

THE POLITICAL ECONOMY OF U.S. FOREIGN AID: AMERICAN LEGISLATORS AND THE DOMESTIC POLITICS OF AID

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Are there systematic political economy factors that shape preferences for foreign aid, a key component of American foreign policy? We analyze votes in the House of Representatives from 1979 to 2003 that would increase or decrease foreign aid by considering the political, economic, and ideological characteristics of legislators and their districts. To understand who supports and opposes foreign aid, we utilize theories of foreign economic policy preferences. By examining different types of aid policy, we show that domestic politics and especially the distributional consequences of economic aid can matter. The economic characteristics of a district and its left–right ideological predispositions influence support for aid in a systematic fashion over the nearly 25-year period. Stolper–Samuelson models along with political ideology can help explain legislators' preferences toward aid.

1. INTRODUCTION

GIVING FOREIGN aid to other countries has been a key tool of American economic statecraft since World War II (Baldwin, 1986). This instrument has been a primary way for the United States to engage other nations in pursuit of its foreign policy goals. Like other foreign policy tools, such as international trade or economic sanctions, however, aid creates winners and losers at home. Studies of other foreign policies, like trade, immigration, and sanctions, have identified the supporters and opponents of these policies in much detail (e.g. Hiscox, 2002; Martin, 1992; Rogowski, 1989; Scheve and Slaughter, 2001b). Few such empirical studies of the political economy of aid in donor countries exist (Fleck and Kilby, 2001). Most extant research on aid focuses instead on the characteristics of recipients to show indirectly that donor interests matter (e.g. Alesina and Dollar, 2000).

We advance the literature by identifying theoretically the winners and losers from aid giving in the donor country using theories of political economy and then we evaluate our expectations using new data. We focus on legislators in the U.S. House of Representatives who vote regularly on foreign aid bills. Since aid is paid for by taxes appropriated annually by Congress, preferences toward aid are continuously revealed. As with other

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issues, presidents have to create a legislative coalition to support their proposals for giving foreign aid. Legislators have the opportunity to voice their preferences regarding aid by voting on and offering amendments to the president's requests. Because Congress must approve foreign aid allocations every year, their votes – more than, say, public opinion polls – provide a powerful lens for understanding support and opposition to aid.

We focus on Congress, constituency interests, and foreign aid policy. Much of the literature on Congress suggests that legislators are rational actors who seek to maximize their chances of re-election (Fiorina, 1974; Mayhew, 1974; McCarty et al., 2006). Part of this literature argues that legislators are often quite free to pursue the goals that they want since interest groups are not well organized and publics are poorly informed and inactive (Bauer et al., 1972). Another part claims that interest groups and their competition dominate legislative behavior (Baumgartner and Leech, 1998; Truman, 1951). Others argue that presidents and party loyalty especially in foreign policy shape legislative behavior (Canes-Wrone, 2006; Edwards, 1989; Wildavsky, 1966). Finally, there is a literature that suggests that legislators are tightly bound by the preferences of their constituents, even if those constituents are neither well informed nor organized. The latter perspective suggests that legislators respond to such constituents' pressure because of anticipated reactions (Arnold, 1990; Bailey, 2001; Denzau and Munger, 1986). Fearing for their re-election, legislators anticipate the preferences of their constituents so that other groups cannot mobilize them. In this paper we are able to examine these alternative models of Congress.

Are there systematic determinants of legislators' support for foreign aid? Our null hypothesis is that no such relationship exists. If foreign aid does not have significant political and economic consequences for legislators and their constituencies, then we should see no relationship between support for aid and the characteristics of their districts. We examine numerous votes on five distinct types of foreign aid policy in the U.S. House of Representatives over approximately 25 years (1979–2003). Using political economy models of the distributional effects of foreign aid, we theorize about the groups and legislators who should support aid giving. As we shall argue, economic aid, which is the main form we focus on, has domestic political and economic effects that generate support and opposition to it from domestic groups, much as does international trade (e.g. Baldwin and McGee, 2000; Beaulieu and Magee, 2004; Hiscox, 2002; Ladewig, 2006; Magee et al., 1989). Foreign economic aid, like trade, is one part of an internationalist foreign policy that seeks to maintain a stable, open world economy; hence, groups that benefit from such openness tend to support aid, as Broz and Hawes (2006) argue with respect to international financial policy.

The existing literature suggests that political and economic factors in the donor country often affect aid flows significantly; many studies contrast the pressure generated by such donor interests with those of recipient needs

(e.g. Alesina and Dollar, 2000; Dudley and Montmarquette, 1976; Fleck and Kilby, 2001; Irwin, 2000; Murshed, 2004; O'Leary, 1967; Rieselbach, 1966; Therien and Noel, 2000). These existing studies infer such donor interests from the way in which aid is distributed to recipients; they do not directly show which domestic interests in the donor are engaged. We move beyond this literature using political economy theories to link legislators' foreign aid preferences to the characteristics of their constituencies. In addition, we contrast different types of aid votes to further examine the explanatory power of the political economy models. Depending on how strong their distributional consequences are, we expect the different forms of aid to generate different configurations of preferences.

We also examine the impact of ideology since preferences toward aid may well be driven by more than material interests. Scholars have argued that ideology can have an important impact on foreign policy (e.g. Lumsdaine, 1993). We focus on the left–right political distinction in ideas about the role of government in the economy and redistribution. Our argument combines economic interests and political ideology to explain preferences over aid in the U.S. We expect ideology to exert a variable impact depending on the type of aid involved.

Rejecting the null hypothesis, our data show that when distributional consequences are most salient, legislators' votes on aid respond to the material interests of their constituents, and to a lesser extent to organized interest groups. Ideology also has a systematic impact on support for aid. We show that for those types of aid where the economic and political consequences are least salient our results most resemble the null hypothesis. But in all votes on types of aid where the distributional consequences are salient, our models fit the data well. We thus provide support for Congressional theories which hold that unorganized constituent preferences can influence legislators through their anticipation of the negative electoral consequences of neglecting such preferences in a competitive political environment. Finally, our data show that the configuration of preferences regarding aid has been very stable over the past 25 years, despite many domestic and international changes. Below we present a theory of the political economy of aid and then develop a number of hypotheses derived from this theory.

2. THE DOMESTIC POLITICS OF FOREIGN AID: ECONOMIC INTERESTS AND IDEOLOGY

Unlike trade or immigration policy, a standard refrain about foreign aid is that it is a policy not supported by any constituency (e.g. Lancaster, 2007). This view of the domestic politics of aid implies that no stable group of legislators or voters exists in favor of aid. If true, it means that we should find no systematic relationship between factors relating to a legislator's

constituency and his vote on aid bills. This claim that support for aid is not related to any characteristics of a legislator or his constituency forms our null hypothesis, which is an important alternative in our study.

Why would any legislator support aid? It represents a transfer of wealth from domestic taxpayers and voters to foreigners who neither pay for it nor vote in the U.S. Are there systematic explanations for legislators' votes on aid? Legislators' foremost interest lies in being re-elected, which requires being responsive to those who help them get re-elected – i.e. to their constituents. The positions that legislators take on foreign aid, we argue, are at base no differently motivated than other issues. Legislators do not want to be seen as responsible for policies that hurt a majority of their voting constituents. Constituents may be unorganized and poorly informed; nevertheless, legislators have to attend to such diffuse interests to some extent (Arnold, 1990; Denzau and Munger, 1986). “Rival politicians, interest groups, the media, and the president have incentives to activate diffuse interests if representatives pay too little attention to these interests. Rational legislators forestall such attacks by serving these voters preemptively . . . [Legislative] candidates who ignore uninformed voters open the door for opponents to mobilize these voters. In order to avoid such a fate, candidates will take into account the opinions even of uninformed voters, thereby constraining their ability to serve special interests” (Bailey, 2001, pp. 46–47). Rational legislators anticipate this process and calculate the distributional effects of a policy on voting constituencies within their districts, taking positions that reflect these district interests even in foreign policy.

We thus argue that one can systemically explain legislators' votes on aid policy. The probability of voting in favor of foreign aid is affected by two factors primarily: the economic characteristics of a legislator's district, which reflect the interests of the constituents in aid, and the political ideologies of a legislator's constituents. We control for a number of other factors such as interest group contributions and presidential pressure.

2.1 A Political Economy View of Aid: Constituents' Economic Preferences

Foreign economic aid, like all other economic policies, has distributional consequences (Peltzman, 1984; Przeworski, 2009; Stigler, 1971). The U.S. gave over US\$20 billion in foreign development assistance in 2004, the most of any donor country. While a small fraction of American GDP, this amount was regularly close to, or even greater than, funding for other major budget items in American politics. In the 1990s, for instance, foreign aid claimed on average 0.5% of the U.S. government budget, while much talked about spending categories, like farm income support and higher education funding, took up roughly the same magnitude of spending (each at 0.9%) (GBO, 2007). Aid is not an insignificant part of American foreign policy. Nor is aid spending small compared with several major domestic policy areas.

Furthermore, many studies of economic aid point out that domestic interests within donor countries seem to have a significant impact on how much and where aid is delivered, as domestic groups presumptively gain from these flows (e.g. Alesina and Dollar, 2000; Dudley and Montmarquette, 1976; Fleck and Kilby, 2001; Irwin, 2000; Therien and Noel, 2000). Some studies show that aid and trade are positively correlated, while others even indicate that both tied and untied aid have a positive effect on a donor's exports to aid recipients (Arvin et al., 2000). Finally, roughly 70% of national elites sampled in the 1975, 1979, and 1982 Chicago Council on Foreign Relations (CCFR) surveys felt U.S. economic aid had positive effects on the U.S. economy (CCFR, 1975/1979/1982) (in later years this question was not asked). When the survey identified House members (in 1975 and 1982), over 75% of them felt that aid had a beneficial impact on the U.S. economy. In sum, aid seems both to have real economic effects and to be perceived to have such effects on the donor's political economy.

