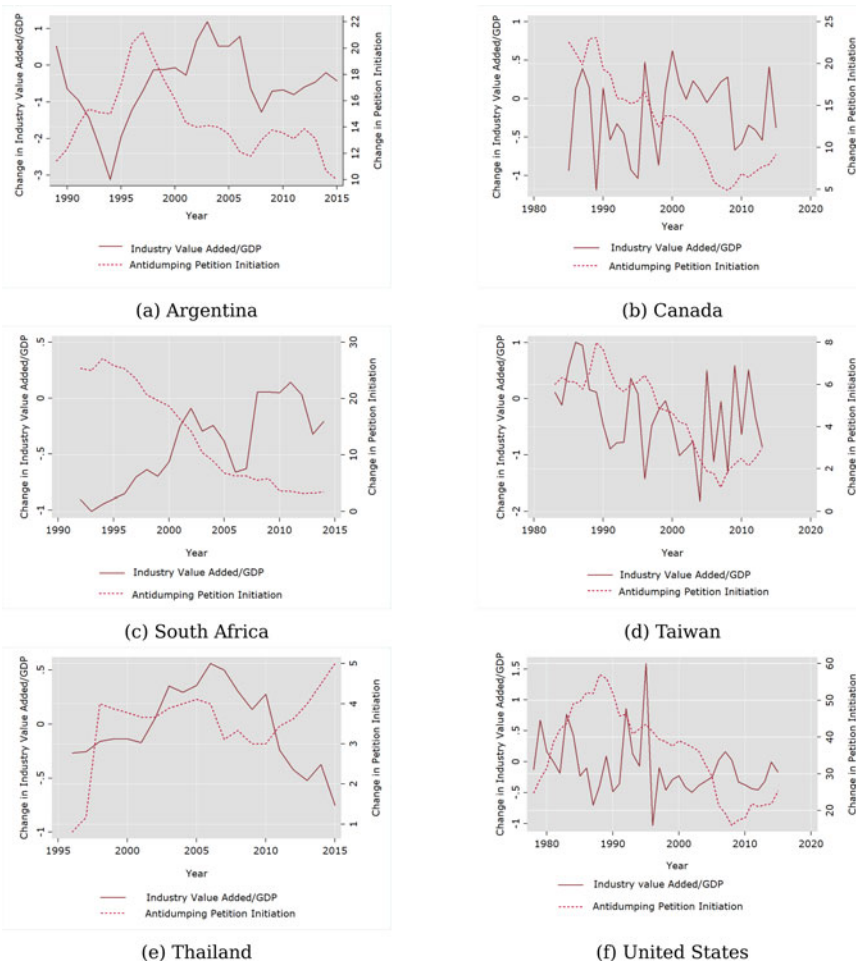
Figure 4: Time series graphs depicting the five-year moving average of industry value added as a percentage of GDP and anti-dumping petition initiations. Data on industry value added are produced by the World Bank. Data on antidumping petitions are produced by Bown (2016).

that have reduced the need for human labor. These trends have also heavily contributed to trends in deindustrialization. Despite this broader and more general trend, we can observe the two moving average series moving in counterpoint in all of the subfigures included in 4, to some degree. The empirical relationship is clearest in subfigures a, b, c, and e, which correspond to Argentina, Canada, South Africa, and Thailand. Each of these cases are a good example of the relationship between international trade and deindustrialization affected by trade liberalization, which we have described.

Canada and the United States epitomize the deindustrialization experience of the advanced economies. Canada, like the United States, has mostly experienced deindustrialization since 1980, a function of long-term trade liberalization and increased automation in manufacturing. Interestingly, however, there is evidence that changes in industry value added have stabilized over time in both countries. In the 1980s, declines in industry value added corresponded with larger increases in demand for protections. Over time, as the declines in manufacturing have become smaller and more stable, and Canada experienced the occasional minor growth spurt in industry value added, the demand for antidumping protections tapered off. This trend is evident in the US graph as well and, in part, reflects the reality of increasingly complex supply chains. Integrated, complex supply chains have allowed large international corporations that are based in advanced economies and that rely on a multitude of foreign sub-contractors to compete with companies in middle income and new industrialized economies whose labor supply is more

abundant and less expensive. New petition initiation has been lower in the United States since the mid-1990s, and this likely reflects the point in time at which many large American corporations embraced outsourcing and their global production chains became so complex and integrated that seeking antidumping protections became less advantageous because doing so could spark retaliatory efforts by foreign companies that could reduce the expected gains from compensatory antidumping tariffs.[21] Admittedly, one major difference between the experiences of the United States and Canada is that scale of demand for antidumping petitions in Canada has been much smaller than in the United States, but this might be explained by the fact that Canada also experienced less severe declines in industry value added.

