Does Asian Infrastructure Investment Bank Lending Support China's Belt & Road Initiative? A Subnational Analysis of Project Location

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ABSTRACT:
Can China use multilateral economic institutions akin to the way the U.S. has done? Specifically, can China exert influence over an international organization to pursue bilateral goals? We address this question by examining the association between projects funded by the China-led multilateral Asian Infrastructure Investment Bank (AIIB) and projects in the Chinese Belt and Road Initiative (BRI), a bilateral initiative that links China to other countries. We argue that China may benefit from exerting influence over the AIIB for its own goals under the right conditions. We test these theoretical claims on a novel dataset that identifies the geographic location of AIIB and BRI projects. Using spatial regressions, we find evidence of transnational colocation: more AIIB loans go to provinces directly across a national border from BRI projects. This pattern cannot be explained by the economic logic of spatial synergies in infrastructure investment as it holds only for BRI projects (not for World Bank-funded infrastructure projects) and only across national borders (not across domestic provincial borders). The paper advances our understanding of China's complex usage of multilateral platforms and illuminates the AIIB-BRI linkage that has eluded the literature.

I. Introduction

A perennial question both in study and practice of international relations concerns behavioral differences between democratic and authoritarian regimes. Findings include, for example, that democracies have different inclinations toward war, as well as toward membership in international organizations (IOs).[1] With China's ascent into a global economic power rival to the U.S., the literature has been debating whether China threatens the extant liberal international order and the IOs within it.[2] We contribute to this debate by enquiring whether China is utilizing its leadership in multilateral economic institutions to serve its bilateral goals. We do so theoretically – by discussing factors China must consider when deciding whether to intervene in a multilateral organization over which it is able to exert influence – as well as empirically – by analyzing the linkage between China's central multilateral economic institutional initiative, the Asian Infrastructure Investment Bank (AIIB), and Chinese President Xi Jinping's most high-profile bilateral effort, the Belt and Road Initiative (BRI).

An expansive literature examining the political economy of international organizations, particularly the World Bank and International Monetary Fund, suggests that the U.S. and, to a lesser extent, some of its allies have utilized these multilateral institutions to advance their own

[1] We can only sample from this rich literature. Democratic peace theories suggest that, for multiple reasons, democracies are less prone to go to war with one another. Mansfield and Pevehouse (2006) have seminally shown that transitional democracies are more likely to join IOs as a commitment device. More recently, Mattes and Rodriquez (2014) argue that certain types of non-democracies can be inclined toward international cooperation, similar to their democratic counterparts, and Mazumder (2017) similarly suggests the potential of institutionally-embedded authoritarian regimes for non-militarized cooperation. Cottiero and Haggard (forthcoming) find that regional organizations composed of authoritarian regimes could have detrimental effects on democratization.

[2] Examples include: Johnston (2003); Schweller & Pu (2011); Layne (2018); Kastner & Saunders (2012); Chan et al. (2019); Kastner et al (2019).

narrow goals.[3] Various works find that countries voting in line with the U.S. at the United Nations General Assembly (UNGA) get better, i.e. larger and with fewer conditionality, IMF loans (e.g., Thacker 1999; Stone 2004; Barro & Lee 2005; Andersen et al 2006; Copelovitch 2010).[4] Given that voting alignment proxies close ties between the U.S. and another country, using the IMF – which functions as a lender of last resort to countries in economic crisis – in this way enables the pursuit of narrow American interests. The literature reaches similar conclusions about U.S. influence over World Bank loans (e.g., Frey & Schneider 1986; Kilby 2013; Kilby & Kersting 2021).[5] Additionally, the literature finds evidence that suggests multilateral assistance by international organizations is used in attempts to "buy votes" or to curry favor with strategically important countries. For example, temporary members of the United Nations Security Council tend to get more loans from the World Bank (e.g., Dreher et al 2014; Vreeland & Dreher 2014) and are more likely to get IMF bailouts (Dreher et al 2009). In short, international organizations and their key functions, such as lending, can be used by established powers to reward allies or try to win strategic friends.

As China ventures into international institution building, has it followed the U.S. pattern of exerting influence over a multilateral organization to support its narrow bilateral goals? This study analyzes the degree to which AIIB lending buttresses China's flagship bilateral foreign policy initiative, the BRI.

[3] The notion of narrow goals refers to country-specific interests pertain to the pursuit of national as opposed to global goods. Throughout the paper, when we refer to "bilateral" goals, we understand them as a subset of these narrow aims.

[4] For all works referenced in this section, "all else equal" holds in the sense that proximity to the U.S. or one of its key allies translates into privileged access from these institutions controlling for all relevant factors.

[5] The broad finding of great power influence over key multilateral economic institutions withstands the use of different variables to operationalize proximity to powerful states, such as aid or trade ties with the great power (Kilby 2011 for a review).

In 2016, China led the foundation of the AIIB as a new multilateral development bank, despite vocal American efforts to dissuade countries from joining (Perlez 2015; Anderlini and Mitchell 2015; Åberg 2016; He 2019). The AIIB was launched with 57 founding members and a $100 billion capital endowment. Within four years, this multilateral institution had nearly doubled its membership and was able to raise funds on international capital markets through issuing triple A-rated bonds. And, while the AIIB's original goal was to lend for infrastructure in Asia, its membership now extends beyond the region—the institution has almost as many non-regional members as regional ones—and its lending activities have grown to encompass budget support and soft infrastructure.[6] The AIIB's significance in the multilateral development assistance is widely recognized, with most of the relevant literature explaining China's varied motivations in founding the institution (e.g., Bustillo and Andoni 2018; Chan 2017; Chin 2016; Ikenberry and Lim 2017; Jakupec and Kelly 2015; Kastner et al. 2019; Liang 2021; Paradise 2017; Ren 2016; Strand et al. 2016; Wan 2016) and more recently how it competes with the U.S.-led World Bank (e.g., Hernandez 2017; Qian et al. forthcoming; Zeitz 2021).[7]

The BRI was launched in 2013 and aims to connect China to both regional and non-regional countries through infrastructure projects that establish a network of transnational trade routes and supply chains with China at its center. While China has not publicly disclosed the size of its BRI investment, estimations place at the figure at over $800 billion (Malik et al. 2021). Undoubtedly,

[6] Soft infrastructure includes, for example, digital infrastructure or health care. Hard infrastructure encompasses traditional infrastructure projects, such as roads and railroads.

[7] Throughout this paper, we use the terms of international organization and multilateral setting/institution interchangeably.

the AIIB and the BRI are both emblematic of ramped up Chinese ambitions in the global economic realm (Elizabeth 2018).[8]

Although the extant literature on the AIIB and the BRI also raises our core question – how the AIIB serves Chinese bilateral goals – that question remains unresolved. Kaya et al. (2021) argue that China is more likely to pursue a strategy of "remedial multilateralism" rather than "supplemental multilateralism" given the potentially high costs China would face if it did the latter. Under remedial multilateralism, China uses the AIIB to foster new connections with politically and economically distant states. This contrasts with supplemental multilateralism, where China would use the organization to bolster extant bilateral ties by rewarding friendly states or dispensing patronage, as the U.S. has tended to do in the Bretton Woods institutions. Kaya et al. provide empirical support for Chinese remedial multilateralism with respect to the AIIB based on analysis of lending at the country-level. Kaya and Woo (2021) reach a similar conclusion that supports remedial multilateralism when examining how votes were allocated to different members of the AIIB.