International economic policy may not directly engage voters, but it can have domestic distributional consequences that do affect voters' lives. We claim that legislators anticipate these influences and vote accordingly because of their desire for re-election. Legislators' views about the district-level consequences of aid matter. For instance, as one legislator noted about such district effects:

In addition to Alabama farmers, Alabama manufacturers and suppliers also benefit from the foreign aid programs administered by AID The amount for fiscal 1976 brings to \$76,593,756 the total value of AID financed products purchased in Alabama during the 8-year period – fiscal 1969 through 1976.

(Zablocki, 1977)

Former USAID director James Atwood made a similar set of points in testimony for Congress in 1996:

USAID has particular importance in expanding new markets for the U.S. economy. . . . Most of the growth in U.S. exports continues to come from countries in the developing world and countries in transition from state-dominated economies to free market economies This growth supported roughly 1.9 million jobs in the United States. That translates into over 4 million jobs for Americans. Developing countries are particularly good customers for our high-value exports

(Atwood, 1996)

Even former Treasury Secretary Robert Rubin extolled the virtues of aid from multilateral development banks (MDBs) for the U.S. economy:

The MDBs provide substantial benefits to the U.S. economy. Caterpillar of Peoria, Illinois estimates that it gets \$250 million each year from contracts

funded through the MDBs. These contracts help the economy in Illinois and have a ripple effect elsewhere through sub-contractors and suppliers. Other U.S. corporations also get major contracts from the MDBs

(Rubin, 1995)

How do we make sense of these statements by policy-makers? Two well-established theoretical models, the Heckscher–Ohlin and Stolper–Samuelson theorems, make predictions about who the winners and losers will be from international economic integration (Rogowski, 1989). Many scholars have shown that these theorems accurately predict congressional voting patterns and public opinion in other aspects of U.S. foreign policy, such as trade and immigration (e.g. Baldwin and McGee, 2000; Beaulieu, 2002a; Ladewig, 2006; Scheve and Slaughter, 2001a). As Broz and Hawes (2006, p. 376) note for international financial policy, “the inference is that members of Congress oppose (support) financial rescues because their constituents are harmed (gain) by economic globalization. International trade theory provides the basis for specific predictions As diffuse interests, we do not expect lobbying from these actors, but we do expect their interests to find expression in Congress by way of the electoral calculations of legislators.” We seek to extend these results to foreign aid because international aid flows are closely related to other international economic flows (Alesina and Dollar, 2000).¹

Are trade flows and aid flows similar to one another? One might argue that aid is unlike trade since markets are not the primary means for producing aid flows as they are for trade, implying that while trade may have distributive effects following factor endowment models like Stolper–Samuelson, aid will not.² This view seems incorrect. First, in theory aid is a pure transfer of capital from a rich country to a poor one. Hence, it should have the same factor content implications as trade flows from a developed country to a developing one. Capital, the abundant factor in the rich country, is being transferred to the poor one, in effect just like trade. However, in practice not all aid is given as capital; a large percentage of aid is tied, meaning that U.S. firms receive contracts to provide goods and services that are sent abroad as aid. It could be that these firms are chosen on a non-market basis; i.e. the goods sent abroad might not be ones in which the U.S. has a comparative advantage as in trade. But data suggest that this view is not correct either. Using our data and that on contracts for aid awarded to congressional districts in the 103rd and 104th Congresses collected by Fleck and Kilby (2001), we find that the value of aid contracts, the number of them, and the number of contractors per district are all higher in districts

¹An alternative model, Ricardo–Viner, focuses on export-oriented interests vs. import-competing groups. There is little theoretical literature that links this model to aid flows. Further, variables designed to tap this sectoral argument were never significant.

²Heckscher–Ohlin and Stolper–Samuelson models are contested even in explaining trade flows (e.g. Treffer, 1993).

where capital endowments are higher (see supporting information, Table S1). Even tied aid then is going to districts where U.S. firms have comparative advantages, i.e. those employing higher levels of human and physical capital.³ All of this suggests strongly that aid flows and trade flows have similar factor content implications.

Following standard economic models, we detail the distributive consequences of aid for groups within donor countries (e.g. Bhagwati et al., 1983, 1984; Brakman and Marrewijk, 1998; Mayer and Raimondos-Møller, 2003). In unilateral international transfers, the donor transfers a part of its capital to the recipient country. There are two effects associated with this international transfer: a direct income effect (the transfer of purchasing power usually financed by taxes) and a change in the terms of trade. The direct income effect means the donor must reduce its spending, while the recipient can increase his. Any difference in spending patterns between the donor and recipient then leads to terms-of-trade effects because spending patterns are usually quite different between rich donors and poor recipients.

Individual preferences for foreign aid in the donor country depend on their factor ownership and these terms-of-trade effects. Because aid affects international terms of trade, it in turn changes the distribution of income among factor owners in the donor country. Since individuals within the donor have different endowments of factors (e.g. different levels of labor and capital), their preferences depend on how the terms-of-trade effect interacts with their endowments. The magnitude of this income distribution effect depends on the size of the differences in propensities to consume between donor and recipient country and on the domestic distribution of factor ownership in the donor.

Using a standard Heckscher–Ohlin model, scholars have shown that economic aid benefits certain groups within the donor country, hence making donor governments more willing to provide aid (e.g. Brakman and Marrewijk, 1998; Mayer and Raimondos-Møller, 1999). If, as is likely, the distribution of factor ownership varies among individuals in the donor, then foreign aid can have different impacts on different groups' welfare. Some will gain from the country's giving of foreign aid; in particular, those who are relatively well endowed with the rich country's abundant factor – capital – will benefit when capital or capital-intensive goods and services are exported as foreign aid. Since aid's indirect effect is to raise the price of the capital-intensive good, then relatively abundant owners of capital in the donor should benefit from and thus favor aid.

The key is whether the giving of aid can benefit some segments of the donor's domestic population. Each individual in the donor is affected by

³We also conducted a similar analysis with data for 2001 where we took a subset of contractors and mapped them to Congressional districts. Among districts with contractors, districts with higher skill levels received more aid. See Table S1.

foreign aid in three different ways. First, each one has to pay higher taxes to finance the aid; this is the negative direct effect of aid. Second, each one pays different prices as a consumer whenever the transfer leads to a terms-of-trade effect. Third, due to the terms-of-trade effect, each individual receives a different amount of factor income. As Mayer and Raimondos-Møller (2003) note, a necessary condition for foreign aid to increase the welfare of a person in the donor is that the transfer raises their income. An increase in a person's income will occur if the recipient country's propensity to consume exceeds the donor's for those goods that use relatively intensively the factor which that person owns relatively more of than the average person. For example, a transfer will increase a person's income if the recipient country has a higher propensity to consume the capital-intensive good than the donor does and the person's capital ownership ratio exceeds that of the average individual in the donor.

Since poor recipient countries have a higher marginal propensity to consume certain goods, such as capital-intensive imports, than rich donor countries (Younas, 2008), a transfer will raise the world prices of these goods. Then individuals in the donor country whose factors of production are used intensively in the production of these goods (say, capital-intensive equipment manufacturers) have incentives to favor foreign aid, as the Stolper–Samuelson theorem would anticipate. Similarly, the incomes of people with factors that are used intensively in other sectors (in which the recipient has a lower propensity to consume) will fall. Thus, while all factor owners in the donor may pay more taxes to finance foreign aid, the factor owners benefiting from the terms-of-trade effects receive extra gains at the cost of factor owners that are losing from them. As Younas (2008, p. 662) concludes, “donor nations’ motivation for providing aid also arises from their interest in acquiring a larger share of the recipient nations’ imports. The economics of aid, therefore, constitutes a part of donor nations’ commercial strategy to secure larger trade benefits . . . The economic benefits in terms of [aid] are largest when recipient countries import goods in which donor countries have a comparative advantage in production. Since all donor nations are developed OECD countries, they tend to have a comparative advantage in the production of capital goods. Since capital goods constitute a significantly larger share (value) of manufacturing imports [for recipient countries], donors seem to find their economic interest in encouraging their imports through aid.”

For economic aid, the data we have seem to support the Stolper–Samuelson assumptions. Almost all U.S. aid is given to low- and middle-income countries, and U.S. exports to these countries tend to be concentrated on capital-intensive goods. Data we have collected from COMTRADE and the World Bank's World Development Indicators suggest that poor recipient countries' marginal propensities to consume capital-intensive imports is quite high; for every additional dollar of income in a recipient country,

they tend to purchase US\$0.16 more of capital-intensive goods, vs. US\$0.01 additional of labor-intensive goods and US\$0.08 additional of land-intensive products (see Table S1). The link between aid flows and capital exports by donor countries to recipient ones has been noted in the literature as well. As Younas (2008, p. 672) points out, “a substantially larger amount of bilateral aid per capita is provided to the recipients who import capital goods, while imports by other individual category groups have no significant effects. Given that developed donor nations are major producers and exporters of capital goods, this result at least partially supports their trade benefits motive.” This implies that different marginal propensities to consume between the U.S. and its economic aid recipients exist and thus that capital vs. labor endowments may drive the distributional effects in donor countries.

Thus, there will be a clear distributional effect of foreign economic aid in the donor. The main conclusion of the distributional models of aid, using the Heckscher–Ohlin and Stolper–Samuelson framework, is that owners of capital in donor countries tend to gain from aid and thus are more likely to support giving aid. On the other hand, owners of relatively unskilled labor in the donor are likely to lose from aid, given the terms-of-trade effects, and thus should be more likely to oppose it. For economic aid, we expect to see the cleavages between labor and capital over aid policy as predicted by the Stolper–Samuelson theorem.

These types of distributional consequences should be most apparent for economic aid in contrast to other forms of aid, such as agricultural or military aid. That is, we expect the distinction in preferences between capital and labor to be most evident for economic aid, in which capital or capital-intensive goods and services are shipped abroad to poor recipient countries. For agricultural aid where American farm goods are shipped abroad, we expect the particular interests engaged here – namely, agricultural producing groups and districts – to have strong preferences for this form of aid. For military aid where the U.S. is transferring arms or military expertise to poor countries, we anticipate the fewest direct distributional consequences and hence the weakest relationship between district economic characteristics and legislative voting. Factor endowments are not central to military aid; rather foreign policy priorities are likely to be more powerful.