South Africa and Latin American epitomize the premature deindustrialization experience of developing countries who embraced neoliberal reforms without an active export-oriented growth strategy to replace former import substitution industrialization (ISI) policies. In South Africa, trade liberalization after the fall of Apartheid created competition between imported products and those produced by formerly protected industries, which initially proved harmful for South African companies. This resulted in a spike in demand for antidumping protections, which slowly eased as South Africa's manufacturing industry recovered somewhat post-2005. Argentina's reforms occurred around the same time as South Africa's and had similar initial effects. Following substantial economic and trade reforms in the 1990s, Argentina's formerly protected industry faced steep international competition, and demand for antidumping protections was high. However, Argentina back-tracked reforms in 2001 and returned to some former ISI policies. This actually slowed deindustrialization (though it was not enough to jump start growth in industry), and had the added effect of reducing demand for antidumping protections.

Finally, Thailand epitomizes the experience of rapid industrialization in East Asian countries, whose exported oriented growth policies succeeded in earning them a secure place in the global supply chains that funnel consumer goods to advanced economies. Thailand experienced increases in industry value added, especially after the Asian financial crisis ended and before international demand fell off following the 2008 financial crisis. Following a series of economic and trade reforms in the early and mid-1980s, including Thailand's accession to the WTO, Thailand became the fastest growing country in the world. Manufacturing sectors performed well thanks to high levels of foreign direct investment from more advanced economies in North America, Europe, and Asia. The government embraced an export-led growth strategy and revised the tax code to favor labor-intensive manufacturing. During the crisis-free interval of time, Thai companies increased demand for antidumping petitions only very slightly. However, demand picked up rapidly when industry value added collapsed after the 2008 financial crisis.

In the next section, we evaluate how well the experiences of these countries generalize to a cross-sectional data set of thirty-four middle and high income countries. Specifically, we evaluate the following hypothesis:

H1. Long-term declines in the strength of a country's industrial and manufacturing sectors increases the demand for antidumping protections, while growth in a country's industrial capacity reduces the demand for protection.

We evaluate the evidence for this hypothesis alongside evidence for existing explanations of antidumping petitions, including exchange rate fluctuations and business cycle changes.

Data and models

To evaluate the empirical evidence for the various explanations of antidumping petitions that we have outlined, we analyze data on antidumping petitions filed in thirty-four countries between 1978 and 2015.[22] We focus on petitions filed rather than petitions that were approved and implemented because petitions filed is a purer measure of demand on the part of corporations. Petitions filed and those implemented are highly correlated, but on average only six out of nine petitions filed are approved

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[21]We certainly do not see our explanation as competing with literature that has found global value chains facilitate reduced demand for protections; for example, Jensen, Quinn, and Weymouth (2015).
[22]See Bown, 2016.

and implemented. To explain which petitions are approved and implemented, we would have to construct a theory of the politics of numerous bureaucratic agencies tasked with evaluating the petitions, which is largely outside of the scope of this paper.[23]

The data on antidumping petitions files are available from the World Bank via the Temporary Trade Barriers Database (TTBD), and include details on over sixty-five hundred antidumping petitions. The database covers 95 percent of all antidumping petitions filed for the period 1978–2015. For a list of country years covered by the data, refer to table 3 in the Appendix. The data range from 0 to 94, with a mean of 9.2 and a standard deviation of 13.7, meaning the count distribution exhibits overdispersion. Overdispersion must be accounted for; not modeling these elements affects the standard errors and undermines the validity of t-statistics in statistical estimates.[24] We therefore employ cross-sectional negative binomial regression with fixed effects because the number of country-year observations is less than twenty.[25] We consider logging the dependent variable in order to utilize OLS regression, but the logged data still exhibit qualities of non-normality. Indeed, a Shapiro-Wilkes test confirmed that even the logged dependent variable is not normally distributed.

In order to control for a wide vary of variables, and not induce bias in the regression estimates via case-wide deletion, we impute our data. Table 2 in the Appendix produces statistics on missingness. On average, data for the variables is 11 percent missing. We run thirty imputations using the Amelia package in R. Diagnostic plots for the data imputation are presented in the appendix.

Autocorrelation is present in the antidumping petition data.[26] However, due to the limitations inherent to count modeling techniques, accounting for both overdispersion and autocorrelation can be difficult, especially when working with imputed data as software options for running autoregressive Poisson or negative binomial models using cross-sectional timeseries and imputed data are nonexistent. Tradeoffs are therefore necessary.[27] In the Appendix, we employ a Poisson autoregressive model on non-imputed data to demonstrate the robustness of key variables to a model specification that can account for autocorrelation but cannot correct for panel level homoskedasticity or bias induced by case-wise deletion.[28] The model results are reported in the Appendix.