This lack of evidence for supplementary multilateralism is reinforced by the fact that, to date, the exact connection between the AIIB and BRI has remained something of a puzzle. Qualitative studies strongly suggest China intended for the AIIB to be an additional lending facility for the BRI (Gabusi 2017; Haga 2021; Yu 2017). However, the few existing statistical studies on

[8] Hence, there is growing literature devoted to each institution (For AIIB, see Åberg 2016; Chen 2015; Ren 2016; Liang 2021; Bustillo and Andoni 2018; For BRI, see Beeson 2018; Vadlamannati et al. 2019; Zhou and Esteban 2018; Jones and Zeng 2019; Hillman et al. 2021; Rahman 2020; He 2020).

this topic fail to find a positive link between Chinese bilateral interests (of which the BRI is the most important) and AIIB lending.[9]

We argue that China may use supplemental multilateralism under the right conditions. These conditions are likely to be different than those under which the U.S. pursues supplemental multilateralism. Unlike the U.S., China is a rising power subject to great scrutiny over its actions. Hence, it faces relatively high political costs, specifically in the form of institutional delegitimization, if it uses economic multilateralism for narrow goals. Furthermore, the discount rate between American and Chinese politicians should differ significantly. Owing to their non-elected status, Chinese officials should have lower discount rates when it comes to assessing the current value of a future stream of benefits and costs.

Despite these differences, however, we argue that China could be inclined toward some types of supplementary multilateralism when the net present value (NPV) of the intervention is positive. This should happen if China can disguise its self-serving intervention and if two additional conditions are met to reduce political costs: if there is good institutional fit between the multilateral institution and the bilateral goal, and if the salience of the intervention is high. Since both the AIIB and the BRI focus on infrastructure, the institutional fit between the two is good. Likewise, since the BRI remains a cornerstone of Chinese foreign economic expansion, activities supporting the BRI are very salient. Further, the financial and reputational benefits of using the AIIB to bolster the BRI suggests that China should be inclined toward supplementary multilateralism.

[9] Usually this participation, as in Kaya et. al. 2021, is proxied by the presence of a BRI participation agreement between the country and China, but this (as we argue in the later stages of the paper) is an incomplete approach because a country can have a project that China sees as a part of BRI in the absence of a BRI participation agreement.

Channeling financing to the same countries both through the AIIB and the BRI, however, could be too flagrant of a manipulation of the new AIIB—which would thus come with a high reputational cost for both China and the AIIB. We, therefore, consider a more discreet form of influence: transnational colocation of AIIB and BRI projects, i.e., when AIIB and BRI projects are located in proximity to each other but on opposite sides of a national border.

Through a geographic dataset we compiled that tracks the sub-national, province-level location of projects as well as which provinces neighbor one another, we map out the spatial connection between provinces that receive Chinese bilateral BRI funding and provinces that receive AIIB multilateral funding. Figure 1 below provides a flavor of the information in the dataset, demonstrating of the proximity of BRI and AIIB projects and how these projects could connect with one another across national borders.

By running spatial regressions on our dataset, we uncover patterns consistent with China pursuing supplemental multilateralism through the AIIB. While we find weak evidence of more AIIB loans going to provinces that previous received BRI loans (the more obvious pattern suggesting Chinese influence in the AIIB), we find stronger evidence for more AIIB loans going to provinces directly across a national border from foreign provinces that previously received BRI loans. Put differently, Country *X*'s Province *A* bordering Country *Y*'s Province *B* will get more AIIB loans if Province *B* has received BRI projects. This pattern of transnational colocation of AIIB-BRI projects cannot be explained by the economic logic of spatial synergies in infrastructure investment as it holds only for BRI projects (not for World Bank-funded infrastructure projects) and only across national borders (not across domestic provincial borders).

[Figure 1 here]

In addressing an empirical puzzle, the paper advances the understanding of whether and how China, as a rising power and rival to the U.S. within the U.S.-led post-war multilateral economic order, can use an IO to pursue its own goals. Below we provide a more developed account of the theoretical terrain (Section II), before applying it to the case of the AIIB and the BRI (Section III). We then introduce our estimation model and data before discussing our results (Sections IV and V). The final section reflects on the broader implications of our findings (Section V).

II. Great Power Influence Over IOs

Scholars have long recognized that in addition to leadership motivations and the provision of public goods, great powers are tempted to utilize IOs to pursue their own goals (Gilpin 1981; Lake 1993; Mearsheimer 1994/5). For example, as a state gains in economic stature in the international economic system, Gilpin (1981) argues, its dissatisfaction with the status quo grows. In Gilpin's explanation, the system reflects the dominant power's preferences. Meanwhile, a rising state's growing economic capacity boosts its appetite for the consumption of "international goods" and hence the provision of its own multilateral institutions since the rising power runs into limitations in pursuing its preferences in the extant order. Similarly, it has long been recognized that among the different possible Pareto-optimal outcomes from inter-state negotiations, the institutional outcome chosen may reflect the one consistent with the dominant state's preferences (Krasner 1991), and power struggles similarly affect ratification of international agreements (Urpelainen and Schneider 2013). This long-standing recognition that IOs are not simply solutions to collective action problems but also provide great powers with means to pursue their preferences has also motivated a rich empirical literature in the political economy of IOs, some of which was referenced in Section I. That literature finds that IOs and their key functions, such as lending, can be used by

extant powers to reward allies or try to win strategic friends. This point has become so well-established that the analysis has moved on to unearth auxiliary questions, such as the conditions that make it more likely for great powers to exert influence to divert IOs to their own ends (Dreher et al. 2022; Kersting and Kilby 2021; Stone 2011), the kind of "swing" states that great powers might try to win over (Vreeland and Dreher 2014, Chapter 2), and the role of bureaucratic agents in pursuing great power interests (Clark and Dolan 2021).

With the rise of China as an important provider of development assistance (Malik et al. 2021) and as the founding leader in a new multilateral development bank (the AIIB), attention has recently shifted to how China might be utilizing IOs, particularly the AIIB, for its own purposes (Kaya and Woo 2021). Several factors suggest China would be unlikely to use IOs for bilateral goals in quite the same manner that the U.S. has done. To begin with, China is a rising power within the U.S.-led system and thus faces greater critical scrutiny over its global ambitions (e.g,, Bustillo and Andoni 2018; Cai 2018; Gabusi 2017; Liang 2021; Macikenaite 2020). Although the U.S. has faced criticism and push-back for exercising its power over institutions like the IMF and World Bank, the well-established nature of these institutions, as well as the long history US dominance in them, means lower costs on both the U.S. and the institutions—relative to the costs faced by a rising power and a brand new organization.

This skeptical attention directed to a rising power is particularly pronounced for China because its government is an opaque authoritarian regime. In the case of development assistance, for instance, Chinese aid has been deemed "rogue" and accused of supporting repressive or undemocratic regimes for the sake of resource extraction (Lancaster 2007; Naím 2009). China has also been criticized for relying on its own work force at the expense of local employment (Alden and Hughes 2009; Tang 2016), thereby failing to benefit the local economy as much as possible.

All this coupled with a lack of transparency about its international activities—treating the foreign aid budget as a "state secret" (Taylor 2017) and requiring non-disclosure agreements from many borrowers—has subjected China to more intense scrutiny and suspicion.

In the context of this kind of international scrutiny, any overt diversion of AIIB funds to support Chinese foreign policy goals is likely to come at a high reputational cost. For one, as a fledgling institution, the AIIB can more readily attract and retain members if it is considered a truly multilateral development organization rather than a foreign policy instrument for China (Zhu 2019). Indeed, membership in the AIIB has been a highly visible and contested issue (e.g., Perlez 2015; Anderlini and Mitchell 2015). According to Stone (2011, 16), "[i]n order for international institutions to serve anyone's interests, … they must enjoy some minimal legitimacy, because they must elicit voluntarily participation" (see also Davis and Wilf 2017). In the AIIB's case, states' voluntary participation is a heightened concern because the AIIB is the newest MDB in an already crowded landscape, and its attractiveness to members depends on its relative ability to give the proper voice other states (Pratt 2021). Furthermore, the AIIB's ability to raise funding in international capital markets rests on being recognized as a credible development bank (Ella 2021; Ren 2016; Liang 2021; Bustillo and Andoni 2018; Zhu 2019).

Chen and Liu (2018) argue that the AIIB also plays an important role by signaling Chinese self-restraint. Rules-based IOs have long been seen as providing a reassuring signal to other states that the leading state does not intend to wield its power in a solely discretionary way such that others in the system have to fear its intentions (Ikenberry 2000; Stone 2011). For China to take a more prominent role in established IOs, other countries must see China as a responsible actor in this sphere. Particularly, when China has the ability to subvert an institution to pursue its short-term goals—as it does in the AIIB—China must demonstrate self-restraint. Of course, the AIIB

serves this function only if other countries perceive minimal Chinese influence. This logic provides yet an additional reason why any Chinese intervention in AIIB operations should not be overt.