In our research on what legislators said about military aid and in analyses by the *Congressional Quarterly* of military aid legislation, its domestic economic consequences were rarely, if ever, discussed. Unlike economic aid, where Treasury Secretaries repeatedly extolled the positive consequences of aid for the U.S. economy, we did not find this pattern in the documentary evidence for military aid. Geopolitical concerns were much more salient for military aid. This may in part reflect a different channel of lobbying for military aid, where there is some evidence that military contractors directly lobby the Pentagon and have a smaller impact on the legislature (Goss, 1972; LeLoup, 2008). In sum, where the distributional consequences of aid among

different factors of production are significant, we expect our political economy model to perform well. In areas where the distributional consequences are less evident, we do not expect the model to perform as well. If we find that our endowment variables explained military aid just as well as they did economic aid, we might question whether these variables are really measuring such endowments. By looking at different forms of aid with distinct distributional consequences then, we can evaluate our claims more carefully.

2.2 *Ideology*

A long debate has occurred over the relative role of ideology and interests in legislative voting (e.g. Kalt and Zupan, 1993). It is important to try to distinguish these two factors, even if both are important for legislators. The view that ideology shapes foreign policy, and aid policy as well, is well developed (e.g. Cronin and Fordham, 1999; Goldstein and Keohane, 1993; Krasner, 1978). As Lumsdaine (1993, p. 29) has claimed, “foreign aid cannot be explained on the basis of the economic and political interests of the donor countries alone, and any satisfactory explanation must give a central place to the influence of humanitarian and egalitarian convictions upon aid donors.”

Ideology is harder to define than economic interests. There are a number of different forms of ideology, or set of beliefs, one could look at to explore the role of ideas (Goldstein and Keohane, 1993; Katzenstein, 1996; Lumsdaine, 1993). We focus on one set of beliefs, traditional left–right political ideology.

The left–right political spectrum often identifies the left with beliefs in the importance of government intervention in the economy, especially to deal with redistribution of wealth to the poor (McCarty et al., 2006). The right is associated with beliefs about the value of individual effort and of the market above all as the proper means of wealth distribution; government intervention is seen as inefficient and ineffective. Because foreign aid involves taxation and redistribution by the government, ideologies that are more market friendly – usually associated with conservative ideals – will be less supportive of foreign aid. Given these beliefs we expect individuals holding more left-leaning values to be more favorable to aid; on the other hand, those holding right-leaning values should be more likely to oppose aid as a form of government intervention to redistribute wealth globally (Lumsdaine, 1993; Therien, 2002); although in contrast see Goldstein and Moss (2005). We assume that legislators know the distribution of ideological preferences in their district and take this into account when voting on aid (as well as on other economic policies).

2.3 *Hypotheses*

From the above theories, we derive four hypotheses. In evaluating these, we seek to show that legislators decide how to vote on foreign aid as they do on

other international economic policies: they respond to the economic interests and ideological predispositions of their constituents.

Political economic interests:

Hypothesis 1. *Stolper–Samuelson:* Representatives of districts with lower (higher) levels of human or physical capital will be more likely to oppose (support) economic foreign aid.

Hypothesis 2. Hypothesis 1 is more likely to hold if voting concerns economic aid and less likely to hold for military aid, agricultural aid, and omnibus foreign relations bills (i.e. “final passage” bills that include aid among many other topics).

Hypothesis 3. For agricultural aid, a district’s relative endowment of productive land should be a salient predictor of legislative support.

Ideological influences:

Hypothesis 4. *Left/right:* Legislators from districts with more right-wing ideological beliefs will be more likely to oppose foreign aid, while legislators from districts with more left-wing beliefs will be more likely to support foreign aid.

3. EMPIRICAL ANALYSIS

We seek to explain legislators’ votes on foreign aid bills from 1979 to 2004 (96th–108th Congress). Can we reject the null hypothesis that no set of systematic political factors explains support for economic aid? We analyze different types of foreign aid votes in order to show that our models accurately predict preferences. As the domestic distributional consequences of aid diminish, we expect our political economy model to perform less well.

Our main set of votes is what we call “high-focus economic aid” votes. These votes are the “cleanest” measure we have of legislators’ preferences on foreign economic aid since a vote for or against captures only a member’s position on increasing U.S. aid. These votes all concern *economic aid* amendments, which sought a general increase or decrease in foreign aid appropriations. These votes had clear financial consequences for economic aid distributed through key foreign aid programs, such as the main U.S. bilateral aid agency, USAID, or key multilateral organizations.⁴ And their sole content was to affect such aid flows; they did not involve other goals and policies. Our criteria for choosing these votes were that they focused directly

⁴Examples of these votes include a 96th Congress amendment vote that sought to cut funding for the World Bank’s International Bank for Reconstruction and Development from US\$308,000,000 to US\$163,079,165 or 104th Congress vote that sought to decrease the USAID budget by US\$69 million.

on aid flows and did not concern other policy areas. These votes satisfied our four main criteria: (1) they had unambiguous financial effects on aid flows, (2) they were not related to aid directed at a particular country, (3) they did not deal with other key issues such as AIDS, labor rights, or abortion, and (4) they did not concern complicated procedural issues. We expect these votes to exhibit the most important distributional effects.

The second set of votes includes economic aid votes that failed one of the previous criteria; hence, we called them “low-focus aid” votes. These votes involved foreign aid flows, but they also concerned other procedural, geostrategic, or policy areas. As such these votes give us a less clean indicator of a member’s support for foreign economic aid.⁵ We expect that these votes will have fewer distributional consequences than we anticipate for our high-focus economic aid votes. We include these votes to demonstrate the robustness of our findings. We expect them to support our hypotheses but more weakly than the high-focus votes.

The third set of votes involve military aid. These votes dealt with explicit transfer of military aid to other countries, which could take the form of military hardware (e.g. missiles for Saudi Arabia through the Foreign Military Financing program) or logistical and training assistance (e.g. through the International Military Education and Training program). These votes should not have direct distributional consequences along the lines of Stolper–Samuelson.

The fourth set of votes was for the main U.S. agricultural aid program administered under Public Law 480. While food aid has been quite political, roll call votes were relatively rare. These votes should engage agricultural interests, but not necessarily our broader political economy interests.

The last set of votes involved “final passage” votes for the legislative vehicle used to pass annual foreign aid legislation through the U.S. House, the Foreign Operations and Export Financing and Related Programs bill. This bill contains an enormous range of items from funding the State Department and its embassies to funds for the Export–Import Bank to foreign aid. Because of their broad coverage of many issues, these votes should evince much less salient distributional consequences compared with our high-focus economic votes.

Instead of picking one or a handful of votes as many previous studies on Congressional voting have done, our analysis includes the entire population of votes that meet our criteria. Furthermore, we make use of the different implications of these five distinct types of aid votes to show that our models are addressing the distributional and ideological impacts of aid. Thus our model should perform best when analyzing highly focused economic aid

⁵Examples of these votes were a 96th Congress vote that decreased foreign aid authorizations but included specific provisions dealing with aid to Panama or a 100th Congress vote that dealt with aid to the World Bank’s Global Environmental Facility.

votes, next best when explaining low-focus economic aid votes, and least well when confronted with military aid votes, which have few of the distributional consequences of economic aid. Finding that the political economic model does not perform well with military aid, for instance, is important for showing that this model is actually capturing differences in capital and labor endowments.

3.1 *Independent Variables*

Political Economic Interests. In order to examine Stolper–Samuelson effects, we must take into account the distribution of factors of production among districts – in particular, the distribution of capital and labor in the economy. Most studies use a measure of the average skill level of workers to proxy for the level of human capital in a district. Following Broz and others (Beaulieu, 2002b), we measure this as the percentage of working age persons in a district employed in executive, managerial, administrative, and professional occupations, *%HighSkill*. These employment classes isolate workers with skill sets that are above average, indicating relatively high levels of human capital in the district. We also recreated and extended an alternative measure constructed by Ladewig that measures the value of physical, fixed capital in manufacturing industries in a district, *lnCapitalEstab* and *lnLaborManuf*. Use of both sets of measures increases our confidence that we are measuring capital endowments, whether human or physical, rather than other factors such as education or ideology. We expect representatives from higher skill districts (and those with higher physical capital) to be more favorable to economic aid. This variable, on the other hand, should have no relationship to military aid or agricultural aid.

For farm aid, the economic interest variable that should matter is the district's relative endowment of productive land. To tap agricultural interests, we measure the district's total value of agricultural output using U.S. Department of Agriculture data, *MktValAgProd*. Districts with higher agricultural output should favor agricultural aid more than districts with lower agricultural output; we do not expect this variable to perform well in the votes on other forms of aid.

Ideological Influences. Legislators come from districts with different ideological orientations. We measure the left–right ideological orientation of a district as the percentage of the district's two-party vote received by the Republican candidate in the previous presidential election, *PrezVoteRepub%*. Districts that are less inclined to vote Republican have a more left-leaning ideology and should be more favorable to economic aid; they may also support agricultural aid. We have no expectation of how this form of ideology should affect support for military aid. Alternatively, we also measure each legislator's specific ideology by using DW-Nominate

scores, *DW-NOM*. These scores indicate how the overall voting record of a legislator on a left to right scale compares with other legislators. However, serious methodological problems arise when including these measures of ideology in regressions with the types of independent (district economic variables) and dependent (votes) variables we use (Fowler, 1982; Jackson and Kingdon, 1992; Peltzman, 1984). Nevertheless, our substantive results are robust to the inclusion of these variables.⁶

3.2 Control Variables

In addition to our main variables, we include numerous control variables, which prior research identifies as important factors influencing legislators' decisions on aid, in order to estimate the importance of the factors in which we are interested.

