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Working Paper

Greening thy neighbor: How the United States inflation reduction act drives climate finance globally

ADB Economics Working Paper Series, No. 754

Provided in Cooperation with:

Asian Development Bank (ADB), Manila

Suggested Citation: te Kaat, Daniel Marcel; Raabe, Alexander; Tian, Yuanjie (2024) : Greening thy neighbor: How the United States inflation reduction act drives climate finance globally, ADB Economics Working Paper Series, No. 754, Asian Development Bank (ADB), Manila, <https://doi.org/10.22617/WPS240553-2>

This Version is available at:

<https://hdl.handle.net/10419/310362>

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GREENING THY NEIGHBOR

HOW THE UNITED STATES INFLATION REDUCTION ACT
DRIVES CLIMATE FINANCE GLOBALLY

Daniel Marcel te Kaat, Alexander Raabe, and Yuanjie Tian

NO. 754

November 2024

**ADB ECONOMICS
WORKING PAPER SERIES**

ADB Economics Working Paper Series

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No. 754 | November 2024

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ISSN 2313-6537 (print), 2313-6545 (PDF)
Publication Stock No. WPS240553-2
DOI: <http://dx.doi.org/10.22617/WPS240553-2>

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ABSTRACT

Industrial policies greening the economy aim to accelerate the transition to net zero. We show that the United States (US) Inflation Reduction Act improved the supply of climate finance globally. Using granular data on global investment funds, we identify a novel international spillover channel of industrial policies. Sustainable global investment funds received more inflows upon the act announcement, in turn increasing their cross-border portfolio investments worldwide. Recipient economies better prepared to address climate change benefited most from sustainable global funds' additional investments. Non-US domiciled sustainable funds investing outside of the US account for most of the spillovers. The results are robust to a rich set of controls and fixed effects, absorbing recipient economies' demand for foreign funds. Thus, global investment funds have become an important conduit for the international spillover of climate policies.

Keywords: sustainable finance, climate policy, industrial policy, cross-border spillover, portfolio reallocation, portfolio capital flows, investment fund, Inflation Reduction Act

JEL codes: F3, G1, G2, Q5

We thank Thorsten Beck, Gabriele Ciminelli, Nathan Converse, Galina Hale, Ayan Kose, Steven Ongena, Zacharias Sautner and seminar participants at the ADB, ECB Climate Change Center, EIB, Denmark's Nationalbanken, European Commission Joint Research Centre's 6th Summer School on Sustainable Finance, 19th East Asian Economic Association International Conference, University of Bolzano, University of Oldenburg, and University of Verona for valuable comments. The views expressed are those of the authors and do not reflect the views and policies of ADB or its Board of Governors or the governments they represent.

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1 INTRODUCTION

The United States (US) Inflation Reduction Act (IRA) is the most forceful climate policy action in the US history, aiming to reduce US emissions by 40% by 2030 relative to 2005 levels. Given a 50% emission reduction pledged under the Paris Agreement, the IRA is a major building block in achieving the US climate objectives. A combination of tax credits, grants, and loans worth at least \$370 billion promises to accelerate the transition to net zero in the US by stimulating private sector investments in clean energy.¹ At the same time, vast climate financing needs remain unmet not only in the US but also globally. Annual global climate financing needs are estimated at \$10 trillion during the period 2030–2050, with only \$2 trillion made available currently (Buchner et al. 2023). Against the backdrop of record-high post-pandemic debt levels and elevated borrowing costs, we ask how the IRA can alleviate climate financing constraints worldwide. We further ask how policy frameworks abroad can help harness any positive spillovers from the IRA.

We highlight a novel international spillover channel of green industrial policies and show that global investment fund flows are an important conduit for translating the IRA into an increased supply of climate finance globally. Specifically, we document that the IRA triggered a shift in investor portfolios towards assets labeled as sustainable, leading the assets under management (AUM) of sustainable-labeled investment funds to grow significantly upon the IRA announcement.² In contrast, conventional investment funds shrank (Figure 1a). International spillovers arise along two dimensions: First, higher inflows into sustainable investment funds are most pronounced for non-US domiciled investment funds. Second, these sustainable funds increased their cross-border portfolio investments, notably to non-US recipient economies. Thus, the IRA has helped raise climate finance worldwide. Recipient economies better prepared to address climate change benefited most from the additional portfolio investment inflows.

Why does the IRA induce a shift in investor portfolios in favor of sustainable funds? The IRA is widely perceived as a major realization of transition risk. Following decades of legislative initiatives to address climate change, the IRA announcement signaled a credible US commitment to robust climate action and a faster transition to net zero. The immediate decline in climate policy uncertainty upon announcement is testament to the policy's credibility as perceived by investors (Figure 1b). The ensuing rise in transition risk triggered a shift in investors expectations of future sustainable versus conventional

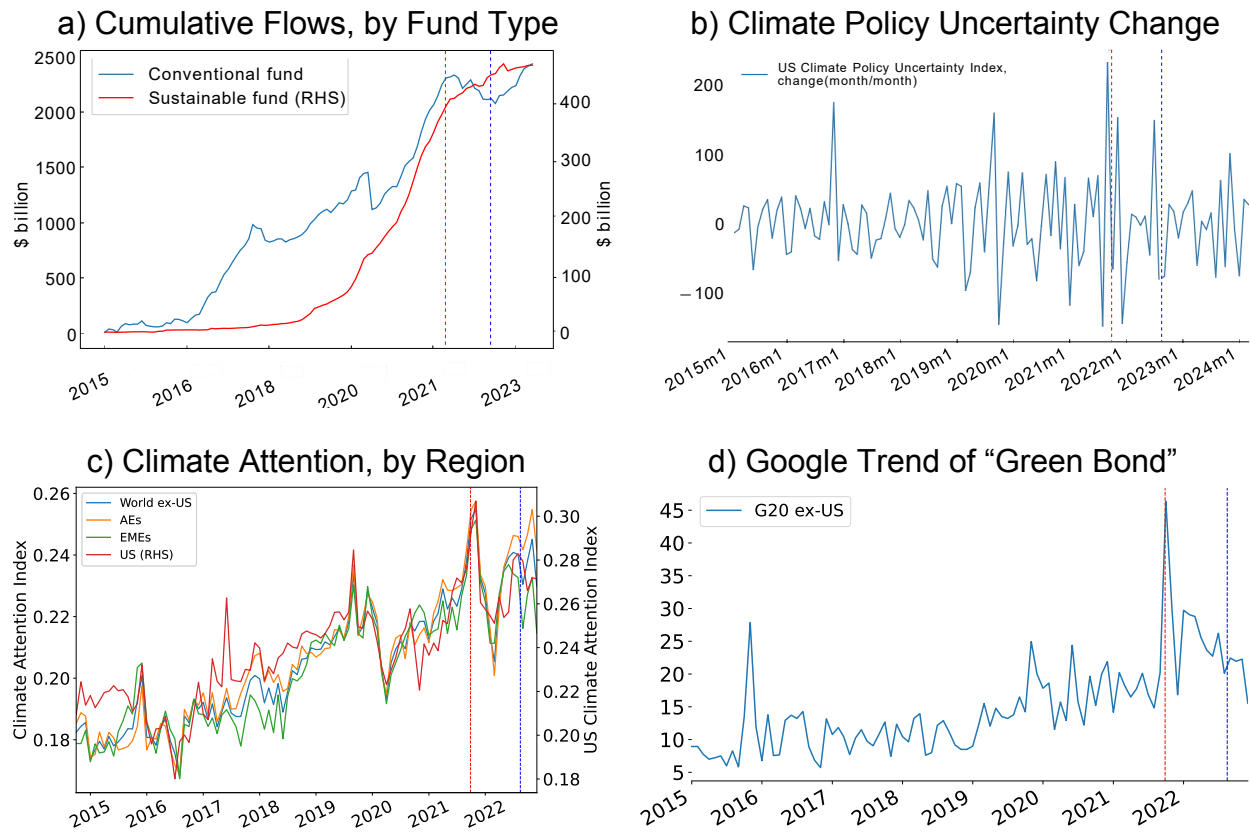
¹ Tax credits are uncapped, and depend on take-up by firms and consumers. Hence, the total green stimulus package may exceed \$370 billion (Bistline, Mehrotra, and Wolfram 2023).

² Henceforth we refer to “sustainable assets” for brevity. Similarly, we shorten “investment funds” to funds.

investment funds' cash flows. As highlighted by Pástor, Stambaugh, and Taylor (2021) and Ardia et al. (2023), cash flows from assets linked to conventional and carbon-intensive activities declined in expectation of tighter climate policies which may strand these assets or see them contested in climate litigation. In contrast, cash flows from assets tied to activities associated with the green transition were expected to rise as they benefit from targeted IRA support and a shift in consumer preferences towards more sustainable products. Moreover, the realization of transition risk may also have strengthened sustainability preferences of investors (Capotă et al. 2022). As Section 5 shows, investors were keenly aware of these shifts in expected cash flows and preferences in favor of sustainable assets, as evidenced by an immediate increase in the relative valuation (realized return) of sustainable funds. This is consistent with the shift to low-carbon assets induced by other major climate policy deals like the Paris Agreement, as documented by Monasterolo and De Angelis (2020), Alessi et al. (2023, 2024).