In short, with high levels of politicization of the AIIB, Chinese multilateral leadership could come under attack, damaging Chinese prestige (Ella 2021; Liang 2021; Zhu 2019). A delegitimized AIIB would ultimately undermine Chinese global ambitions. For these reasons, China has very publicly strived to make the AIIB conform to best practices in multilateral lending and institutional design (Chin 2019).

Given these political costs to China of exercising overt interference with the IO, new research argues that Chinese influence over the AIIB has taken a different form dubbed as "remedial multilateralism" (e.g., Kaya et al. 2021). Under remedial multilateralism, China uses the AIIB to foster new ties with politically and economically distant states as opposed to using the organization to bolster extant bilateral ties, such as rewarding friendly states or dispensing patronage. In contrast, supplementary multilateralism is the more common finding in studies of U.S. influence over IOs: countries that are economically or politically proximate to the U.S. receive preferential treatment from U.S.-led IOs (Section I). This practice means that the multilateral channel supplements the bilateral setting.

China and Supplementary Multilateralism

But, when would China be tempted to pursue supplementary multilateralism, and is there any evidence of it in Chinese-led IOs? As highlighted above, this question becomes particularly important in the context of claims that the AIIB is a tool for Chinese geopolitical influence (Kawai 2015; Sun 2015; Callahan 2016). We argue that China is likely to pursue supplementary

multilateralism when the present value of expected benefits of doing so outweigh the present value of expected costs. When considering an intervention, Chinese officials would weigh the expected stream of future benefits against the expected stream of future costs and move forward with the intervention only when the benefits exceed the costs.

In economics, present value (PV) denotes the current equivalent (of a gain or a loss) from a stream of future benefits or costs. Benefits and costs in the near term receive more weight than those in the distant future. The discount rate reflects this; the higher the discount rate, the faster the future is "discounted" and thus the less weight is placed on future benefits or costs. The expected net present value factors in uncertainty about future benefits and costs; the less likely an outcome, the less weight it receives in the net present value summation. Rational decision-makers, in this case policy-makers in China, select the option with the highest expected net present value.[10] Understanding costs and benefits requires context-specific analysis of what China stands to gain or lose. In making its decision, China (or any other country with sufficient influence in an organization) must consider the specific advantages that using the multilateral setting offers.

Ignoring these context-specific costs and benefits for now, Chinese officials' discount rates should be relatively low, such that they discount the future relatively less. A public choice perspective—where politicians' choices maximize their own welfare—suggests that government discount rates are a function of how long officials expect to hold power. Those that expect to hold office for a short period (as in a multiparty system like the U.S.) worry less about future costs, instead placing high importance on the present; those that see their term as indefinite (as in a one-party system like China) worry more about future costs. This is borne out in empirical research.

[10] This framework assumes a risk neutral decision-maker; otherwise, a different framework that directly incorporates the decision-maker's objective function is needed.

Wright (2008) shows that autocracies that expect to survive longer are less incentivized to use foreign aid for corrupt purposes. Wright specifically points to single-party authoritarian regimes like China having a high expected probability of survival, therefore having longer time horizons, compared to typical kleptocratic regimes. The low discount rate suggests that China will be cautious in utilizing an IO to pursue short run gains.

This perspective also helps explain the evidence of American supplementary multilateralism. The short-run benefits outweigh the future costs for any one American administration, which, in any case, are lower since both U.S. power and U.S.-led institutions are well-established. In contrast, the preceding discussion suggests that the Chinese NPV calculations should be different. The high level of international scrutiny combined with the real possibility that other countries disengage from, or even quit, a discredited AIIB imply a high probability of incurring substantial costs from overt Chinese interventions in AIIB decision-making. Meanwhile, the discount rate of Chinese officials is likely to be low so that these future costs carry considerable weight.[11] Hence, if and when China intervenes, it should be for the highest priority initiatives (when benefits are highest), when costs are lowest, and through means that are relatively covert (in contrast to many U.S. cases).

What are some general factors that will affect these cost and benefits aside from obfuscation lowering the costs of intervention? These broad considerations would be in addition to the context-specific gains and costs unique to each NPV calculation. We argue two additional factors impact the expected net present value of intervention: 1) salience of the issue, namely the

[11] To be sure, we don't suggest that officials lack concerns about domestic legitimacy or "audience costs," which are shown to exist in authoritarian regimes (e.g., Weiss 2008). Our point is narrower and specific to this instance.

priority placed on the object of intervention; and 2) "institutional fit", i.e., the natural malleability of the multilateral realm to the bilateral pursuits.

The higher salience of the goal for which the great power is intervening into the IO, the greater the expected present value of benefits.[12] In some instances, salience can even trump considerations of obfuscation. For instance, extant work provides evidence of American influence over quota shifts in the IMF, which determine member states' voting power (Broz and Hawes 2006; Kaya 2015, Chapter 4),[13] even though these shifts tend to be highly public and thus subject to considerable attention by different audiences. Thus, when the stakes are high, great powers, particularly the U.S., may choose to intervene even in highly visible decisions. Presumably, these are the instances where the U.S. is willing to risk the legitimacy of the international organization since the high expected payoff from intervention is worth the cost. Since costs are higher for China than for the U.S., it may still wish to avoid highly visibly interventions. Nonetheless, if and when China intervenes, it should be for its highest priority initiatives.

Better "institutional fit" between the bilateral goals and the multilateral setting also makes interventions less politically costly and thus more attractive. Good institutional fit means the type of action the institution is directed to take is compatible with its normal operations. For example, linking geo-strategic security alliance consolidation (a bilateral goal) to multilateral loans that are ostensibly for economic development or balance of payments problems shows little institutional fit. This is perhaps one of the reasons why the relevant literature has devoted considerable attention to how temporary UNSC members fare in terms of loans from the IMF and the World

[12] The exact purpose of this intervention, however, needs to be contextualized across different great powers and in different moments in time.
[13] Quotas refers to member states' financial contributions, which in turn determine their weighted voting power, at the IMF.

Bank (see discussion in Vreeland 2019).[14] American subversion of these multilateral economic institutions for opportunistic pursuit of its own security-related agenda at the UNSC is widely recognized as a blatant subversion of the institutions. In contrast, an infrastructure bank providing infrastructure investment to one province rather than another shows relatively good institutional fit. This appears as only a minor departure from the institution's normal activity and so is less likely to raise red flags.

III. Application to the AIIB and the BRI

High Salience and Institutional Fit. Since 2013, the BRI has been a cornerstone of President Xi Jinping's bilateral efforts to increase China's global political-economic footprint (He 2020; Liang 2021), meaning the salience of this initiative is high. The BRI connects China to other countries through Chinese lending for infrastructure and, among other goals, aims to strengthen China's position in global supply chains and provide an outlet for excess Chinese production, such as in steel, as well as excess foreign exchange reserves (Bluhm et al. 2019; Cai 2018; He 2020; Rahman 2020; Yu 2017). The BRI aids Chinese companies in reducing manufacturing costs by giving them access to lower cost labor in poorer participating countries (Dreher et. al. 2022, 286). Along these lines, Xi (2017) has often explained the BRI in terms of five "connectivities" between China and the countries hosting BRI projects: policy, trade, infrastructure, financial, and people-to-people. Indeed, Xi (2017, 30) emphasized the centrality of the BRI in a speech at the 19th National Congress of the Community Party, stating: "We should pursue the Belt and Road Initiative as a priority." Its significance for Chinese foreign policy has earned BRI the status of "Xi Jinping's

[14] The origins of analyzing the importance of UNSC membership dates to Kuziemko and Werker (2006).

signature program" (Brautigam 2019).[15] For these reasons, BRI has also received significant attention from U.S. think tanks working to shape U.S. foreign policy (e.g. Council on Foreign Relations 2021). The BRI, as a cornerstone of Chinese foreign policy, is undoubtedly of high salience for the government of China.