Influence of President. The executive branch employs aid as a part of its foreign policy and so issues the initial foreign aid budget to Congress. For some scholars, presidents have much more influence over foreign policy than they do on domestic policy, and more influence than the public or Congress (Canes-Wrone et al., 2008; Howell and Pevehouse, 2007). The preferences of the executive may influence aid policy as the president invokes national security or his greater knowledge of foreign affairs to elicit support from legislators. Party dynamics may also affect legislative voting as presidents strongly lobby members of their own party to support their foreign policy goals. To control for such presidential influence, we created a presidential support variable, coded as 1 if the president was of the legislator's same party and the president supported aid, and 0 otherwise (Rohde, 2004). If presidents exert influence, this variable, *PrezSupport*, should be positive. We also explored more nuanced versions of this variable, but our substantive results did not change.⁷

Economic Health. A factor repeatedly cited by representatives and scholars discussing aid is that foreign aid takes away money from domestic programs designed to help those suffering during difficult economic times. Meernik and Oldmixon (2004) show that congressional support for internationalism falls when domestic economic conditions deteriorate. Two commonly used measures of district economic health are median income and unemployment. We expect those with higher incomes (*LogMdnIncm*) to be more sympathetic to foreign aid because of the declining marginal utility of income. Likewise,

⁶We also estimated models with a dichotomous variable measuring whether the legislator was a Republican or Democrat. Our results do not change.

⁷We also considered dichotomous variables produced by (1) the president's position (support aid, oppose aid, no position) and (2) whether the legislator was of the same party as the president. Unfortunately, these variables and vote-fixed effects are often collinear.

districts with lower levels of unemployment will be less adverse to paying for foreign aid, and so our measures for district unemployment (*Unemploy%*) and for the state-level change in unemployment from two years previous (*UnempChg_2yr*) should be negative.

Social Interests. Other demographic aspects of a legislator's district that make voters more sympathetic to the wellbeing of foreigners may also affect his vote. Prior research notes the importance of lobbies for foreign-born populations residing in Congressional districts (Fleck and Kilby, 2001; Shain, 1994). The more foreign born there are in a district, *%ForBorn*, the more support we should see for foreign aid. In addition, since substantial U.S. aid goes to Africa, the percentage of African-American residents in a district, *%Afr-Am*, may make the legislator more sympathetic to the needs of foreigners and thus more supportive of aid (Congressional Black Caucus, 1993; Copson, 2003). We also include a measure of religion in the district, which is the percentage of a district's religious adherents that fall into several prominent religious categorizations: Mainline Protestant, Jewish, Catholic, and Evangelical.

Organized Economic Interests. It is important to control for the effects that organized interest groups might have on legislators. We thus examine the impact of three sets of organized interest groups and their campaign contributions on legislators' support for aid: money-centered banks, corporate political action committees (PACs), and organized labor PACs. Following Broz (2005), we hypothesize that private financial institutions serving international credit markets – so-called money-centered banks – favor foreign aid since they have above-average exposure to international credit markets. These money-centered banks are part of the internationalist coalition that gains from economic openness and hence we expect them to be supporters of aid as a further means of maintaining a stable and open world economy (Broz, 2005).

We measure such bank contributions by computing the sum of campaign contributions from banks classified as “money-centered banks” by the Federal Financial Institutions Examinations Council, *BankPAC%*. We also measure the influence of capital with a similar measure of campaign contributions classified by the Federal Election Commission as being from “corporate” sources, *CorpPAC%*. All campaign contributions are calculated as a percentage of total PAC contributions (Roscoe and Jenkins, 2005) and taken from the electoral cycle *preceding* the Congress where we observe an actual vote.

Next, we examine the influence of organized labor and its campaign contributions on legislators' votes on foreign aid. Several other studies of foreign aid have noted the role of organized labor in foreign aid, but none have systematically analyzed why they would support or oppose aid (Morrissey, 1996; O'Leary, 1967). Organized labor might support aid for two reasons. First, organized labor has traditionally been associated with a

left-leaning ideological position, and this orientation may drive their support. Second, organized labor benefits from foreign aid since it receives some foreign aid money for overseas activities (Shorrock, 2005; Sweeney, 2003).⁸ As scholars have noted, organized labor has always been a major player in the U.S. foreign aid system since the Marshall Plan and a vocal advocate (Bandow, 1995; Biemiller, 1967; Hero and Starr, 1970; Wala, 1986). Organized labor has also benefited directly from USAID funding of labor organization programs overseas and from mandatory shipments of food aid on unionized ships. We examine the influence of labor using aggregate campaign contributions by labor organizations, *LabPAC*%.

Finally, to control for any unobserved regional heterogeneity, we include a set of dummy variables to differentiate between the West, South, Midwest, and Northeast.

4. RESULTS OF THE EMPIRICAL ANALYSIS

We analyze legislative voting by using both panel and individual regression models. Our dependent variable is dichotomous, with a 1 indicating a vote in favor of foreign aid. Our data are in panel format with the legislator vote as the unit of analysis. We estimate a series of probit models for each type of foreign aid. Our model specification includes vote-fixed effects to control for any unmodeled heterogeneity across votes and differences in the yeas–nays margin across votes. Here we present results from a marginal effects specification (“population averaged”) (Neuhaus et al., 1991), which uses a GEE estimator with a probit link and an exchangeable within group correlation structure. Thus, the slope coefficients indicate the influence on a population of legislators, not individual legislators per se; put differently, they tell us the average impact of a variable on an average legislator’s probability of voting in favor of aid. Heterogeneity across legislators is accounted for by calculating robust standard errors. Our results do not change if we use a random-effects specification, which relaxes the assumption that the intercept for particular legislators is identical across votes. Because of the relatively small number of observations per legislator, we do not use legislator-fixed effects. The panel specification means that we are combining votes within and across Congressional sessions, which allows us to compactly analyze our data. In our robustness checks below, we show that running separate probit regressions for each vote yields largely identical conclusions.

Table 1 presents results from our panel model for our main high-focus aid votes using a wide variety of model specifications. Table 2 reports results for a narrower range of models for the other foreign aid categories. The results from each of these tables enable us to reject our null hypothesis that no systematic factors account for a legislator’s support for aid. However,

⁸In 2001 the AFL-CIO’s Solidarity Center had US\$70 million in contracts to USAID.

TABLE 1 HIGH-FOCUS ECONOMIC AID VOTES

	AM1	AM2	AM3	AM4	AM5	AM6	AM7	AM8	AM9	AM10
<i>%HighSkill</i>	1.39** [0.49]	3.32** [0.53]	5.03** [0.57]	4.69** [0.58]		3.28** [0.86]	3.75** [0.91]	3.51** [0.88]	3.48** [0.91]	3.19** [0.88]
<i>Ln CapitalEstab</i>					0.34* [0.13]					
<i>Ln LaborManuf</i>					-0.23** [0.09]					
<i>PrezVoteRepubl%</i>		-3.42** [0.31]			-3.00** [0.30]	-2.23** [0.42]		-2.13** [0.42]	-2.81** [0.16]	-1.96** [0.43]
<i>DW-NOM</i>			-2.80** [0.11]	-2.77** [0.11]			-2.80** [0.16]			
<i>PrezSupport</i>						0.07 [0.06]	0.02 [0.08]	0.08 [0.06]	0.02 [0.08]	0.07 [0.06]
<i>West</i>				-0.04 [0.09]	-0.35** [0.10]		-0.02 [0.10]	-0.11 [0.11]	-0.07 [0.13]	-0.02 [0.14]
<i>Midwest</i>				-0.01 [0.10]	-0.36** [0.09]		0.06 [0.10]	-0.04 [0.11]	0.10 [0.11]	0.07 [0.12]
<i>South</i>				-0.29** [0.08]	-0.57** [0.09]		-0.29** [0.10]	-0.28** [0.10]	-0.08 [0.13]	-0.01 [0.13]
<i>BankPAC%</i>						4.69** [1.60]	8.23** [1.96]	5.16** [1.61]	8.12** [2.06]	5.02** [1.66]
<i>CorpPAC%</i>						0.23 [0.26]	0.53* [0.27]	0.28 [0.26]	0.54* [0.27]	0.27 [0.26]
<i>LabPAC%</i>						2.19** [0.21]	0.09 [0.24]	2.17** [0.21]	0.02 [0.24]	2.15** [0.22]
<i>Unemploy%</i>						3.11 [2.05]	-1.52 [2.30]	1.70 [2.16]	-1.74 [2.41]	1.26 [2.28]
<i>UnempChg_2yr</i>						0.06* [0.03]	0.05 [0.03]	0.05+ [0.03]	0.07* [0.03]	0.06* [0.03]

<i>LogMdnInc</i>	0.14	0.14	-0.10	0.07	-0.19
	[0.21]	[0.24]	[0.22]	[0.23]	[0.22]
<i>%ForBorn</i>	1.89**	1.70**	1.95**	1.15*	1.32*
	[0.54]	[0.50]	[0.55]	[0.57]	[0.59]
<i>%Afr-Am</i>	0.53	0.50	0.83*	0.57+	0.96*
	[0.35]	[0.31]	[0.38]	[0.33]	[0.39]
<i>MktValAgProd</i>	0.47	-3.12	-0.34	2.66	3.43
	[5.07]	[4.82]	[5.11]	[5.10]	[5.47]
<i>%Catholic</i>				-0.15	0.48
				[0.33]	[0.34]
<i>%Jewish</i>				-0.55	-0.06
				[1.34]	[1.34]
<i>%Mainline</i>				-0.57	-0.45
				[0.82]	[0.78]
<i>%Evangelical</i>				-1.40**	-0.93*
				[0.40]	[0.37]
Constant	-2.53	-3.33	-0.05	-2.29	0.87
	[2.12]	[2.34]	[2.26]	[2.36]	[2.24]
Observations	5,049	5,048	5,049	5,048	5,049

Notes: Standard errors are in brackets. All panel models estimated with the xtprobit command in STATA 9.0 with population-average effects, robust standard errors, and vote-fixed effects (omitted).
 + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