A record increase in climate attention in the US when the IRA was announced confirms the immediate revaluation of sustainable assets in response to it. Investors paid close attention to the IRA as important policy action mitigating climate change-related risks (Figure 1c). We use the Google Search Volume Index for the term “green bond” as an alternative measure of climate attention and its link to sustainable debt capital markets. The spike in searches just after the IRA announcement confirms investor awareness of the change in transition risk (Figure 1d).

Figure 1: Stylized Facts



Note: The upper left panel plots cumulative flows by fund type. The upper right panel shows the US climate policy uncertainty changes based on Gavrilidis (2021). The lower left panel shows the climate attention index based on Arteaga-Garavito et al. (2023) for the US and aggregated for selected groups of economies. AEs = Advanced Economies; EME = Emerging Market Economies. The lower right panel shows the Google Search Volume Index in G20 economies excluding the US for the term "green bond." Both series are computed as 3-month moving averages. The vertical lines depict the announcement of the IRA in September 2021 and its signing in August 2022.

Sources: a) EPFR, Authors' calculations; b) Gavrilidis (2021); c) Arteaga-Garavito et al. (2023); d) Google.

Importantly, the IRA's impact on investment choices is not only limited to the US residents but ripples on beyond the US. We argue that investors globally perceived the IRA announcement as a signal of heightened transition risk for conventional assets. Given the weight of the US in global policy-making and financial markets, the US commitment to climate action improved the chances of progress on the global climate agenda and hence the probability of the launch of similar green industrial policies abroad, further raising transition risk. We see this reflected in climate attention peaking upon IRA announcement not only in the US but in all major non-US advanced and emerging economies (Figure 1c). Thus, the IRA abetted the portfolio reallocation into sustainable investment funds globally, not only in the US. We buttress this point in two

ways: First, we show in Section 4.4 that international spillovers of the IRA are driven by non-US domiciled sustainable funds. The IRA spillover manifests itself as sustainable funds experiencing increased inflows even when domiciled outside of the US. Second, Section 5 focuses on funds with an investor base attached to the fund's economy of domicile. For this fund sample, we document an even larger increase in sustainable fund inflows when the climate attention specific to the respective non-US fund domicile rises upon IRA announcement.

To our knowledge, our paper is the first to study the international spillover of climate policies and the IRA in particular through capital flows and specifically the global portfolios of investment funds. We assess the IRA spillovers using granular data on investment funds obtained from EPFR Global. For this, we combine two datasets, one on investors' flows into investment funds, and another on funds' investment allocations across recipient economies.³ The combination of both datasets permits us to exploit data variation at the fund-economy level, which entails two important advantages. First, we are able to control for a rich set of recipient economy variables comprising various policy and macroeconomic characteristics. Second, the fund-economy data, in contrast to data at the fund level only, allow us to more accurately separate supply from demand effects, as we detail below. Recipient economy-specific investment flows over the period 2015–2023 at daily and monthly frequencies by some 30,000 funds provide an ideal setup to control for confounding factors in an IRA-centered event study. Our fund-economy-level panel data sample represents the near universe of fund AUM, with funds based in 72 domicile economies and investing in 130 recipient economies, i.e., economies other than the jurisdiction of fund domiciles. We identify sustainable funds by (i) an EPFR-derived indicator measuring the sustainability of a fund's investments, and (ii) the Bloomberg fund-level market value-weighted financial materiality of the fund holdings' environmental performance expressed as fund-level environmental scores.

Difference-in-difference estimations around the IRA announcement on 27 September 2021 suggest an increase in flows into sustainable funds. Inflows into these funds relative to conventional funds rise by 0.034–0.045 percentage points upon IRA announcement. This differential between sustainable and conventional funds is economically significant and equivalent to about a 100% increase relative to the mean of fund inflows over the sample period, or an additional \$ 1.3–1.4 billion each month. Given low and time-invariant cash shares in fund portfolios of about 2% on average, additional fund inflows are equivalent to higher fund investments in recipient economies. The

³ Note that our dataset does not carry information about the residence of fund investors. We only know the residence of fund domicile and recipient economies of fund investments.

additional inflows into sustainable funds are increasing in funds' environmental scores. The IRA-induced inflow into sustainable funds is thus chiefly related to their environmental performance instead of broader sustainability concepts.

Besides the announcement, the shift to sustainable funds is not detectable for other IRA-related events, such as the final signing into law and other legislative events such as a negotiation breakthrough between the US Senators Chuck Schumer and Joe Manchin. Similarly, the increased flows into sustainable funds are unique to the IRA. Other major climate policy events like the Paris Agreement, the US withdrawal from it, the European Union (EU) Green Deal, and the first global climate strike did not trigger a similar shift in investor behavior. The estimations control for various fund characteristics and for recipient economies' trade linkages with the US. The latter is important to absorb the US import demand for inputs relevant to IRA-targeted sustainable investments as an alternative spillover channel. This channel would entail that increased exports of IRA-related products to the US may raise the profitability of firms in recipient economies, thus attracting foreign portfolio investments. A rich set of fixed effects allows us to isolate the supply effect of the IRA, and in particular to eliminate recipient-economy demand for foreign capital.

The results are robust to a battery of additional checks. We vary the time window around the IRA, both at monthly and daily frequencies, drop small funds, and scale fund flows by fund-recipient economy-specific AUM or recipient economy gross domestic product (GDP). Moreover, as our preferred specification focuses on flows at the fund-economy level, the finding of increased flows into sustainable investment funds could be blurred by a contemporaneous shift in fund managers' economy allocations. To isolate the effect on investor choices in favor of a higher allocation into sustainable funds upon IRA announcement, we keep the pre-treatment economy shares in fund portfolios fixed in the post-treatment period. We also conduct the estimation at the fund level only, eliminating the possibility of contemporaneous changes in economy allocations. Both leave the results virtually unchanged. Next, we comprehensively test for parallel pre-trends between the treatment and control groups. First, we apply propensity score matching to ensure comparing closely similar sustainable and conventional funds. Second, we match sustainable and conventional equity funds by limiting the sample to funds specialized in specific industries. Third, analyses tracing out the dynamic effect prior to and after treatment, as well as for placebo events lend credence to parallel trends being present.

Furthermore, we confirm that international spillovers from the announcement of a US climate policy do not arise mechanically. We already established that non-US investors

are sensitive to the signal on transition risk revealed through the IRA announcement, and shift their portfolios into non-US domiciled sustainable funds. In turn, these non-US sustainable funds translate additional inflows into investments abroad. Cross-border investments with the US as a recipient economy may arise mechanically for funds with some portfolio allocation to the US, either de facto or by mandate. Mechanic spillovers can also arise for the US-domiciled sustainable funds with a multi-economy portfolio. Robustness tests that focus only on samples of non-US domiciled funds and funds without any US exposure lay any concerns about mechanical spillovers to rest. The IRA spillover is attributable to non-US domiciled funds, notably those investing cross-border and in non-US recipient economies.

Having established the international spillovers of the IRA and the key role of investment funds, we return to the question how policy frameworks in recipient economies can harness these spillovers. The spillovers are economically large, reaching almost 6% of the median economy-level GDP in the 3 months after the IRA announcement. Given large and unmet climate financing needs, it is important to efficiently allocate these scarce additional sustainable investments into recipient economies where funds are most productively channeled into climate action. We propose that this depends on economies' capacity to productively use inflows for climate change-related investments, and gauge this capacity by the Bloomberg Government Climate Score. This score measures economies' progress in emission reduction, power sector decarbonization, and the policy commitment to address climate change. We find that higher-scoring economies tend to attract more inflows from sustainable funds following the IRA announcement, suggesting that climate policy performance matters to raising private climate finance. The relatively higher flows into higher-scoring economies are not only driven by higher flows into sustainable funds post IRA but also fund managers' active portfolio shifts in favor of higher-scoring economies. Importantly, even conventional funds exhibit this portfolio shift and thus deliver a major climate finance contribution as they represent 90% of all investment funds.

2 LITERATURE REVIEW

Our analysis ties in with several strands of the literature. First, we contribute to early evidence for the effectiveness of the IRA. Bauer, Offner, and Rudebusch (2023) study the US stock market response to the IRA announcement and find negative abnormal returns for firms with higher emissions and lower environmental scores. As the largest US climate action in history, the IRA is expected to focus investor attention on climate transition risks, increasing investor preference for green investments, and lowering green firms' borrowing costs. Jain (2023) provides evidence that indeed the IRA lowered the cost of green bonds for the US firms. Macroeconomic effects of the IRA in the US are assessed as small according to Bistline, Mehrotra, and Wolfram (2023). Similarly, Fournier et al. (2024) find small impacts on competitiveness abroad. The existing literature studies the financial and economic IRA impact in the US and cross-border effects on competitiveness. We contribute to this strand by demonstrating its international spillover through global investment funds.