Main explanatory variables

We focus on two main explanatory variables: industry value added as a percentage of GDP and the percentage of the workforce employed in manufacturing. We expect the primary measure, industry value added, to perform best for two reasons. First, the data for this variable has fewer missing observations. Secondly companies that file antidumping claims are more likely to be sensitive to changes in their own productive capacity than to changes in their level of employment. Indeed some declines in employment might be a positive development if this correlates with an increase in average worker productivity and efficiency.

Industry value added as a percentage of GDP

This is the longest running and most widely available measure of the size of countries' manufacturing sectors. Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions

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[23]We reproduce our full models using the alternative dependent variable of petitions implemented. See table 7 in the Appendix.

[24]Ibid., 598.

[25]In their Monte Carlo simulation analysis of random and fixed effects, Clark and Linzer (2015, 20–21) find that once each unit has twenty observations, regardless of the level of correlation between the independent variable and unit effect, the slope parameter in random effects models is not biased.

[26]We employ a Wooldridge test for serial autocorrelation in panel data; see Drukker, 2003.

[27]Lagged dependent variables in count models are not equivalent to lagged dependent variables in OLS models. Lagged dependent variables are generally inapplicable with count models. Exponentiated coefficients on lagged variables do not control for moving average time trends in count models; they instead only model exponential growth trends. See Brandt et al., 2000; Brandt and Williams, 2001; Fogarty and Monogan III, 2014.

[28]This particular model specification also allows for overdispersion to be modelled; for more on this, see Schwartz (1996) and Davis, Dunsmuir, and Wang (1999).

15-37). While manufacturing specific measures are available, they are available for less than half of the years for which we have antidumping data for many key countries, including the United States. The World Bank produces the data. To capture the long run change in deindustrialization, we employ the five-year moving average in the annual change of this variable. We expect this variable to be negatively correlated with the number of antidumping petitions.

Percentage of workforce employed in manufacturing

This is a measure of the level of deindustrialization that has occurred in a country. We use this data to demonstrate robustness because the data availability is substantially less than industry value added (approximately 30 percent missing and missing entirely for some countries). The data are taken from the Groningen Growth and Development Center (GGDC).[29] These data exist for just forty-two countries, both developed and developing, from the 1950s to 2010. To capture the long run change in deindustrialization, we employ the five-year moving average in the annual change of this variable as well as the change in the value of this variable from the five-year lagged value. We expect this variable to be negatively correlated with the number of antidumping petitions.

Economic control variables

Real exchange rate

The real exchange rate is one of our primary explanatory variables. Real exchange rate movements are collected from Bruegel's real effective exchange rate (REER) database.[30] "Real Exchange Rate" is a CPI-adjusted measure calculated annually for 178 countries and is available from 1960–2018. The measure incorporates time-invariant weights and is constructed against a basket of several countries. The database also includes data unavailable in other datasets. Theoretically, increases or appreciations in real exchange rates should be associated with higher quantities of antidumping petition initiations. We therefore expect a positive association between real exchange rate appreciations and aggregate antidumping petitions filed.

GDP growth

GDP Growth is included as a control variable to account for causal mechanisms linked to business cycles. Data for GDP is collected from the World Bank World Development Indicators. It is specifically operationalized as percent change in annual GDP (current international dollars).[31] We expect a negative coefficient for this variable.

Unemployment

Some scholars have emphasized the role of business cycles in driving protectionism and antidumping petitions. We include unemployment to account for alternative factors linked to business cycles. It is defined as the percent of the civilian labor force actively seeking employment. Theoretically, higher rates of unemployment should be positively associated with larger quantities of antidumping petitions filed. This data is gathered from the World Bank World Development Indicators database.

Import growth

"Import Growth" is the annual percent change in imports. Omitting import growth would risk wrongly attributing changes in antidumping petition initiations to exchange rate movements when they are in fact a function of greater import competition.[32] The World Bank World Development Indicators database produces this data.

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[29]Timmer et al., 2015.
[30]See Darvas (2012), for more information.
[31]See Bank, 2018.
[32]Oatley, 2010, 11.

Total annual imports

We include this variable to control for the fact that countries who conduct a larger volume of trade will, all else equal, have more industries that could file for antidumping protection. The World Bank World Development Indicators database produces this data.

Economic retaliation

To control for the tit-for-tat dynamics that can affect antidumping protectionism, we create a measure of retaliation against each country by summing up the number of antidumping petitions filed against each country by every other country each year in the Global Antidumping Database.[33]

Domestic political controls

Given the evidence for the effect of the real exchange rate regime, three other domestic institutional variables may be consequential for explaining the regional variation in demand for antidumping protection: the exchange rate regime, central bank independence, and the type of political regime. The effect of these variables is under-explored in the literature, but could reasonably affect variation in demand for protection.

