Green Industrial Policy and the Geopolitics of Investment in Critical Minerals and Batteries[*†]

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Abstract

Like many industrial policies, the Inflation Reduction Act (IRA) of 2022 sought to alter the structure of domestic industry, in this case to increase investments in green technologies and critical minerals. But it also had broader ambitions that are not typical of industrial policy, namely, to de-risk the *global* battery supply chain from China by giving tax credits to products made with critical minerals and battery components produced in friendly countries. We ask whether the IRA, as an industrial policy, has had such effects *outside* US borders. We collected data on investments in the battery supply chain and critical minerals to test our expectations and show that since the IRA took effect, foreign direct investments in countries with an IRA-compliant Free Trade Agreement (FTA) have increased significantly compared to those geopolitical allies of the US without an FTA. Our analyses find that this investment effect is significant, and driven entirely by increases from non-Chinese investors, although there is no evidence that Chinese investors are withdrawing their investments from mineral-rich countries. The IRA thus had the anticipated effects of shifting investment decisions outside (and within) the US borders. Investment patterns also reveal that mineral-rich countries that have an FTA with the United States can indeed play both sides - receiving investment from China and US allies. These findings have important implications for the literature on geoeconomics, weaponized interdependence, green industrial policies, and economic development in resource-rich countries.

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1 Introduction

In 2024, battery demand in the global energy sector reached an historic 1TWh, driven mainly by electric vehicles (EVs), where demand rose by 25 percent over 2023 and is expected to triple by 2030 (IEA, 2025*a*). China dominates by far the production and demand for EV batteries, as well as every stage of the supply chain, from mining of critical minerals to the production of EVs. Western countries are attempting to close this gap in clean energy technology (and advance energy transition goals) through industrial policy initiatives such as the Inflation Reduction Act (2022) in the US and Europe's Green Deal Industrial Plan (2023). Industrial policies typically entail regulations, incentives, and subsidies with the goal of effecting structural change in industry *within* a country. The 2022 Inflation Reduction Act (IRA) is no exception. There are tax incentives, subsidies, and local content requirements that are designed to stimulate green investment in multiple facets and sectors of green industry in the United States. However, the IRA also had wider geopolitical ambitions, notably, to diversify global supply chains in critical minerals and batteries away from China.[1] The IRA does not just include monetary incentives for firms to reshore supply chains within the U.S. but also to "friendshore" investments to countries that are aligned with the U.S., defined as those countries that have a Free Trade Agreement (FTA) with the U.S.

Can green industrial policy achieve the goal of reshaping supply chains *beyond* national borders? We answer this question using newly collected data on both greenfield FDI and brownfield investments in critical minerals and the battery supply chain. Friendshoring is essential for successfully challenging China's dominance in the battery supply chain and critical minerals more generally. The global integration of supply chains means that components of an electric vehicle battery may cross international borders multiple times in the production process. While that is true of many sectors in the global economy, what is distinctive about

[1]The Energy Act of 2020 defines a "critical mineral" as a non-fuel mineral or mineral material essential to the economic or national security of the U.S. and which has a supply chain vulnerable to disruption. Critical minerals are also characterized as serving an essential function in the manufacturing of a product, the absence of which would have significant consequences for the economy or national security (USGS 2022).

the clean energy supply chains is the dominance of China and the concentration of mineral extraction, refining, and battery production.[2] Although recent years have seen modest diversification in lithium and other mineral production, China remains the dominant supplier for 19 of 20 refined critical minerals reviewed by the International Energy Agency (IEA) in 2025. The IEA estimates that China is on course to supply over 60 percent of refined lithium and cobalt, and around 80 percent of battery-grade graphite and rare earth elements by 2035 (IEA, 2025*c*). Given the limited potential for expanding mining and refining in the U.S., successfully transitioning away from Chinese dominance should include a reliance on friendly countries.

From the US perspective, China's dominance in critical minerals and clean technology creates vulnerabilities not only for energy security, but also for national security, given the vital role of minerals such as rare earth elements in military technology (Allan and Nahm, 2025). Closing this gap will not be an easy task for reasons we discuss below, one of which is the cost advantage that China enjoys, which makes it difficult for new entrants in the market to compete with the subsidized and vertically integrated Chinese firms. China's ability to 'weaponize' this strategic advantage, (Farrell and Newman, 2019) such as by restricting the export of rare earths and permanent magnets, or by imposing technology exports in critical minerals, as it has done in 2025, represents a significant risk to Western countries and gives China a tremendous advantage in this rivalry.[3]

While friendshoring is key to any strategy to break China's stranglehold on critical mineral and battery supply chains, we know very little about whether and how (industrial) policies in one country affect the decisions by private actors to relocate their investments in other countries. The IMF and others have offered compelling evidence that geopolitical alignments increasingly shape aggregate transnational investment flows (Aiyar, Malacrino

[2]A supply chain concentration in the semiconductor industry also may be linked to the US CHIPS Act under the Biden Administration.

[3]In December 2024, China restricted the export of gallium, germanium, and antimony, key minerals for semiconductor production, to the United States. This was followed by further announcements in early 2025 of global export restrictions of additional rare earth elements, along with technology export restrictions for rare earths and lithium production. (IEA, 2025*a*)

and Presbitero, 2024; Allan, Gordon and Wang, 2023; Gopinath et al., 2025; , IMF). However, the mechanism underlying this shift remains elusive. The most general argument is that investors flock to countries that are aligned with the United States because they believe that continued market access to the U.S. can be more easily secured if the host country has friendly relations with the U.S. The assumption is that these political advantages will offset the cost increases associated with moving away from Chinese production.

Can green industrial policy restructure supply chains on a global scale? The literature on weaponized interdependence has heavily focused on sticks, such as export sanctions, tariffs, and investment screening as tools for limiting Chinese influence. Less attention has been paid to the use of industrial policy and the array of incentives therein to reshape global economic flows. Although industrial policies vary widely, (Breznitz and Gingrich, 2025; Juhász, Lane and Rodrik, 2023; Warwick, 2013) they typically focus on *domestic* structural economic transformation, where governments can more easily put in place both supply and demand incentives for new private sector investment. However, given that governments and their priorities change over time, sometimes drastically, industrial policy faces key challenges in terms of credibility and policy design. This is especially the case when returns to investment may be considerably delayed, as in the case with building large-scale manufacturing, and especially mining endeavors. Arguably, these credibility challenges are even greater when considering investments outside the policy-making jurisdiction where it is harder to politically lock-in international incentives.

How then can the government credibly communicate that financial incentives for investing outside the United States will remain in place? A key design challenge is defining who is a "friend" entitled to benefits and who is not? If beneficiary status is uncertain, then the policy incentives may likewise be at risk of being withdrawn. Draft version of the IRA included NATO countries among the beneficiaries but the final version only confers IRA-compliance status to countries that have an FTA with the U.S., thus angering allies that lack such an agreement, most notably European Union countries. We show that this choice

had consequences: FTA countries benefited compared to military allies without an FTA.

Using differences-in-differences estimation, we find that greenfield FDI announcements and brownfield (mergers and acquisitions) agreements increased in economically and statistically significant ways in FTA partners after the IRA; including when non-FTA military allies are the control group. The increase is entirely driven by non-Chinese investments, although there is no evidence that the Chinese reduced investments into countries that have alignments with the United States. We find no evidence of an IRA effect in a placebo dataset of FDI projects on electric components that are not subject to the IRA. Thus, the specific benefits of the IRA rather than diffuse political alignment drove the reshaping of critical minerals and battery investments. However, the limitations of reshaping the global supply chain through industrial policy are also apparent in the data: greenfield FDI projects dried up in the second half of 2024 when it became apparent that Donald Trump, who vowed to eliminate the IRA, would be elected U.S. President. Moreover, there is evidence that some of the announced projects were canceled after the election.