Second, we add to the emerging literature on international spillovers of domestic climate policies through financial market participants' portfolio reallocation. Benincasa, Kabas, and Ongena (2023) document that banks react to domestic climate policy stringency by increasing cross-border lending. Laeven and Popov (2023) suggest a similar leakage of climate regulations, and show that the introduction of carbon taxes precipitates an increase in bank lending to high-emission firms abroad, confirming the cross-border leakage of carbon regulations, which incentivizes firms to shift high-emission production abroad (Ben-David et al. 2021, Bartram et al. 2022). Focusing on global banks as vehicles of climate policy spillovers, Demirgüç-Kunt et al. (2023) find that a tightening of climate policies' stringency in foreign economies hosting global banks' subsidiaries raises the locally provided credit by these subsidiaries. Li, Tang, and Xie (2022) study how enacting climate policies affects cross-border mergers and acquisitions, and find that acquirers withdraw deals announced shortly before a policy is enacted, as well as a decline in deals' synergies, premiums, and post-merger operating performance. High-emission foreign acquires tend to target low-emission acquires abroad, further pointing at the spillover of climate policies. We contribute to this literature as we provide evidence for a novel spillover channel of industrial climate policies through global investment funds.

Third, our work highlights global investors' sensitivity to major climate policies like the IRA. Alessi, Battiston, and Kvedaras (2024) show that investors reduced their exposure to high-emission firms' equities issued in the European Union in response to the Paris

Agreement. In contrast, investors domiciled in economies with lower climate policy stringency increased their exposure. This trend reversed after the US withdrew from the agreement. Earlier work by the same authors showed that announcements of major climate policy deals like the Paris Agreement, the first Global Climate Strike, and the EU Green Deal made investors in European equities more likely to hold and accept lower returns for green assets (Alessi, Ossola, and Panzica 2023). Also using the Paris Agreement as an event study, Monasterolo and De Angelis (2020) demonstrates investors' increased exposure to low-carbon assets, but decreases their exposure to high-carbon assets only marginally. However, the US oil and gas firms experienced significant stock price declines (Diaz-Rainey et al. 2021). Ardia et al. (2023) report that stock prices of green firms tend to rise, while those of brown firms tend to decline following unexpected shifts in climate concern. These outcomes are driven by changes in customer and regulatory preferences toward more sustainable solutions. Anderson and Robinson (2024) finds that belief in climate change affects the composition of investors' mutual fund portfolios. These findings are underpinned by a vast body of evidence from asset pricing for investors demanding compensation for higher exposure to physical and transition climate risk (see e.g. Aswani, Raghunandan, and Rajgopal 2024; Bolton and Kacperczyk 2021; Faccini, Matin, and Skiadopoulos 2023; Hsu, Li, and Tsou 2023; Krueger, Sautner, and Starks 2020; Luo 2022; Seltzer, Starks, and Zhu 2022; Pástor, Stambaugh, and Taylor 2022; Ardia et al. 2023). We sharpen the perspective on investors' response to climate risks and policy announcements thanks to our dedicated focus on the behavior of global investment funds, and their role in facilitating cross-border policy spillovers.

Fourth, our evidence for global investment funds is directly related to the pricing of climate risks by mutual funds. Ceccarelli, Ramelli, and Wagner (2024) discuss how mutual funds with a low-carbon portfolio experienced significant inflows upon the 2018 release of Morningstar's novel carbon risk classification of funds. Funds also reduced their exposure to high-carbon firms. In turn, funds with higher levels of sustainability achieved higher performance (Soler-Domínguez et al. 2021). Funds with a higher carbon risk exposure are also likely to experience future outflows (Kuang and Liang 2022). Cao et al. (2023) validate these findings for bond mutual funds. Our work confirms that climate risks and mitigating industrial policies are key concerns in the mutual fund industry. In addition, we emphasize their international spillovers through global investment funds, both mutual and ETF-type funds.

Fifth, our work is aligned with research showing global investment funds' sensitivity to economy characteristics. Choi, Ciminelli, and Furceri (2023) demonstrate that an

increase in economy policy uncertainty is associated with portfolio debt outflows, especially from actively managed mutual funds. Similarly, bond funds reduce their cross-border exposure as sovereign default risk rises (Converse and Mallucci 2023). We add to this by showing that economies' climate policies determine the allocation of funds' cross-border investments, in turn, building on the rich literature discussing the importance of institutional qualities as a pull factor for portfolio capital flows (Daude and Fratzscher 2008; Papaioannou 2009; Okada 2013; Koepke and Paetzold 2024; Julio and Yook 2016).

Sixth, global investment funds have been shown to be important conduits for the international spillover of shocks, in line with the rise of market-based finance (Carney 2019). The literature pays particular attention to the transmission of the US monetary policy shocks to Emerging Markets, and the Global Financial Cycle more generally. Using granular data on global investment fund flows, Dahlhaus and Vasishta (2014) discusses the link between the effect of the US monetary policy shocks on portfolio flows to Emerging Markets, and subsequent financial turmoil in recipient economies. Drawing on the same data, Ciminelli, Rogers, and Wu (2022) show that an increase in the US interest rates precipitates large and persistent portfolio outflows from recipient economies. It is the portfolio reallocation of global investment funds in response to funding shocks that explains spillovers to Emerging Markets (Jotikasthira, Lundblad, and Ramadorai 2012). Furthermore, global investment fund flows amplify capital flow and exchange rate volatility in response to the Global Financial Cycle (Davis and Zlate 2023). The sensitivity of international capital flows to global financial conditions can be particularly attributed to the rise of Exchange Traded Funds (ETFs) (Converse, Levy-Yeyati, and Williams 2023). Chari (2023) highlights the macroeconomic repercussions of this exposure, emphasizing that the rise of open-end mutual funds and ETFs account for half of the capital flows to Emerging Markets, in excess of international bank lending to these economies. Citing a large body of literature, the author notes that increased volatility of capital flows to Emerging Markets results from global investment funds' vulnerability to liquidity and redemption risks during global financial market stress, as originally highlighted by Raddatz and Schmukler (2012), and recently confirmed by Schmidt and Yesin (2022). Drawing on the same data provider for granular investment fund flows, we demonstrate that global investment funds specifically facilitate the spillover of climate policies and the IRA in particular.

Our paper is structured as follows. Section 3 presents the institutional background of the IRA, introduces the data set, and presents summary statistics. Section 4 explains the regression framework and benchmark results at the fund and fund-economy level. The

section further discusses the identification strategy to tightly control for fund heterogeneity and shows that international spillovers do not arise mechanically. In Section 5, we demonstrate how the IRA works through the investment decisions of non-US investors through a signaling channel. Section 6 studies how climate policies in recipient economies amplify the IRA-induced international spillovers, also investigating the contribution of conventional funds through a reallocation of their investment portfolios in response to the IRA. Section 7 concludes. Appendices provide additional details on the data, and discuss several additional results, including a battery of robustness checks.

3 DATA AND THE IRA

In this paper, we investigate how global investment fund flows facilitate an international spillover of the IRA into an increased supply of climate finance globally. This section reviews the institutional background of the IRA, and presents the dataset and summary statistics, with details available in the Appendix A.

3.1 The IRA and Climate Attention

The IRA is the most ambitious climate policy action of any US administration in history, and the single most important policy to act on the US pledge under the Paris Agreement to reduce emissions by 50% until 2030 relative to 2005 levels, with an estimated emission reduction of 710 million metric tons by 2030 (Voigts and Paret 2024). The IRA comprises a targeted stimulus package worth \$370 billion composed of supply and demand side measures (The White House 2023). On the supply side, the package includes a blend of tax incentives, grants, and loans, with corporate tax incentives constituting the primary source of funding. On the demand side, consumers stand to benefit from subsidies for energy-efficient appliances, electric vehicles, rooftop solar panels, geothermal heating systems, and home batteries (IEA and IFC 2023).

Following decades of initiatives in the US to address climate change, the passage of the IRA is widely seen as a major achievement after a long legislative process (Table 1). Core elements of the IRA were announced on 27 September, 2021, as part of the Build Back Better Act. In addition to climate change, this broader legislative proposal also included healthcare, tax reform, and social safety nets. The Build Back Better Act passed the House on November 19, 2021, but faced an evenly divided Senate. There, Senator J. Manchin became the key holdout among the Democratic votes needed for passage. He declined to support the bill and announced his decision to vote against the Build Back Better Act on December 19, 2021, leading to months of negotiations.