Exchange rate regime

Exchange rate regime flexibility may affect the demand for antidumping protections by affecting the probability that an economy faces fluctuations in exchange rates. Fixed exchange rate regimes limit the extent to which exchange rates fluctuate on the foreign exchange market. Fixed exchange rate regimes should therefore be associated with fewer antidumping petitions filed. Also, because exchange rates are more volatile under floating exchange rate regimes, currency fluctuations could increase the propensity of firms harmed by exchange rate appreciations to file antidumping petitions, holding other factors constant. However, exchange rate regime flexibility could potentially have the opposite effect if monetary independence also affects demand for antidumping protections. Countries that fix their exchange rate may be more likely to experience inflation, since they will have less control over domestic monetary policy. Inflation could affect domestic demand, which might negatively affect companies' profits, which could also motivate companies to lobby for protection. We measure exchange rate flexibility with the database compiled by Ilzetzki, Reinhart, and Rogoff (2017). We rely on the "fine" index to construct two dummy variables for floating and fixed currencies. The floating dummy equals one if a regime is classified as a 12 or 13 under the fine index. The fixed dummy codes as 1 all regimes with a value of 4 or less according to this index.

Central bank independence

Central bank independence might also affect antidumping petition initiations through monetary policy. Broz (2002, 861) argues that central bank independence is associated with low and stable inflation (in transparent political environments). Low inflation may smooth domestic demand for domestic firms' product, which may help counteract the effect of exchange rate fluctuations on companies' bottom lines. Alternatively, central bank independence may indicate that a government is less likely to intervene in managing its currency's value, which may mean that firms lobby the government for protection because they are unable to lobby for exchange rate intervention.[34,35]

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[33]Bown, 2016.

[34]Bernhard and Leblang, 1999; Broz, 2002; Bernhard, Broz, and Clark, 2002; Aizenman, 2013. We collect the data for this variable from the Garriga (2016) Central Bank Independence in the World dataset. The Garriga index contains data on de jure central bank independence for 182 countries between 1970–2012. We employ the weighted index, which measures central bank independence on a scale from 0 to 1. Scores closer to 0 indicate lower levels of central bank independence. Scores closer to 1 indicate higher levels of central bank independence.

[35]The Garriga index is partially based on the attributes employed in the Cukierman, Web, and Neyapti (1992) index. Garriga's data is expanded to cover additional countries and employs variables measuring additional attributes such as statutory reforms affecting central bank independence. These scores are divided into 16 different dimensions, which are further categorized under 4 different dimensions of central bank independence (on a country-year basis): CEO characteristics, policy formulation attributions, central bank objectives, and the central bank's limitations on lending to the public sector.

Political regime type

Because the literature on antidumping largely focuses on the experience of advanced economies, such as the United States, the research may take for granted the effect of regime type. The open economy politics (OEP) literature has made a strong case for the effect of regime type or level of democracy on the level of protectionism.[36] On the one hand, democracies may be more responsive to corporations' interests both because corporations are free to lobby democratic governments, but also because democratic governments recognize the role that employment levels play in generating popular and electoral support. Thus, corporations may be more willing to spend time filing antidumping petitions in democratic regimes than other types of regimes. Alternatively, democracies tend to be less protectionist than other types of regimes, as politicians have to take a broad range of interests into account when crafting trade policy.[37] While corporations may be able to easily lobby for protection, they may also realize that doing so is a losing proposition. We include a country's level of democracy in the model to account for domestic political institutions. Democracy is measured with the Polity IV Project's polity2 variable.[38] Higher values of this score indicate higher levels of democracy.

Results

Table 1 presents four models. Model 1 is our base model of petition initiations. It includes variables associated with existing hypotheses we outlined in the literature review: the business cycle hypotheses, the retaliation hypothesis, and the real exchange rate hypothesis. It also includes our main measure of deindustrialization—industry value added as a percentage of GDP. Model 3 presents this model with our secondary measure of deindustrialization—manufacturing employment. Models 2 and 4 include a series of the other control variables. In table 6 in the Appendix, we present autoregressive versions of these models limited to just statistically significant variables to minimize bias induced by case-wide deletion since these models cannot be estimated using imputed data.

Taken as a whole, the models indicate a handful of consistent relationships. First, in line with existing literature that relies on smaller samples of countries, the effect of a country's real exchange rate is very robust. Across all four models, the real exchange rate is positively and significantly correlated with the number of antidumping petitions filed in a country. A one standard deviation increase in the value of the real exchange rate increases the number of antidumping petitions by 12 percent (or about 1 petition). The effect of this variable is not confounded by level of import growth. The coefficient on import growth is never statistically significant and is incorrectly signed in three of the four models. This suggests that real exchange rates are a better determinant of demands for antidumping petitions than are short term increases in import competition.[39]