These findings have important implications for the literatures on geoeconomics, weaponized interdependence, green industrial policies, and economic development in resource-rich countries. We offer evidence that U.S. industrial policy can affect global supply chains but that any sustained effects depend on the credibility of the policy. We thus offer insights into the mechanisms of how transnational investment flows are being restructured in response to domestic and geopolitical challenges. It is by no means obvious that an industrial policy such as the IRA can alter, let alone reshape, investment in a globally integrated sector that is already highly concentrated in China's favor and subject to geopolitical rivalry between China and the West. Even in non-strategic sectors, global value chains take significant time to develop and change. They do not change easily for many reasons, including the prevalence of long-term contracts and off-take agreements. Nevertheless, our analysis of greenfield foreign direct investment (FDI) projects announced in the battery and critical mineral sector shows that in the short number of years since the passage of the IRA, this industrial policy

package has made a significant shift in new investments both within the US and beyond national borders toward allied countries, as specified in the IRA. Policy uncertainty resulting from the election of Donald Trump, however, has had a dampening effect on the pace of new investment projects in the US and IRA-compliant countries. Finally, the finding offers some hope for countries that are rich in critical minerals: the increased investment resulting from the IRA was not accompanied by reduced investment from China. Thus, it remains possible for these countries to engage in economic transactions with both geopolitical rivals.

2 China's Dominance in Highly Concentrated Supply Chains

Concentration in the global supply chain of any industry presents a risk to the supply and price of goods, services, and technology for downstream producers and consumers. In the case of critical minerals, the mining - and especially refining - sectors are *very* highly concentrated. According to the International Energy Agency, the average market share of the top three critical minerals refiners rose from around 82 percent in 2020 to 86 percent in 2024, with about 90 percent of that growth coming from the largest suppliers, *viz.*, Indonesia for nickel and China for cobalt, graphite and rare earths (IEA, 2025*c*). Further downstream, China produced three quarters of the batteries in the world in 2024, and at considerably lower prices than the rest of the world. This cost-competitiveness gap means that the cost of battery cell production is 40-50 percent higher in Europe and the United States than in China (IEA, 2025*c*). If China were to use its dominant position in mineral production to create supply disruptions, this manufacturing cost gap could widen further.

This concentration did not happen overnight but has grown out of China's long-term energy security strategy that targeted all aspects of the energy value chain (Zhou, Crochet and Wang, 2023). China's critical mineral strategy dates to the 1970s under Deng Xiaoping and initially focused on rare earth elements (Shen, Moomy and Eggert, 2020; Tse, 2011).

China's 'Going Out' strategy, announced in 1999, sought to use the country's large foreign currency reserves and domestic 'policy' banks (Chinese Export-Import Bank and Chinese Development Bank) to help national firms gain access to foreign markets, and the natural resources it lacked, but considered fundamental for national development (Dreher et al., 2022). According to FDI Markets, there have been 124 Chinese outbound greenfield investments in the extractive sector since 2003, valued at approximately US66 billion. Of these, three quarters, valued at approximately US48 billion, were in the metals and minerals sector, as opposed to hydrocarbons, underscoring their prioritization of the former in recent years (Paterson, 2024).

The Belt and Road Initiative (BRI) played an important role in this dominance. The BRI, launched in 2013 as a 1 trillion dollar "infrastructure project," broadened considerably the breadth and depth of China's reach in the critical minerals sector, as it frequently linked infrastructure investment with extractive projects across the global south (Parks et al., 2023). According to AidData, China has invested 57 billion to secure critical minerals in 19 BRI countries using a combination of aid and subsidized credit (Escobar, 2025). This financing approach differed from China's dominant lending strategy, which relied on public and publicly guaranteed debt. Rather, the minerals strategy involved the extension of loans by a state-owned commercial bank for infrastructure, in exchange for which a Chinese firm would be granted equity stake in an extractive project. The natural resource product would accrue directly to the Chinese firm through long-term off-take agreements, and indirectly to the Chinese bank as collateral for the loan (Escobar, 2025; Gelpern et al., 2023; Moran, 2010). This strategy not only enabled Chinese firms to gain a foothold in the mining (and petroleum) sector by lowering the costs of entry, but it also secured long-term off-take agreements for the mineral product. China's financial power has been instrumental in this strategy. The subsidized nature of Chinese loans to companies that acquired assets in the minerals sector meant a lower cost of production for Chinese companies, drawing existing companies into joint ventures with Chinese firms. The result was considerable barriers to entry for companies

that do not enjoy subsidized loans to support the high upfront capital costs of a greenfield mining project.

In 2015, President Xi Jinping also launched a domestic industrial policy initiative, "Made in China 2025," to improve manufacturing and technological capacity specifically in the area of green technology (Escobar, 2025). This effort included significant investments in domestic capacity for the refining of minerals, along with funding for the development of expertise and innovation in battery production and manufacturing of electric vehicles. This two-pronged strategy meant that China was more than a decade ahead of the West in building extensive know-how in green technology through domestic industrial policy that included vertical integration from mining to final products, and overseas acquisition of mineral assets.

3 The (Geopolitical) Ambitions of the IRA

New technologies, like those associated with the energy transition, are particularly well-suited for industrial policy investments. They face high start-up costs, great uncertainty about future demand stability, and long time delays before project payoffs. Industrial policy reduces such costs and risks through the provision of subsidies, regulations, and a combination of supply and demand incentives (Gabor, 2021). As an industrial policy, however, a novel characteristic of the IRA is that rather than focusing solely on structural change in the domestic economy, it had the ambition of altering *global* supply chains, from critical mineral extraction to battery and electric vehicle production, *inter alia* (Allan and Nahm, 2025). Not only did China's dominance in the electric vehicle supply chain pose a challenge to this ambition, but the deepening geopolitical rivalry between the US and China amplified the energy and national security risks that such dominance posed, especially in the extraction and refining of critical minerals. Even the most optimistic of miners recognized the geological fact that the US lacks sufficient reserves of critical minerals to go it alone through autarky. Thus, an important element of the act, beyond its vast domestic multi-sectoral objectives, is

to 'de-risk' supply chains from potential chokepoints by encouraging investment in battery supply chain production from mining to final product in friendly nations, i.e., 'friendshoring' (Allan, Gordon and Wang, 2023).

In February 2022, the U.S. Department of Energy (DoE) released "America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition", which outlines the challenges and opportunities faced by the United States in the energy supply chain and plans to address these challenges and opportunities. This was in response to President Biden's Executive Order 14017, "America's Supply Chains," calling for a review of vulnerabilities in America's critical mineral and material supply chain. Among the strategic opportunities identified were the objectives of increasing the availability of critical minerals (through mining and recycling), expanding domestic manufacturing capabilities, and investing in "diverse, reliable, and socially responsible *foreign* supply chains" (emphasis added).

The Inflation Reduction Act (IRA) was signed into law in August 2022, with vast ambitions. The provision that is of specific interest in this analysis is section 30D,[4] which specifies the countries of origin from which components of an EV may be sourced in order to qualify for the Clean Vehicle Credit (7,500 dollars).[5] This provision explicitly excluded from the tax credit any component of a battery that was manufactured or assembled in a "foreign entity of concern."[6]

[4]IRA Section 30D Text (7)EXCLUDED ENTITIES For purposes of this section, the term "new clean vehicle" shall not include— (A)any vehicle placed in service after December 31, 2024, with respect to w*hich any of the applicable critical minerals contained in the battery of such vehicle (as described in subsection (e)(1)(A)) were extracted, processed, or recycled by a foreign entity of concern* (as defined in section 40207(a)(5) of the Infrastructure Investment and Jobs Act (42 U.S.C. 18741(a)(5))), or (B)any vehicle placed in service after December 31, 2023, with respect to which any of the components contained in the battery of such vehicle (as described in subsection (e)(2)(A)) were manufactured or assembled by a foreign entity of concern (as so defined).