Table 1: Inflation Reduction Act: Timeline

Date	Event Description
27-Sep-2021	Introduced in the House as the Build Back Better Act by Congressman John Yarmuth.
19-Nov-2021	Build Back Better Act passed by the House.
19-Dec-2021	Senator Joe Manchin declared his intention to oppose the Build Back Better legislation.
27-Jul-2022	Senators Joe Manchin and Chuck Schumer reached an agreement, introducing a new climate legislation called Inflation Reduction Act (IRA).
3-Aug-2022	Congressional Budget Office and the Joint Committee on Taxation announced the estimated cost of the IRA.
6-Aug-2022	Senator Chuck Schumer proposed an amendment to substitute the text of the previously passed bill with the Inflation Reduction Act of 2022.
7-Aug-2022	Passed by the Senate as the Inflation Reduction Act of 2022.
12-Aug-2022	Inflation Reduction Act of 2022 passed by the House.
16-Aug-2022	Signed into law by President Joe Biden.

Source: Authors' compilation.

Following what seemed a final rejection of further attempts to pass the Build Back Better Act due to Senator Manchin's objections to climate legislation elements, a breakthrough of negotiations came to surprise markets on July 27, 2022. That day, Senators Manchin and Schumer unveiled an agreement that would become the IRA. Senator Schumer proposed an amendment to substitute the text of the previously passed Build Back Better bill with the Inflation Reduction Act of 2022 on August 6, 2022, finally passed by the House and Senate within days and signed into law on August 16, 2022.

The IRA's legislative history illustrates several key dates. Any of these—notably the announcement, negotiation breakthrough between Senators Manchin and Schumer, and the signing into law—could have made investors aware of the change in transition risk and triggered the shift into sustainable investments. However, as we will show in Section 4.2, and in line with the efficient-market hypothesis, investors' pivot towards sustainable funds can only be detected for the announcement on 27 September, 2021.

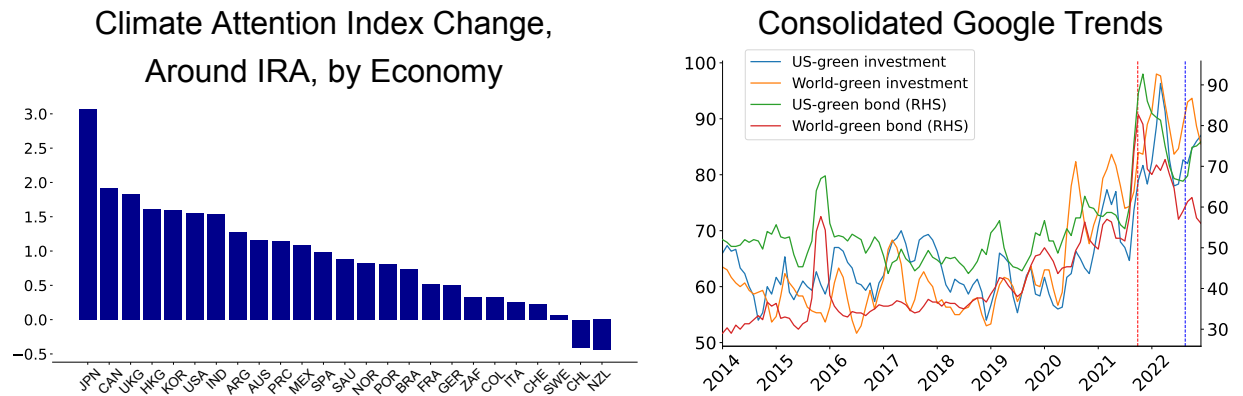
Stylized facts of shifts in investors' climate attention lend further support to centering our event study on the announcement date. That date saw a record increase in climate attention as measured by Arteaga-Garavito et al. (2023), both in the US and globally (Figure 1c). The index draws on almost 24 million Twitter messages posted by newspapers in 25 economies to measure economy-specific attention to climate change.

The US index spiked after the Paris Agreement in December 2015, the Trump administration's withdrawal from the Paris Agreement in June 2017, and the first global climate strike in September 2019, but the index movement around the IRA remains unique in magnitude. Except for the US withdrawal from the Paris Agreement, the non-US indices mirror these dynamics. Importantly, climate attention peaked around the world shortly after the IRA, with the rapid increase not observed for any other climate-related policy. Figure 2 underlines the significant heterogeneity in the increase in climate attention across most economies between August 2021 (pre-IRA) and November 2021 (post-IRA).

Furthermore, we inspect the climate attention as specifically relevant to investors, as measured by changes in the Google Search Volume Index for terms associated with investor preference shifts in reaction to climate risks. In the tradition of Fahmy (2022), we focus on the terms “green bond” and “green investment.” Figure 2 suggests that at the time of the IRA, the frequency of searches for the former reached an unprecedented peak both in the US and globally. Besides the Paris Agreement, other climate policy-related events seem not to have exerted a similarly pronounced effect on search behavior. Searches for “green investment” are more volatile but without a clear trend between 2014 and 2020. In April 2021, however, searches increased markedly as President Biden announced the ambition for the US to lead global efforts in emission reduction. This increase, however, was only transitory. Only the IRA announcement in September 2021 permanently raised the searches for “green investment.” As before, this increase is mirrored by the world as a whole, underlining the IRA's global reach.

Taken together, the IRA announcement stands out as the day of maximum climate attention for investors globally. Neither the news on the negotiation breakthrough between Senators Manchin and Schumer in July 2022 nor the signing into law in August 2022 similarly affected investors' climate attention. Thus, we expect the impact on sustainable fund flows to materialize around the IRA announcement, and center our difference-in-differences regression on a window around this event. As we show below, specifications estimated around other IRA-related events do not yield any statistically significant results.

Figure 2: The IRA and Climate Attention Worldwide



ARG = Argentina; AUS = Australia; BRA = Brazil; CAN = Canada; CHE = Switzerland; CHL = Chile; PRC = People's Republic of China; COL = Colombia; FRA = France; GER = Germany; HKG = Hong Kong, China; IND = India; ITA = Italy; JPN = Japan; KOR = Republic of Korea; MEX = Mexico; NZL = New Zealand; NOR = Norway; POR = Portugal; SAU = Saudi Arabia; SPA = Spain; SWE = Sweden; UKG = United Kingdom; USA = United States; ZAF = South Africa.

Note: The left panel shows the change in climate attention index for all economies from August (pre-IRA) to November 2021 (post-IRA). The right panel shows the Google Trend search of the US residents and the world as a whole for the term “green investment” and the corresponding search behavior for “green bonds.” Both series are computed as 3-month moving averages. The vertical lines depict the announcement of the IRA in September 2021 and its signing in August 2022.

Sources: Arteaga-Garavito et al. (2023), Google.

3.2 Fund-Level Dataset

Our evidence is based on data taken from EPFR Global at the daily and monthly frequency, which contains flows into a large number of investment funds domiciled in a diverse set of economies. While we start our empirical analysis at the fund level, benchmark results are based on a fund-economy level dataset, as further explained below. The funds hold \$50 trillion AUM in the aggregate, representing 96% of the total worldwide AUM (Koepke and Paetzold 2024). Several other studies rely on these data (Jotikasthira, Lundblad, and Ramadorai (2012), Forbes et al. (2016), Chari et al. (2022), Converse and Mallucci (2023), Converse, Levy-Yeyati, and Williams (2023), Davis and Zlate (2023) or Bettendorf and Karadimitropoulou (2023)) and Koepke and Paetzold (2024) conclude that the EPFR data are best-suited to study research questions that require micro-level (i.e., fund-level) data. The data on cross-border flows of investment funds contained in our dataset captures a subset of portfolio investment flows reported in the economy's balance of payments.

Cross-border flows by institutional investors purchasing foreign assets directly are not captured.

We scale the flows corrected for valuation changes by fund-level one-period lagged AUM in line with the literature (e.g., Converse, Levy-Yeyati, and Williams 2023), and winsorize this variable at the 1% and 99% levels to reduce the potential impact of outliers.⁴ Our fund-level dataset for daily data covers 20 trading days before and 20 days after the IRA announcement. The dataset for monthly data includes 3 months before and after the IRA announcement. The monthly dataset comprises, depending on the specification, up to 30,000 funds, while the daily analysis contains about 25,000 funds. As the EPFR database contains newly created and closed funds our analysis does not suffer from survivorship bias.

Our analysis controls for funds' one-month lagged performance following Converse, Levy-Yeyati, and Williams (2023), and a funds' lagged AUM, in line with Chari et al. (2022). We also control for funds' domiciles by means of fixed effects, and use the information about domiciles to buttress our evidence on international spillovers, showing that non-US domiciled funds are key for the mechanism we document. We further exploit information on whether a fund is actively or passively managed (ETF), its asset class (bonds vs. equities), as well as its currency and geographic target investment mandate. For equity funds, we also know a fund's industry allocations into 25 different sub-industries. In part to reassure ourselves of parallel trends in the pre-treatment period, we aggregate these sub-industries into five broader industry groups in line with the ISIC Rev. 4 industry classification: manufacturing, utilities, finance, communication and information, and retail trade and transport.