TABLE 2. LOW-FOCUS ECONOMIC AID, FINAL PASSAGE, FOOD AID, AND MILITARY AID VOTES

	Low focus	Low focus	Final passage	Final passage	Food aid	Food aid	Food aid	Military aid	Military aid
<i>%HighSkill</i>	1.635 [1.008]	1.808* [0.898]	1.496+ [0.833]	1.326 [0.869]	0.904 [1.137]	1.026 [1.154]	1.026 [1.154]	-0.560 [0.602]	-0.453 [0.564]
<i>PrezVoteRepub%</i>	-2.253** [0.435]	-2.638** [0.163]	-0.480 [0.344]	-0.837** [0.134]	-0.720 [0.513]	-1.090** [0.209]	-1.090** [0.209]	1.243** [0.282]	0.596** [0.0871]
<i>DW-NOM</i>	-0.0871 [0.154]	-0.284* [0.137]	0.0581 [0.0744]	0.0367 [0.0764]	0.774** [0.176]	0.347+ [0.204]	0.347+ [0.204]	1.043** [0.0879]	0.994** [0.0876]
<i>BankPAC%</i>	4.689** [1.617]	4.529** [1.613]	0.0215 [0.998]	-0.0599 [0.982]	-1.295 [2.011]	-2.103 [1.921]	-2.103 [1.921]	0.822 [0.832]	0.878 [0.843]
<i>CorpPAC%</i>	-0.393 [0.298]	-0.152 [0.273]	-0.273 [0.199]	-0.266 [0.195]	0.345 [0.407]	0.481 [0.413]	0.481 [0.413]	1.088** [0.230]	1.155** [0.236]
<i>LabPAC%</i>	2.902** [0.259]	0.462+ [0.261]	0.535** [0.168]	-0.177 [0.203]	0.742* [0.308]	-0.283 [0.355]	-0.283 [0.355]	-0.220 [0.165]	0.339+ [0.196]
<i>Unemploy%</i>	0.573 [2.137]	-0.155 [2.141]	2.554 [1.584]	2.638 [1.669]	1.667 [2.403]	2.154 [2.327]	2.154 [2.327]	-1.929 [1.435]	-2.634+ [1.400]
<i>UnempChg_2yr</i>	0.00502 [0.0433]	-0.00726 [0.0422]	0.0306 [0.0250]	0.0357 [0.0260]	0.0262 [0.0518]	0.0309 [0.0538]	0.0309 [0.0538]	0.00199 [0.0309]	-0.00371 [0.0311]
<i>LogMdnInc</i>	0.224 [0.263]	0.532* [0.246]	0.538* [0.243]	0.676** [0.253]	-0.0649 [0.308]	0.0238 [0.309]	0.0238 [0.309]	-0.357* [0.170]	-0.405* [0.162]
<i>%ForBorn</i>	2.296** [0.585]	1.355* [0.526]	1.432* [0.607]	1.093+ [0.617]	0.706 [0.772]	0.433 [0.679]	0.433 [0.679]	-0.264 [0.268]	-0.267 [0.253]
<i>%Afr-Am</i>	0.490 [0.387]	-0.00290 [0.316]	0.0452 [0.281]	-0.206 [0.274]	0.412 [0.448]	0.212 [0.398]	0.212 [0.398]	0.00537 [0.194]	-0.101 [0.174]
<i>MktValAgProd</i>	1.897 [4.906]	1.378 [4.713]	-9.215* [4.619]	-8.808+ [4.816]	24.60** [9.184]	26.47** [9.592]	26.47** [9.592]	-8.697* [3.745]	-7.204* [3.671]
Constant	-1.815 [2.648]	-6.819** [2.491]	-5.620* [2.438]	-6.846** [2.577]	1.150 [3.134]	0.563 [3.128]	0.563 [3.128]	1.688 [1.706]	2.771+ [1.650]
Observations	2,769	2,767	7,244	7,234	1,565	1,563	1,563	4,376	4,376

Notes: Panel probit with population average effects and vote-fixed effects (omitted).

Standard errors are in brackets.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

the results of all of our analyses show interesting differences across types of foreign aid voting. These results across different forms of aid also tend to bolster our argument. In votes where distributional consequences are more likely to appear, we find that the relative factor endowments variables matter. In votes where such distributional consequences are weak or more diffuse, such as final passage votes or military aid, we do not find any significant relationships with our endowment variables. And in the case of agricultural aid, the endowment variable that matters is less capital vs. labor and more the relative endowments of productive land, which is also expected given the theory we use.

4.1 *Political Economy Interests: Capital vs. Labor*

We evaluate the Stolper–Samuelson theorem, which implies that districts with higher human capital as measured by skill levels will be more likely to support economic foreign aid, but will be less associated with support for other types of foreign aid. Using the district's percentage of employment in high-skill jobs (*%HighSkill*) as a proxy for the relative abundance of capital in the region, we find a strong positive and significant relationship for our high-focus votes, as seen in Table 1. Legislators with districts that are abundant in labor and low-skill workers – districts that will bear the brunt of the terms-of-trade effects generated by aid to developing countries – opposed this type of foreign aid.

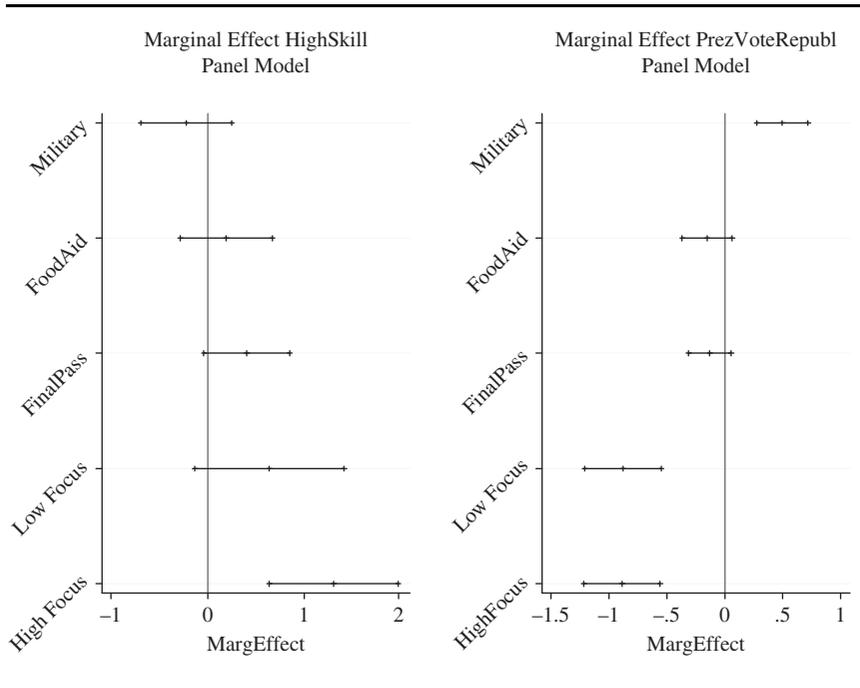
The effect of this variable, however, becomes smaller and smaller for the low-focus economic aid votes, final passage, food aid, and military aid votes. Thus, the empirical results support the theoretical prediction that this variable should have a strong effect on aid votes with distributional consequences for labor vs. capital, a weaker effect on other aid votes with fewer distributional consequences, and no effect in still other areas where such distributional consequence are not apparent. If our measures of relative endowments were capturing other factors such as education or cosmopolitanism, we would not expect to see this type of differentiation across types of aid. The differences we uncover suggest that the distributional consequences of economic aid for capital and labor are driving our results.

To illustrate the magnitude of these differences, we calculated marginal and substantive effects using model 6 from Table 1 for each type of aid. We present the substantive effect calculations in Table 3 and marginal effects calculations in Table 4. In each case, as we expected, the effect of this measure of relative capital endowments is highest in the high-focus aid votes, has a moderate effect in the low-focus and final passage aid votes, and a negligible effect in the food aid and military aid votes. A *one*-standard-deviation change from the mean of our skill variable leads to a nearly 8% change in the probability of supporting economic aid. For our high-focus votes this substantive effect is in line with that found in other issue areas

TABLE 3 PANEL MODEL SUBSTANTIVE IMPACTS, CHANGE IN PROBABILITY OF PRO-AID VOTE

Vote type	%HighSkill	PrezVoteRepubl%
High-focus economic aid	8.34	- 10.03
Low-focus economic aid	3.15	- 10.79
Final passage aid	3.96	- 2.35
Food aid	1.37	- 2.57
Military aid	- 0.51	2.70

TABLE 4



(Broz, 2005). For low-focus and final passage votes we observe between a 3% and 4% change, for food aid a 1.3% change, and for military aid a -0.5% change.

We also reconstructed and extended the measures of the value of physical, fixed capital in manufacturing industries and manufacturing employment per district used by Ladewig (2006) and find identical results. For high-focus economic aid votes, as expected, the measure of capital endowments is positive and significant, while the total manufacturing employment is negative

and significant, with substantive impacts of 6.2% and -3.7% . This measure avoids potential problems associated with the skill-level variable; it suggests that our results on the skill variable are measuring capital endowments and not proxying for cosmopolitanism or education. Predictions generated by political economy models are important in systematically explaining legislator's votes on aid, even holding many other factors constant. We thus find strong support for one of our main hypotheses about the influence of the political economic interests of districts.

Despite the fact that we get similar results from the capital and labor endowment measures proposed by Ladewig, it might still be argued that our high-skill variable proxies other causal mechanisms, such as cosmopolitanism. Alternative claims about the possible role of our endowment measures do not seem to explain the differences we observe across the different types of aid. A cosmopolitan interpretation of our skill measure would suggest that legislators with high cosmopolitan ideals (as proxied by their district skill levels) would favor all of the types of aid we consider. But we do not observe this pattern. Instead we see that as the distributional consequences of the different types of aid diminish, the factor-based argument we advance loses explanatory power, as we predict.⁹

These results are consistent with analysis of public opinion on foreign aid. Milner and Tingley (2008) analyze World Values Surveys across a range of OECD countries. Estimating models similar to those used in the trade literature, they find that individual capital endowments correlate positively and strongly with support for foreign aid. Chong and Gradstein (2008) present similar results using the World Values Survey. In sum, the extant public opinion work on aid is consistent with the above results on legislative voting, again bolstering our claims.