[5]The Critical Mineral Requirement has two components. In order to earn half of this credit, a minimum percentage of the value of critical minerals in the battery must be extracted or processed in the U.S. or a country with a free trade agreement, or be recycled in North America. The second part is the Battery Component Requirement, which states that a minimum percentage of the battery components must be manufactured or assembled in North America.

[6]Foreign Entities of Concern (FEOCs) in Section 30D are entities owned or controlled by foreign adversaries (e.g., China, Russia, North Korea, and Iran). In May 2024, the Treasury issued a final rule on clean vehicle tax credits, including section 30D, which references the DOE's finalized guidance on foreign entities of concern.

The IRA generated furious reactions from U.S. allies without an FTA with the U.S. For example, French President Emmanuel Macron called the legislation "super aggressive" toward European companies.[7] The Biden Administration made some concessions in the rule-making process to interpret the IRA. For example, electric vehicles produced in Europe could temporarily qualify for the $7500 tax credit as long as they were leased rather than sold in the U.S.[8] The administration also interpreted a March 2023 Critical Mineral Agreement (CMA) between Japan and the U.S. as an FTA for the purposes of the IRA, even though this agreement was never approved by Congress.[9] Yet others failed to get such concessions. Argentina and India signed a Memorandum of Understanding concerning critical minerals, but they remain ineligible for the IRA tax credits. Negotiations over a CMA with the European Union and other countries were never finalized.

Beyond its incentives to stimulate manufacturing of green technology in the United States, the IRA thus created significant tax incentives for EV manufacturers to source products in the battery supply chain from countries that were allied with the US, defined as those with a Free Trade Agreement or a Critical Minerals Agreement. As mentioned, this strategy of "friendshoring" recognized both the threat of China's dominance in the green technology and critical mineral supply chain, as well as the limits of America's chance to be self-sufficient in these sectors. How likely is it that these ambitions could be realized?

4 Industrial Policy and Friendshoring Foreign Direct Investment

The concept of "friendshoring" is not new (Allan, Gordon and Wang, 2023; Vivoda and Matthews, 2024). Friendshoring is a strategy to integrate production and sourcing into do-

[7]https://www.reuters.com/world/europe/macron-visits-nasa-talks-space-cooperation-us-visit-begins-2022-11-30/

[8]"https://asia.nikkei.com/Business/Automobiles/Non-U.S.-made-EVs-secure-tax-credits-via-lease-loophole "

[9]https://www.congress.gov/crs-product/IF12517

mestic supply chains from countries that are geopolitical allies. The 1950 Defense Production Act, for instance, aimed to bring production and sourcing of products in US supply chains to countries that are geopolitical allies. The goal of that law was to reduce reliance on nations that may pose geopolitical risks and enhance supply chain resilience. Friendshoring thus has been a consistent, if not well-documented pillar of global supply chains (Vivoda, 2023).

Analysis of the susceptibility of commodity trade to friendshoring shows that this sector is most vulnerable to geoeconomic fragmentation (Alvarez et al., 2023), and thus ripe for friendshoring policies. Indeed, this concept guided the creation of the Mineral Security Parthership (MSP) in 2022 when the United States and its G7 partners launched the Partnership for Global Infrastructure and Investment (PGII) to build clean energy supply chains. Members of the Minerals Security Partnership also sought to reduce financial risks to private investment in new mining projects by creating the MSP Finance Network. This in principle was meant to join the development finance institutions (DFIs) and export credit agencies (ECAs) of the MSP partner governments to finance the production, processing, and recycling of critical minerals. [10] Although it was created in 2022, the US government only passed an authorization act in 2025 to move forward the financial and technical support for the MSP within the 2025-26 fiscal year. [11]

Efforts at friendshoring through industrial policy must overcome two key hurdles. First, the industrial policy must credibly offer incentives for a long period of time. Investments in especially critical minerals have long and uncertain returns on investments, particularly given the volatility of mineral prices. An investment in a lithium mine now may only be profitable ten or twenty years later. While some investments, such as acquisitions or investments in manufacturing, may well have more immediate returns, the long-term credibility of the IRA remains key to its success. The importance of credibility for industrial policy in general

[10] Current MSP partners include Australia, Canada, Estonia, Finland, France, Germany, India, Italy, Japan, Norway, the Republic of Korea, Sweden, the United Kingdom, the United States, and the European Union (represented by the European Commission).

[11] This includes the creation of a database on mineral projects and financing, which may provide additional evidence for future research on this topic beyond the IRA.

(Breznitz and Gingrich, 2025) and green industrial policy in particular (Gazmararian and Tingley, 2023) thus is well understood. At the domestic level, the IRA's architects in the Biden Administration hoped to lock in the agreement by ensuring that most of its benefits would flow to Republican districts even as all Republicans opposed the legislation in Congress (Bang, 2025). It is less clear how much thought has been given to the credibility challenges of industrial policy as foreign policy. Even if Republicans might have been inclined to protect benefits flowing to their districts, much of which were eliminated in the 119th Congress's (H.R. 1), why would they care if access to tax credits for goods produced in foreign IRA-compliant countries is cut off? We should thus expect that uncertainty over the IRA's fate would have a large impact on FDI flows to IRA-compliant countries.

Second, creating legislation to incentivize friendshoring requires precise definitions of who is a friend and who is not. As discussed above, this is by no means an easy feat and military allies who were excluded from IRA benefits protested fiercely. That the IRA would define friends as FTA partners was by no means obvious. For example, Sarah Bianchi, the deputy US Trade Representative whose portfolio included the energy transition and the implementation of the IRA, mentioned that earlier drafts included NATO members as potential beneficiaries. [12] The choice for FTA partners was mostly made for domestic legal reasons, as these were already countries with privileged access to U.S. markets. These challenges do offer some opportunities for evaluating the effects of the IRA beyond the diffuse friendshoring that is already taking place; as allies without an FTA offer a logical control group. If the IRA matters, then we would expect investments to increase more following the IRA in IRA compliant countries than in non-compliant allies.

There is a considerable literature that finds that international agreements between countries such as Bilateral Trade Agreements (BITs) and Preferential Trade Agreements (PTAs) are important drivers of FDI (Büthe and Milner, 2008,?; Kerner, 2009; Kerner and Lawrence, 2014). We argue that the benefits of such agreements are increased when industrial policy

[12] https://www.energypolicy.columbia.edu/where-climate-and-trade-policy-meet/

offers additional incentives for investment.

H1: After passage of the IRA, we should see larger increases in mineral and battery investments in countries that have an FTA with the United States than in countries that do not have an FTA with the U.S., all else being equal;

An important corollary is that these effects should not be driven by Chinese investments, which would not qualify for the IRA as Chinese-owned companies are defined as "foreign entities of concern." Moreover, we expect that these effects will subside once it became clear that Donald Trump was likely to win the U.S. election. On the campaign trail, Trump vowed to eliminate what he called Biden's "electric vehicle mandate," which are precisely those benefits that should incentivize supply chain restructuring.

