The Politics of Government-to-Government Loans: Interests, Information, and Network Effects

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Abstract

Creditor governments use government-to-government loans to obtain influence over strategically valuable debtors. However, identifying strategically valuable recipients goes beyond observable factors such as geographic location or resource endowment. We argue that much of a government's value is subjectively defined by the assessments of other governments. Creditors take cues from the lending practices of others in that a government's popularity as a loan recipient reveals other creditors' assessments of that government's political value. However, when observing competitor creditors making loans, governments could either engage them by providing new loans to re-gain lost influence over the recipient; alternatively, they could also re-focus their lending activities to debtors who are not yet under the influence of their enemies. We subsequently derive empirically observable network effects and use inferential network models to operationalize these implications. We find strong support that governments' perception of recipients' strategic value depends on the behavior of others. Further, our analysis provide strong evidence that creditors choose to specialize, rather than engage, in the face of direct financial competition with competitor creditors. The analysis shows that interdependence is not merely a statistical nuisance that must be controlled but is instead a driving force behind governments' efforts to exercise political and financial influence. In fact, incorporating the strategic interdependence in statistical models dramatically improves our ability to predict when and with whom governments create new loans.

Word Count: xxx

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In international relations, governments compete for political influence. Government-to-government loans are an important tool in this competition. For example, Japan's emergence as a major power in the 1980s corresponded with its emergence as a dominant creditor. Helleiner (1989: 343) argues that Japan's "[c]reditor status can be seen to have given Japan a certain amount of 'relational power,' [...] the power of A to get B to do something that they would not otherwise do." More recently, John R. Bolton, former security advisor to President Donald Trump, noted that, "Great power competitors, namely China and Russia, are rapidly expanding their financial and political influence across Africa. They are deliberately and aggressively targeting the region to gain a competitive advantage over the United States."[1]

Examples of bilateral loans providing creditor governments with influence are plentiful. In response to a $8.6bn Chinese loan to Angola in 2006, US diplomats in Angola reported that "China's bilateral credit line without doubt has increased Angola's range of options and bargaining power."[2] Following a $603.5 million Chinese loan, US diplomats in Tajikistan observed that Chinese lending had emboldened the Tajik government and "raised Tajik expectations when dealing with the United States."[3] A Chinese loan to Kenya offers another example. In 2009, US Ambassador Sunkuli observed that "the United States risks losing its still pre-eminent influence on the continent if it continues to make unreasonable demands on African governments." [4]

Clearly, bilateral loans are an instrument of "what might be called the 'foreign policy' of money" (Calleo and Strange 1984: 91). However, the political dynamics of government-to-government lending remain unclear. How do creditor governments choose debtors in order to maximize political influence? Why do governments extend loans to some targets and not others? As the above examples suggest, bilateral loans are fraught with interdependence. The likelihood of a loan between, say, the United States and Kenya is not independent of the actions of third parties like China. In competing for political influence, governments lend in response to loans by other creditors. We use a network framework to theorize and empirically model this interdependence.

Creditor governments do not act in isolation from one another but instead observe existing

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[1] "A New Africa Strategy," John R. Bolton, Heritage Foundation Keynote Lecture, December 13, 2018.

[2] "Angola: A Reality Check On The Chinese Credit Line," *US Embassy in Angola*, May 3, 2006.

[3] "Chinese Making Big Footprint On Tajikistan's Infrastructure," *US Embassy in Tajikistan*, September 5, 2006.

[4] "Kenyan Ambassador On Growing China Relationship," *US Embassy in China*, April 21, 2009.

lending patterns and adjust their own lending practices accordingly. While creditor governments wish to gain political influence in strategically important recipient countries, the strategic value of a potential partner is only partially determined by exogenous characteristics such as geographic position or natural resources. The evaluations made by other, third-party creditors provide crucial further information on strategic value. In networks, those actors whom receive the most attention are assumed to be the most important, and they consequently increase in importance (Newman 2001). However, we further argue that the identity of these third parties matters. Evaluations made by friends, allies, and like-minded partners enter the decision making process differently than those of enemies. We model under what conditions creditor governments compete with other creditors for influence over strategically important countries, and when they instead focus their scarce resources on recipients that are not yet under the influence of their enemies.

Our theory specifies how the probability of observing a loan between two particular governments depends on the loans made and received by other governments. Loan data are rife with endogeneity. In this context, however, endogeneity is not merely a statistical nuisance that needs to be instrumented away; rather, it directly reflects the political strategies that drive bilateral lending. By incorporating these strategic dynamics into inferential network models, we can estimate the effects of interdependence on lending and borrowing in ways that would be statistically infeasible in a traditional dyadic regression framework.

Our findings show that the perception of strategic importance indeed depends largely on the evaluations made by other creditors, not the exogenous characteristics of loan recipients. The model allows us to further explore substantive implications. For example, we show that the United States responds to Chinese loans primarily by focusing its own lending portfolio toward countries that are not yet a lost cause.

It is key to explain how creditors compete for political influence, as such loans have security, political, and economic implications. In terms of security, the loans may explain which creditor government is allowed to set up military installations in what recipient country. In terms of politics, understanding how the US responds to Chinese loans may help assess the possibility that Chinese loans undermine Democracy in recipient countries. In terms of economics, explaining how creditors compete with loans may provide insights into whether market-based economic models or state-led development approaches prevail in developing countries.

1 Bilateral loans and international relations

What are government-to-government loans? Following Brech and Potrafke (2014: 63), we define bilateral loans as government-to-government monetary transfers with the expectation of repayment. These loans carry an interest rate, grace period, and maturity. Loans are not the same as foreign aid, also known as official development assistance (ODA). ODA includes grants, in-kind transfers, food aid, and technological assistance, as well as expenses occurred in creditor countries, such as administrative costs and refugee assistance. Extremely cheap loans—e.g., with low interest rates and long repayment schedules—may qualify as ODA, while more expensive loans do not. Governments are acutely aware of the distinction between loans and ODA. For example, in discussing Japanese assistance to Pakistan, the US Embassy in Japan reported that "grants and technical assistance fell slightly from [...] JPY 7.7 billion ($75.7 million) in funding," while "yen loans [...] more than doubled to JPY 479 billion ($4.7 billion)."[5]

Financial relationships offer an avenue for creditors to exercise direct influence over borrowers. In some cases, loans come with explicit political conditions, such as China's requirement that loan recipients not recognize Taiwan politically. But even without explicit political conditions, "[c]ountries deploy economic links in the hopes that economic interdependence itself will, over time, change the target's foreign policy behavior" (Kahler and Kastner 2006). The British Secretary of State for Business, Energy, and Industrial Strategy noted that trade-related bilateral lending "provide[s] a platform on which to build diplomatic relations [and] creates influence and leverage when it comes to negotiation."[6]

Conversely, an absence of loans diminishes political influence. For example, observers opined that the "One Belt, One Road" initiative "is likely to deepen unease in US business and foreign policy circles about diminishing US influence,"[7] while also "conflicting with Moscow's Eurasia initiative and helping China overtake Russia for influence among Central Asian countries."[8]

The frequency of bilateral lending further reinforces its significance. Table 1 shows the number of country-years during which governments relied on either bilateral, multilateral, or private loans,

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[5] "Japan's Assistance To Pakistan Shifting From Grants To Loans," *US Embassy in Japan*, April 11, 2008.