4.2 *Liberal vs. Conservative Ideology*

The ideological orientation of a district (*PrezVoteRepub%*) has a strong impact on how legislators vote on foreign aid. For economic aid and final passage votes, districts with high percentages of the presidential vote going to the Republican candidate or legislators with more conservative DW-Nominate scores were significantly more likely to oppose foreign aid. For food aid, our district-level measure was negative but insignificant, although our measure of legislator ideology was significantly negative (*DW-NOM*) for

⁹Despite our robustness checks and the range of studies that operationalize capital endowments as we do, arguments that districts with higher skill levels might also be more "cosmopolitan" and hence open to international engagement cannot be ruled out. One way to address this is to include a control for education. Controlling for the percentage of adults that have a college degree, our *%HighSkill* variable is still positive and significant for high-focus economic aid votes. We also collected data on magazine subscriptions for magazines with a cosmopolitan orientation for a few years. Controlling for magazine readership, our results did not change (see Table S1).

these votes. For military aid, we found the opposite relationship. More conservative districts are more likely to support military aid. As with the skill variable, the effect of ideology is not the same across the different types of foreign aid.¹⁰

The substantive effect of district ideology was highest for the low- and high-focus economic aid votes, moderate for the military aid votes, and negligible for the final passage and food aid votes. This also corresponds to what we might expect from the standard interpretation of liberal–conservative ideology as expressing preferences about government involvement in redistribution. It is not the case, for example, that final passage foreign aid votes – which include many varied components – are as objectionable to conservatives as votes on only economic aid. What is interesting is the way legislators from more conservative districts, and more conservative legislators, are more likely to support military aid. This reflects an important difference among legislators on the strategies for international engagement. Our analyses of the CCFR surveys show similar differences across economic and military aid. In both elite and national samples conservatives tend to be less supportive of economic aid but more supportive of military aid.

4.3 Control Variables

Our analysis focuses on economic and ideational sources of support for different types of foreign aid. Our results hold even when we control for many other factors, and indeed reveal other interesting differences.

We find strong evidence that organized interest groups matter. Money-centered bank PAC contributions (*Bank PAC%*) influence legislator support for high-focus economic foreign aid. As seen in Table 1, money-centered bank PAC contributions are significant and positive for all of these votes. Models run with total money-centered bank PAC contributions yielded similar results. Legislators receiving larger amounts of money from organized capital with a high overseas exposure were more likely to support economic aid, *ceteris paribus*. A one-standard-deviation change, holding other factors constant at their mean, leads to an increase in the probability of supporting aid of 2.9% (model 6). However, for other types of foreign aid this relationship is less strong or non-existent. For the low-focus votes, the bank PAC variable was positive and occasionally significant. For final passage, farm, and military aid votes, the variable was never significant, which accords with our theory. There is little reason to suspect, for example, that these money-centered banks would have strong preferences for military aid since it has little distributional impact on them.

¹⁰When we use the legislator's party instead of either the district or legislator ideology variables, the effect of party is as expected. Republicans, on average, were opposed to economic and food aid, and Democrats in favor. We found the opposite for military aid.

Interestingly, evidence suggests that organized labor supports some types of foreign aid. The percentage of PAC contributions from all labor organizations (*LabPAC%*) was positive and significant for models with our district ideology or party measures. This support was strongest for the high-focus economic aid votes, but still positive and significant in several models for the final passage and food aid votes. Conversely, our labor variables were occasionally negative and significant for military aid votes.

These results disappeared when we used the legislator's own measure of ideology, *DW-NOM*, due to the high correlation between labor PAC contributions and this ideology score. This suggests that labor elites may have a high degree of ideological motivation for supporting aid. Because of their general support for left-leaning representatives, labor organizations give contributions to legislators who support aid for ideological reasons. Organized labor leaders may, however, also favor aid for more narrow material benefits; as noted before, labor organizations benefit from aid that helps them pursue labor's goals overseas. This result about labor support for aid contrasts with evidence we find for the opposition of unskilled labor to economic aid. This divergence suggests evidence of a split in the preferences of organized labor leaders and rank-and-file union members. Public opinion surveys corroborate this; they show that labor leaders consistently were more likely to favor economic aid than were individual union members. Pooling over the 1975–2002 CCFR surveys, 86% of labor leaders supported aid, whereas only 56% of labor union members supported it. Our positive findings for organized labor in support of economic aid are interesting when compared with international trade, where organized labor has opposed trade liberalization since the 1970s. Our data here imply that ideological influences explain this difference: labor elites support aid since it is consistent with a liberal ideology that favors governmental efforts to redistribute income to the poorest. When we control for this ideological predisposition, the impact of labor PACs disappears.

We find that presidential position taking on high-focus economic aid votes had a negligible influence on legislators of his party compared with legislators in the opposite party or when the president did not take a position (*PrezSupport*). This variable was negative in several of the low-focus models. However, the influence of the president was positive and significant for our food aid and military aid votes. Hence, overall the influence of the president appears mixed. Future work might consider this finding more closely, as well as consider the relative influence of the president across issue areas (e.g. see Milner and Tingley, unpublished, for a comparison between trade and aid voting). Including this measure, however, does not change our other results.

While economic turmoil is frequently cited as a source of opposition to foreign aid, our statistical analysis does not support this. Our measures of unemployment (*Unemploy%*), change in unemployment (*UnempChg_2yr*), and district income (*LogMdnIncm*) were rarely significant. Representatives

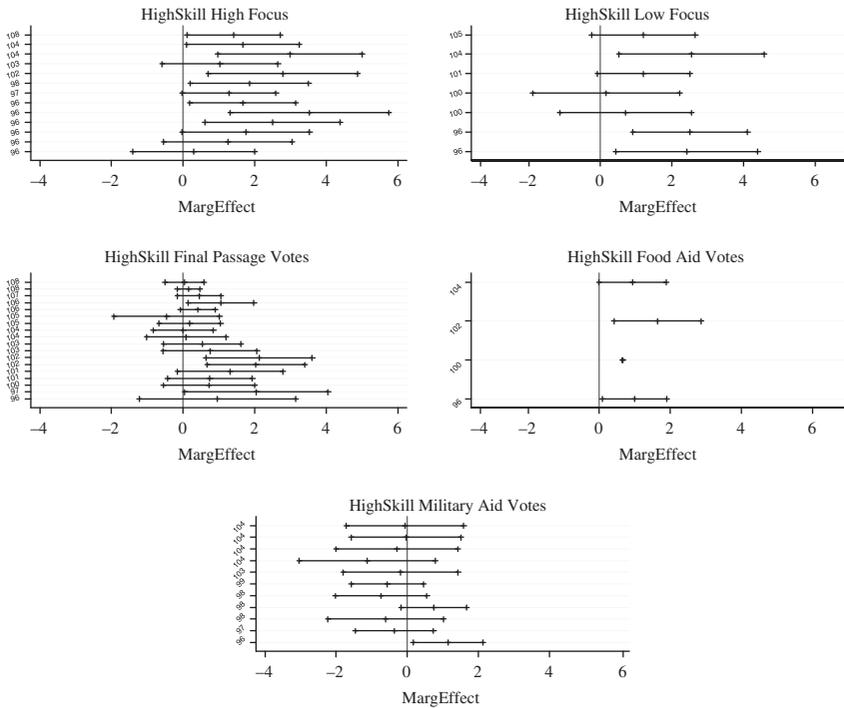
from districts with a high percentage of foreign-born citizens (*%ForBorn*) appear more likely to support economic aid and final passage votes, but we do not see this influence for food aid and military aid. Another demographic variable that mattered was the percent of African Americans in a district (*%Afr-Am*). A higher concentration of African Americans meant more support for economic aid, which might be expected given the perceived focus of U.S. aid on Africa. Our religious variables are not significant and do not diminish the explanatory effect of our other variables. Only the percentage of district religious adherents who are Evangelical (*%Evangelical*) is significant in the economic aid vote models and it is negative. The inclusion of regional fixed effects did not change our results either.

5. ROBUSTNESS

Because our panel estimation strategy with vote-fixed effects does not allow variables that are constant across legislators within a vote, we cannot include national-level variables. We can look at each vote separately to see if there are systematic changes in the influence of our variables over time. Our general results persist across two decades of votes and a variety of partisan structures. Because reporting slope coefficients and standard errors from separate regressions for many variables is unwieldy, we present marginal effects with corresponding 95% confidence intervals. We present these results in Tables 5 and 6 for our *%HighSkill* and *PrezVoteRepubl%* variables for each type of aid vote. Neither an individual vote nor our panel estimation appears to drive our results. The impacts of the factors we focus on are not changing over time. The groups supporting aid are very stable despite large changes in domestic and world politics over this period. But differences across the types of aid persist. Where the distributional effects of aid are strong, such as in high-focus economic aid, those groups gaining (losing) from the policy tend to support (oppose) it consistently over the period. Where the distributional effects are muted or absent, such as in final passage or military aid votes, the variables reflecting such distributional consequences tend to be insignificant.

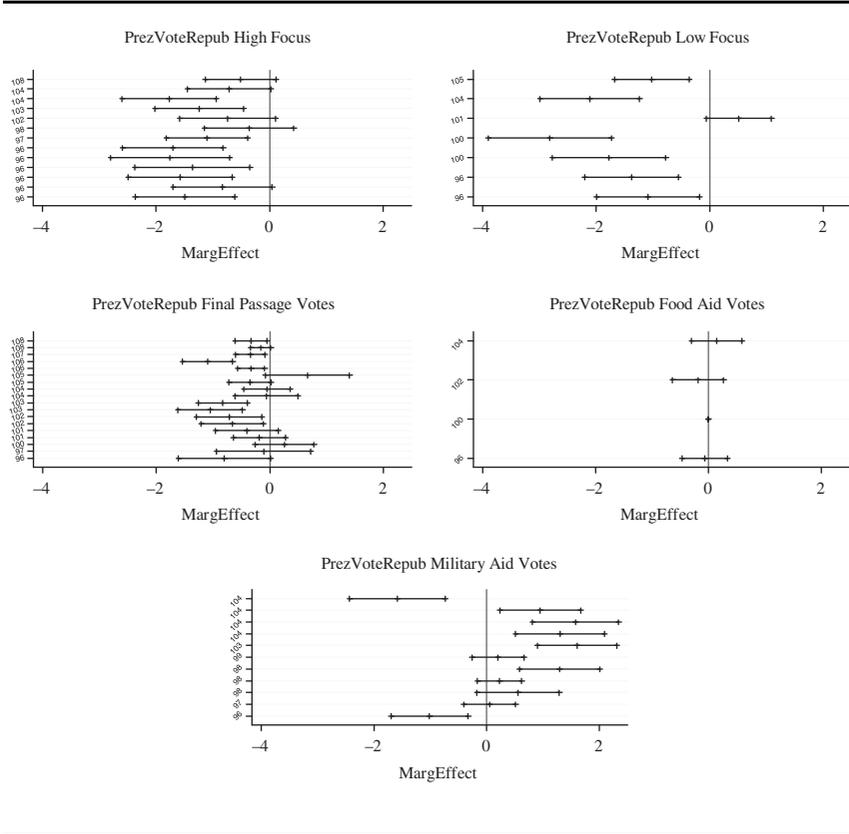
In addition to controlling for many factors and examining individual votes, we checked to see if our results relied on the inclusion of legislators re-elected by large margins (see Table S1). We reduced our sample by including only those legislators who won their previous elections by a closer margin. These smaller samples changed our results very little. Our key variables remain significant and in the expected direction. While we only report results for two “cut-offs” and for high-focus and final passage votes, our results for other intermediate values and aid types differ little from their complete panel counterparts. We also estimated models with state-level fixed effects in the supporting information, and find that our results persist.