After beginning operations in 2016, the AIIB has catapulted China to an important leadership position in the multilateral development finance landscape. As we discussed at the onset, the AIIB has grown impressively since its foundation, about doubling its membership. By 2018, this new multilateral development bank's target lending was about threefold of its $100 billion capital endowment (Kynge 2018) in aiming to meet the infrastructure needs of countries in Asia and beyond. Given both the BRI and the AIIB focus on infrastructure lending in largely overlapping geographic areas, there is a high degree of institutional fit between them. In fact, Xi (2017, 6) grouped these institutions together when describing his foreign economic policy:

> We have made all-round efforts in the pursuit of major country diplomacy with Chinese characteristics, thus advancing China's diplomatic agenda in a comprehensive, multilevel, multifaceted way and creating a favorable external environment for China's development. We have jointly pursued the Belt and Road Initiative, initiated the Asian Infrastructure Investment Bank…

Following Xi's remarks, a qualitative strand of this literature claims a strong conceptual connection between the AIIB and the BRI (Yu 2017; Cai 2018; Skålnes 2021; Zhao and Lee 2020), with numerous conjectures that AIIB lending aims to bolster, or even serve, the BRI (Haga 2021; Macikenaite 2020; Gabusi 2017). At the same time, the language of "connectivity" that marks the BRI has also been adopted by policy-makers at the AIIB, with one top official discussing the AIIB

[15] By the same token, other countries' diplomatic attendance at the Belt and Road Forum is taken as sign of "foreign interest in China's global economic leadership" (Broz et. al. 2020, pp.423).

as increasing Asia's connectivity to other regions as the AIIB has begun providing loans to countries outside of Asia (Kynge 2018).

Alongside the importance of the BRI for China's global goals, the institutional fit between the BRI and the AIIB—both focused on infrastructure lending—should increase Chinese officials' inclination to use the AIIB to serve the BRI. The institutional fit due to the AIIB and BRI's common focus on infrastructure means that the AIIB can support BRI goals without appearing to materially stray from its mandate. For example, China has made massive investment in the port of Duqm in a remote region of Oman, as has the AIIB. (Jabarkhyl 2017). Duqm is considered central to Chinese economic presence in the Gulf region, and the AIIB's investment in Duqm's commercial port is in line with Chinese ambition to develop the city into a regional hub for Chinese investors and exporters. Meanwhile, China has funded BRI projects in the neighboring Saudi Arabian province of Ash-Sharqīyah. These BRI projects predate AIIB loans for Duqm; both aim to boost connectivity in the region. In another example, the Belt and Road Initiative has several transportation projects in Pakistan's Sindh province, such as the building of motorways and highways. In India's Gujarat province, which lies directly across the border from Sindh, the AIIB has funded infrastructure projects that include a system of rural roads. These endeavors clearly fit well together to strengthen the transportation network in the area and thereby promote the type of regional connectivity the BRI envisions.

Context-specific Expected Gains. Chinese officials have to also consider context-specific gains: what would China would expect to reap from using the multilateral development bank it leads for its signature bilateral program? The benefits of using the AIIB to support the BRI could be financial and reputational. Financially, first, lending through multilateral development banks (MDBs) allows countries to pool resources, which means China leverages its own contributions

through the contributions of other member states. On the slip side, costs of project failure is financially distributed across multiple actors, as opposed to being born by a single donor. Second, thanks to bond-financing, MDBs, including the AIIB, are able to raise funds independently, which reduces the need for paid-in capital by their members, making most of their capital callable. This callable capital underwrites the institution's ability to borrow on capital markets by issuing bonds without creating a direct cost for member states. Only one-fifth of the AIIB's capital is paid-in; the rest remains callable. Using multilateral lending for bilateral goals, thus, offers concrete financial advantages.

Furthermore, it can come with two kinds of reputational benefits. First, lending multilaterally can conceal Chinese influence. Given the potential foreign public and elite backlash against Chinese influence, lending through the AIIB is a more *in*conspicuous way to support Chinese global ambitions broadly, and the BRI specifically, without drawing the ire of critical spectators (Abi-Habib 2018; Gold 2022; Wen 2022; Wheatley and Kynge 2020). For BRI projects, there is no denying the Chinese imprint; in contrast, AIIB-financed projects enjoy a multilateral imprimatur. The case of India provides an instructive example. Although India is the single largest recipient of AIIB loans, it is India's participation in the BRI that has attracted much more negative domestic reaction (Baruah and Mohan 2018). To the extent that China is influencing AIIB lending to India, this may be an example of an IO doing the "dirty work" of a great power, as the same objectives may be harder to achieve outside a multilateral setting (Vaubel 1986; Dreher et al. 2022). Second, this multilateral imprimatur also means that reputational costs from failed projects are shared across actors or falls on the multilateral institution, as opposed to solely on China.

Summary & Hypothesis

The BRI's salience for China and its institutional fit with the AIIB create strong incentives for China to use the AIIB to support BRI investments and advance China's goals embodied in this bilateral initiative. Furthermore, there are specific financial and reputational advantages to China in using the AIIB rather than further augmenting BRI lending. By rising the expected net present value to China of exert influence over AIIB lending, these features make it more likely that China will do so. However, blatant actions still come at a high price as they would undermine the perception of the AIIB as a legitimate multilateral development bank and, by extension, undermine the credibility of China in this realm, where it is trying to take leadership.

Given the expected costs in the presence of strong motivations for interference with the AIIB, we investigate a less transparent link between BRI and AIIB lending: the subnational location of the projects funded by the two sources. While within-country correlation between the location of AIIB and BRI projects could be easily detected, transnational colocation of projects would be harder to detect. *We therefore expect transnational colocation, i.e. AIIB projects to be spatially close to BRI projects in neighboring countries, but not necessarily within the same country.* We suspect that the lack of an emphasis on the subnational level could explain the puzzling absence, to date, of empirical findings linking the BRI and the AIIB. [16]

[16] Kaya et. al. (2021) includes a BRI variable in their analysis of AIIB lending but focus on the country-level.

IV. Model and Data

Since our primary goal is to see whether there is an association between the subnational location of AIIB projects (on the left-hand side) and BRI projects (on the right-hand side), our data are organized at the first subnational level (ADM1). As a shorthand, we refer to these subnational units as provinces though the official terminology varies from country to country.[17]

Estimation model

In spatial regressions, there are some decisions to make regarding how to model spatial relationships, e.g., whether to include spatial lags of the dependent variable (spatial autocorrelation) and the covariates, and whether to model spatial correlation in the error term. Our initial estimations suggest that the inclusion of spatial autocorrelation is not necessary, which we next explain. To present the empirical model, we start with a simplified version that focuses just on province locations:

$$Y_i = \alpha + \delta\left(\sum_{k\in C_i} Y_k\right) + \beta_1 X_i + \beta_2\left(\sum_{k\in C_i} X_k\right) + \varepsilon_i \text{ for all } i \in S \quad (1)$$

C_i is the set of provinces contiguous to province i; S is the set of province-level observations in the estimation sample. The model includes spatial autocorrelation (measured by δ). The model

[17] ADM1 refers the largest subnational administrative division in the country. Examples include states in the United States and provinces in Canada. We use the ADM1 level rather than more precise locations because our location information for some sources is less fine grained, for example just identifying the centroid of the province. This could bias results toward finding Chinese influence. In some cases, we locate AIIB and BRI projects at the centroid of the province (due to lack of more precise information) while we have precise coordinates for World Bank projects. Using coordinate data, even controlling for the location of World Bank projects, AIIB projects would appear to locate near BRI projects (i.e., at the provincial centroid). Conducting the analysis at the ADM1 level eliminates this problem.

also allows the value of X in province i to impact the value of Y in province i (β_1) and the values of X in provinces contiguous with province i ("neighbor provinces") to impact the value of Y in province i (β_2). In other words, this model includes both spatial autocorrelation and spatial lags of covariates. All this is standard in spatial regressions (sometimes termed the Spatial Durbin model (Elhorst 2014)) except that here C_i can include both $k \in S$ and $k \notin S$. That is, neighboring provinces need not be in the estimation sample to impact the outcome Y.[18]

It is essential for us to include neighboring provinces not in the estimation sample of AIIB loans. These provinces are border provinces in countries that do not borrow from the AIIB but may still receive BRI projects. For example, there are no AIIB projects in Thailand (which leaves Thailand out of our estimation sample), but Thailand has received BRI projects. Thailand borders Laos and Myanmar, both of which are in our estimation sample. For provinces in these two countries that border Thailand (nine of 17 in Laos and five of 15 in Myanmar), the number of BRI projects in neighboring provinces should include those in Thailand. In total, the 20 countries in our sample have 26 neighboring countries with no AIIB project locations, i.e., there are 26 relevant out-of-sample countries. At the province level, the figures are 498 in-sample and 270 out-of-sample. The relevance of out-of-sample neighbors poses a substantial problem for models that include a spatial lag of the dependent variable such as the one in equation (1), especially for calculating indirect effects that reflect spillovers between neighbors.