5 Data and Methods

5.1 Greenfield Investments

We collected data on greenfield investment project announcements from fDi Markets. These data are widely used in the literature, including the literature on geoeconomic fragmentation (e.g. Aiyar, Malacrino and Presbitero, 2024). Project announcements may come quite quickly after major policy changes, which makes them suitable to estimate the (near) immediate impact of the IRA. Yet, some announced projects never materialize. Indeed, there is widespread reporting that several IRA inspired projects have been canceled in 2025 due to the uncertain fate of the IRA.[13]

We selected projects with the tags "Battery Supply Chain," "Critical Minerals," and "Lithium." We eliminated projects that involved critical minerals that are irrelevant for batteries or electric vehicles, like platinum. Among the "Battery Supply Chain" projects, we deleted those with tags indicating that the project was explicitly about some other usage

[13]See: "E2: $14 Billion in Clean Energy Projects, 10,000 Jobs Cancelled So Far in 2025; $4.5 Billion Cancelled in April", https://e2.org/releases/april-2025-clean-economy-works/

of batteries, like cellphones or drones. This left us with 1261 projects between January 1, 2016 (when FDI Markets started tagging projects), and December 31, 2024.

Since it was unclear whether the tags captured all relevant projects, we also searched for the occurrence of the term "lithium" anywhere in the project description. Since electric vehicle batteries are often called lithium-ion batteries and they all contain lithium in the cathode, this term is likely to appear somewhere for relevant projects. We then asked a research assistant to code where in the value chain a project occurred and whether the project was relevant at all for the battery supply chain. This yielded an additional 198 projects (after eliminating duplicates). Most of these projects were in the intermediate stages between critical minerals mining and producing batteries or electric vehicles. This includes investments into the chemical processes that prepare minerals for usage in cathodes and anodes, manufacturing battery cells, and assembling the cells into battery packs. Since these projects are relevant for the IRA, we include them in the main analysis. However, our main findings are consistent if we just use the tagged projects.

Our final dataset has 1459 FDI projects, 741 of which have some bearing on critical minerals. A total of 102 projects concern extraction, whereas 844 involve manufacturing as the main activity. The most common sectors, as recorded by fDi Markets, are electronic components (810), metals (209), and minerals (129). The data contains information about the estimated size of the capital investment and new jobs.

The United States is the most common destination country, with 253 projects, followed by Germany (140) and China (113). This is also true in terms of the dollar value of investments. In total, the projects include 115 billion dollars' worth of capital investments into the United States. China is the predominant source country of the investments, with 291 projects worth 102 billion dollars. South Korea is second (172 projects), followed by the United States (157), Germany (113), and Japan (107). There are a total of 92 countries that attracted at least one investment and 62 countries that had 10 or more investments. This includes countries with domestic automobile or advanced electronics manufacturing as well as countries that

are key suppliers of critical minerals, such as Argentina (41), Indonesia (34), Australia (30), and Chile (20).

We also collected a dataset of placebo projects: projects that are similar to those in the main dataset but that are not subject to the IRA. These include data on all FDI manufacturing projects that are in the sector of electronic components, which is the most common sector for battery components. Indeed, 427 of the 1866 manufacturing projects in electronic components were also in our main dataset. Our placebo data then consists of the remaining 1439 projects.

5.2 Brownfield Investments

Companies have also responded to the IRA through investments in already existing production facilities. Battery manufacturers usually have long-term offtake agreements with critical mineral suppliers. Indeed, the financing of extraction and refining projects often requires long-term offtake agreements. The IRA gives battery manufacturers incentives to close such agreements in countries that have an FTA with the United States. This is sometimes explicit in announcements. For example, in February 2024, the Korean firm LG Energy Solutions announced a five-year offtake agreement for Australia's WesCEF's battery-grade lithium hydroxide "to deliver top-quality, IRA-compliant batteries to its customers." [14]

Manufacturers often acquire a stake in the foreign producer as part of these offtake agreements in upstream firms. More generally, the IRA offers incentives for firms to invest in upstream firms located in IRA compliant countries. We collected data from LSEG (formerly Refinitiv) on mergers and acquisitions (M&A) between 2016 and 2024 in two TRBC sections: "Automotive Batteries" and "Specialty Mining & Metals (NEC)." For the latter sector, we then selected only those acquisitions in the five key critical minerals necessary for batteries: lithium, cobalt, graphite, manganese, and nickel. Since our interest is in FDI,

[14] https://news.lgensol.com/company-news/press-releases/2435/ From public sources, we gathered data on 95 lithium offtake agreements between 2016 and 2024 but we cannot be sure this captures the unverse of these agreements. Several recent offtake announcements explicitly mention the IRA as an inspiration.

we also eliminate M&A activity that we know is not cross-border investment, such as when a Canadian firm acquires a stake in another Canadian firm. We lack information on the acquirer country of the investor for 389 projects. We keep those projects in the data but check for the robustness of our findings to excluding these. We have also estimated models that combine our data on lithium offtake agreements with M&A agreements.

This leaves us with 736 total investments, with 630 investments in critical minerals and 106 in automotive batteries. In that latter sector, domestic M&A activity is a much larger share than in critical minerals. About half of the critical mineral investments concern lithium. There is data on the valuation of only about half of all investments. Given the amount of missing data on the dollar amount of investments, we will analyze the number of projects only.

Canada is the most common target nation of M&A activity, followed by China, Australia, the U.S., and Japan. For the projects for which we do have information about the home country of the investing company, China is the most common source country. Thus, for both our greenfield and brownfield data, China is the most frequent investor, which is consistent with our qualitative understanding of the supply chain. Canada, Australia, the U.S., and Japan are the next most common sources of M&A activity.

5.3 Descriptive Patterns

Domestic manufacturing in the battery sector was advanced primarily bSectionon 45X of the IRA, which created a federal tax incentive designed to stimulate domestic manufacturing of clean energy components and critical minerals within the United States. The credit applies to the production of specific clean energy components, including solar, wind, batteries, inverters, and critical mineral refining and processing. The early effects of this provision have been dramatic, according to independent analyses. The IEA and Clean Investment Monitor report that battery manufacturing capacity in the US has doubled since 2022 following the

implementation of tax credits for producers, reaching over 200 GWh in 2024."[15]

Figure 1 plots the total FDI (in millions of dollars) and the number of greenfield projects that flowed into the United States and countries that have an FTA[16] with the United States on a half-yearly basis. We use 6-month periods as the basis for our analysis given that the IRA was adopted midway through 2022. In a (future) appendix, we will also show our results with quarterly data, which are noisier but show the same patterns.

Figure 1 shows that capital investments of announced projects into the United States peaked in the second half of 2022, after adoption of the IRA. Yet, there were already sharp increases in investments starting when President Joe Biden took office in 2021. By contrast, countries with an FTA with the United States saw a notable increase in investments in 2023. Indeed, the value of these projects exceeded those launched in the United States during this period.