TABLE 5 MARGINAL EFFECT OF %HIGHSKILL ON DIFFERENT TYPES OF VOTES BY CONGRESSIONAL SESSION



Finally, we conducted simple non-parametric difference-in-means tests to see if the distributional assumptions in our multivariate model were driving our results for our high-focus economic aid votes. To do this, we split legislators up by party, and then within party split legislators into “party line” (Democrats that favor aid, Republicans that oppose aid) and “defector” groups. We calculated the difference in means between the two within-party groups. Our theories of aid largely explain these defections. Almost all differences are in the expected direction and significant. Republican defectors, i.e. those who voted in favor of economic aid, received on average a higher percentage of their PAC contributions from money-centered banks and labor and had districts with higher capital endowments (skill levels) compared with Republicans who voted against foreign aid. Compared with Democrats who voted in favor of foreign aid, Democratic “defectors” (who voted against foreign aid) received on average a smaller percentage of contributions from money-centered banks and organized labor and had lower skill levels in their districts. Applying a similar strategy to the other vote categories generates

TABLE 6 MARGINAL EFFECT OF IDEOLOGY ON DIFFERENT TYPES OF VOTES BY CONGRESSIONAL SESSION



results consistent with the multivariate models as well. Including all of these robustness tests increases the confidence we have in our results.

6. CONCLUSION

Theories developed in the international political economy literature and used successfully on trade policy can help explain voting on foreign economic aid. Many have claimed that there is no set of domestic interests that supports foreign aid (e.g. Lancaster, 2007). Our data show that this is not the case; i.e. it allows us to reject the null hypothesis that there are no systematic influences on legislators' support for foreign aid. An identifiable and theoretically predictable group of legislators who support foreign aid exists. Domestic political and economic factors systematically influence American legislators when they cast their votes on foreign aid. Furthermore, we show that legislators seem to

respond to the diffuse interests of their constituents, as some models of Congress predict. Legislators appear to understand the distributional implications of aid and to vote in accord with the preferences of their constituents, even though they are not organized and lobbying for such aid. Foreign aid is politicized and others have shown that domestic interests within donor countries affect aid policy (e.g. Alesina and Dollar, 2000; Dudley and Montmarquette, 1976; Fleck and Kilby, 2006; Irwin, 2000; Therien and Noel, 2000). Our contribution is to show which domestic groups support and oppose foreign aid and to provide a theoretical explanation for these voting patterns.

We show that two of the most important political economy theories – the Heckscher–Ohlin and Stolper–Samuelson theorems – have significant explanatory power for aid votes. On economic aid votes that have domestic distributional consequences, the Stolper–Samuelson predictions provide a strong explanation for patterns of support and opposition to such aid. Controlling for a wide variety of factors, districts that are better endowed with capital (labor) are more (less) supportive of economic aid, as the theory predicts. On other votes, like food aid and military aid, where the distributional consequences of aid are muted, the division between capital and labor is less salient. We thus offer one of the first systematic theoretical and empirical analyses of preferences surrounding foreign aid. We also utilize differences in types of aid to help evaluate our theoretical predictions. We show that political economy theories can be usefully imported into other issues areas when those areas have distributional consequences. An interesting question is whether this type of influence on aid policy exists in other donor countries.

Interests matter, but so does ideology. Legislators respond not just to the material interests of their constituents, but also to their ideological predispositions. Legislators in left-leaning districts favor economic aid more than do right-leaning ones. On military aid, however, this relationship is reversed. Districts and legislators who prefer a larger role for the government in the economy and have stronger tastes for egalitarianism seem to be more disposed toward providing economic aid to others abroad. As Lumsdaine argued, a preference for government intervention at home to alleviate poverty appears to carry over to the international realm. Research on other countries suggests that this ideological pattern of support exists in other donors (Tingley, unpublished). The support that we sometimes find by organized labor for aid seems to rest heavily on its ideological appeal. But unlike in trade where conservative individuals generally support free trade, conservatives tend to oppose foreign economic aid. This ideological division is the opposite of the one in trade, and it makes the political coalitions in trade and aid different.

Another contribution is our finding that organized interest groups and their contributions to legislators are systematically related to support for aid. Legislators respond to the diffuse preferences of their voting constituents, but they are also attentive to the pressures brought to bear by organized interest groups. Many studies have found that campaign contributions do

not affect legislators' voting on issues (e.g. Fiorina and Peterson, 1998; Smith, 1995). Instead they argue that interest groups give contributions to like-minded legislators and that this "friendly giving" is driven by common ideology and constituent interests and not an attempt at influence (e.g. Bauer et al., 1972). Here we examine whether organized interest groups and their PAC contributions are systematically associated with votes on aid. We show that campaign contributions are channeled in ways that correlate with both ideological and political economy models of support (and opposition) to foreign aid. Such contributions (from money-centered banks and corporations) may account for why some conservative Republicans have been more likely to defect from their party's position against aid, and why some liberal Democrats (because of contributions from labor organizations) may be more supportive of aid as a strategy of international engagement than they are of international trade. This finding stands alongside our other results, which suggest that a district's factor endowments also influence legislators with particular ideological positions to vote differently than they might have on purely ideological grounds. In sum, organized interest groups and district economic characteristics seem to be predictably associated with legislative activity on economic aid, as they are on trade policy (Baldwin and McGee, 2000; Beaulieu and Magee, 2004).

More generally, our analysis implies that foreign aid policy is not driven solely by American foreign policy objectives, but also responds to underlying domestic political conditions. Presidents do not seem to dominate aid policy; their positions and preferences are not among the key factors that we identify in affecting a legislator's votes on economic aid. Aid may well be used as an exchange mechanism to alter other countries' behavior, but it must first command enough domestic support to win Congressional approval (Bueno de Mesquita and Smith, 2007). The existing literature that examines whether donor interests or recipient needs shape aid indirectly tests whether domestic interests matter by examining the characteristics of the recipients (Alesina and Dollar, 2000; McKinley and Little, 1979). In contrast, our study shows that domestic interests in the donor country directly affect foreign aid. Presidents must construct aid policy so they can garner majority support for aid in Congress. Legislators do not vote on aid randomly; they take into account its effects on their districts and vote accordingly. Political economy models can well explain this.

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REFERENCES

- Alesina, A. and D. Dollar, 2000, Who gives foreign aid to whom and why? *Journal of Economic Growth* 5, 33–63.

- Arnold, D. R., 1990, *The Logic of Congressional Action* (Yale University Press, New Haven, CT).
- Arvin, M., B. Cater, and S. Choudhry, 2000, A causality analysis of untied foreign assistance and export performance: the case of Germany. *Applied Economics Letters* 7, 315–319.
- Atwood, J. B., 1996, Hearings before the Subcommittee on Foreign Operations, Export Financing and Related Programs Appropriations to Consider FY97 Budget Requests for Foreign Assistance Programs, 104th Congress, 2nd Session, March 20.
- Bailey, M., 2001, Quiet influence: the representation of diffuse interests on trade policy, 1983–1994. *Legislative Studies Quarterly*, 45–80.
- Baldwin, D., 1986, *Economic Statecraft* (Princeton University Press, Princeton, NJ).
- Baldwin, R. E. and C. S. McGee, 2000, Is trade policy for sale? Congressional voting on recent trade bills. *Public Choice* 105, 79–101.
- Bandow, D., 1995, A new aid policy for a new world. *Policy Analysis* No. 226.
- Bauer, R. A., I. D. S. Pool, and L. A. Dexter, 1972, *American Business and Public Policy: The Politics of Foreign Trade* (Aldine-Atherton, Chicago, IL).
- Baumgartner, F. R. and B. L. Leech, 1998, *Basic Interests: The Importance of Groups in Politics and in Political Science* (Princeton University Press, Princeton, NJ).
- Beaulieu, E., 2002a, Factor or industry cleavages in trade policy? An empirical analysis of the Stolper–Samuelson theorem. *Economics and Politics* 14, 99–131.
- , 2002b, The Stolper–Samuelson theorem faces Congress. *Review of International Economics* 10, 343–360.
- and C. Magee, 2004, Four simple tests of campaign contributions and trade policy preferences. *Economics and Politics* 16, 163–187.
- Bhagwati, J., R. Brecher, and T. Hatta, 1983, The generalized theory of transfers and welfare: bilateral transfers in a multilateral world. *American Economic Review* 73, 57–76.
- , ———, and ———, 1984, The paradoxes of immiserizing growth and donor-enriching “recipient-immiserizing” transfers: a tale of two literatures. *Weltwirtschaftliches Archiv* 110, 228–243.
- Biemiller, A. J., 1967, To all members of the US House of Representatives. AFL-CIO Director of Department of Legislation, July 24.
- Brakman, S. and C. v. Marrewijk, 1998, *The Economics of International Transfers* (Cambridge University Press, Cambridge, UK).
- Broz, J. L., 2005, Congressional politics of international financial rescues. *American Journal of Political Science* 49, 479–496.
- and M. B. Hawes, 2006, Congressional politics of financing the International Monetary Fund. *International Organization* 60, 367–399.
- Bueno de Mesquita, B. and A. Smith, 2007, Foreign aid and policy concessions. *Journal of Conflict Resolution* 51, 251–284.
- Canes-Wrone, B., 2006, *Who Leads Whom? Presidents, Policy, and the Public* (University of Chicago Press, Chicago, IL).
- , W. G. Howell, and D. E. Lewis, 2008, Toward a broader understanding of presidential power: a re-evaluation of the two presidencies. *Journal of Politics* 70, 1–16.
- CCFR, 1975/1979/1982, American Public Opinion and US Foreign Policy, National Leaders. Available at http://www.thechicagocouncil.org/past_pos.php (accessed May 11, 2009).
- Chong, A. and M. Gradstein, 2008, What determines foreign aid? The donors’ perspective. *Journal of Development Economics* 87, 1–13.
- Congressional Black Caucus, 1993, Legislative Synopsis 1993. Available at http://www.africa.upenn.edu/Govern_Political/CBC_Legislation.html (accessed May 11, 2009).