Given the trade-off between including a spatially lagged dependent variable and properly accounting for neighboring provinces, we run Moran tests for spatial dependence using an order-1 spatial contiguity matrix and the specifications spelled out in equations (2) and (3) below (Moran

[18] The issue of what happens at the edges of a spatial sample is generally not considered in the spatial econometrics literature, presumably because no good theoretical solutions are available.

1950; Kelejian & Prucha 2001).[19] These tests could help us decide whether the inclusion of an autocorrelation term is necessary. The Moran tests fail to reject the null hypothesis that the error terms are independently and identically distributed (p = 0.5594 and p = 0.7883). That is, the tests fail to reject the hypothesis that there is no spatial lag once we allow for spatially lagged covariates.

Based on these conceptual and statistical considerations and tests, we opt for the approach that includes all neighboring provinces and so estimate models that do not include the spatially lagged dependent variable (i.e., in (1) $\delta = 0$). Equation (2) provides the main spatial regression estimation model, which incorporates this restriction (omitting spatial lags of the dependent variable). The equation also spells out the variables used in our analysis with the notation needed to track the panel nature of the data: province (i), country (j), and year (t).

$$AIIB_{ijt} = \alpha + \beta_1 \left(\sum_{r=1,2,3} BRI_{ijt-r} \right) + \beta_2 \left(\sum_{\substack{(k,\ell)\in C_{ij} \\ r=1,2,3}} BRI_{k\ell t-r} \right) + \beta_3 \left(\sum_{r=1,2,3} WB_{ijt-r} \right) + \beta_4 \left(\sum_{\substack{(k,\ell)\in C_{ij} \\ r=1,2,3}} WB_{k\ell t-r} \right) + \beta_5 Z_{ij} + \varepsilon_{ijt} \quad \text{for all } (i,j,t) \in S \tag{2}$$

where

$AIIB_{ijt}$ AIIB-funded projects in province i, country j in year t

BRI_{ijt-r} Chinese BRI projects in province i, country j in year $t-r$

WB_{ijt-r} World Bank-funded infrastructure projects in province i, country j in year $t-r$

[19] An order-1 spatial contiguity matrix allows for a direct impact of immediate neighbor provinces on the province in question but only indirect effects of provinces further away (i.e., noncontiguous provinces).

Z_{ij} Other factors (population, nighttime lights) in province i, country j

This specification allows for spatial association between BRI projects approved in the prior three years ($t - r$ for $r = 1,2,3$) and subsequent AIIB project approvals, whether in the same or neighboring provinces. As above, C_{ij} is the set of provinces contiguous to province i in country j. Province k in country ℓ is included in this set if it is contiguous, even if country ℓ does not borrow from the AIIB. Some specifications further breakdown neighboring provinces into domestic and foreign neighbors to allow for different values of β across these categories.

Our identification strategy primarily rests on including an appropriate set of control variables to avoid omitted variable bias, though we later try alternative methods. Even in the absence of Chinese influence, the same set of economic and social characteristics could make a province a desirable location for both AIIB and BRI projects (since both institutions focus on infrastructure investment). To account for these province-specific factors, we include provincial population (in 2020) and nighttime lights (average annual emissions per capita, from 2015).[20] The aid literature finds more funds to go to more populated areas, and nighttime lights are the preferred measure of subnational economic output (Dreher et. al. 2022, 205; Henderson et al., 2012). To better capture the myriad additional factors likely to attract infrastructure investment, we also include World Bank-funded infrastructure projects (also for the prior three-year period). World Bank-funded infrastructure project location should respond to the same unobserved location

[20] We used nighttime lights in 2015 rather than in year $t - 1$ to avoid potential endogeneity concerns (e.g., if anticipation of AIIB activity impacts light emissions). We use a single value of population since these figures are relatively stable over time. Because these variables are time invariant, Z in equation (2) has no time subscript.

characteristics that attract AIIB projects.[21] Without adequate controls, such omitted factors could generate a correlation between AIIB and BRI investment locations that does not reflect Chinese influence over AIIB lending decisions. The same-province World Bank project count serves this function for the same-province BRI variable and the neighboring-provinces World Bank project count serves this function for the neighboring-provinces BRI variable. Likewise, when we introduce a distinction between domestic and foreign neighbors, we apply it to World Bank-funded projects as well.

We also explore two extensions to the model in equation (2). The first is to include country-year fixed effects α_{jt}:

$$AIIB_{ijt} = \beta_1 \left(\sum_{r=1,2,3} BRI_{ijt-r} \right) + \beta_2 \left(\sum_{\substack{(k,\ell)\in C_{ij} \\ r=1,2,3}} BRI_{k\ell t-r} \right) + \beta_3 \left(\sum_{r=1,2,3} WB_{ijt-r} \right) + \beta_4 \left(\sum_{\substack{(k,\ell)\in C_{ij} \\ r=1,2,3}} WB_{k\ell t-r} \right) + \beta_5 Z_{ij} + \alpha_{jt} + \varepsilon_{ijt} \quad (3)$$

for all $(i, j, t) \in S$

Our research question focuses solely on the location of projects within a country rather than the country-level allocation process. Including country-year fixed effects thus means our empirical analysis also focuses solely on the location of projects within a country. This is practical in the

[21] To the extent that China has influence in the World Bank or that the World Bank attempts to compete with Chinese aid, BRI lending may impact World Bank lending. This would tend to bias our analysis against finding evidence of Chinese influence in the AIIB so that our estimates can be considered conservative.

context of least squares estimation, which is why we include the fixed effects when our models are linear, but not in Probit or count models. Probit model estimation requires variation across provinces in a given country-year, meaning that the estimation sample can only include years when the country received at least one AIIB loan. In a similar vein, count models face convergence problems due to the limited degrees of freedom remaining once country-year fixed effects are estimated. Both Probit and count models also face challenges regarding consistent estimation of fixed effects.

The second extension to equation (2) allows for contiguous spatial correlation in the error term ε. With i and k indexing provinces and j and ℓ indexing countries, and as above C_{ij} being the set of provinces contiguous to province i in country j, contiguous spatial correlation is modeled as:

$$E\left(\varepsilon_{ijt}\varepsilon_{k\ell t}\right) = \lambda \text{ for } (k,\ell) \in C_{ij};\ E\left(\varepsilon_{ijt}\varepsilon_{k\ell t}\right) = 0 \text{ for } (k,\ell) \notin C_{ij} \quad (4)$$

Elhorst (2014) refers to this as the Spatial Durbin Error model. If the estimation model omits explanatory variables that are uncorrelated with the included explanatory variables but themselves are correlated spatially, their (implicit) inclusion in the model's error term implies a spatially correlated error term and thus a bias in reported standard errors.[22]

Data

[22] In this case, having contiguous provinces that are not in the estimation sample does not create a problem since no spillover effect needs to be calculated. Thus, here we do not face a choice between modeling a spatial correlation and using the correct measure of neighbor for the independent variables.