Importantly, a variable indicating a fund's sustainability serves as our treatment variable in the difference-in-difference specifications. This dummy measures whether a fund adheres to a sustainable investment mandate as determined by EPFR based on a set of ESG-related keywords appearing in funds' prospectuses. Table A2 in the Appendix provides the full list of the ESG-related terms screened by EPFR. This dummy constitutes our main variable determining a fund's sustainability label for the treatment variable. As an alternative, we use fund-level market value-weighted financial materiality of the fund holdings' environmental performance, available from Bloomberg as fund-level environmental pillar percentile score. This score provides a more granular assessment of a fund's sustainability, but its sample coverage is more restricted than the EPFR sustainability indicator so that we lose about 42% of observations.

⁴ EPFR constructs this variable as the change in funds' total assets net of changes in net asset values.

3.3 Fund-Economy-Level Dataset

Our motivation for working with fund-economy level for our main specification is twofold: First, our analysis seeks to shed light on recipient economy policies helping to attract sustainable fund flows from abroad in the wake of the IRA enactment. Data at the fund-economy level allows us to consider a rich set of economy characteristics comprising policies and macroeconomic control variables as further specified below. Second, sustainable fund investments in recipient economies may be driven by both the demand for foreign sustainable finance and its supply. Fund-economy level data enable us to apply economy-time fixed effects to absorb any economy-level time-varying confounders, and thus to isolate the supply effect of the IRA on funds' flows to recipient economies.

To construct the fund-economy-level panel, we combine the fund-level data presented in the previous sub-section with EPFR's data on funds' economy allocations in terms of AUM.⁵ As the economy allocation data is only available at monthly frequency, our final dataset is at monthly frequency. Crossing both datasets allows us to track investors' flows into various economies as channeled through individual funds. As before, we scale these fund-economy level flows by a fund's one-month lagged AUM. For robustness, we also present specifications scaling by fund-economy-level AUM or recipient economies' nominal GDP. The final dataset covers the period 2015:M1–2023:M6, with the start in 2015 as sustainable investment funds only started to receive meaningful inflows at that time (Schmidt and Yesin 2022). We estimate the difference-in-differences specification over the period from 2021:M6–2021:M12, i.e., the 7 months around the IRA announcement.

In addition to the fund-level covariates introduced in Section 3.2, we also match a rich set of recipient economy characteristics to the dataset.⁶ Importantly, this includes Bloomberg Government Climate Scores (henceforth just climate policy score), which measure an economy's climate transition performance as a weighted average of three metrics: an economy's emission performance, power transition performance, and climate policies performance. These metrics rate economies according to the extent to which they (i) reduce carbon emissions, (ii) decarbonize the power sector, and (iii) commit to addressing climate change. Economies with a higher score are more likely to

⁵ EPFR only provides economy allocation data for multiregion funds and not for single-economy funds. For the latter, we hence assume an economy allocation share of 100%.

⁶ We match variables at the annual (quarterly) frequency to all months in the respective year (quarter).

meet their Nationally Determined Contributions pledged to reduce emissions in line with the goals of the Paris Agreement.

To control for alternative spillover channels, our dataset includes recipient economies' trade linkages with the US and with funds' domicile economies as well as for capital account openness. Unless absorbed by the appropriate fixed effects, we further control recipient economies' income level with GDP per capita, monetary policy rate differentials with the US, Moody's sovereign credit rating, and various measures of rule of law.

We clean these data as follows. First, fund-economy level flows are winsorized at the 1% and 99% levels. Second, we drop fund-economy pairs for funds that never received any inflows in line with Converse and Mallucci (2023). This second step is important to distinguish true zero flows from those that arise because a particular economy is *excluded* from the geographic scope of a fund's investment mandate.⁷ Third, we exclude fund-economy pairs with an economy allocation share of less than 0% or more than 100%.⁸ Finally, the EPFR economy allocation data do not only include single economies, but also geographical areas, such as the euro area. As we cannot match those to the aforementioned economy characteristics, we exclude the corresponding fund-economy pairs (about 8% of the initial sample).

3.4 Summary Statistics

Table 2 shows the summary statistics for our benchmark specification 2 at the fund-economy level estimated over the period 2021:M6–2021:M1. The average economy-specific flows into funds are positive with a mean of 0.05%, with the average fund reaching one-month lagged AUM of \$2.8 billion, with a minimum of 0 and a maximum of about \$1,059 billion after winsorization. The average share of AUM invested in the manufacturing industry accounted for 48%, finance accounts for 19%, utilities for 7%, information and communication for 14%, and retail trade and transport for 9%. Sustainable funds account for 10% of our sample, a fund's average Bloomberg environmental score is 79%, and the average US economy share in fund portfolios equals 25%. The change in economy allocation shares over our sample period is virtually zero as fund managers are typically penalized for deviating from target allocations. We will later show that results are not driven by changes in funds' economy allocations. The average fund achieved a monthly return (performance) of 0.16%,

⁷ Including these pairs yields similar results.

⁸ In this step of the data cleaning process, we lose less than 0.1% of observations.

Table 2: Summary Statistics

Variable	Observations	Mean	Std. dev.	Min	Median	Max	Unit
Flows _{<i>i,c,j,t</i>}	453,350	0.046	1.340	-9.922	0.000	12.339	%
$\Delta Share_{i,c,j,t}$	453,350	0.000	0.516	-31.350	0.000	23.632	%
Sustainable _{<i>i,j</i>}	453,350	0.103	0.305	0.000	0.000	1.000	0/1
Env. Score _{<i>i,j</i>}	269,078	78.535	13.351	6.506	81.670	99.400	0-100
Performance _{<i>i,j,t-1</i>}	453,350	0.157	2.840	-57.946	0.264	116.279	%
AUM _{<i>i,j,t-1</i>}	453,350	2.832	15.664	0.000	4.799	1059.022	\$ billion
US Share _{<i>i,j</i>}	453,282	25.261	35.061	0	0.155	100.000	%
ETF _{<i>i,j</i>}	453,350	0.344	0.475	0.000	0.000	1.000	0/1
Equity Fund _{<i>i,j</i>}	453,350	0.651	0.477	0.000	1.000	1.000	0/1
Single-economy Fund _{<i>i,j</i>}	453,350	0.206	0.404	0.000	0.000	1.000	0/1
Finance Industry Share _{<i>i,j</i>}	178,329	19.225	8.482	-24.244	19.225	72.451	%
Manufacturing Industry Share _{<i>i,j</i>}	178,329	47.737	10.845	0.000	47.737	94.226	%
Utility Industry Share _{<i>i,j</i>}	178,329	6.613	5.531	0.000	6.613	52.346	%
Trade/Transport Industry Share _{<i>i,j</i>}	178,329	9.076	4.271	0.000	9.076	46.982	%
Information/ Communication Industry Share _{<i>i,j</i>}	178,329	14.402	6.890	0.000	14.402	100.000	%
Post _{<i>t</i>}	453,350	0.427	0.495	0.000	0.000	1.000	0/1
Climate Policy Score _{<i>c</i>}	391,312	4.793	1.161	1.801	4.529	6.922	-
Trade-US _{<i>c</i>}	394,365	0.379	0.588	0.000	0.149	2.679	%
Capital Account Openness _{<i>c</i>}	443,409	0.789	0.330	0.000	1.000	1.000	[0,1]
GDP p.c. _{<i>c</i>}	397,892	10,525.590	7,126.641	263.689	11,759.040	26,916.210	\$
Rule of Law _{<i>c</i>}	450,695	0.859	0.874	-2.296	1.289	2.058	-
Trade-fund domicile _{<i>c</i>}	374,002	0.003	0.007	0.000	0.001	0.120	%
Bilateral FDI _{<i>c</i>}	423,124	0.040	0.125	-0.016	0.002	1.095	%
Interest Rate Differential _{<i>c</i>}	274,703	3.002	5.815	-0.19	1.035	37.91	%
Rating _{<i>c</i>}	452,810	5.748	4.845	1.000	4.000	21.000	-

Note: This table reports summary statistics for the main regression sample of column (4) in Table 4. We provide data definitions and sources in Table A1.

Source: Authors' calculations.

mirroring the general asset price increase in 2021. About one-fifth of funds in our matched sample invest in a single economy, two-thirds are equity funds, and one-third are ETFs, with these categories overlapping.

As for economy-level covariates, Table 2 shows that the average climate policy score is 4.8, with strong cross-economy heterogeneity given a range of 1.8–6.9. We exploit this heterogeneity in an analysis of how policy frameworks can help harness positive spillovers from the IRA.