[6] "Sajid Javid to lead high-level export push to Iran," *Financial Times*, March 9, 2016.

[7] "China backs up silk road ambitions with $62bn capital injection " *Financial Times* April 20, 2015.

[8] "China's Ambitious 'Silk Road' Plan Faces Hurdles" *VOA News*, April 15, 2015.

disaggregated by region. During the 1990-2013 period, governments utilized bilateral loans more frequently than other loan types. Further, although lending activity varies by region, this preference for bilateral lending persists across all regions.

	Number of Loans		
	Bilateral	Multilateral	Private
East Asia and Pacific	745	181	148
Europe and Central Asia	860	339	231
Latin America & the Caribbean	1231	403	337
Middle East and North Africa	748	154	145
South Asia	582	108	67
Sub-Saharan Africa	1593	652	303
Total	5759	1837	1231

Table 1: Number of loans governments obtained from different sources. The data show that bilateral loans are the most frequently used type of creditor.

Existing work exploring interdependency between creditor governments   As noted in the introduction, we argue that the actions by different donor governments are interdependent. We are not the first to note or attempt to explain such interdependence. One approach examines how sudden changes in debtor characteristics shape the allocations of several donors simultaneously. Cassen (1994: 177) observes that aid donors move in "herds," whereby multiple donors disburse money into "star" countries. Frot and Santiso (2011) consider explanations for such behavior. They find that sudden changes in debtor characteristics, such as natural disasters or transitions toward non-democracy, cause donors to simultaneously increase or decrease aid allocations. Similarly, Bunte (2018) shows that some donors focus their efforts disproportionately on recent recipients of debt relief. However, these approaches treat herding as a result of exogenous factors. The fact that natural disasters tend to attract more foreign aid, for example, does not necessarily imply a strategic dimension to aid competition.

By contrast, a second approach explicitly models strategic interactions between donors where the volume of aid provided by a particular donor depends on the volume of aid given by others. Studies in this vein typically note a "peer" or "bandwagon" effect. Davies and Klasen (2013) find that a 1% increase in ODA by all other countries is associated with a .3% increase in ODA by the focal country. Similarly, De Matteis (Forthcoming) and Powell and Bobba (2007) find evidence of imitative behavior among donors in terms of aid volume. Investigating the responses by donors

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to Chinese loans, Humphrey and Michaelowa (2019) show that both Russian and US aid increases following Chinese loans committments. In each of these studies, scholars find that the amount of aid provided by a donor depends on the aid given by other donors—but none explicitly tests *why* this interdependence exists.

To our knowledge, only two studies theorize and test the underlying causal mechanism connecting the monetary flows by different donors. Both focus on export competition as the key variable. Fuchs, Nunnenkamp, and Öhler (2014) argue that if industrialized countries export to the same developing country, the likelihood that both are active donors in the recipient country increases. Similarly, Barthel et al. (2014) show that "an increase in aid by other donors to a specific recipient with which the donor under observation competes in terms of exporting to this recipient increases the aid from the donor to the recipient."

Politics, not Export Competition   In our view, export competition is unlikely to be the driver underpinning interdependence between creditor governments. Export is an activity undertaken by private firms, while loans and aid are provided by governments. Consequently, the mechanism of export competition requires the assumption that exporting firms are able to overcome their collective action problem to lobby the government for aid to a particular recipient, and that the government has the incentive to listen to domestic firms. These assumed private-public linkages complicate both theory-building and empirical analysis.

Our approach instead considers how a government's public political interests influence, and are influenced by, its public economic interests. This perspective requires no micro assumptions about private actors but instead focuses on competition for *political* influence between states—which appears to be much more important in explaining interdependence in lending. Consider John Bolton's statement that, "The predatory practices pursued by China and Russia stunt economic growth in Africa; threaten the financial independence of African nations; inhibit opportunities for US investment; interfere with US military operations; and pose a significant threat to US national security interests."[9] Export competition does not appear as a major motivation for the US government in light of Chinese loans, while political questions about how to counter Chinese influence do. Our first contribution is therefore to model explicitly how creditor governments search

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[9] "A New Africa Strategy," John R. Bolton, Heritage Foundation Keynote Lecture, December 13, 2018.

for political influence by providing bilateral loans.

Our second contribution is to incorporate the interaction between multiple actors, rather than merely dyads. For example, Fuchs, Nunnenkamp, and Öhler (2014) examine the effect of export competition between two donors on their respective aid activities. While this approach does incorporate interdependence across donors, it is limited to discrete pairs of countries and thus effectively ignores interdependence among multiple actors.[10] By contrast, our network approach allows for acknowledging that multiple actors might be interacting simultaneously. For example, competition for influence in Latin American countries involves not only the US and China, but also Russia, prompting Russian Prime Minister Medvedev to characterize Chinese ties to Latin America as "normal competition" for Russia.[11]

Lastly, we focus on bilateral loans, rather than foreign aid in general, for two reasons. The first relates to the inherent heterogeneity of aid. Many types of activities count as Official Development Assistance (ODA). For example, ODA data includes grants, food aid, in-kind transfers, and technological assistance. Even money spent within donor countries may count as ODA, such as administrative costs, refugee assistance, and expenses for exchange students. This heterogeneity complicates identification of strategic dynamics. Instead, we focus on a single type of public cross-border transfer: bilateral loans. We define bilateral loans as government-to-government monetary transfers with the expectation of repayment. This approach allows us to analyze a homogenous good, thereby increasing conceptual and empirical precision.[12]

Second, foreign aid is provided largely by a handful of rich OECD countries, while recipients are primarily poor developing nations. By contrast, government-to-government loans are widespread even beyond industrialized economies. Table 2 shows that between 1990 and 2013, 104 of the 184 countries in our dataset provided loans to foreign governments at some point. While developed economies certainly play a prominent role in bilateral lending, our dataset includes loans from

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[10]The only exception we are aware of is Barthel et al. (2014), whose spatial lag model incorporates interdependencies among multiple countries simultaneously.

[11]"Russia play in America's backyard" *US Embassy in Russia*, December 5, 2008.

[12]Extremely cheap loans—e.g., with low interest rates and long repayment schedules—may qualify as ODA, while more expensive loans do not. We conduct a robustness test below confirming that our findings apply to both cheap and expensive loans.

	Creditors	Non-creditors	Debtors	Non-debtors	Total
East Asia and Pacific	13	14	16	11	27
Europe and Central Asia	40	10	23	27	50
Latin America & the Caribbean	20	13	27	6	33
Middle East and North Africa	14	4	10	8	18
North America	2	0	0	2	2
South Asia	3	5	8	0	8
Sub-Saharan Africa	12	34	43	3	46
Total	104	80	127	57	184

Table 2: Number of countries that engaged in bilateral lending, either as creditors or debtors. Based on 1990-2013 period.

Algeria to Jamaica, Brazil to Ecuador, Bulgaria to Ethiopia, and Cuba to Angola, among many others. Similarly, borrowing is not limited to the least-developed economies. 127 of the countries in our dataset borrowed from another government during the 1990–2013 period. The ubiquity of bilateral loans further illustrates the need for studying the strategic dynamics as creditors wrestle for influence.

2 A Network Theory of Bilateral Lending

Third-Party Interest and Perceived Strategic Value. Creditor government use loans to gain influence over recipient governments. Creditors are specifically interested in gaining influence over *strategically important* countries. How do creditor governments identify potential recipients that have significant strategic value? One approach is to consider observable characteristics of the recipient, such as geographic proximity to crucial thoroughfares, resource endowments like rare earth minerals or hydrocarbons, or unique historical or political connections, such as colonial history, military alliances, and/or foreign policy similarity.