The effect of retaliation is also robust and statistically significant across all four models, which is also consistent with existing literature. A one standard deviation increase in the number of petitions filed against a countries, increase the number of antidumping petitions filed in that country by approximately 14 percent (or about 1.3 petitions).[40]

Finally, across all models, the level of industry and manufacturing output has a negative and statistically significant effect on the number of antidumping petitions filed. According to the estimates reported in model 1, a one standard deviation increase in industry value added as a percentage of GPD decreases the number of petitions by about 10 percent (or slightly about 0.9 petitions). As well, according to model 3, a one standard deviation increase in manufacturing employment also decreases the number of petitions by about 11 percent (or about 1 petition).[41]

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[36]See Mansfield, Milner, and Rosendorff, 2000; Milner and Kubota, 2005.
[37]See Milner and Kubota, 2005, 107.
[38]See Polity Project, 2010.
[39]These results are confirmed by the autoregressive models presented in table 6 in the Appendix.
[40]These results are confirmed by the autoregressive models presented in table 6 in the Appendix.
[41]These results are partially confirmed by the autoregressive models presented in table 6 in the appendix. Case-wide deletion in these models results in the loss of significance for manufacturing employment.

Table 1: Negative binomial regression models of antidumping petition initiation for thirty-four countries from 1978–2014.

	(1) Base	(2) Controls	(3) Robustness	(4) Robustness
Industry Value Added	−0.129* (0.056)	−0.140* (0.059)		
Manufacturing Employ.			−0.116* (0.056)	−0.0001* (0.00005)
GDP Growth	0.005 (0.016)	−0.003 (0.017)	0.003 (0.016)	−0.002 (0.016)
Import Growth	−0.002 (0.004)	.001 (0.004)	−0.0001 (0.002)	−0.00001 (0.004)
REER	0.007* (0.002)	0.006* (0.002)	0.006* (0.002)	0.008* (0.002)
Retaliation	0.029* (0.005)	0.021* (0.006)	0.025* (0.006)	0.015* (0.006)
Unemployment		0.015 (0.011)		0.015 (0.01)
Central Bank Ind.		0.193 (0.319)		0.162 (0.321)
Polity2		−0.006 (0.016)		−0.004 (0.015)
Fixed Rate		0.116 (0.168)		0.013 (0.169)
Floating Rate		0.107 (0.108)		0.015 (0.102)
Total Annual Imports		−1.48e-07* (6.34e-08)		−1.37e-07* (6.35e-08)
Constant	−.317 (0.183)	−.503 (0.259)	−.515 (0.184)	−0.628 (0.253)
N	725	725	725	725

Standard errors in parentheses.
*$p < 0.05$.

The business cycle hypothesis finds no support in the models in table 1. The sign on the coefficient of GDP growth is inconsistent between the models with and without control variables. The coefficient is correctly signed on unemployment. However, neither the coefficient on GDP growth nor the coefficient on unemployment is statistically significant in any of the four models.

Domestic political institutions also appear to have no effect on demand for antidumping protections. The coefficients on political regime type, central bank independence, and the fixed and floating monetary regime factor variables are all insignificant.

The only control variable that has a statistically significant effect on petition initiation is the size of total annual imports. Predictably, the larger the volume of a nation's imports, the more likely industries will be to file antidumping petitions. The effect of this variable is slightly larger than the other variables. A one standard deviation increase in the volume of a country's imports, increases the number of antidumping petitions by 19 percent (or about 1.67 petitions). This also suggests that industries in countries that have de facto more liberal trade regimes are also more likely to demand antidumping protections.

Overall, the effects of these models confirm existing major hypotheses about the determinants of demand for antidumping petitions. Real exchange rate fluctuations and tit-for-tat dynamics affect

national demand for these protections. Additionally, the evidence suggests that long run changes in national comparative advantage in manufacturing, driven by trade liberalization and the globalization of supply chains, also affects national demand for antidumping protections. Domestic political institutions and choice of exchange rate regime appear to do little to mitigate the effect of these global economic changes on industries' demands. Once a national government embraces trade liberalization, the structure of global trade and production will heavily impact the competitiveness and profitability of a country's industries. In the face of this competitive landscape, industries will pursue every avenue possible to maintain their own survival and the bureaucratic nature of antidumping protections makes these types of protections an appealing prospect.

Implications and conclusion

Our analysis has evaluated the causes of antidumping petition initiations filed by firms in a sample of thirty-five countries. We have juxtaposed several existing hypotheses that have found support using evidence mostly from advanced economies with a new hypothesis about the role of global market dynamics and deindustrialization on demands for antidumping protection. We find a respectable amount of evidence for the main existing hypothesis that exchange rate changes and tit-for-tat retaliatory dynamics create demand for antidumping measures. Appreciations in the real exchange rate incentivize rent-seeking firms to file higher quantities of antidumping petitions. The number of antidumping petitions filed in a country positively correlates with the number of petitions filed against it by other countries in the same year. We also find that in addition to these factors, deindustrialization also shapes demand for antidumping. Limited evidence is offered by the models to support alternative theoretical explanations including the business cycle hypothesis and the role of domestic political institutions.