4 DO SUSTAINABLE FUNDS RECEIVE MORE INFLOWS AFTER THE IRA?

In Section 4, we examine the effect of the IRA on investors' flows into sustainable funds. We first present the regression framework and identify assumptions, followed by the results.

4.1 Econometric Approach

We estimate difference-in-differences regressions both at the fund and fund-economy level around the announcement date of the IRA on 27 September, 2021. At the fund level, our estimation is given by

$$Flows_{i,j,t} = \alpha_{jt} + \alpha_{ij} + \nu \cdot (\text{Post}_t \times \text{Sustainable}_{i,j,pre}) + \epsilon_{i,j,t} \quad (1)$$

where $Flows$ are investors' flows into fund i , domiciled in economy j , in the 3 months before (June–September 2021) and after (October–December 2021) the IRA announcement, scaled by a fund's one-month lagged AUM.

The main variable of interest is the interaction between a Post -dummy that is equal to one after the IRA announcement, i.e., after 2021:M9), and zero before, and a dummy that takes a value of one if a fund is labeled as sustainable in 2021:M8, the month before the IRA announcement. We expect the coefficient ν to be positive, as this would indicate a shift of investor portfolios towards sustainable investments after the IRA. α_{jt} are domicile-time fixed effects, and α_{ij} are fund-level fixed effects, which absorb time-varying, fund domicile-specific heterogeneity as well as time-invariant, fund-specific heterogeneity.⁹ This effectively controls investors' preferences for certain funds and for funds domiciled in specific economies. Standard errors are clustered at the fund level.

We estimate equation 1 not only with data at monthly frequency but also using a fund-level dataset at daily frequency, using up to 40 trading days around the IRA announcement. This is to reduce the possibility that our results might be driven by any other contemporaneous events in the same period as the IRA.¹⁰

More importantly, we carefully isolate the supply effect of the IRA. This is crucial as results for equation 1 could be driven by demand for investors' allocations into

⁹ Adding manager-time fixed effects leaves the main results unchanged.

¹⁰To ensure comparability of results derived from data at the monthly frequency between fund-level and fund-economy-level analysis, the analysis at fund level is only based on those funds that form part of the fund-economy-level analysis. The dataset for the latter is derived as described in Section 3.3. In contrast, results based on daily data are based on all funds available from EPFR at the daily frequency.

sustainable funds. For instance, ultimate investment targets in recipient economies could demand more financing from sustainable than conventional funds and thus account for an increased flow into sustainable funds. In contrast, we seek to identify how investors reallocate their supply of funding to sustainable funds relative to conventional funds in response to the IRA. To cleanly identify this supply effect, we run our benchmark regression at the fund-economy level as follows

$$Flows_{i,c,j,t} = \alpha_{ct} + \alpha_{jt} + \alpha_{ic} + \alpha_{mct} + \beta \cdot (Post_t \times Sustainable_{i,j,pre}) + \epsilon_{i,c,j,t} \quad (2)$$

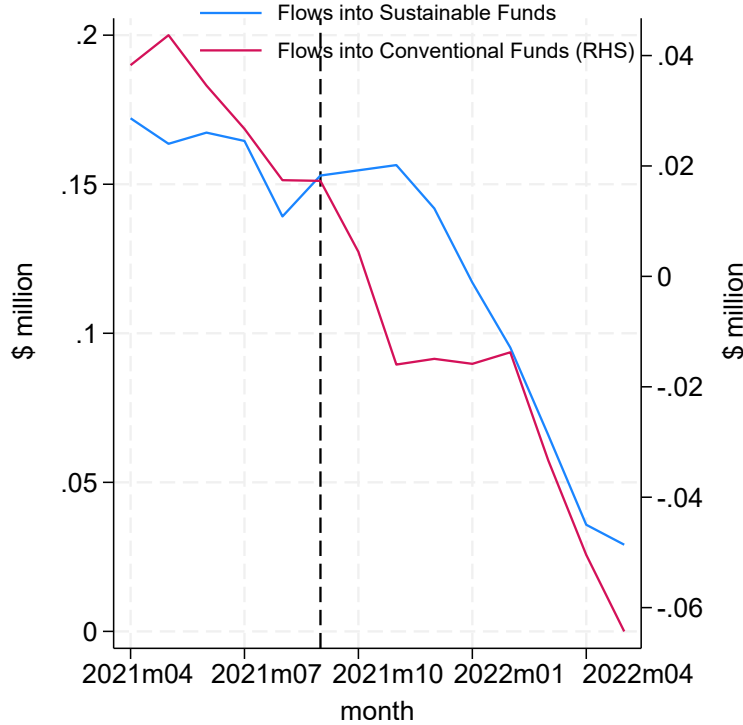
where *Flows* are now the recipient economy-specific investor flows into fund *i* in the 3 months before (June–September 2021) and after (October–December 2021) the IRA announcement, scaled by a fund’s one-month lagged AUM. Note that, as the IRA was announced on 27 September, 2021, we treat fund flows in September 2021 as being pre-IRA, but we show below that the results are similar if we drop the announcement month from the sample. As before, *j* denotes a fund’s domicile and the main variable of interest is the double interaction between the *Post*-dummy and the sustainable fund indicator. We also present the results using a fund’s environmental score instead of the sustainability dummy.

The fund-economy-level specification allows us to introduce recipient economy-time fixed effects α_{ct} to control for time-varying, recipient economy fund demand. We further saturate the equation with domicile-time fixed effects α_{jt} , fund-economy, α_{ic} , as well as—in most specifications—manager-economy-time fixed effects, α_{mct} . Managers *m* represent the investment companies managing a fund.¹¹

In the fund-economy level specification 2, manager-economy-time fixed effects are important to distinguish between the effect of the IRA on investors’ flows into funds and fund managers’ allocations across economies. Both could affect our outcome variable, as it is computed as the product of investor-specific flows and fund manager-specific economy allocations. By controlling for manager-economy-time fixed effects, we control for any changes in fund managers’ shifts in economy allocations and hence focus on the IRA’s impact on investors’ flows into funds. In the same vein, for robustness, we fix managers’ economy allocation shares in the pre-IRA period and all of our results are qualitatively unchanged, providing further evidence for significant shifts in investor behavior as a response to the IRA.

¹¹As economy-time fixed effects are spanned by manager-economy-time fixed effects, the former are not included separately.

Figure 3: Flow Dynamics of Sustainable vs. Conventional Funds



Note: This figure plots the three-month rolling average flows (in million \$) scaled by lagged AUM into sustainable and conventional funds. The vertical lines depict the IRA's announcement in September 2021 and its enactment in August 2022.
Source: EPFR, Authors' calculations.

For robustness, we estimate a version of equation 2 with data averaged in pre- and post-treatment periods, respectively, with the dependent variable computed as the difference between these two averages, to be then regressed on the sustainable fund dummy. This strategy mitigates any serial correlation of the standard errors, as argued by Bertrand, Duflo, and Mullainathan (2004) and Bottero, Lenzu, and Mezzanotti (2020).

For our difference-in-differences analysis to be valid, flows into sustainable and conventional funds need to exhibit parallel trends in the absence of treatment. As per Figure 3, both sustainable and conventional funds' flows are on similar trajectories before the IRA announcement. It is only after the IRA is announced that sustainable funds receive more inflows relative to conventional funds. Further below, we analytically corroborate the validity of the parallel trend assumption by running several placebo regressions, which estimate equation 2 on a sample period that did not see an announcement of the US (or any other economies') climate policies. In all of these cases, the double interaction coefficient β turns out to be statistically insignificant. In

addition, we show the results of a regression that interacts month dummies with the sustainable fund dummy, setting the reference month equal to the IRA's announcement month (September 2021). As we shall see, the corresponding interactions are only statistically significant in the 3 months after the announcement. This further speaks to the parallel trend assumption being satisfied.

4.2 Benchmark Results

In this section, we present the results on the effect of the IRA on investors' flows into sustainable funds. We start with the regressions at the fund level, as in equation 1, and then show the results at the fund-economy level as in equation 2.

Table 3 shows that after the IRA announcement in September 2021, sustainable funds received higher inflows. In column (1), we start estimating the regression at the monthly frequency. The positive interaction coefficient implies that after the announcement, sustainable funds saw 0.14 percentage points higher inflows than conventional ones. However, the result is based on a relatively long time window of 6 months around the IRA announcement, and thus other, contemporaneous events might distort this effect. To alleviate this concern, we estimate equation 1 on daily data and a shorter window around the announcement. In column (2), we focus on the 5 trading days before and after IRA announcement; in column (3) we take 20 pre- and post-IRA trading days. In both cases, the double interaction estimate remains positive and statistically significant at least at the 10% level.

In columns (4)–(7), we examine the impact of other legislative milestones of the IRA, notably the agreement between Manchin and Schumer in July 2022 and President Biden's signing of the IRA in August 2022. In both cases, the double interaction coefficient is not statistically different from zero. That is, only the IRA announcement led to differential investor flows into sustainable vs. conventional funds, consistent with Figure 2 showing that only the IRA announcement raised investors' climate attention.