We do not deny the importance of such observable characteristics, but these influences do not remotely exhaust the nuanced sources of strategic value. We argue that an extremely important aspect of strategic importance has been overlooked so far, because it is not directly observable: the subjective assessments of other governments. Creditors take cues from the lending practices of others. A government's popularity as a loan recipient reveals other creditors' evaluations of that government's political value.

A potential debtor's perceived strategic value increases as it attracts increasingly large numbers of creditors. Consequently, governments condition their lending on the lending practices of other

governments, explicitly considering third-party creditors' evaluations of those potential loan recipients. Thus, strategic value is not only a function of an underlying trait or observable characteristic, but also of the behavior of other creditors.

Archival notes provide illustrations of creditors converging on the same debtors in response to a plethora of incoming loans. For example, just before recommending that the US should also lend to Angola, the US Embassy noted that "Angola has reached new loan agreements with China—and there is more than just China. Angola has negotiated with other nations since 2004, including USD 580 million from Brazil, 400 million euros from Portugal, and 100 million euros from Germany. [...] Angola's rising reputation as reliable borrowers helped fuel international lenders' interest."[13] Similarly, internal documents from the US Embassy in Ghana note that Ghana is an important potential recipient precisely because it had received loans from many other creditors. The memo lists China, India, Japan, and Brazil, but also "At the same time, Saudi Arabia, Kuwait, Iran and Egypt all invest in Ghana and provide loans and grants bilaterally." [14]

In sum, a debtor's borrowing profile reveals third-party creditors' level of interest in that government, where a large number of incoming loans suggests that many other governments view this recipient as strategically valuable.

> **Hypothesis 1** *The greater the attention received by competing creditors, the greater the perceived strategic value of that recipient, the greater the probability of a bilateral loan*

The Identity of Third Parties and Strategic Value.   While a the perception of a potential recipient's strategic importance is shaped by amount of attention received from other creditors, there may be more to this dynamic. The identity of the third-party creditors matters. That is, for a focal government, the informational value of third-party lending practices depends on whether those loans are made by friends or foes of the focal government. As the Chairman of the US Senate Foreign Relations Committee stated, "the United States and Europe must compete with China, and we must do so with vigor."[15]   The question is how to do so. Ex ante, two possibilities are

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[13] "Angola: A Reality Check On The Chinese Credit Line," *US Embassy in Angola.*

[14] "Ghana at 50: A World View," *US Embassy in Ghana*, March 1, 2007.

[15] Senator James Risch, Press Conference, November 12, 2019.

plausible responses: To engage or to specialize.

The engagement option suggests that creditor governments compete with their foes. If a focal government observes its enemy lending to a strategically important recipient, that enemy has likely increased its influence over the debtor at the expense of the focal government. In order to level the playing field and re-gain lost influence, the focal government may subsequently provide a loan to that same debtor. More generally, observing an enemy making a loan increases the likelihood that competitors will provide loans themelves.

And example of engagement might be Japanese reactions when observing Chinese loans to India. In 2006, the US Embassy in Japan noted Japanese concerns with "the expansion of Chinese commercial activity" and the "large loans Beijing is making in the region."[16] Japan showed particular concern about lost influence in India, which received $1.3 billion in loans from China that year. Japanese lawmakers argued that their country "must find a way to cooperate with India" and explicitly considered the possibility that loans "could be used in the effort to turn India into a counterweight to China."[17] Importantly, the US embassy observed that, in fact, the large Japanese loans were themselves the reason for Chinese lending.[18]

> **Hypothesis 2** *The greater the attention received by enemy creditors, the greater the incentive to match their loans to regain lost influence, the greater the probability of a bilateral loan*

In contrast to increased lending in response to a competitor's lending, an equally plausible strategy is to focus one's resources on recipients that have not yet fallen under the influence of the enemy. As noted by Ivo Daalder, the former US ambassador to NATO: "The United States could not, nor should, match China at every step. Instead, just as Beijing was exploiting its strengths, so should Washington."[19].

There are two reasons why a focal government may prefer specialization to engagement. First,

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[16] "US-Japan Central Asia Dialogue: Part One, Strategic Overview," *US Embassy in Japan*, December 21, 2006.

[17] "LDP Interest In Aid To India Surprisingly High, Says Academic," *US Embassy in Japan*, December 4, 2006.

[18] This would also be in line with emerging evidence that western-dominated international financial institutions such as the World Bank respond to Chinese loans by providing more generous loan packages to the same recipients. See Zeitz (2021) and Hernandez (2017).

[19] "China's power is booming. How should the US respond?", Chicago Tribune, May 23, 2019.

engagement may not be a wise use of monetary resources. Engaging competitor creditors by providing additional loans carries the risk that those loans will not yield political benefits. The recipient has already received loans from, and committed to cooperation with, competitor governments, diluting the focal government's influence. If the focal governments wishes to maximize the utility of its loans, it may be more efficient to cut losses and focus its efforts elsewhere. This is particularly the case should the creditor face domestic audience costs. For instance, John R. Bolton noted that, "We will ensure that US taxpayer dollars for aid are used efficiently and effectively. The United States will no longer provide indiscriminate assistance across the entire continent, without focus or prioritization."[20] In other words, creditors may prefer to focus their financial resources where they can still make a difference.

A second reason why governments may prefer specialization pertains to the effectiveness of political influence. The alternative to competing with enemies is to coordinate with friends, partners, and allies in gaining influence over recipient countries. If several friendly creditor governments provide loans to a specific debtor, that signals to the focal government that this recipient is strategically important. Moreover, as allies are likely to share common goals when exercising influence over debtors, providing yet an additional loan reinforces the effect of financial diplomacy on the recipient.[21]

Much diplomatic evidence suggests that like-minded creditor governments converge on the same recipients. For example, in 2007, several European countries expressed their interest in helping Argentina with new loans or debt forgiveness. "Germany and France have shown interest in helping Argentina resolve the situation (...) Other countries, such as Spain, have also made clear their sympathies."[22] Alternatively, Kuwait, Qatar, and the UAE converged on Cambodia, all funding similar agricultural initiatives with their loans [23] This strategy is also visible in the aggregate lending patterns: AidData reports that only two of the ten largest recipients of official

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[20] "A New Africa Strategy," John R. Bolton, Heritage Foundation Keynote Lecture, December 13, 2018.

[21] A similar logic is presented by Kinne and Bunte, 2020, BJPS in the realm of military cooperation, where financial diplomacy leads to the establishment of like-minded security communities.

[22] "Argentine Economy Minister Talks Paris Club, Ecuador with AS Shannon," *US Embassy in Argentina*, February 28, 2007.

[23] "Kuwait: Laying Foundations for the New Silk Road?," *US Embassy in Kuwait*, May 5, 2009.

finance in Africa are the same for China and Western countries. For example "Ghana is first on the list for China, and although it is not in the top ten for the US or DAC is it a very large recipient of Western funding as well (Ghana takes the 11th spot on the DAC recipient list and the 12th spot for the US)" (Strange et al. 2013).