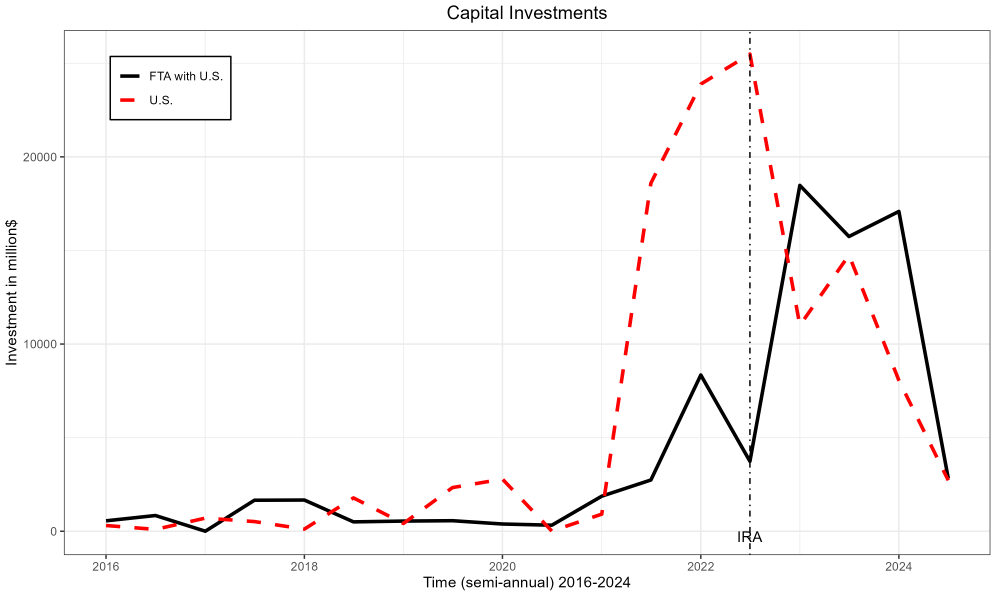
The level of new greenfield investments dropped significantly in the second half of 2024, during the US elections. Presidential candidate (and then President-elect) Donald Trump had announced that he would eliminate the IRA and especially what he labeled the "electric vehicle mandate" that forms the basis of the financial incentives for investments into countries that have FTAs with the United States. This appears to have had a dramatic effect on new greenfield investments.

Figure 2 plots M&A activity in the U.S., FTA countries, countries that have a collective defense treaty with the U.S. ("allies") but not an FTA,[17] and non-allies. The figure shows that M&A activity rapidly increased in countries that have an FTA with the United States starting in 2022. While there was already an increase in the first half of 2022, this increased substantially in the semesters following the IRA. In contrast to greenfield investments, M&A activity kept rising throughout 2024. Indeed, countries that have FTAs with the U.S. are by

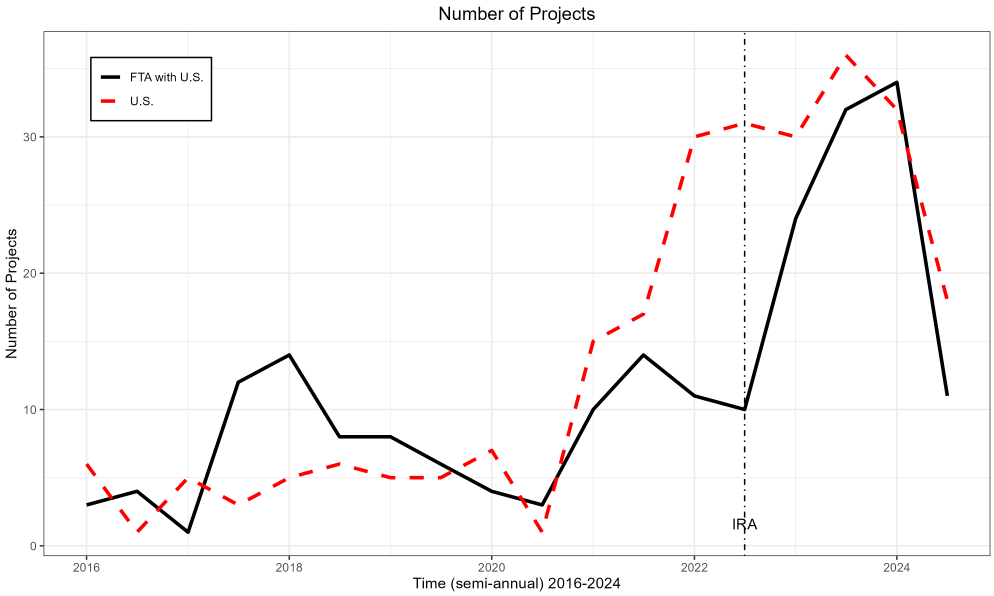
[15]https://www.cleaninvestmentmonitor.org/reports/us-clean-energy-supply-chains-2025; (, IEA)

[16]This includes Japan, which has a Critical Minerals Agreement with the U.S. The full list of FTA countries was compiled from the U.S. Trade Representative: https://ustr.gov/trade-agreements/free-trade-agreements (accessed June 14, 2025).

[17]https://2009-2017.state.gov/s/l/treaty/collectivedefense/



(a) Capital investments in millions of dollars



(b) Number of greenfield FDI projects

Figure 1: Capital Investment and FDI Project Announcements in Battery Supply Chain and Critical Minerals going to the U.S. and Countries with an FTA with the U.S., 2016-2024, 6-month periods. Data from fDi Markets

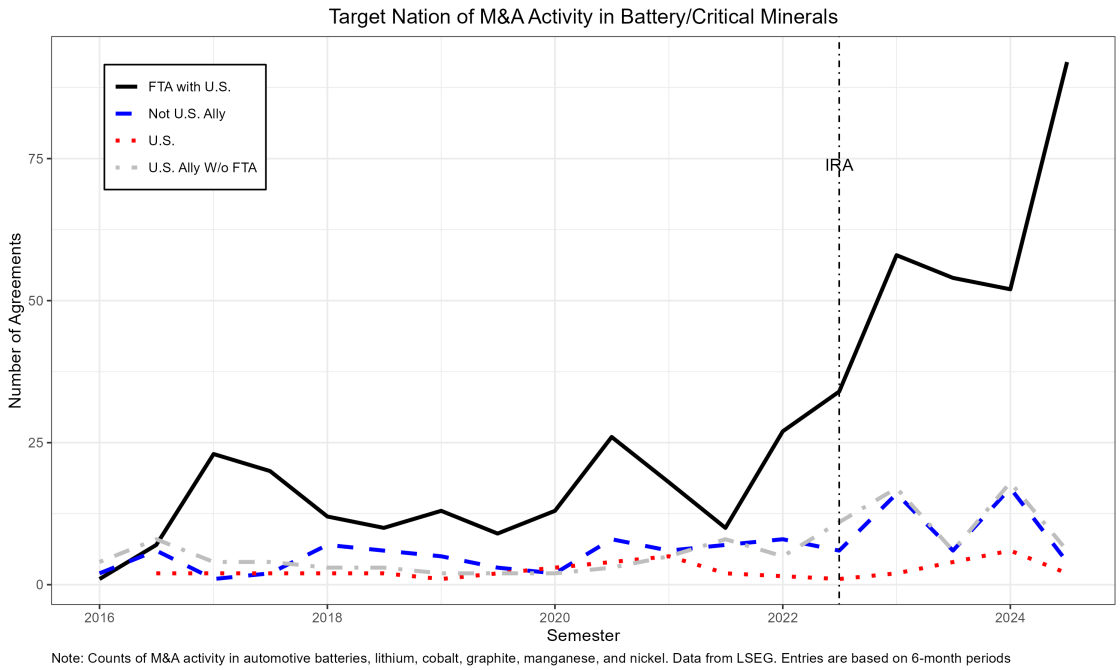


Figure 2: M&A activity in automotive batteries and critical minerals, 2016-2024, 6 month periods. Data from LSEG

far the most important target of M&A activities. Almost all of this is driven by activity on critical minerals rather than manufacturing automotive batteries.

5.4 Empirical Strategy

Figures 1 and 2 are suggestive that the IRA had a causal effect on international supply chains, which is the focus of this analysis. Investments in batteries and critical minerals were growing even before the IRA. This reflects a broader issue in evaluating the causal effects of industrial policies, which are usually adopted due to underlying trends that could also be responsible for increased economic activity(Juhász, Lane and Rodrik, 2023).

We rely on a Differences-in-Differences (DiD) strategy to identify the differential effect of the IRA on countries that do and do not have an FTA with the United States. Initially, the IRA was supposed to confer a favored status to U.S. military allies. This was changed mostly because U.S. trade law has no specific exceptions for allies that do not have an FTA. The DiD strategy evaluates the difference in the outcome variable between the treatment, countries

with an FTA, and the control group both before and after the policy change. Although FTA countries are clearly different from non-FTA countries, these differences already existed before the IRA. The Average Treatment Effect on the Treated (ATET) is the difference between the differences before and after policy adoption.