Our dependent variable measures lending by the AIIB based on project counts and are drawn from the organization's online database (AIIB 2022).[23] For each AIIB project, we determine the providence in which it is located from the title and description. For example, Project 000477 is titled "India: Chennai City Partnership: Sustainable Urban Services Program." Chennai is the capital of Tamil Nadu. Projects that have no subnational location, e.g., because they are national, are excluded. The year of the project is based on its financing approval date. Our measure of AIIB lending (our dependent variable) is the number of projects approved for the province in the given year.

Our key independent variables track the location of BRI projects and are based on the Reconnecting Asia database (Reconnecting Asia Project 2020). We add longitude and latitude coordinates to place projects within provinces using ADM1 boundaries defined by GADM 4.0.1.[24] We lag BRI variables by one year so that the BRI project predates related activity at the AIIB. This is a sufficient lag since the AIIB project approval timeline tends to be short, typically 6 months from concept review to financing approval.[25] To capture proximity, we tabulate both BRI projects in the same province as well as BRI projects in neighboring provinces.

As indicated above, our control variables include provincial population, nighttime lights, and World Bank projects. We compile province-level 2020 population data by aggregating one-kilometer-wide raster data from WorldPop (2022) to the ADM1 boundaries defined by GADM 4.0.1. Given the wide range of population values (running from 15,331 people in Batanes, an

[23] This was our preferred source for the data as it includes projects clearly declared as part of BRI. We additionally considered lending volume measured via the dollar amount of approved projects but our data for loan amounts are substantially less complete. We, therefore, also use project counts for our BRI and World Bank variables.
[24] In the case of disputed territories, we assign the territory to the government borrowing for the project located there.
[25] Spatial regression results reported below are robust to switching to a two-year lag.

archipelago province in the Philippines, to 23.7 million people in Uttar Pradesh, the most populous state in India), we log this variable. Our nighttime light data are from Elvidge et al. (2021) and Goodman et al. (2019), converted to per capita terms and logged. World Bank project data are drawn from the International Aid Transparency Initiative (IATI) application programming interface (API) because World Bank reports additional data to IATI, which it does not make available on its website. Given multiple locations are often reported for individual World Bank projects, for each project, we identify in which provinces it had locations (again using boundaries from GADM 4.0.1). The count variables we report indicate how many World Bank-funded projects had at least one location in the province in the given year; that is, these variables count projects, not locations.[26]

Our sample is limited to those countries eligible to borrow from the AIIB in the years they were members to the AIIB. In practice, this means we only cover countries that received at least one AIIB loan between 2016 (when AIIB lending began) and 2021.[27] Table 1 provides summary statistics for the sample used in our baseline estimations. Our unit of observation is the province-year for countries that received at least one of the 66 AIIB loans made between 2016 (when the AIIB began lending) to 2021. For such countries that were not founding members, our sample begins the year they joined the AIIB. The sample includes 497 provinces in 20 countries. These

[26] World Bank project variables are meant to capture features of the province that attract AIIB and BRI infrastructure projects so we use only World Bank infrastructure projects. The World Bank identifies multiple sectors per project and reports percentages for each sector. Following Zeitz (2021), we classify a project as funding infrastructure if its largest sector is infrastructure-related (i.e., agriculture, energy, industry, information and communication technology, transportation, or water and sanitation). If an infrastructure sector is tied for largest sector, the project is counted as infrastructure.

[27] For each country, the first year covered is 2016 (if the country was a founding member of the AIIB) or the year the country joined the AIIB (if the country joined later). We also exclude the province of Sindh in Pakistan as this provides to be an influential outlier with two AIIB projects in 2019 and 14 BRI projects over the prior three years.

figures suggest that most provinces received no AIIB loans in a given year; seven provinces received two projects in the same year (three provinces in India and one each in Bangladesh, Pakistan, Turkey and Uzbekistan). BRI projects are somewhat more numerous, with a total of 111 across the 2982 province-years. BRI projects per province range from zero to six (one province in Pakistan). The number of neighboring province BRI projects is larger since most provinces have more than one neighbor; the neighbor project count ranges from zero to 14 (one province in Pakistan). Since we often have multiple locations for each World Bank project, project counts for the World Bank (lagged one year) are substantially higher: 0.306 projects with a location in a province.

[Table 1 here]

V. Findings and Discussion

As outlined above, our empirical strategy is to estimate the relationship between the number of BRI projects in a province or neighboring provinces in recent prior years and the number of AIIB projects in the province in year t, *ceteris paribus*. Since the data set is a spatial panel with a dependent count variable, a variety of estimation methods are used. We begin with a baseline model in Table 2, which reflects the spatial nature of the data by including the neighbor values of BRI and World Bank project counts. Estimation is via negative binomial, least squares, and Probit procedures. All specifications include year dummies, except Column (3), which includes country-year dummies. Reported t/z statistics and statistical significance are based on province-clustered standard errors.

Column (1), based on a negative binomial model, show that the own-province BRI project variable is positive but not statistically significant. The number of BRI projects in neighboring

provinces (both domestic and foreign) is again positive but marginally significant. Our variables intended to capture the attractiveness of the province for infrastructure projects more generally all enter with positive and statistically significant coefficient estimates: Provinces with more World Bank infrastructure projects, larger populations, and higher nighttime light emissions per capita receive more AIIB infrastructure projects, *ceteris paribus*.

[Table 2 here]

Results are similar using OLS in column (2), except that now none of the BRI coefficients are statistically significant. Point estimates are substantially smaller but this difference is due to characteristics of the estimators, i.e., the negative binomial using the log count rather than the count. Column (3) adds country-year dummies so that the coefficient estimates reflect purely within country-year, across province variation. This results in a number of changes (especially the in the coefficient estimate for nighttime lights) but not for the estimated effect of BRI projects, which remains statistically insignificant. Finally, Column (4) reports marginal effects from a Probit estimation. In this setting (examining whether or not a province received any AIIB projects), the neighboring province BRI variable is marginally significant once again.

Table 3 provides estimates from a Spatial Durbin Error model that allows for correlation between the error terms for contiguous provinces using a generalized spatial two-stage least squares procedure that incorporates a GMM estimation in the first stage; this departure from OLS accounts for the small differences in the point estimates as compared to the corresponding columns in Table 2.[28] The specification in Column (1) matches that from Table 2, Column (2), except for the treatment of the error term; the same holds for Column (2) and Table 2, Column (3). Column

[28] We implement this via Stata's spregress and spxtregress commands. Also, estimation via maximum likelihood yields similar results but the normality assumption behind the maximum likelihood estimator is hard to justify in this context.

(3) presents a province random effects model (with year dummies).[29] Finally, Column (4) is a province fixed effects model (with year dummies).[30] The main take-away from Table 3 is the (marginal) statistical significance of the coefficient estimates for own-province and neighboring province BRI projects in the pooled regressions.[31] These results prove some—but not strong—evidence of a "BRI effect" that might signal Chinese influence over AIIB lending.

[Table 3 here]

Above we argued that the extant literature focuses on country as the unit of analysis but that more fine-grained links between BRI and AIIB projects in terms of their specific subnational locations are likely to be less visible. AIIB and BRI projects that are proximate to each other but fall on opposite sides of a national border would particularly be less visible, even though in the case of infrastructure investments, such projects could be components of the same overall scheme. A pattern of AIIB projects locating near foreign BRI projects might attract less attention and thus be less likely to focus attention on China's role in the AIIB.

Table 4 explores this hypothesis by splitting the neighbor province variables based on national borders. A BRI project is classified as a "domestic neighbor" if it is located in a neighboring province in the same country but as a "foreign neighbor" if it is located in a neighboring province in a different country. To maintain parallelism in the control variables, we do the same with the neighboring World Bank project variables. Table 4's columns are structured

[29] As in other settings, the random effects specification requires a strong set of assumptions.
[30] Population and nighttime lights are not time varying in our data set and so drop from this fixed effects specification.
[31] Given the limited number of observations per province (6 at most) and the limited within-province variation in the key variables, the fixed effects outcome is hardly surprising.

like those of Table 2. The key pattern from this table is that the coefficient estimate for domestic neighboring BRI projects is not significant in any of the specifications, while that for foreign neighboring BRI projects is significant in all specifications. The point estimates are substantial in relative terms; an additional BRI project in a neighboring foreign province roughly doubles the predicted number of AIIB projects, ceteris paribus.