> **Hypothesis 3** *The greater the attention received by friendly creditors, the greater the incentive to match their loans to reinforce influence, the greater the probability of a bilateral loan*

3   Research Design

Methodological Approach.   Our theory is fundamentally interested in the interdependence between loans. Consequently, we cannot use traditional dyadic approaches, for two reasons. First, dyad-year regression models assume independent, identically distributed (i.i.d.) data points. Because bilateral lending data contain nonindependent observations, parameter estimates from a standard regression model will necessarily be biased.

Second, and more substantively, dyadic approaches ignore how relations influence one another. They cannot model the endogenous aspects of bilateral lending (Oatley et al. 2013). As the above hypotheses make clear, these endogenous influences are in fact themselves key quantities of interest. The dyadic regression framework, given its assumptions of independence, lacks a statistical infrastructure for estimating such quantities.

Instead, we use network methodologies to arrive at unbiased estimates of the substantive quantities of interest. We test the hypotheses using a stochastic actor-oriented model (SAOM) of network evolution (Snijders, Van de Bunt, and Steglich 2010). Consider a square, asymmetric, binary matrix, $\mathbf{Y}$, where $y_{ij} = 1$ entries indicate a network tie from i to j. In a SAOM, the $\mathbf{Y}$ matrix itself is the dependent variable. We model the evolution of the network from one $\mathbf{Y}_t$ observation moment to the next (where t indicates the loan network for year t) as a function of monadic attributes of actors, dyadic attributes of country-pairs, and/or endogenous network influences (i.e., "interdependencies") (Snijders 2001: 366).

Evolution of the network is driven by the choices of individual actors, who extend and retract ties in such a way as to maximize their subjective utility. This "actor oriented" component of

the model ensures that network evolution remains within the control of individual states, which is consistent with our theory. Specifically, when actors extend and retract ties, they attempt to maximize an "objective function," $f_i(\beta, \mathbf{y})$, which, as in generalized linear models, is simply a weighted sum or linear combination of specified effects, as follows:

$$f_i(\beta, \mathbf{y}) = \sum_{h=1}^{L} \beta_h s_{ih}(\mathbf{y}). \tag{1}$$

Here, $\mathbf{y} = \mathbf{Y}(t)$ is a given observation of the network, and the $s_{ih}(\mathbf{y})$ functions are user-specified effects, which may include any number of endogenous network influences (centrality, reciprocity, transitivity), and/or exogenous covariates (geography, resources, colonial ties, etc.).

The objective function is too complex for explicit calculation of probabilities. We use simulated method of moments estimation, as detailed in Snijders (2001), where parameter estimates are determined by fitting the observed values of the network statistics to their expected values. As in logit and probit models, hypothesis testing is conducted through the use of t-statistics, and the parameter estimates themselves are similar to multinomial logit coefficients.[24]

Operationalization of Hypotheses. The $s_{ih}(\mathbf{y})$ network statistics in Eq. 1 include endogenous features of the network that correspond to our hypotheses. We use the network concept of *nodal indegree* to operationalize Hypothesis 1. Figure 1 illustrates how the i creditor's likelihood of extending a new loan is shaped by the j potential debtor's network ties. Specifically, the creation of a given $i \rightarrow j$ loan tie is endogenous to j's various ties to k third parties. If i observes that j government has many incoming ties (i.e. a high-indegree), the probability of an $i \rightarrow j$ tie should be greater than if j has few incoming loans. Substantively, a government that receives large numbers of loans will continue to attract new loans because creditors perceive it to have high strategic value. Importantly, this effect is strictly endogenous. The j debtor is more likely to receive new loans *precisely because it receives a large number of loans,* not simply because it has, say, a strong credit rating or abundant natural resources.

We utilize the network concept of *covariate closure* to test H2 and H3. Figure 2 illustrates

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[24]An alternative network methodology is the temporal exponential random graph model (TERGM). We conduct a robustness test utilizing this network approach and arrive at essentially the same conclusions. More details in the Appendix.
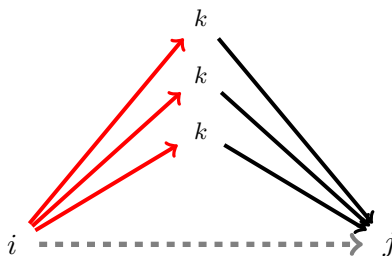
Figure 1: Indegree Effect
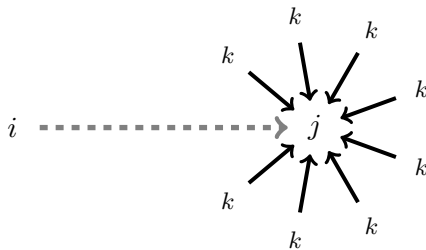
Note: Solid black lines indicate bilateral loans in place. Dashed gray lines indicate prospective loans. Node i is the lender. Node j is the borrower.

the underlying concept of how the identity of third-party creditors is incorporated. The effect of creditor i observing loans made by third party creditors k to recipient j depends on the relationship between i and k. According to H2, if the relationship between i and k is based on enmity, then observing loans by k to j should increase the probability of a direct loan from i to j. Alternatively, H3 asserts that i only mirrors the $k \rightarrow j$ lending practices of k creditors that are friends, allies, or otherwise aligned with i.

Figure 2: Covatiate Closure Effect

Note: Solid black lines indicate bilateral loans in place. Dashed gray lines indicate prospective loans. Red lines indicate enmity or amity ties between the focal i creditor and third-party k creditors. Node j is the borrower.

We apply the SAOM to lending data from the Debtor Reporting System (DRS) of the World Bank. Our sample includes 184 countries for the period 1990[25] to 2013.[26] To facilitate analysis

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[25]Some data prior to 1990 are available. However, we omit pre-1990 data from the analysis for three reasons. First, the quality of data reported by the Soviet Union and its allies is questionable. Second, missing observations increase dramatically prior to 1990. Third, the end of the Cold War in 1990 likely acts as a structural break, the effects of which are challenging to estimate accurately.

[26]Although these data are available to any scholar, they cannot be disseminated by scholars themselves but must

with inferential network models, the bilateral loan data are structured as a stack of $1 \ldots T$ $n \times n$ matrices, denoted $\mathbf{Y}$, where T is the number of years of data and n is the number of countries. Let $\mathbf{y} = \mathbf{Y}(t)$ be the network matrix for some t year of data. The y_{ij} elements of $\mathbf{y}$ are network ties, defined dichotomously, such that $y_{ij} = 1$ if government i initiates a new loan to government j in year t, and $y_{ij} = 0$ if no loan is made. Importantly, $y_{ij} \neq y_{ji}$. The network is thus binary, directed, and longitudinal.

Operationalizing covariate closure for the test of H2 and H3 requires measures of enmity and friendship. We use four different metrics to capture "positive" or amity-based ties. First, we measure the ideological alignment between i and j. Former US Security Advisor noted that "Countries that repeatedly vote against the United States in international forums, or take action counter to US interests, should not receive generous American foreign aid." Consequently, we utilize data by Voeten, Strezhnev, and Bailey (2013) who estimated ideological alignment using countries' voting record in the United Nations General Assembly. We specifically incorporate the "affinity" metric, which is valued between -1 and +1, with values closer to +1 indicating greater similarity in foreign-policy preferences. In addition, we assume that i and k are friends if they have formed a military alliance (Leeds et al. 2002) or a security partnership in the form of a defense cooperation agreement (Kinne 2020). Finally, we include a log-transformed count of the number of shared IGO memberships between i and k. If H2 is operating, these four operationalizations should result in negative estimates, while positive estimates would provide support for Hypothesis 3.