Causal identification hinges on two assumptions: the presence of counterfactual parallel trends between FTA countries and the control group and the absence of contemporary shocks other than the IRA that differentially affect countries with and without an FTA. These assumptions are fundamentally untestable. Yet, there are ways to assess their plausibility and to assess how vulnerable the results are to possible violations.

First, long pre-trends allow for an inspection of emerging observable differences between the groups prior to the policy change. We examine this graphically, using the event study models.

Second, we estimate models with time-varying country-level observables that may differentially affect FTA countries. Countries with an FTA may shift over time to develop similar interests to the United States. We thus include country-level UN ideal points, which are often used in the geo-economics literature to measure geopolitical interests(Bailey, Strezhnev and Voeten, 2017). An FTA may affect how open a country becomes to both trade and investment.

We thus estimate models that control for a country's FDI and trade as a percentage of GDP in the previous year. We also control for GDP growth in the previous year, which may attract additional FDI. The economic data come from the World Development Indicators.

Third, we estimate models where non-FTA military allies are the control group. As mentioned earlier, at some point in the drafting stage, military allies were the designated beneficiaries of IRA provisions. These countries are more similar in their underlying characteristics to FTA countries than non-allies.

Finally, we run placebo tests with FDI projects that are similar to battery manufacturing but that are not subject to the IRA. This test addresses the concern that tariff-hopping rather

than the IRA may be driving our findings. That is: concerns about U.S. market access given increased protectionism may be driving investors towards countries that have an FTA with the U.S.

In a regression framework, the capital investment flowing into country i at time t (Y_{it}) is a function of unobserved individual-level time-invariant factors α_i, time-specific shocks to investment(α_t), and time-varying observables$\mathbf{X}_{it}$. We can then estimate the ATET as the coefficient on the interaction between being post-IRA and having an FTA:

$$Y_{it} = \alpha_t + \alpha_i + \delta * IRA_t * FTA_i + \beta(\mathbf{X}_{it}) + \varepsilon_{it}$$

The two-way fixed effects model is appropriate here because the panel is balanced and the treatment is applied at once to all of the treated.[18] Figure 1 shows that the IRA effect may be delayed and that it may not be uniform across the post-IRA period. We therefore also estimate an event-study analysis where we interact each time period with the FTA indicator. This also allows us to examine the pre-trend:

$$Y_{it} = \alpha_t + \alpha_i + \alpha_t \times FTA_i + \beta(\mathbf{X}_{it}) + \varepsilon_{it}$$

The standard errors are clustered on countries. Consistent with the literature on FDI projects, we estimated Poisson models to deal with the large numbers of 0s in the data (Aiyar, Malacrino and Presbitero, 2024). Our primary models use the 6-month time periods, but we have also estimated yearly and quarterly models. We take the first full 6-month period post IRA as the first post-IRA period. All models exclude investments to the United States as a destination country. Countries with 0 investment projects drop from the analysis.

6 Results

Table 1 presents the results on the amount of capital investments, the number of new greenfield FDI projects, and M&A agreements. The coefficients on the greenfield projects are

[18]For the purposes of this analysis, we assume that Japan is always in the treated group post FTA. Incorporating time-varying information about Japan does not alter the results in a TWFE analysis.

economically and statistically significant. Countries with a U.S. FTA after the IRA are expected to have a 250 percent increase in dollar value and a 62 percent increase in the number of FDI projects. These are very sizable effects. The coefficient on M&A agreements has a similarly sized effect to the number of greenfield projects. However, after including covariates, the coefficient is only significant at the ten percent level.

Table 1: Effect of FTAs after IRA on Greenfield Investments and M&A Activity in Batteries/Critical Minerals: Poisson regressions with country and semester fixed effects. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.263***	1.148***	0.4606**	0.4428**	0.5299**	0.4620*
	(0.3361)	(0.3392)	(0.2332)	(0.2192)	(0.2421)	(0.2490)
UN Idealpoint		0.7584		0.3393		0.3404
		(0.8067)		(0.3807)		(0.5306)
FDI (% of GDP)		0.0089***		0.0030**		0.0029
		(0.0023)		(0.0013)		(0.0060)
Trade (% of GDP)		0.0089		0.0124		-0.0111
		(0.0143)		(0.0087)		(0.0138)
GDP Growth		-0.0817**		0.0122		0.0162
		(0.0389)		(0.0205)		(0.0298)
Fixed-effects						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	1,564	1,488	1,564	1,488	1,060	1,042
Squared Correlation	0.45971	0.49909	0.62165	0.63861	0.93221	0.92960
Pseudo R^2	0.67068	0.67596	0.47542	0.47329	0.68459	0.68668
BIC	540,058.8	521,073.2	3,329.5	3,269.6	1,871.0	1,873.7

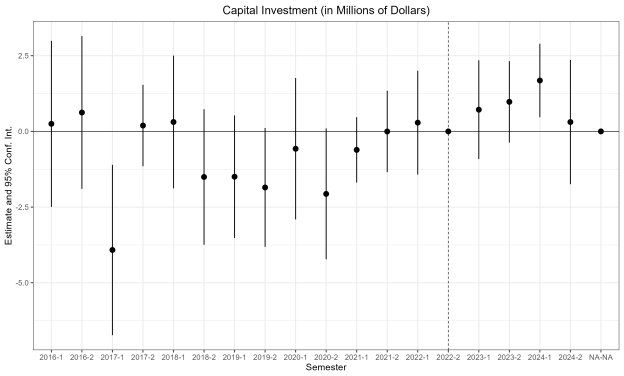
Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Tables 7 and 8 in the appendix separate out FDI coming from China and FDI from the rest of the world. Consistent with our expectations, there is no IRA effect for FDI coming from China in any of the models. By contrast, when we limit the data only to non-Chinese

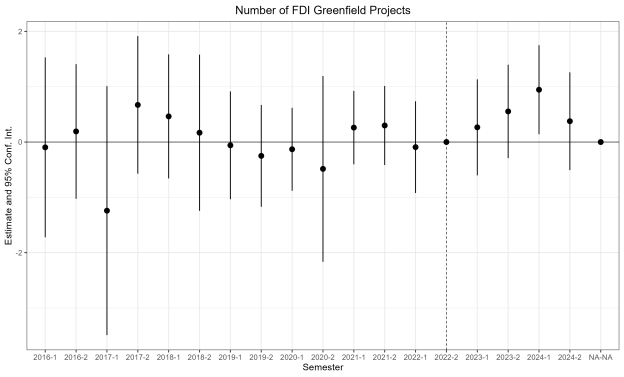
investments all coefficients are economically and statistically significant, including for M&A activity. In other words, we are not seeing that Chinese investors seek to benefit from U.S. subsidies by investing in FTA partners. The IRA was designed to prevent this and we see no evidence for it in the data. The results in table 8 for non-Chinese investments clearly show that the IRA had its intended global effect.

Tables 3 and 4 in the appendix show that the results on greenfield investments also apply when the control group is just non-FTA military allies. Indeed, the coefficients on both greenfield capital investments and projects are larger and they are all significant at the 1 percent level. This is not true for M&A activity but this changes when we limit the analysis to only non-Chinese investments in table **??**. Clearly, the IRA redirected non-Chinese investments in critical minerals and battery components towards FTA countries compared to non-FTA military allies while Chinese FDI was largely unaffacted. The coefficients on the contrasts between FTA partners and non-allies are somewhat smaller but still significant for capital investments, though not for the number of new projects. Overall, these analyses strongly suggest that the financial incentives of the IRA, not some vaguer underlying increased concern about political friendliness, reshaped investments in global supply chains.