Future research can improve these findings in a number of ways. First, a dyadic study of antidumping petitions would allow for a more fine-grained evaluation of the hypotheses we've outlined and tested. Such a study would present an improvement over the present study in several ways. First, we would be better able to tease out whether the mechanism that translates exchange rate movements into demands for antidumping measures is import-competition or export competition. If, for example, an increase in a bilateral exchange rate for Country A relative to Country B induces an increase in antidumping petitions filed by companies in Country A against Country B, and this effect is not confounded or accompanied by a significant effect of an increase in imports by Country A from Country B, then we would have reason to believe that firms in Country A that export to B, rather than firms in A that compete with imports from B, may be filing antidumping petitions because of the exchange rate effect.

The dyadic level is also the best level for teasing out the effect of retaliation, which is difficult to control for at the aggregate national level we use because the retaliation measures correlate with values of the lagged dependent variable, increasing the difficulty of adequately modeling autocorrelation. However, current data availability limits researchers' abilities to pursue these strategies. While long-run data series on bilateral exchange rates exist only for both most developed economies, it is clear from this study that dynamics between developed and developing economies are important dimensions of the increased demand for antidumping protections.

Additionally, innovations in software for estimating autoregressive Poisson models using imputed panel data should facilitate future studies that can more adequately model antidumping petition initiation without bias created by autocorrelation, panel heteroskedasticity, or case-wise deletion. Being able to model all the complexities of this antidumping data would give us more confidence in the relative effect of the different variables we have analyzed.

Lastly, the dynamics that affect antidumping petition initiations may also be different from the dynamics that influence actual antidumping measure implementation. Most notably, the role of domestic politic institutions is likely more substantial in determining the number of petitions are that are successfully granted. Future studies could compare the effect of the variables we have examine on actual antidumping measure initiation. Such studies will have to reconcile data

made available by the Global Antidumping Database[42] and data provided by the WTO on implemented measures.

Despite our data and modeling limitations, this study has replicated the results of existing studies on the determinants of demand for antidumping measures using the broadest cross-sectional time series data available. Additionally, it has proposed and empirically tested another potential causal mechanism: deindustrialization. In conclusion, our analysis suggests that global market dynamics, largely beyond the control of any one particular industry, determine the level of demand for these new forms of protectionism. Whether these protectionist policies ultimately serve to smooth the worst effects of a volatile international economy (as firms who lobby for them hope they might), or instead exacerbate volatility by introducing another variable that can rapidly alter prices remains a pressing question for future studies.

Supplementary material. To view supplementary material for this article, please visit https://doi.org/10.1017/bap.2020.17.

References

Aizenman, Joshua. 2013. "The impossible trinity—from the policy trilemma to the policy quadrilemma." *Global Journal of Economics* 2 (01): 1350001.

Alderson, Arthur S. 1999. "Explaining deindustrialization: Globalization, failure, or success?" *American Sociological Review*: 701–21.

Baldwin, Richard E., John McLaren, and Arvind Panagariya. 2000. "Regulatory protectionism, developing nations, and a two-tier world trade system [with comments and discussion]." In *Brookings trade forum*. JSTOR: 237–93.

Bernhard, William, and David Leblang. 1999. "Democratic institutions and exchange-rate commitments." *International Organization* 53 (1): 71–97.

Bernhard, William, J. Lawrence Broz, and William Roberts Clark. 2002. "The political economy of monetary institutions." *International Organization* 56 (4): 693–723.

Bohara, Alok K., and William H Kaempfer. 1991. "A test of tariff endogeneity in the United States." *The American Economic Review* 81 (4): 952–60.

Bown, C., and M. Crowley. 2013. "Import protection, business cycles, and exchange rates: Evidence." *Journal of International Economics* 90 (1): 50–64.

Bown, Chad P. 2016. "Global antidumping database." The World Bank. http://econ.worldbank.org/ttbd/gad.

Brandt, Patrick T., and John T. Williams. 2001. "A linear Poisson autoregressive model: The Poisson AR (p) model." *Political Analysis* 9 (2): 164–84.

Brandt, Patrick T., John T. Williams, Benjamin O. Fordham, and Brian Pollins. 2000. "Dynamic modeling for persistent event-count time series." *American Journal of Political Science* 44 (4): 823–43.

Broz, J. Lawrence. 2002. "Political system transparency and monetary commitment regimes." *International Organization* 56 (4): 861–87.

Broz, J. Lawrence, and Seth H. Werfel. 2014. "Exchange rates and industry demands for trade protection." *International Organization* 68 (2): 393–416.