To capture the degree of antagonism or enmity between i and k, we consider three metrics. First, we use a binary variable coded 1 if military conflict existed between i and k in the previous 5 years. Second, we include difference in Polity scores between i and k, where larger values indicate greater dissimilarity in regime types. Third, we include distance in UNGA ideal points (Voeten, Strezhnev, and Bailey 2013), where larger values indicate greater dissimilarity in foreign policy preferences. In all three cases, a positive coefficient would provide support for Hypothesis 2, while we would expect a negative coefficient with Hypothesis 3.

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be obtained from the World Bank directly. Obtaining the data is a straightforward process and instructions are included in the replication archive. According to World Bank policy, "requests from other scholars to access the data for the purposes of validating or critiquing results will be looked on favorably."

Control variables   We argue that the endogenous network influences matter *even after controlling for observable factors.* First, we control for several economic factors that might also shape the likelihood of loans. We include the creditor's exports to, and imports from, potential debtors (in constant US dollars, log transformed), which controls for the possibility that trade partners make for more attractive financial partners. We control for debtors' and creditors' GDP and current account balance (log transformed) as poorer debtors might desire loans, while richer creditors might be more willing to provide them. We also control for the existing debt stock of debtors as well as their credit rating (based on the average rating from S&P, Fitch, and Moody's) which should capture debtors' economic capacity to repay loans. We also control for the debtor's total oil supply as debtors with natural resources may be more attractive to creditors. As countries with current or recent financial crises are more likely to seek external assistance, we control for whether the debtor has experienced a debt, banking, or currency crisis within the past ten years.

In addition to these economic factors, we include a battery of political control variables that might also shape the likelihood of loans. Here, we include measures for whether the debtor is a former colony of the creditor to capture historical connections. And because creditors may prioritize lending to politically likeminded governments, we control for similarity in regime type. Lastly, we control for distance between capital cities, in log-transformed kilometers, as creditors may prefer lending to geographically proximate countries.

Third, while this paper focuses on government-to-government loans, debtors can also borrow from multilateral organizations and private creditors. Access to these alternative lenders may affect bilateral loan decisions; that is, a government may respond to bilateral loan offers differently if it has already secured multilateral or private loans. We must control for these possibilities in order to avoid omitted variable bias. Following Copelovitch (2010), we include two propensity scores for the debtor, which measure the likelihood of the debtor obtaining loans from other creditor types. Specifically, we include the inverse Mills-ratio of predictions resulting from two logit models: (1) the propensity to borrow from multilateral organizations, modeled using variables such as default, current account balance, financial crises, and government ideology; and (2) the propensity to obtain loans from private creditors, modeled using credit ratings, GDP, growth rate, and polity score. We also include a propensity score for creditors, which controls for a country's propensity to provide funds to multilateral lending institutions. Data sources for all control variables, as well as the

calculations for the propensity scores, are available in the online appendix.

Finally, we include several standard network terms as control variables. Specifically, we include measures capturing the reciprocity and transitivity in the network as well as a measure of outdegree. We do not expect substantively interesting results (after all, there is little reason to expect reciprocity, as debtor j is unlikely to provide a loan to its creditor i), but such possibilities should nonetheless be accounted for.

4   The Political Dynamics of Bilateral Lending

The Perception of Strategic Importance.   We estimate all models on data for 1990–2012, reserving the 2013 data for out-of-sample prediction. The estimates from the strictly dyadic model are displayed in the left-side panel of Figure 3 ("No network effects"), while the right-side panel of Figure 3 incorporates the network effects.

The estimate for *Indegree (i)* provides strong support for H1. As creditors observe that a particular debtor receives interest by competing creditors, its perceived strategic importance and overall attractiveness as a loan recipient increases. In turn, this results in the positive estimate shown here, representing the increased likelihood by creditor i to also provide a loan to that strategically important recipient. Importantly, this indegree effect holds even after controlling for myriad other influences on prospective debtors' attractiveness to creditors, including the debtor's credit rating, oil reserves, propensity to borrow from the private or multilateral markets, and numerous others. High-indegree debtors are popular targets not because they have good credit ratings or are endowed with natural resources, but precisely because they receive much attention from other creditors.

To interpret this estimate, consider a hypothetical i creditor that must choose between extending a loan to j_1 or j_2. If the nodal indegree of j_2 is one higher than the nodal indegree of j_1—that is, the former debtor has received one more bilateral loan than the latter—then the odds of i making a loan to j_2 are about 13% greater than the odds of i making a loan to j_1. Note that this effect increases substantially for larger indegrees. E.g., if j_2 has ten more incoming loans than j_1, then the odds of i making a loan to j_2 are nearly 250% greater than the odds of i making a loan to j_1. This preferential attachment or "rich get richer" effect is widely documented across social systems

Figure 3: Estimated Effect of Covariates and Network Influences on Bilateral Loans
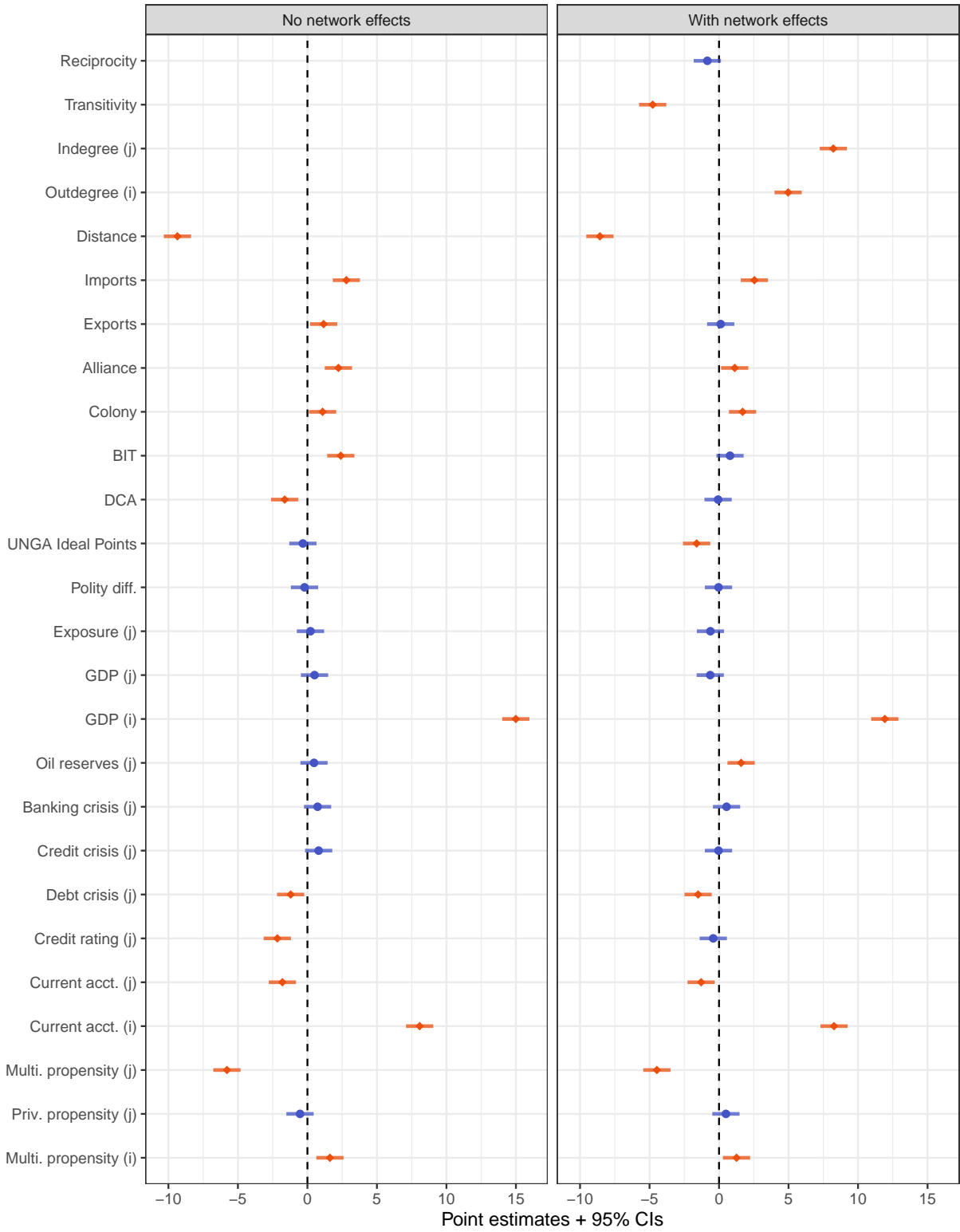
Note: Symbols are rescaled point estimates. Lines are standardized 95% confidence intervals.