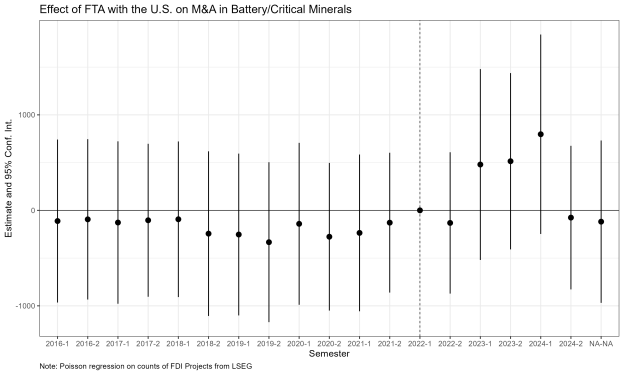
One concern is that there may have already been differential pre-trends before the IRA in FTA and non-FTA countries. Figure 3 plots the event study plots. There are no clear pre-trends. One concern may be that capital investment into FTA countries suffered during the trade wars in the first Trump Administration, which downplayed the value of trade agreements. The event plots also makes clear that FTA countries lose their advantage in the second half of 2024, when a second Trump Administration became more likely. Thus, uncertainty over the continuation of IRA benefits appears to have played a role in the investment decisions.



(a) Capital FDI (Greenfield



(b) Number of new FDI projects



(c) M&A Agreements

Figure 3: Event plots (semester) from Poisson regressions on capital investments, number of new projects, and M&A agreements in battery supply chain and critical minerals

6.1 Placebo Test

Another potential concern is that we are simply picking up the effects of tariff-hopping: businesses are increasingly investing in countries that have FTAs with the US in order to avoid (the likelihood of) higher tariffs. Especially Chinese investors have been accused of doing this, for instance, by setting up electric vehicle supply chains in Mexico. However, we have already shown that our findings do not hold for Chinese investments. We now conduct a further test by estimating the same models from table 1 on our placebo dataset of manufacturing investments in electronics (excluding battery supply chain and critical minerals).

Table 2 shows the results. There is no evidence of an IRA effect in non-battery electronic components. The coefficients are all insignificant and close to zero. Thus, we do not think that our findings reflect an overall run for FTA partners of the U.S. but a specific effect of the IRA.

7 Conclusion

The geopolitical rivalry between the US and China has heightened both the national security and energy security concerns of the US government. During the Biden administration, the coincident goals of climate change mitigation and de-risking supply chains for advanced technology led to the passage of significant new industrial policies such as the Inflation Reduction Act. Beyond its domestic ambitions to spur new clean energy investment and production, the IRA sought to re-shape global patterns of investment. This was a tall order, in light of the strategic importance of the mineral and battery supply chain, along with China's considerable lead in securing control of the production and refining of critical minerals.

Our analysis demonstrates that this was a qualified success: the IRA directed increased non-Chinese greenfield and brownfield investments in critical minerals and battery supply

Table 2: Placebo test: Effect of FTAs after IRA on Greenfield Investments in Non-Battery Electronic Components: Poisson Regressions with country and semester fixed effects. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Investment		Projects	
Model:	(1)	(2)	(3)	(4)
Variables				
FTAxIRA	0.8018	0.6950	-0.0778	-0.1657
	(0.4975)	(0.5309)	(0.2012)	(0.2036)
Un Idealpoint		0.9174		0.1782
		(0.6922)		(0.2705)
FDI (% of GDP)		0.0065		-0.0015
		(0.0040)		(0.0044)
Trade (% of GDP		-0.0111		0.0069
		(0.0180)		(0.0073)
GDP Growth		0.0014		0.0397**
		(0.0538)		(0.0170)
Fixed-effects				
Country	Yes	Yes	Yes	Yes
Semester	Yes	Yes	Yes	Yes
Fit statistics				
Observations	1,674	1,608	1,674	1,608
Squared Correlation	0.33193	0.35475	0.71413	0.72508
Pseudo R^2	0.64986	0.65279	0.50083	0.50400
BIC	413,341.3	404,387.1	3,505.7	3,435.2

Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

chains towards countries that have an FTA with the U.S. However, this finding comes with two important qualifications. First, the largest effect is compared to non-FTA allies as opposed to non-allies. We have no direct evidence that important allies were directly hurt by the IRA in terms of reduced investments but it is clear that the precise definition of who is a friend matters if industrial policy is being used as a tool for friendshoring.

Second, the credibility of industrial policy matters a great deal for its international effects. International financial incentives are harder to lock in than domestic incentives and they may be the first to disappear when political winds change. Indeed, the EV credit was an early

target for Presidential candidate Donald Trump during the campaigns and he has actively sought to remove it. In the data there is clear evidence of a sharp drop off in friendly investments, thus significantly slowing the move away from Chine in the critical minerals supply chain.

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8 Appendix

Table 3: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and semester fixed effects. Only FTA Partners and Military Allies in data. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.401***	1.321***	0.5613***	0.5471**	0.4467	0.3204
	(0.3560)	(0.3971)	(0.1764)	(0.2209)	(0.2862)	(0.2845)
UN Idealpoint		-0.9760		-0.4424		-0.3366
		(1.370)		(0.4557)		(0.6441)
FDI (% of GDP)		0.0064**		0.0020		-0.0039
		(0.0026)		(0.0016)		(0.0059)
Trade (% of GDP)		0.0123		0.0081		-0.0124
		(0.0141)		(0.0098)		(0.0219)
GDP Growth		-0.1000**		-0.0106		0.0334
		(0.0476)		(0.0279)		(0.0749)
Fixed-effects						
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	882	878	882	878	576	576
Squared Correlation	0.45620	0.49568	0.69395	0.69514	0.96175	0.95978
Pseudo R^2	0.65550	0.66697	0.45427	0.45435	0.75974	0.76044
BIC	339,598.4	327,639.8	2,122.9	2,145.2	1,117.5	1,140.6

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 4: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and semester fixed effects. Only FTA Partners and non-Military Allies in data. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.082***	0.6582**	0.2782	0.0727	0.6136	0.4672
	(0.3741)	(0.3101)	(0.1977)	(0.3090)	(0.3823)	(0.3853)
UN Idealpoint		1.571*		0.7975		0.8128
		(0.8259)		(0.5030)		(0.5953)
FDI (% of GDP)		-0.0277		-0.0136		0.0096
		(0.0498)		(0.0190)		(0.0131)
Trade (% of GDP)		0.0275		0.0188		-0.0186
		(0.0181)		(0.0126)		(0.0162)
GDP Growth		-0.1030**		0.0034		-0.0115
		(0.0414)		(0.0233)		(0.0353)
Fixed-effects						
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	952	878	952	878	664	646
Squared Correlation	0.62732	0.67080	0.53288	0.59193	0.95986	0.96011
Pseudo R^2	0.73270	0.74369	0.47715	0.48091	0.75899	0.76235
BIC	266,406.7	248,153.7	1,804.7	1,738.8	1,200.1	1,198.5