Buss, Philipp, and Christian Peukert. 2015. "R&D outsourcing and intellectual property infringement." *Research Policy* 44 (4): 977–89.

Clark, Tom S., and Drew A. Linzer. 2015. "Should I use fixed or random effects?" *Political Science Research and Methods* 3 (2): 399–408.

Commission, US International Trade et al. 2008. *Antidumping and countervailing duty handbook*. DIANE Publishing. https://www.usitc.gov/trade_remedy/documents/handbook.pdf.

Coughlin, Cletus C., Joseph V. Terza, and Noor Aini Khalifah. 1989. "The determinants of escape clause petitions." *The Review of Economics and Statistics*: 341–47.

Cukierman, Alex, Steven B. Web, and Bilin Neyapti. 1992. "Measuring the independence of central banks and its effect on policy outcomes." *The world bank economic review* 6 (3): 353–98.

Darvas, Zsolt. 2012. "Real effective exchange rates for 178 countries: a new database." Bruegel Working Paper 2012/06, 15 March 2012.

Davis, Richard A, William TM Dunsmuir, and Ying Wang. 1999. "Modeling time series of count data." *Statistics Textbooks and Monographs* 158: 63–114.

Debapriya, Aryashree, and Tapan Kumar Panda. 2006. "Anti-dumping Retaliation—A Common Threat to International Trade." *Global Business Review* 7 (2): 297–311.

Drezner, Daniel W. 2014. "The system worked: Global economic governance during the great recession." *World Politics* 66 (1): 123–64.

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[42]Bown, 2016.

Drukker, David M. 2003. "Testing for serial correlation in linear panel-data models." *The stata journal* 3 (2): 168–77.

Egger, Peter, and Douglas Nelson. 2011. "How bad is antidumping? Evidence from panel data." *Review of Economics and Statistics* 93 (4): 1374–90.

Eichengreen, Barry, and Douglas Irwin. 2009. "The protectionist temptation: Lessons from the Great Depression for today." *VoxEU.org*, 17 March, 2009.

España, Juan. 2013. "The real costs of offshoring." *Journal of Business and Behavioral Sciences* 25 (2): 40.

Ethier, Wilfred J., and Ronald D. Fischer. 1987. "The new protectionism." *Journal of International Economic Integration*: 1–11.

Feinberg, Robert M. 2005. "US antidumping enforcement and macroeconomic indicators revisited: do petitioners learn?" *Review of World Economics* 141 (4): 612–22.

Feinberg, Robert M., and Barry T Hirsch. 1989. "Industry rent seeking and the filing of 'unfair trade' complaints." *International Journal of Industrial Organization* 7 (3): 325–40.

Feinberg, Robert M., and Kara M. Reynolds. 2006. "The spread of antidumping regimes and the role of retaliation in filings." *Southern Economic Journal*: 877–90.

Feinberg, Robert M., and Kara M. Reynolds. 2018. "How do countries respond to antidumping filings? Dispute settlement and retaliatory antidumping." *The World Economy* 41 (5): 1251–68.

Fogarty, Brian J., and James E. Monogan III. 2014. "Modeling time-series count data: the unique challenges facing political communication studies." *Social science research* 45: 73–88.

Gandolfo, Giancarlo. 2014. "The 'New' Protectionism." In *International Trade Theory and Policy*, 277–295. New York: Springer.

Garriga, Ana Carolina. 2016. "Central bank independence in the world: A new data set." *International Interactions* 42 (5): 849–68.

Gould, David M., and William C. Gruben. 1997. "Will fair trade diminish free trade?" *Business Economics*: 7–13.

Hartigan, James C., and Hylke Vandenbussche. 2013. "Disfavored Nations: Antidumping at the WTO." *Review of Development Economics* 17 (1): 105–16.

Hindley, Brian, and Patrick A. Messerlin. 1996. *Antidumping Industrial Policy*. Washington, DC: American Enterprise Institute.

Ilzetzki, Ethan, Carmen M. Reinhart, and Kenneth S. Rogoff. 2017. "Exchange arrangements entering the 21st century: Which anchor will hold?" Cambridge, MA: Technical report National Bureau of Economic Research.

Irwin, Douglas A. 2005. "The Rise of US antidumping activity in historical perspective." *World Economy* 28 (5): 651–68.

Irwin, Douglas A. 2015. *Free trade under fire*. Princeton, NJ: Princeton University Press.

Jallab, Mustapha Sadni, Monnet Benoit Patricj Gbakou, and Rene Sandretto. 2008. "The influence of the macroeconomic factors on antidumping initiations: the case of the European Union and the United States." *REVUE D ECONOMIE POLITIQUE* 118 (4): 573–600.