Newman (2001).

Engaging Enemies or Coordinating with Friends?   We argue, however, that the identity of those k third parties who lend to j also matter. Figure 4 illustrates the effect of "covariate closure," where the focal i creditor has political, security, or other ties to k third-party creditors. The results strongly support the specialization hypothesis (H3) and generally contradict the competition hypothesis (H2). Affinity in UNGA voting, high numbers of shared IGO memberships, and formal military alliances between i and k third parties all significantly increase the probability that i will make loans to the same j targets as k. The estimate for DCAs is also positive but is not significant at conventional levels. By contrast, we find no evidence that creditors attempt to compete with the lending patterns of their enemies. Overall, creditor governments do not provide loans to re-gain lost influence, but instead focus their monetary resources on recipients where they can hope to still gain influence and reinforce the influence by their friends.

Figure 4: Covariate Closure
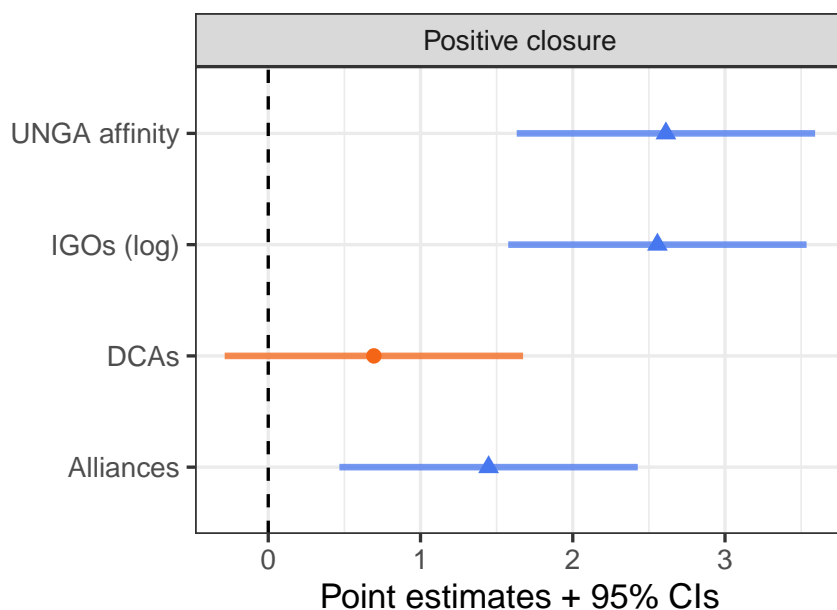
Note: Estimates from main SAOM model, with all covariates and endogenous terms included the baseline "With network effects" model.

We interpret the parameter estimates for the covariate closure terms by considering hypothetical combinations of k third-party creditors. Consider Figure 5, which plots the respective third-party

effect of alliances and DCAs. If creditor i has five alliance partners who make loans to some j target, then the odds of i making a loan to that same target are about 30% greater than if none of i's alliance partners made loans. The corresponding effect for DCAs is weaker, showing an increase of about 20%.

Figure 5: Substantive interpretation of the parameters
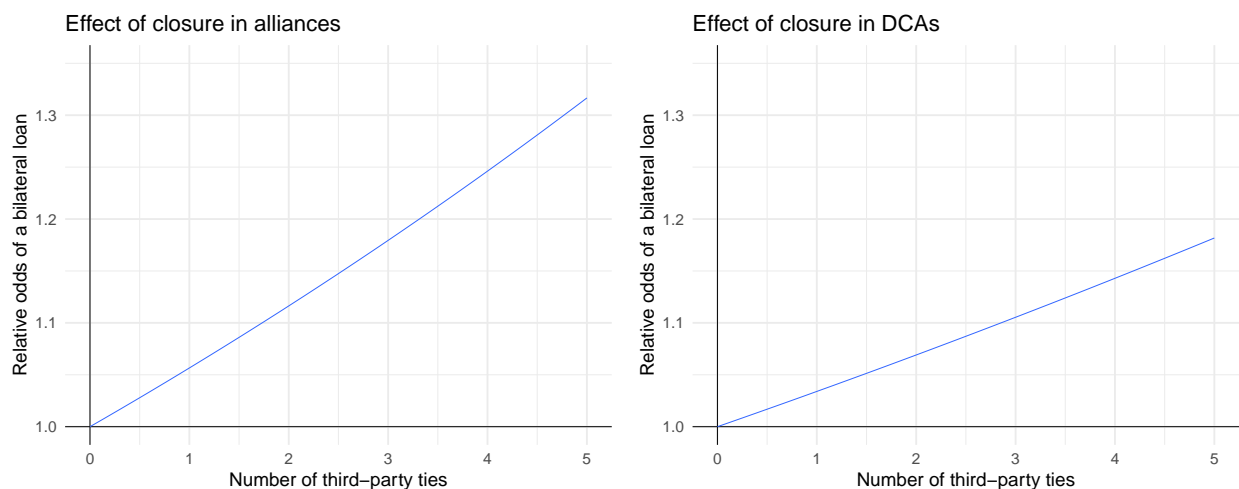
The two remaining positive closure terms—UNGA affinity and shared IGO memberships—pose more of an illustrative challenge, as the connection between i and k third parties is not binary but valued. In the case of UNGA affinity, i's relations with k may be positive, neutral, or negative, while in the case of shared IGOs those relations may vary from weak to strong. Figure 6 thus illustrates a range of hypothetical scenarios. For example, if i has a maximal UNGA affinity to five k third parties who make loans to j, then the odds of i making a loan increase by more than double. Yet, if i's affinity ties to those k third partie are negative, then the odds of a loan decline by half. Shared IGOs have a particular strong effect. If i shares the maximum observed number of shared IGOs with five k third parties who make loans to j, then the odds of i also making increase more than 12-fold. In short, positive closure appears to be strongly influential in bilateral lending.