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 5: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and semester fixed effects. Only Chinese investments. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.236	0.8158	-0.0078	-0.1683	-0.9808	-0.4230
	(0.8199)	(0.7278)	(0.5166)	(0.4443)	(0.6815)	(0.5936)
UN Idealpoint		-1.392		-0.9373		6.436*
		(1.291)		(0.6602)		(3.793)
FDI (% of GDP)		-0.0013		-0.0030		-0.0841*
		(0.0053)		(0.0033)		(0.0508)
Trade (% of GDP)		0.0500**		0.0420***		-0.0009
		(0.0211)		(0.0149)		(0.0479)
GDP Growth		-0.0501		-0.0578		0.1944
		(0.0429)		(0.0413)		(0.1769)
Fixed-effects						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	808	790	808	790	156	156
Squared Correlation	0.38568	0.39005	0.41886	0.43945	0.38119	0.48456
Pseudo R^2	0.53416	0.54459	0.29219	0.30158	0.27562	0.32464
BIC	224,036.6	217,280.8	1,335.7	1,332.7	285.27	294.71

Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 6: EEffect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and semester fixed effects. Only non-Chinese investments. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.421***	1.268***	0.7351***	0.7192***	0.6960***	0.6020**
	(0.4026)	(0.4455)	(0.2341)	(0.2353)	(0.2532)	(0.2642)
UN Idealpoint		0.3541		0.2151		0.3105
		(0.8791)		(0.2801)		(0.5048)
FDI (% of GDP)		0.0132***		0.0045***		0.0209
		(0.0041)		(0.0017)		(0.0132)
Trade (% of GDP)		-0.0080		0.0043		-0.0149
		(0.0194)		(0.0097)		(0.0142)
GDP Growth		-0.1345**		0.0077		0.0142
		(0.0651)		(0.0302)		(0.0297)
Fixed-effects						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	1,038	997	1,038	997	1,060	1,042
Squared Correlation	0.50085	0.55937	0.65130	0.65682	0.94743	0.94588
Pseudo R^2	0.67654	0.68984	0.45141	0.44898	0.69691	0.69970
BIC	345,981.7	326,746.1	2,315.8	2,291.7	1,786.4	1,787.1

Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 7: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and semester fixed effects. Only non-Chinese investments, only allies and FTA partners. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.673***	1.526***	0.8144***	0.8325***	0.5981**	0.4795*
	(0.5316)	(0.5508)	(0.2287)	(0.2279)	(0.2829)	(0.2878)
UN Idealpoint		-0.0070		0.5199		-0.0823
		(1.962)		(0.6060)		(0.6496)
FDI (% of GDP)		0.0120***		0.0040**		0.0379*
		(0.0046)		(0.0017)		(0.0215)
Trade (% of GDP)		-0.0136		8.25×10^{-5}		-0.0105
		(0.0223)		(0.0111)		(0.0225)
GDP Growth		-0.1553*		-0.0261		0.0437
		(0.0882)		(0.0361)		(0.0707)
Fixed-effects						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	611	609	611	609	576	576
Squared Correlation	0.52807	0.55474	0.67567	0.67862	0.97134	0.97052
Pseudo R^2	0.66511	0.68420	0.44455	0.44546	0.76953	0.77089
BIC	225,532.4	212,424.8	1,509.6	1,531.3	1,072.5	1,093.5

Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 8: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and semester fixed effects. Only non-Chinese investments, only FTA partners vs non-allies. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.019**	0.7283	0.6078*	0.5386	0.8005*	0.6472
	(0.4245)	(0.5399)	(0.3434)	(0.3709)	(0.4232)	(0.4370)
UN Idealpoint		0.8163		0.1878		0.7092
		(0.8411)		(0.4775)		(0.6016)
FDI (% of GDP)		-0.0261		0.0178		0.0104
		(0.0566)		(0.0151)		(0.0122)
Trade (% of GDP)		-0.0237		0.0083		-0.0222
		(0.0271)		(0.0129)		(0.0171)
GDP Growth		-0.1224		0.0179		-0.0160
		(0.0875)		(0.0341)		(0.0351)
Fixed-effects						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Semester	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	583	545	583	545	664	646
Squared Correlation	0.70077	0.72511	0.65045	0.66183	0.97115	0.97173
Pseudo R^2	0.78315	0.78883	0.45800	0.45906	0.76966	0.77305
BIC	140,450.4	133,593.9	1,190.5	1,164.6	1,147.0	1,146.1

Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 9: Effect of FTAs after IRA on Greenfield Investments and M&A Activity in Batteries/Critical Minerals: Poisson regressions with country and quarter fixed effects. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.200***	1.094***	0.3992	0.3849	0.7517***	0.7596***
	(0.3420)	(0.3500)	(0.2465)	(0.2342)	(0.2366)	(0.2495)
UN Idealpoint		0.7946		0.3514		0.9592*
		(0.8030)		(0.3813)		(0.5586)
FDI (% of GDP)		0.0091***		0.0030**		0.0034
		(0.0023)		(0.0013)		(0.0064)
Trade (% of GDP)		0.0092		0.0124		-0.0013
		(0.0144)		(0.0087)		(0.0135)
GDP Growth		-0.0826**		0.0121		0.0239
		(0.0388)		(0.0204)		(0.0270)
Fixed-effects						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	3,128	2,976	3,128	2,976	1,915	1,883
Squared Correlation	0.34077	0.36706	0.49697	0.50981	0.86654	0.86455
Pseudo R^2	0.59180	0.59582	0.40194	0.39922	0.62898	0.63222
BIC	786,733.8	765,476.3	4,522.5	4,452.5	2,401.0	2,397.2

Clustered (Country) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 10: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and quarter fixed effects. Only FTA Partners and Military Allies in data. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.311***	1.217***	0.4634**	0.4474*	0.5989**	0.5509*
	(0.3974)	(0.4278)	(0.1853)	(0.2371)	(0.2720)	(0.2869)
UN Idealpoint		-0.9833		-0.4660		0.3053
		(1.367)		(0.4432)		(0.5428)
FDI (% of GDP)		0.0066***		0.0021		-0.0039
		(0.0025)		(0.0016)		(0.0060)
Trade (% of GDP)		0.0122		0.0079		-0.0062
		(0.0142)		(0.0099)		(0.0218)
GDP Growth		-0.0978**		-0.0099		0.0743
		(0.0464)		(0.0276)		(0.0838)
Fixed-effects						
Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	1,764	1,756	1,764	1,756	1,044	1,044
Squared Correlation	0.30118	0.32814	0.54344	0.54387	0.91596	0.91079
Pseudo R^2	0.56286	0.57195	0.37530	0.37524	0.70149	0.70253
BIC	526,898.1	515,097.7	3,007.9	3,032.8	1,523.2	1,547.4

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 11: Effect of FTAs after IRA on Greenfield FDI in Critical Minerals and Battery Supply Chain: Poisson Regressions with country and quarter fixed effects. Only FTA Partners and non-Military Allies in data. All covariates are lagged by one year. Standard errors clustered on country

Dependent Variables:	Capital Investment		Nr of FDI Projects		M&A Activity	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
FTAxIRA	1.054***	0.6647**	0.2816	0.0934	0.8441**	0.7308*
	(0.3959)	(0.3262)	(0.1931)	(0.3205)	(0.3910)	(0.3807)
UN Idealpoint		1.595*		0.7912		1.421**
		(0.8305)		(0.4994)		(0.7024)
FDI (% of GDP)		-0.0271		-0.0137		0.0117
		(0.0495)		(0.0188)		(0.0129)
Trade (% of GDP)		0.0279		0.0188		-0.0064
		(0.0183)		(0.0125)		(0.0163)
GDP Growth		-0.1051***		0.0034		-0.0076
		(0.0404)		(0.0230)		(0.0323)
Fixed-effects						
Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	1,904	1,756	1,904	1,756	1,201	1,169
Squared Correlation	0.51166	0.54456	0.43532	0.48015	0.92367	0.92505
Pseudo R^2	0.66588	0.67561	0.41192	0.41433	0.70668	0.71140
BIC	380,023.9	359,212.9	2,445.6	2,368.3	1,597.3	1,589.1

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*