[Table 4 here]

The above results are robust to a range of different variable definitions regarding the set of countries and provinces used in the estimation. Our main sample includes all AIIB borrowers—including China itself. While this makes sense when considering how AIIB decisions are made—Chinese influence over lending to China would still reflect infringement on AIIB autonomy—the BRI project count may have a different meaning inside China. We address this concern in three ways. First, we simply exclude observations for China itself. Second, we also exclude Chinese provinces from the neighboring province calculations for the BRI variable.[32] Finally, to completely avoid the possibility that "China is different," we drop any province that borders China. In all cases, the results reported above continue to hold (available on request): the foreign neighbor BRI continues to enter with a positive and significant coefficient.

To interpret the meaning of these results, it important to put the foreign neighbor BRI estimate in context. In principle, AIIB projects could be more numerous when there are more nearby BRI projects because of infrastructure synergies. That is, the presence of nearby BRI projects might make subsequent AIIB investments more productive. If so, the link between these projects would reflect an efficient allocation of AIIB resources rather than Chinese influence over the institution. However, the same logic should apply in other contexts as well. If colocation of

[32] For symmetry, we do the same for the World Bank neighbor province variable.

infrastructure projects were driven by synergies, the same-province variables (BRI and World Bank) and the domestic neighboring-province variables (BRI and World Bank) should enter with positive and significance coefficients. This should likewise hold for foreign neighboring-province World Bank projects. Of these, only the same-province World Bank project variable enters with a positive and statistically significant coefficient (and, as suggested before, this may reflect province characteristics that attract both World Bank and AIIB-funded projects rather than the impact of World Bank projects themselves). In short, pattern of results is not consistent with an infrastructure synergies explanation; it is consistent with AIIB lending supporting BRI objectives.

VI. Conclusions

This paper provides the first detailed analysis of possible links between AIIB and BRI projects through a large N-study. This analysis finds novel evidence suggesting Chinese supplementary multilateralism, i.e., China using its influence over a multilateral organization to supplement its bilateral development finance. To do this, the paper introduces a new dataset of subnational locations for BRI and AIIB projects that can be used in future studies. Although both policy discussions and the academic literature suggest a connection between the AIIB and BRI such that China uses the AIIB to bolster the BRI, the few extant studies to date – based on country-level analysis – fail to find a connection. Instead, these studies point to remedial multilateralism, whereby China uses the AIIB to connect with economically distant countries. More broadly, the paper illuminates the understanding of Chinese influence over IOs as distinct from the predominant form of American influence witnessed in the post-war order.

We present a theoretical argument that China will be motivated to intervene in the multilateral setting (here by exerting its influence over the AIIB) to serve its bilateral goals (the

actualization of the BRI) conditional on certain factors that determine the expected net present value of such interventions. In addition to specific advantages of using a multilateral forum for bilateral goals, such as bypassing domestic audiences in recipient countries that are skeptical of Chinese involvement, the importance (salience) of the bilateral goal should increase the present value of expected benefits. An intervention that is less visible, and where the institutional fit between the bilateral and multilateral settings is good, should have a lower present value of expected costs (especially in terms of damage to both China's and the AIIB's reputations). Under conditions where the net present value of expected benefits are high and the costs are low, Chinese intervention is more likely.

Our empirical findings are consistent with a subtle form of Chinese supplemental multilateralism based on project colocation. Evidence of colocation of BRI projects and subsequent AIIB projects in the same province is weak, as is evidence of such a pattern in neighboring provinces within a country. However, when considering AIIB and BRI projects in different countries, we find strong evidence of transnational colocation. Provinces across the border from a foreign province with BRI-funded projects receive more AIIB-funded projects than other provinces in the same country. This pattern of transnational colocation cannot be accounted for by the specific features of these provinces and hold across different models. We also present evidence that these are unlikely to be driven by synergies between the infrastructure projects that the BRI funds and the infrastructure projects that the AIIB funds. Plausibly, then, the transnational colocation of AIIB and BRI projects reflects Chinese policy-makers' expressed policy to link the AIIB to the BRI.[33] This is a subtle form of supplementary multilateralism in that it is a less transparent way to supplement China's BRI initiatives than simply directing more AIIB projects

[33] We never suggest it is merely a tool of the BRI.

to countries that are big BRI recipients. This makes it less likely to be detected and, if detected, plausibly deniable. Nonetheless, despite all of our robustness checks, as in all observational data, this association between AIIB and BRI project locations is correlational.

Future work should expand upon these results as more data become available – as we explained, data on project loan sizes still contain too many missing variables. Additionally, future works should examine how the coexistence of the AIIB and the BRI affect the regional development landscape. We do not assert that Chinese influence over the AIIB to support the BRI exclusively benefits China – any assistance given for self-interested reasons could generate returns for other. Hence, it is plausible that even with this pattern, Chinese assistance delivers economic benefits to localities. This said, there could also be considerable downsides to Chinese assistance, including the supporting of authoritarian or corrupt regimes, which are obviously negatives for development. Future work can also examine how relations within the region or among countries are affected through the patterns we observe here and elsewhere on Chinese aid. For example, how does Oman courting Chinese financing affects its extant relations with India, or how do AIIB and BRI support in a region bolster regional ties, or alternatively create a competition for investment? We hope that the greater clarity on Chinese development assistance in the first place lays the groundwork for these kinds of analyses.

Indeed, the paper contributes to several scholarly and policy-relevant debates. First, Chinese multilateral assistance is undoubtedly changing the landscape of international development "aid," which includes not just concessional funds (grants and below-market loans), but also non-concessional lending (market-rate or above market rate loans). Yet, scholars are still in the early stages of unpacking what Chinese "aid" looks like. This project helps advance this agenda. Second, understanding the nature of different dimensions of Chinese involvement in

multilateral development assistance and the linkage between them – specifically the connection between the bilateral BRI and the multilateral AIIB – helps illuminate broader questions about Chinese influence in the U.S.-led order. For example, researchers are now turning to questions like whether the AIIB competes with the World Bank (Hernandez 2017; Zeitz 2021 Qian et al. 2022). Our study is relevant to these works– if China is using multilateral AIIB to bolster its foreign policy goals, World Bank emulation of Chinese infrastructure projects (Zeitz) could lend an inadvertent hand to Chinese goals. How great powers use multilateral economic institutions is a perennial concern because it means these rules-based settings do not only help states cooperate and arbitrate disagreements, but also provide a platform for powerful states to advance their interests. While China as a rising power may not be able to manipulate multilateral settings like the U.S. has done, it seems to be finding its own ways of doing so.