Out-of-sample predictions. We further illustrate the importance of accounting for endogenous influences within the lending network by conducting an out-of-sample predictive analysis. The confidence in our theory would increase substantially if our model, which was estimated using data from 1990–2012, can predict actual loans in 2013. Accordingly, we calculate pairwise out-of-sample

Figure 6: Substantive interpretation of the parameters
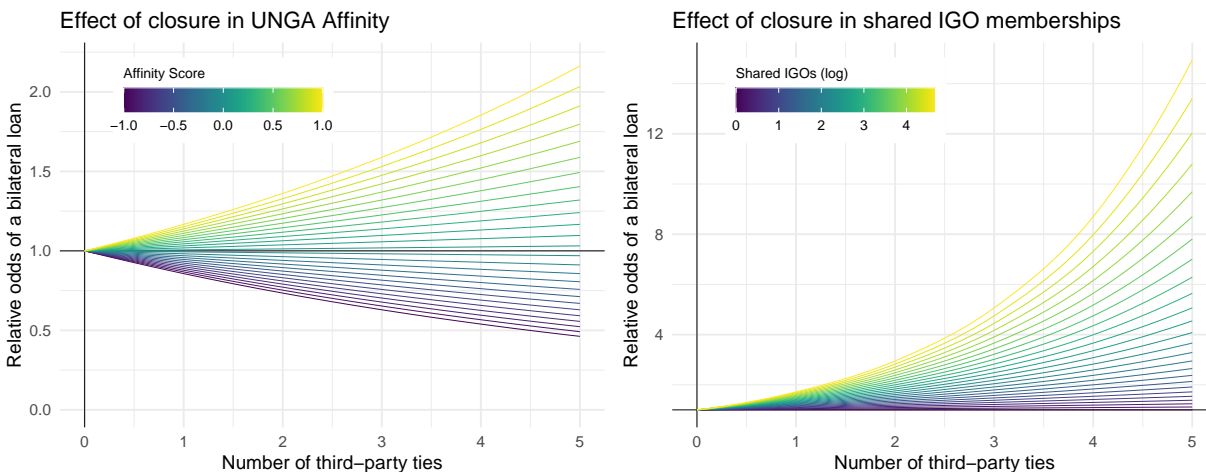
predictions for China's 2013 loans.

Figure 7 presents the results of this exercise. Each of the 30 countries listed on the x-axis of Figure 7 is a "true positive," i.e., a country to whom the Chinese government in fact initiated a new loan in 2013. The top panel shows the predicted probabilities of a Chinese loan. Consider the light shaded bars, which represent the predicted probabilities derived from a standard dyadic logit model without network effects. The accuracy with which this model predicts known Chinese loans is hardly better than a coin flip. On the bottom panel, the light shaded bars use the same logit model—i.e., without network terms—to illustrate the probability that the United States lends to the same set of countries that received loans from China in 2013. The predicted probabilities again hover around 50%. The problem with the US predictions, however, is that only two of these 30 countries—Indonesia and Ghana—in fact received a loan from the United States in 2013. For China, the logit model yields many false negatives, while for the US it yields many false positives.

Compare the logit results with the dark shaded bars, which present the predicted probabilities of loans derived from our preferred network model. Two key differences emerge. First, the network model is significantly more accurate in predicting Chinese loans to the 30 countries that indeed received loans. Furthermore, the network model is also significantly more accurate in predicting which countries *did not* receive loans from the United States. Out of the 30 countries, the network model only gets a single prediction wrong (Jamaica).

We draw two key insights from this exercise. First, substantively, the findings illustrate how

Figure 7: Prediction of Chinese Bilateral Loans in 2013
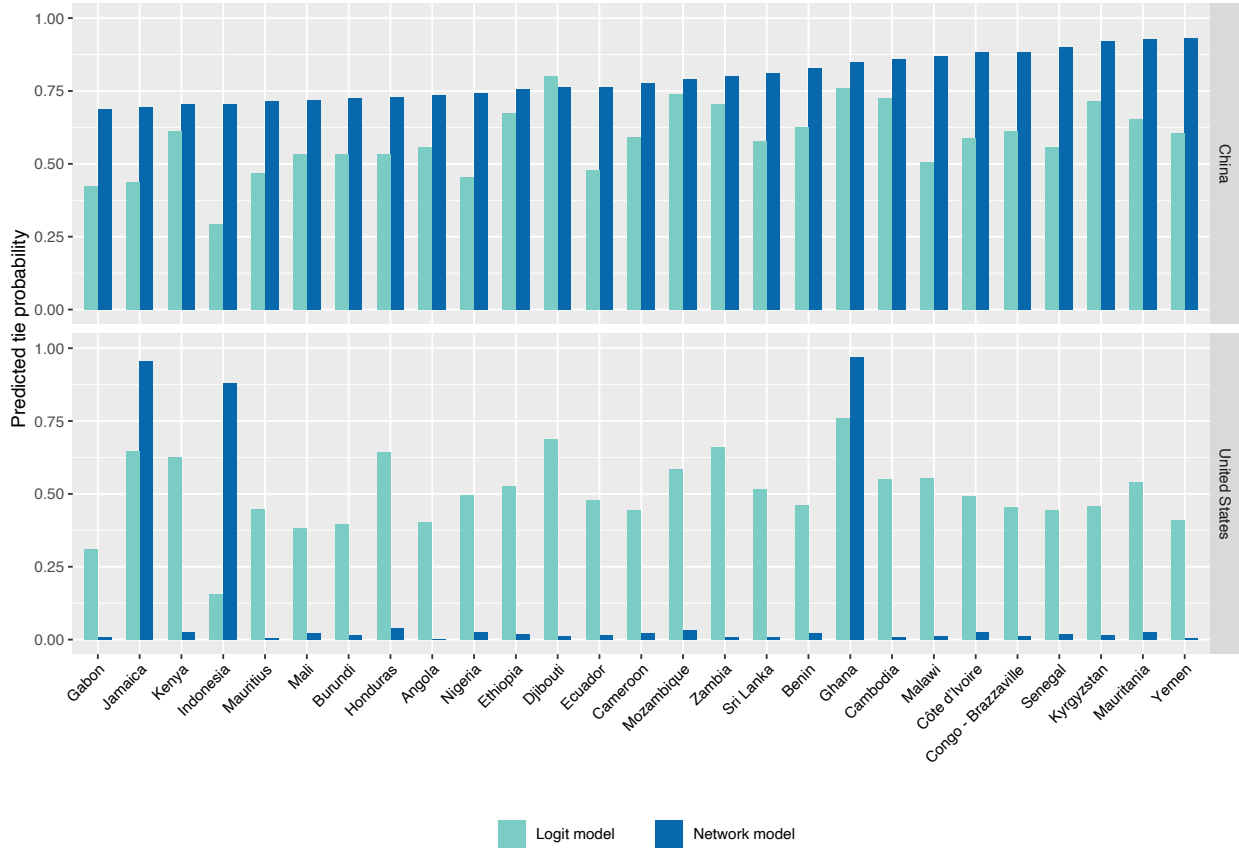
Note: Out-of-sample predictions drawn from 1,000 simulations of the 2012 network, using the period 1990–2012 as a training set. All listed states received Chinese loans in 2013. Only Ghana and Indonesia received US loans.

competing creditors specialize rather than engage. Upon learning that China provided loans to these 30 countries, the United States did not try to also provide loans to the same set of recipients to re-gain lost political influence. Instead, it focused its monetary resources elsewhere. Our insights can therefore reconcile two seemingly contradictory truths: Humphrey and Michaelowa (2019) find that the total loan volume by Western governments does not respond to the presence of Chinese loans—and yet practitioners on the ground observe fierce competition between the US and China. The answer is that the US smartly directs its bilateral loans to recipients where its lending can still earn political influence.