Table 3: The Impact of the IRA on Fund Flows: Fund-Level Evidence

	September 2021, 3 months	September 2021, 5 days	September 2021, 20 days	July 2022, 5 days	July 2022, 20 days	August 2022, 5 days	August 2022, 20 days
VARIABLES	(1) Flows _{i,j,t}	(2) Flows _{i,j,t}	(3) Flows _{i,j,t}	(4) Flows _{i,j,t}	(5) Flows _{i,j,t}	(6) Flows _{i,j,t}	(7) Flows _{i,j,t}
$Post_t \times Sustainable_{i,j}$	0.139* (0.082)	0.006* (0.004)	0.005** (0.002)	0.002 (0.003)	-0.003 (0.002)	-0.001 (0.003)	-0.003 (0.002)
Domicile-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	117,873	246,505	985,557	261,594	1,041,894	261,027	1,044,882
R-squared	0.386	0.198	0.115	0.185	0.092	0.176	0.091

Note: This table is based on daily and monthly EPFR fund-level data covering the years 2021 and 2022. Column (1) focuses on the 3 pre- and 3 post-IRA announcement months, with the announcement month being September 2021. Columns (2)–(3) focuses on the 5 and 20 pre- and post-announcement trading days, respectively. In columns (4)–(5), we restrict the sample to the 5 and 20 days before and after the agreement between Joe Manchin and Chuck Schumer on July 27, 2022. Columns (6)–(7) consider the 5 and 20 days before and after President Biden’s signing of the IRA on August 16, 2022. The dependent variable is the fund-level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-dummy equal to one after each of these events and a dummy indicating a fund being labeled as sustainable funds. We further control for lagged fund performance and lagged AUM, whose coefficients are omitted for brevity. The regressions also include domicile-time and fund-level fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors’ calculations.

The above results may be driven by economy-specific demand for investors' allocations into sustainable funds. As discussed in 4, we effectively eliminate this demand effect and isolate the supply effect of the IRA by estimating the relationship at the fund-economy level as per equation 2. Economy-time fixed effects control for any changes in economy-specific demand for external finance. Results are shown in Table 4.

Column (1) adds no fixed effects at all. Column (2) adds recipient economy-time fixed effects, column (3) further adds domicile-time fixed effects, column (4) introduces fund-economy fixed effects, and the most saturated model specification in column (5) includes manager-economy-fund-level fixed effects. As explained above, the latter is important to distinguish between the effect of the IRA on investors' flows into funds and fund managers' allocations across economies. By adding these fixed effects, we eliminate the fund manager's discretion in the cross-economy allocation of funds, thus identifying the IRA's supply effect on investors' flows.

Across all of these specifications, the double interaction coefficient of interest is positive and statistically significant at least at the 5% level. This positive coefficient implies that sustainable funds, relative to conventional ones, see higher investor inflows after the IRA. This effect is not only statistically significant but also economically meaningful. The IRA implies additional flows into sustainable funds relative to conventional funds of 0.034–0.045 percentage points, which is non-negligible given a mean of the dependent variable of 0.05% and a 90th percentile of 0.30%. The total AUM in our sample is about \$30 trillion and 10% of the funds are classified as sustainable. This implies that our results correspond to an additional \$1.4 billion flows into sustainable funds each month ($=30 \text{ trillion} \times 0.045 / 100 \times 0.1$). As we show below, this additional inflow is statistically significant for the 3 post-IRA months. The cumulative effect reaches almost 6% of GDP for the median economy in our sample.

Table 4: The Impact of IRA on Fund Flows

VARIABLES	(1) Flows _{<i>i,c,j,t</i>}	(2) Flows _{<i>i,c,j,t</i>}	(3) Flows _{<i>i,c,j,t</i>}	(4) Flows _{<i>i,c,j,t</i>}	(5) Flows _{<i>i,c,j,t</i>}	(6) Flows _{<i>i,c,j,t</i>}
$Post_t \times Sustainable_{i,j}$	0.038*** (0.015)	0.035** (0.015)	0.038** (0.015)	0.033** (0.015)	0.045** (0.018)	0.044** (0.018)
$Post_t$	-0.024*** (0.005)					
$Sustainable_{i,j}$	0.138*** (0.014)	0.149*** (0.014)	0.148*** (0.014)			
$LaggedPerformance_{i,j,t-1}$	0.010*** (0.001)	0.012*** (0.002)	0.011*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)
$LaggedAUM_{i,j,t-1}$	0.000 (0.000)	0.000* (0.000)	0.000* (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Economy \times Time FE	No	Yes	Yes	Yes	No	No
Domicile \times Time FE	No	No	Yes	Yes	Yes	Yes
Fund \times Economy FE	No	No	No	Yes	Yes	Yes
Manager \times Economy \times Time FE	No	No	No	No	Yes	Yes
Observations	495,233	495,221	495,151	494,998	454,031	453,350
R-squared	0.002	0.006	0.015	0.389	0.452	0.465

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. Column (1) adds no fixed effects at all. Column (2) adds recipient economy-time fixed effects, column (3) further adds domicile-time fixed effects, column (4) introduces fund-economy fixed effects, and the most saturated model specification in column (5) includes manager-economy-fund-level fixed effects. In column (6), the latter is obtained by multiplying fund-level inflows with economy allocation shares fixed in 2021:M8. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a sustainable fund. We further control for lagged fund performance and lagged AUM. The regressions include economy-time, domicile-time, fund-economy, and manager-economy-time fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

**Table 5: The Impact of the IRA on Fund Flows:
Using Fund-Level Environmental Scores**

VARIABLES	(1) Flows _{<i>i,c,j,t</i>}	(2) Flows _{<i>i,c,j,t</i>}	(3) Flows _{<i>i,c,j,t</i>}	(4) Flows _{<i>i,c,j,t</i>}
$Post_t \times Env.Score_{i,j}$	-0.000 (0.000)			-0.001 (0.000)
$Post_t \times HighScore_{i,j}$		0.035** (0.014)	0.031** (0.014)	
$Post_t \times Sustainable_{i,j}$			0.047** (0.021)	0.038* (0.023)
$Post_t \times Sustainable_{i,j} \times Env.Score_{i,j}$				0.004* (0.002)
Economy \times Time FE	No	No	No	No
Domicile \times Time FE	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes
Observations	262,516	262,516	262,516	262,516
R-squared	0.444	0.444	0.444	0.444

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor in column (1) is the interaction between a post-IRA dummy equal to one after 2021:M9 and a fund's environmental score from Bloomberg. In column (2), we replace this continuous score with a dummy (HighScore) equal to one when the environmental score exceeds the 67th percentile of the in-sample distribution. In column (3), we horse race this double interaction with our benchmark post-sustainable double interaction and in column (4), we include a triple interaction between the post-IRA dummy, a dummy for the EPFR-based sustainability label, and the continuous environmental score. All regressions further control for lagged fund performance and lagged AUM, as well as domicile-time, fund-economy, and manager-economy-time fixed effects. The regressions also incorporate all lower-order interactions, whose coefficients are not shown for brevity. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

In all of the regressions in columns (1)–(5), the dependent variable is the product of fund-level inflows and a fund's time-varying economy allocation shares. In column (6), we fix such economy shares in the last month before IRA announcement (August 2021), so as to obtain time variation in the dependent variable only driven by investors' flows into funds. The coefficient estimate is virtually identical to the one in column (5), suggesting

that the manager-economy-time fixed effects applied in column (5) are already effective in controlling for changes in fund managers' economy allocations.

In Table 5, we show that the previous results are robust to using the fund-level environmental score from Bloomberg as treatment variable instead of the EPFR-based sustainability indicator. Both variables correlate positively, but weakly. For instance, the average environmental score in the sub-sample of funds labelled as sustainable by EPFR equals 83%, compared to 78% in sub-sample of funds labelled as conventional (not sustainable) by EPFR. That is, the two treatment variables measure similar, but not identical concepts. In column (1), we replace the sustainability dummy with the continuous version of the score. However, the interaction with the post-IRA dummy does not enter statistically significantly. As only highly scoring funds are likely perceived as sustainable by investors, we next define a dummy equal to one when the score exceeds the 67th percentile of the in-sample distribution. As per column (2), using this dummy turns the interaction positive and statistically significant at the 5% level. This result is unchanged when we include the interaction of the IRA-dummy and EPFR-based sustainability indicator in column (3). Thus, after the IRA investors pour more money into funds regarded as sustainable regardless of the sustainability concept, with funds identified as sustainable either by related key words in a fund's prospectus as measured by EPFR or by a fund's environmental performance. Results in column (4) suggest that post-IRA funds labelled as sustainable by EPFR experienced even higher inflows if also performing highly on the environmental score, as evidenced by a statistically significant triple interaction between the post-IRA dummy, the EPFR-based sustainability indicator, and the environmental score.¹² The double interaction between the post-IRA dummy and the environmental score by itself is not statistically significant. Overall, the results using the environmental score highlight that inflows into sustainable funds triggered by the IRA announcement are linked to funds' environmental performance, and not to broader sustainability concepts like social and governance dimensions of common ESG labels partly covered by EPFR-selected keywords and thus determining the EPFR-based sustainability indicator.