Jensen, J. Bradford, Dennis P. Quinn, and Stephen Weymouth. 2015. "The influence of firm global supply chains and foreign currency undervaluations on US trade disputes." *International Organization*: 913–47.

Kim, Soo Yeon. 2013. "Protectionism during Recessions: Is This Time Different?" *Political Economist* 9 (2): 6–8.

Knetter, Michael M., and Thomas J. Prusa. 2003. "Macroeconomic factors and antidumping filings: evidence from four countries." *Journal of International Economics* 61 (1): 1–17.

Lake, James, and Maia K. Linask. 2016. "Could tariffs be pro-cyclical?" *Journal of International Economics* 103: 124–46.

Mansfield, Edward D., Helen V. Milner, and B. Peter Rosendorff. 2000. "Free to trade: Democracies, autocracies, and international trade." *American Political Science Review* 94 (2): 305–21.

McKeown, Timothy J. 1984. "Firms and tariff regime change: Explaining the demand for protection." *World Politics* 36 (2): 215–33.

McKinnon, Ronald I., and Kwok-Chiu Fung. 1993. "Floating exchange rates and the new interbloc protectionism: Tariffs versus quotas." In *Protectionism and World Welfare*, edited by Dominick Salvatore, 221–43. Cambridge: Cambridge University Press.

Messerlin, Patrick A. 1990. "Antidumping regulations or pro-cartel law." *World Economy* 13 (4): 465–92.

Milner, Helen V., and Keiko Kubota. 2005. "Why the move to free trade? Democracy and trade policy in the developing countries." *International organization* 59 (1): 107–43.

Nelson, Douglas. 2006. "The political economy of antidumping: A survey." *European Journal of Political Economy* 22 (3): 554–90.

Niels, Gunnar, and Joseph Francois. 2006. "Business cycles, the exchange rate, and demand for antidumping protection in Mexico." *Review of Development Economics* 10 (3): 388–99.

Nivola, Pietro S. 1986. "The new protectionism: US trade policy in historical perspective." *Political Science Quarterly* 101 (4): 577–600.

Oatley, Thomas. 2010. "Real Exchange Rates and Trade Protectionism." *Business and Politics* 12 (2): 1–17.

Oatley, Thomas. 2015. *A Political Economy of American Hegemony: Buildups, Booms, and Busts*. Cambridge: Cambridge University Press.

Oatley, Thomas H. 1997. *Monetary politics: Exchange rate cooperation in the European Union*. Ann Arbor, MI: University of Michigan Press.

Oatley, Thomas, and Robert Gallantucci. 2019. "The Dollar and the Demand for Protection." *International Interactions* 45 (2): 267–88.

Olson, Mancur. 1965. *The Logic of Collective Action*, volume 124. Cambridge, MA: Harvard University Press.

Plunkert, Lois M. 1990. "The 1980's: a decade of job growth and industry shifts." *Monthly Lab. Rev.* 113: 3.

Polity Project. 2010. "Polity Project."

Rodrik, Dani. 2016. "Premature deindustrialization." *Journal of economic growth* 21 (1): 1–33.

Rose, A. K. 2013. "The march of an economic idea? Protectionism isn't counter-cyclic (anymore)." *Economic Policy* 28 (76): 569–612.

Rowthorn, Robert, and Ramana Ramaswamy. 1999. "Growth, trade, and deindustrialization." *IMF Staff papers* 46 (1): 18–41.

Schwartz, Joel. 1996. "Air pollution and hospital admissions for respiratory disease." *Epidemiology*: 20–28.

Stopford, John M., and Louis Turner. 1985. *Britain and the Multinationals*. Chichester, United Kingdom: Wiley and Sons.

Strange, Susan. 1979. "The management of surplus capacity: or how does theory stand up to protectionism 1970s style?" *International Organization* 33 (3): 303–34.

Timmer, M. P., E. Dietzenbacher, B. Los, R. Stehrer, and G. J. de Vries. 2015. "An Illustrated User Guide to the World Input–Output Database: the Case of Global Automotive Production." *Review of International Economics* 23: 575–605.

Vandenbussche, Hylke, and Maurizio Zanardi. 2008. "What explains the proliferation of antidumping laws?" *Economic Policy* 23 (53): 94–138.

Veer, Theresa, Annika Lorenz, and Knut Blind. 2016. "How open is too open? The mitigating role of appropriation mechanisms in R&D cooperation settings." *R&D Management* 46 (S3): 1113–28.

Wood, Adrian. 1995. *North-South trade, employment, and inequality: Changing fortunes in a skill-driven world*. Oxford: Oxford University Press on Demand.

World Bank. 2018. "World Development Indicators." https://databank.worldbank.org/reports.aspx?source=World-Development-Indicators.

Zanardi, Maurizio. 2004. "Anti-Dumping: What are the Numbers to Discuss at Doha?" *World Economy* 27 (3): 403–33.