- Copson, R., 2003, *Congressional Black Caucus and Foreign Policy (1971–2002)* (Nova Science, Lancaster, UK).
- Cronin, P. and B. Fordham, 1999, Timeless principles or today's fashion? Testing the stability of the linkage between ideology and foreign policy in the Senate. *Journal of Politics* 61, 967–998.
- Denzau, A. and M. Munger, 1986, Legislators and interest groups: how unorganized interests get represented. *American Political Science Review* 80, 89–106.
- Dudley, L. and C. Montmarquette, 1976, A model of the supply of bilateral foreign aid. *American Economic Review* 66, 132–142.
- Edwards, G. C., 1989, *At the Margins: Presidential Leadership in Congress* (Yale University Press, New Haven, CT).
- Fiorina, M., 1974, *Representatives, Roll Calls, and Constituencies* (Lexington Books, Lexington, MA).
- and P. Peterson, 1998, *The New American Democracy* (Allyn & Bacon, Needham Heights, MA).
- Fleck, R. and C. Kilby, 2001, Foreign aid and domestic politics: voting in Congress and the allocation of USAID contracts across congressional districts. *Southern Economic Journal* 67, 598–617.
- and ———, 2006, How do political changes influence US bilateral aid allocations? Evidence from panel data. *Review of Development Economics* 10, 210–223.
- Fowler, L. L., 1982, How interest groups select issues for rating voting records of members of the U.S. Congress. *Legislative Studies Quarterly* 7, 401–413.
- GBO, 2007, Budget of the United States: Fiscal Year 2006. Available at <http://www.gpoaccess.gov/usbudget/fy06/sheets/hist03z2.xls> (accessed May 11, 2009).
- Goldstein, J. and R. Keohane, 1993, *Ideas and Foreign Policy* (Cornell University Press, Ithaca, NY).
- Goldstein, M. and T. Moss, 2005, Compassionate conservatives or conservative compassionates? US political parties and bilateral foreign assistance to Africa. *Journal of Development Studies* 41, 1288–1302.
- Goss, C. F., 1972, Military committee membership and defense-related benefits in the House of Representatives. *Western Political Quarterly* 25, 215–233.
- Hero, A. O. and E. Starr, 1970, *The Reuther–Meany Foreign Policy Dispute: Union Leaders and Members View World Affairs* (Oceana Publications, Dobbs Ferry, NY).
- Hiscox, M. J., 2002, *International Trade and Political Conflict: Commerce, Coalitions, and Mobility* (Princeton University Press, Princeton, NJ).
- Howell, W. G. and J. C. Pevehouse, 2007, *While Dangers Gather: Congressional Checks on Presidential War Powers* (Princeton University Press, Princeton, NJ).
- Irwin, L. G., 2000, Dancing the foreign aid appropriations dance: recurring themes in the modern Congresses. *Public Budgeting and Finance*, 30–48.
- Jackson, J. E. and J. W. Kingdon, 1992, Ideology, interest group scores, and legislative votes. *American Journal of Political Science* 36, 805–823.
- Kalt, J. P. and M. A. Zupan, 1993, Capture and ideology in the economic theory of politics, in: C. K. Rowley, ed., *Public Choice Theory*. Vol. 2: *The Characteristics of Political Equilibrium*, Elgar Reference Collection Series. International Library of Critical Writings in Economics 24 (Edward Elgar, Brookfield, VT) pp. 238–259.
- Katzenstein, P., 1996, *Cultural Norms and National Security: Police and Military in Postwar Japan* (Cornell University Press, Ithaca, NY).
- Krasner, S., 1978, *Defending the National Interest: Raw Materials Investments and US Foreign Policy* (Princeton University Press, Princeton, NJ).
- Ladewig, J. W., 2006, Domestic influences on international trade policy: factor mobility in the United States, 1963 to 1992. *International Organization* 60, 69–103.

- Lancaster, C., 2007, *Foreign Aid: Diplomacy, Development, Domestic Politics* (University of Chicago Press, Chicago, IL).
- LeLoup, L. T., 2008, Reflections on Carol F. Goss's 1972 article, "Military committee membership and defense-related benefits in the House of Representatives." *Political Research Quarterly* 61, 39–42.
- Lumsdaine, D. H., 1993, *Moral Vision in International Politics: The Foreign Aid Regime 1949–1989* (Princeton University Press, Princeton, NJ).
- Magee, S. P., W. A. Brock, and L. Young, 1989, *Black Hole Tariffs and Endogenous Policy Theory* (Cambridge University Press, Cambridge, UK).
- Martin, L., 1992, *Coercive Cooperation: Explaining Multilateral Economic Sanctions* (Princeton University Press, Princeton, NJ).
- Mayer, W. and P. Raimondos-Møller, 1999, The politics of foreign aid. University of Cincinnati, Copenhagen Business School.
- and ———, 2003, The politics of foreign aid: a median voter perspective. *Review of Development Economics* 7, 165–178.
- Mayhew, D. R., 1974, *Congress: The Electoral Connection* (Yale University Press, New Haven, CT).
- McCarty, N., K. Poole, and H. Rosenthal, 2006, *Polarized America: The Dance of Ideology and Unequal Riches* (MIT Press, Cambridge, MA).
- McKinley, R. D. and R. Little, 1979, The US aid relationship: a test of the recipient need and the donor interest models. *Political Studies* 27, 236–250.
- Meernik, J. and E. Oldmixon, 2004, Internationalism in Congress. *Political Research Quarterly* 57, 451–466.
- Milner, H. and D. Tingley, 2008, Class, ideology and national identity: the correlates of public opinion on foreign trade, aid and immigration. Paper presented at the International Studies Association Annual Meeting, San Francisco, CA.
- Morrissey, O., 1996, Business interests and aid policy. Paper presented to the Directors of European Development Policy Institutes, Copenhagen, November.
- Murshed, S. M., 2004, Strategic interaction and donor policy determination. *International Review of Economics and Finance* 13, 311–323.
- Neuhaus, J. M., J. D. Kalbfleisch, and W. W. Hauck, 1991, A comparison of cluster-specific and population-averaged approaches for analyzing correlated binary data. *International Statistical Review* 59, 25–35.
- O'Leary, M. K., 1967, *The Politics of American Foreign Aid* (Atherton Press, New York).
- Peltzman, S., 1984, Constituent interest and congressional voting. *Journal of Law and Economics* 27, 181–210.
- Przeworski, A., 2009, Conquered or granted? A history of suffrage extensions. *British Journal of Political Science* 39, 291–321.
- Rieselbach, L. N., 1966, *The Roots of Isolationism: Congressional Voting and Presidential Leadership in Foreign Policy* (Bobbs-Merrill, Indianapolis, IN).
- Rogowski, R., 1989, *Commerce and Coalitions: How Trade Affects Domestic Political Alignments* (Princeton University Press, Princeton, NJ).
- Rohde, D. W., 2004, Roll call voting data for the United States House of Representatives, 1953–2004. Compiled by the Political Institutions and Public Choice Program, Michigan State University.
- Roscoe, D. D. and S. Jenkins, 2005, A meta-analysis of campaign contributions' impact on roll call voting. *Social Science Quarterly* 86, 52–69.
- Rubin, R. E., 1995, Statement of Treasury Secretary Robert E. Rubin. Subcommittee on Foreign Operations Export Financing and Related Programs.

- Scheve, K. and M. J. Slaughter, 2001a, Labor market competition and individual preferences over immigration policy. *Review of Economics and Statistics* 83, 133–145.
- and ———, 2001b, What determines individual trade-policy preferences? *Journal of International Economics* 54, 267–292.
- Shain, Y., 1994, Ethnic diasporas and U.S. foreign policy. *Political Science Quarterly* 109, 811–841.
- Shorrock, T., 2005, Labor's foreign policy heads in a new direction. Available at <http://www.fpif.org/fpiftxt/261> (accessed May 11, 2009).
- Smith, R., 1995, Interest group influence in the U.S. Congress (in continuities in legislative research). *Legislative Studies Quarterly* 20, 89–139.
- Stigler, G. J., 1971, The theory of economic regulation. *Bell Journal of Economics and Management Science* 2, 3–21.
- Sweeney, S., 2003, The AFL-CIO's "new internationalism." NACLA Report on the Americas 28.
- Therien, J.-P., 2002, Debating foreign aid: right versus left. *Third World Quarterly* 23, 449–466.
- and A. Noel, 2000, Political parties and foreign aid. *American Political Science Review* 94, 151–162.
- Trefler, D., 1993, International factor price differences: Leontief was right! *Journal of Political Economy* 101, 961–987.
- Truman, D. B., 1951, *The Governmental Process: Political Interests and Public Opinion* (Alfred A. Knopf, New York).
- Wala, M., 1986, Selling the Marshall plan at home: the committee for the Marshall plan to aid European recovery. *Diplomatic History* 10, 247–265.
- Wildavsky, A., 1966, The two presidencies. *Trans-Action* 4, 7–14.
- Younas, J., 2008, Motivation for bilateral aid allocation: altruism or trade benefits. *European Journal of Political Economy* 24, 661–674.
- Zablocki, C., 1977, Congressional record, May 12, 1976, 14467.

Supporting Information

Additional Supporting Information may be found in the online version of this article:

Table S1. Online Appendix for: The Political Economy of U.S. Foreign Aid: American Legislators and the Domestic Politics of Aid.

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