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Figure 1: Location of AIIB and BRI Projects

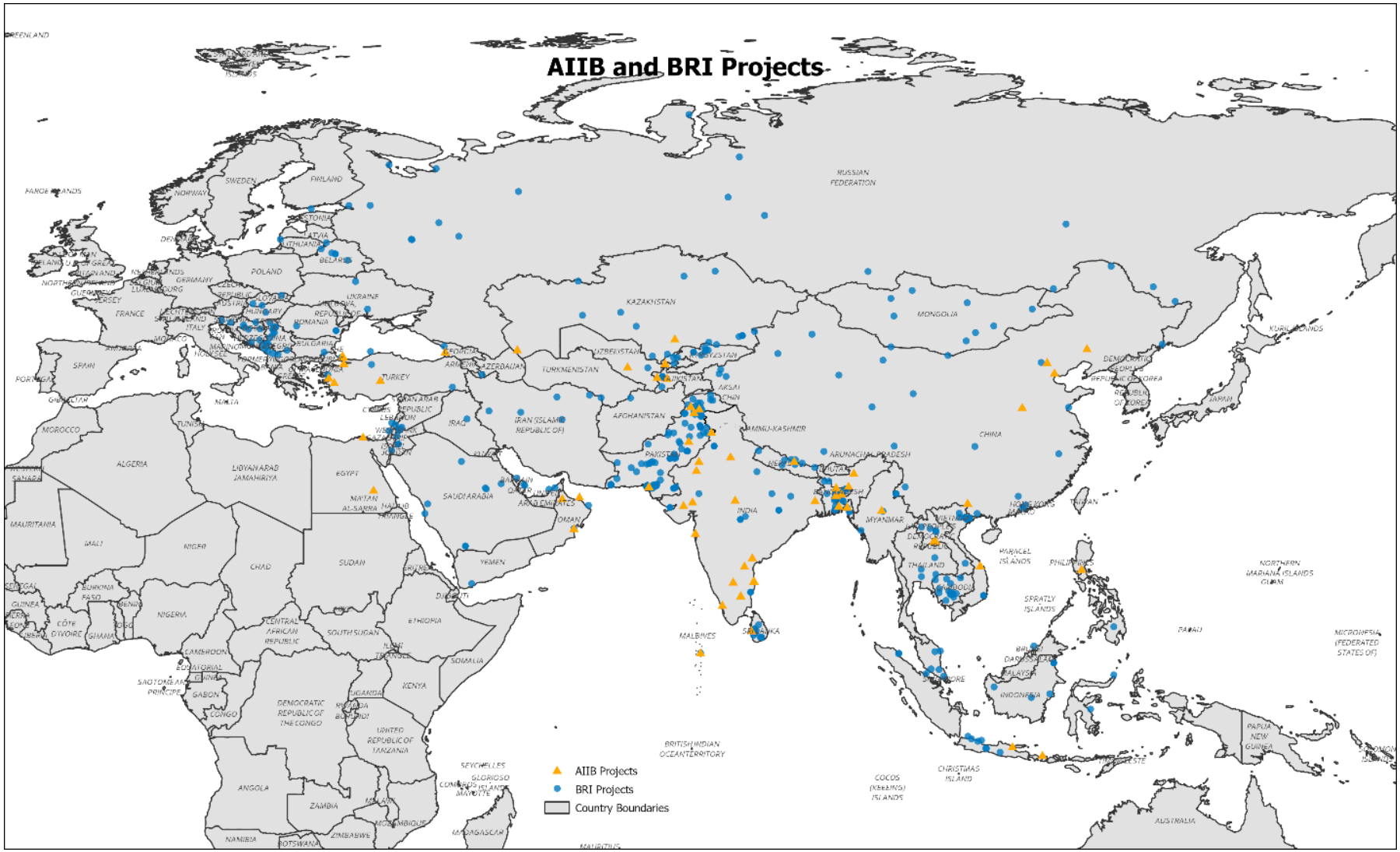

Table 1: Descriptive Statistics for Baseline Estimation

	mean	sd	min	max
# AIIB projects (t)	0.022	0.162	0	2
# BRI projects (t-1,2,3)	0.041	0.230	0	4.67
# neighboring BRI projects (t-1,2,3)	0.237	0.888	0	12
# World Bank projects (t-1,2,3)	0.306	0.403	0	3.67
# neighboring World Bank projects (t-1,2,3)	1.476	1.742	0	13
Population in millions (2020)	8.113	21.793	.0153	237
Nighttime light per capita (2015)	0.035	0.100	.000127	1.14
Year	2018.5	1.708	2016	2021
N	2982			
Provinces	497			
Countries	20			

BRI & World Bank project counts averaged over prior 3 years (t-3 to t-1).

Table 2: Baseline Estimation Results

	(1) nbreg	(2) reg	(3) reg2	(4) probit
# BRI projects (t-1,2,3)	0.248	0.0260	0.0350	0.00370
	(1.11)	(0.97)	(1.40)	(0.72)
# neighboring BRI projects (t-1,2,3)	0.123*	0.00771	0.0103	0.00330*
	(1.65)	(0.97)	(0.90)	(1.80)
# World Bank projects (t-1,2,3)	0.892***	0.0388**	0.0276*	0.0175***
	(3.68)	(2.56)	(1.85)	(3.09)
# neighboring World Bank projects (t-1,2,3)	-0.104	-0.00318	-0.00995***	-0.00190
	(-1.27)	(-1.26)	(-2.80)	(-1.15)
Population in 2020 (log)	0.534***	0.0116***	0.0191***	0.00923***
	(6.09)	(3.56)	(3.92)	(4.88)
Nighttime light per capita in 2015 (log)	0.296***	0.00366***	0.00230	0.00577***
	(2.59)	(2.78)	(0.70)	(2.98)
N	2982	2982	2982	2982
Provinces	497	497	497	497
Countries	20	20	20	20

t/z statistics based on province-clustered SEs; * 0.10 ** 0.05 *** 0.01. Probit reports average marginal effects.
All specifications include unreported year dummies except reg2, which includes country-year dummies.

Table 3: Spatial Regression Estimation Results

	(1) Pooled	(2) Pooled2	(3) RE	(4) FE
# BRI projects (t-1,2,3)	0.0261*	0.0347**	0.0247	-0.0311
	(1.69)	(2.16)	(1.60)	(-1.27)
# neighboring BRI projects (t-1,2,3)	0.00794*	0.0105*	0.00678	-0.0533***
	(1.92)	(1.83)	(1.59)	(-5.54)
# World Bank projects (t-1,2,3)	0.0387***	0.0265**	0.0366***	0.00490
	(4.01)	(2.47)	(3.74)	(0.34)
# neighboring World Bank projects (t-1,2,3)	-0.00303	-0.0101***	-0.00260	-0.00179
	(-1.33)	(-3.74)	(-1.10)	(-0.42)
Population in 2020 (log)	0.0115***	0.0188***	0.0118***	
	(5.70)	(6.59)	(5.50)	
Nighttime light per capita in 2015 (log)	0.00359**	0.00228	0.00372**	
	(2.10)	(0.64)	(2.02)	
N	2982	2982	2982	2982
Provinces	497	497	497	497
Countries	20	20	20	20

z statistics based on SEs incorporating spatial contiguity lag; * 0.10 ** 0.05 *** 0.01.
All specifications include unreported year dummies except Pooled2 which includes country-year dummies. Estimation via generalized spatial two-stage least squares.

Table 4: Spatial Regression Estimation Results with foreign split

	(1) Pooled	(2) Pooled2	(3) RE	(4) FE
# BRI projects	0.404	0.0430	0.0382	0.00714
	(1.13)	(1.59)	(1.46)	(0.95)
# domestic neighboring BRI projects (t-1,2,3)	0.0439	-0.00129	-0.0136	0.00160
	(0.28)	(-0.18)	(-0.60)	(0.51)
# foreign neighboring BRI projects (t-1,2,3)	0.160**	0.0259***	0.0220**	0.00484***
	(2.15)	(2.74)	(2.12)	(2.79)
# WB projects (t-1,2,3)	1.005***	0.0408***	0.0277*	0.0202***
	(3.79)	(2.68)	(1.83)	(3.43)
# domestic neighboring WB projects (t-1,2,3)	-0.188*	-0.00475	-0.0108**	-0.00394*
	(-1.81)	(-1.52)	(-2.56)	(-1.93)
# foreign neighboring WB projects (t-1,2,3)	0.0569	-0.00109	-0.00708	0.00190
	(0.54)	(-0.28)	(-1.38)	(0.92)
Population in 2020 (log)	0.544***	0.0114***	0.0194***	0.00945***
	(6.10)	(3.57)	(3.92)	(4.85)
Nighttime light per capita in 2015 (log)	0.295**	0.00355***	0.00271	0.00579***
	(2.56)	(2.67)	(0.84)	(2.95)
N	2982	2982	2982	2982
Provinces	497	497	497	497
Countries	20	20	20	20

z statistics based on SEs incorporating spatial contiguity lag; * 0.10 ** 0.05 *** 0.01.
All specifications include unreported year dummies except Pooled2 which includes country-year dummies.