Second, methodologically, this exercise demonstrates that the network model is dramatically superior. A model that includes known economic and political influences—but ignores network influences—does not confidently predict which countries receive loans nor can it accurately identify

countries that did not receive loans. Incorporating network influences, and thus accounting for the ways in which governments use the structure of the loan network to glean information about one another, dramatically improve our models. While the covariates matter, the results indicate the ignoring the endogenous network influences results in inferior predictions.

5   Robustness tests

Political vs. Economic closeness?   Our main finding suggests that creditors tend to lend to those recipients who also receive loans from their creditor friends. We argue that this is is the result of an explicitly political phenomenon, where creditors view those recipients as strategically important that their friends find significant themselves. Jointly, then, they are able to maximize their political influence over the recipient country.

Above, we argued that it is the *political* ties between creditors that motivates their behavior. However, it is also conceivable to understand closeness among creditors in economic terms. For instance, if creditor i observes that its trade partner k lends to j_1, it might do so as well. If this were the case, however, the political logic we outline above would presumably not hold. To test this possibility, we re-estimate the same model but substitute the measures for political closeness (UNGA affinity, shared IGO membership, DCAs, and Alliances) for economic measures of closeness such as exports, imports, and FDI between i and k.

The findings are presented in Figure 8. They show that creditor i observing its economic partners making loans to a particular recipient does not increase the likelihood of a loan by i to that recipient. These findings provide additional support for the political mechanism we outline above.

6   Conclusion

In this paper, we analyze the political dynamics that underpin government-to-government lending. Our starting point is that creditors provide loans to gain influence over recipients, and that they are particularly interested in gaining influence over strategically important creditors. However, evaluating strategic important is challenging. While some country characteristics such as geographic

Figure 8: Effect of economic closeness on likelihood of loan
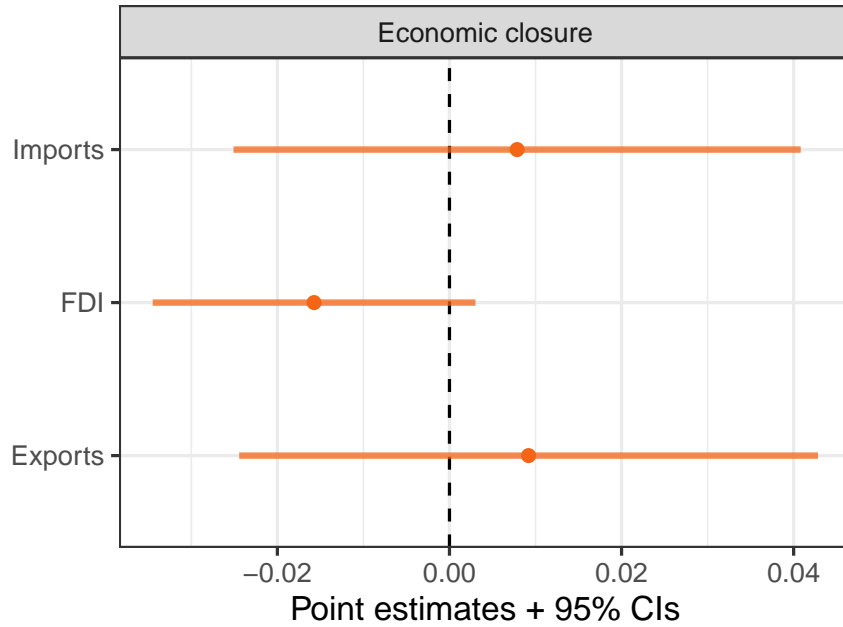
location and resource endowment are important, we argue that much of a government's value is subjectively defined by the assessments of other governments. Creditors take cues from the lending practices of others in that a government's popularity as a loan recipient reveals other creditors' assessments of that government's political value.

We expand on this point by pointing out that the identity of the other creditors might matter. Upon observing that other creditors provide loans to important recipients, creditors can respond in two ways. One the one hand, creditor governments could engage with their competitors. In order to re-gain lost influence, creditors might have the incentive to provide a loan to the very recipient as well. On the other hand, creditors might instead specialize and focus their resources on other recipients. After all, financially, engaging competitor creditors by providing additional loans might just be throwing good money after the bad as the recipient in question is likely already under the influence of the enemy. In addition, the alternative to competing with enemies is to coordinate efforts at gaining influence over recipient countries with friends. Presumably, as allies are likely to share common goals when exercising influence over debtors, providing yet an additional loan might help to reinforce the effect that financial diplomacy should have on the recipient.

Our empirical analysis offers much support for the argument that strategic value is not only a

function of an underlying trait or observable characteristic, but also of the behavior by other creditors. In addition, we find strong evidence in favor of creditors specializing their lending activities, instead of going head-to-head with competitor creditors.

The empirical analysis shows that network influences are, by far, the most powerful determinants of bilateral lending. For instance, out-of-sample predictions of Chinese loans find that a model excluding network effects do a poor job of correctly predicting loans. In contrast, a network model, which incorporates the interdependent nature of bilateral lending, successfully predicts both the presence and the absence of loans. These estimates hold even after controlling for a wide array of potentially correlated exogenous influences, including economize size, credit ratings, financial crises, trade volumes, political differences, and numerous others.

The endogenous influence of loans on new loans is key to explain how creditors compete for political influence. Understanding these dynamics is crucial as such loans have security, political, and economic implications. In terms of security, consider Djibouti where The US Navy maintains Camp Lemonnier, leased by Djibouti to the United States in 2001, along with the right to use the neighboring airport and port facilities. The base supports 'Operation Enduring Freedom' and is home to 4,000 personnel and a fleet of drones. In 2014, the US began a $1 billion upgrade of Camp Lemonnier. However, in 2016 — shortly after obtaining loans from China — the Djiboutian government granted China land for a base as well. Importantly, the Chinese base is located only four miles from the US base. In 2018, the US issued a notice to airmen reporting instances of laser attacks against pilots flying near the base, though the Chinese Defense Ministry called the accusations "untrue" (Browne 2018).

Similarly, understanding how creditors compete for influence is key to recognize the political ramifications of such lending. Observers have pointed to the possibility that Chinese loans might undermine democracy in developing countries. Critics argue that BRICs do not have moral reservations against lending to dictators and autocracies, while Western creditors are supposedly more hesitant to lend to them (Naim 2017). These loans might provide autocratic leaders with resources that allow them to remain in office longer than otherwise possible, thwarting transitions to democracy. Some argue that this is a deliberate strategy by China in an effort to extinguish or dampen democratization around the world (Ambrosio 2009; Bader 2014).

Lastly, explaining how creditors compete for political influence is crucial for grasping the eco-

nomic implications. After all, Chinese loans might allow developing countries pursue alternatives to the neoliberal Washington Consensus. China offers large loans without macroeconomic conditions asking recipients to implement domestic political reforms. Instead, they fund large infrastructure projects that may resolve growth bottlenecks. For better or worse, Chinese loans thus may allow developing countries to pursue a different model of economic development and thus shape the likelihood of lifting millions out of poverty.

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