As we show in the Appendix, Section B, this result survives an extensive set of additional robustness checks. In particular, it is robust to (i) adjusting the window considered around the IRA, for instance by dropping the announcement month from the analysis; (ii) scaling the fund-economy-level flows by fund-economy-specific AUM or by nominal GDP; (iii) dropping small funds with less than \$10 million AUM from the analysis;

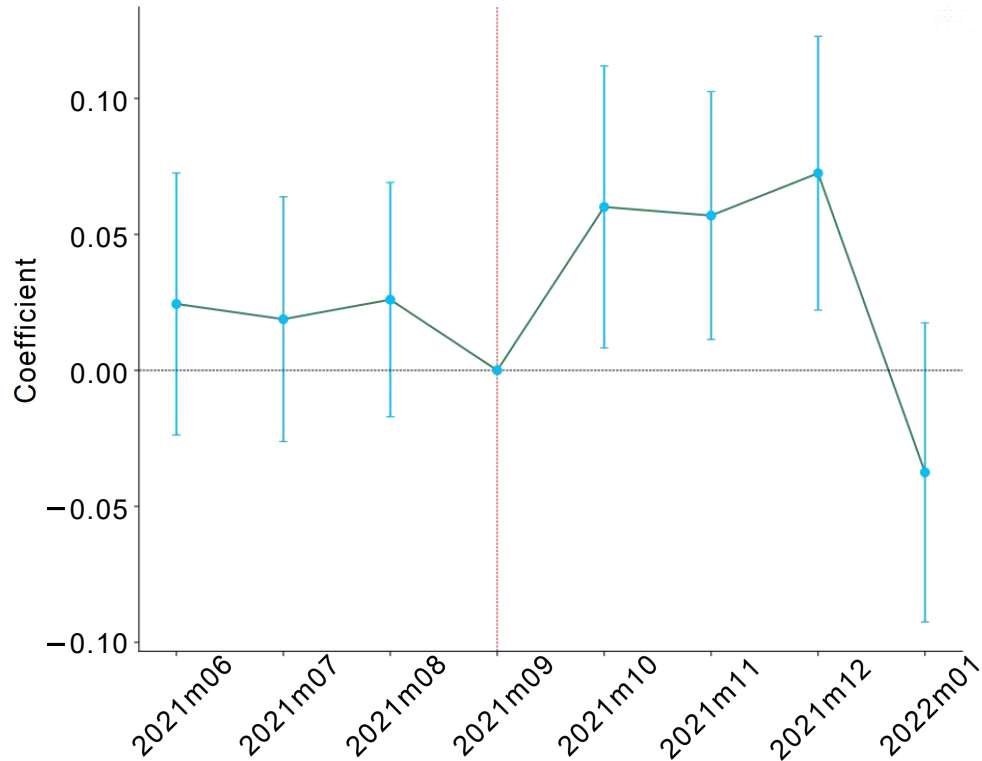
¹²We subtract the mean of environmental scores before including it in the interactions in order to make the attendant results more comparable to the benchmark results.

and (iv) estimating a difference-in-differences version that collapses the data into a single pre- and post-IRA period with the dependent variable computed as the difference between both periods. In further unreported specifications, we drop specific domiciles (e.g., Luxembourg as an international financial center) and/or recipient economies (e.g., the US) from the sample, and our results remain significant. This is evidence that the IRA's effect on fund flows is not limited to special domiciles and economies, but rather has a global dimension—an aspect that we will dig deeper into in Section 4.4.

In Appendix C, we show that other major political agreements to address climate change did not yield an investor pivot towards sustainable funds as identified for the IRA. The same appendix also shows that our results disappear during a placebo event, President Biden's announcement of an earlier Infrastructure Investment and Jobs Act. In contrast to the IRA, this act did not put special emphasis on tackling climate change. These results speak to the validity of the parallel trend assumption underlying our difference-in-differences analysis.

To corroborate this evidence on parallel trends, Figure 4 shows the dynamic coefficient plot of a version of the regression in column (5) of Table 4, where the main coefficient of interest is the interaction between the sustainable fund indicator and month dummies. Before the IRA announcement, sustainable and conventional funds experienced statistically indistinguishable inflows, suggesting parallel trends. The inflow differential between both fund types only becomes statistically significant upon IRA announcement. The effect lasts for 3 months, in line with a one-off reallocation of investors' funds into a new post-IRA equilibrium.

Figure 4: The Dynamic Effects of the IRA on Fund Flows



Note: This figure is based on our monthly fund-level sample from 2021:M6–2022:M1. It plots the coefficients from a regression of fund-economy-level inflows on the interaction between time dummies and the sustainable fund indicator, after controlling for manager-economy-time, domicile-time, and fund-economy fixed effects, as well as lagged fund performance and AUM.

Source: Authors' calculations.

4.3 Controlling for Fund Heterogeneity

In an ideal empirical setting, the sustainability status of a fund would be allocated randomly. Such ideal conditions do not apply in our setting as the sustainability label may correlate with other fund characteristics. In this sub-section, we present different specifications to control for such heterogeneity. The goal is to make the treatment group (sustainable funds) as similar as possible to the control group (conventional funds) for them to differ only in their sustainability status.

First, we sequentially control for the interactions between the post-IRA dummy and several observable fund characteristics, notably whether a fund is an ETF or actively managed, its asset class (equity versus bond fund), single versus multiregion funds, as well as fund-level one-month lagged performance, and AUM. Table 6 shows that none of

Table 6: Controlling for Fund Heterogeneity

VARIABLES	(1) Flows _{<i>i,c,j,t</i>}	(2) Flows _{<i>i,c,j,t</i>}	(3) Flows _{<i>i,c,j,t</i>}	(4) Flows _{<i>i,c,j,t</i>}	(5) Flows _{<i>i,c,j,t</i>}
$Post_t \times Sustainable_{i,j}$	0.044** (0.018)	0.032* (0.018)	0.041** (0.018)	0.041** (0.018)	0.044** (0.018)
$Post_t \times ETF_{i,j}$	0.039** (0.020)				
$Post_t \times EquityFund_{i,j}$		0.099*** (0.014)			
$Post_t \times SingleEconomyFund_{i,j}$			0.169*** (0.043)		
$Post_t \times LaggedPerformance_{i,j,t-1}$				0.002 (0.003)	
$Post_t \times LaggedAUM_{i,j,t-1}$					0.000 (0.000)
Domicile \times Time FE	Yes	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes	Yes
Observations	454,031	454,031	454,031	454,031	454,031
R-squared	0.452	0.452	0.452	0.452	0.452

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a fund's sustainability. In each of the columns, we control for one additional interaction between the post-dummy and the following fund characteristics: ETF versus actively managed, bond versus equity fund, single-economy versus multiregion fund, one-month lagged fund performance, and one-month lagged AUM as a measure for fund size. The regressions also include manager-economy-time, domicile-time, and fund-economy fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

the additional controls renders the double interaction term of interest statistically insignificant. In contrast, the post-sustainable interaction coefficient is robustly estimated and lies in the range of 0.032–0.044, compared to the benchmark estimate from Table 4 ranging from 0.035–0.045. A fund's past performance or fund size as measured by AUM does not play a significant role.

Next, we control for funds' different industry exposures. As EPFR only provides the breakdown by industry for equity funds, the exercise focuses on this fund type. Specifically, in column (1) of Table 7, we add as controls the interactions between the post-IRA dummy and the share of a fund's AUM invested in the finance, manufacturing, utilities, communication/information, and trade/transport industries, respectively. Again, the benchmark estimates are robust, with our post-sustainable interaction of interest

being statistically significant at the 10% level. That is, heterogeneity in industry exposure does not affect our benchmark results.

In columns (2)–(6), we similarly restrict the exercise to a sub-sample of funds with a significant exposure of at least 10% of AUM to the finance (column 2), manufacturing (column 3), utilities (column 4), communication/information (column 5) and trade/transport industry (column 6).¹³ These specifications help make sustainable and conventional funds more comparable to each other concerning industries. In contrast to the specification in column (1) these specifications also show us whether investors allocate more money into sustainable funds with a particular industry focus. The results show that our post-sustainable double interaction term is only statistically significant for funds specialized in finance, manufacturing, and utilities. The coefficient estimates in the communication/information and trade/transport sub-samples are not statistically different from zero. Hence, investors mainly increase their sustainable flows into funds with significant exposure to finance, manufacturing, and utilities. The carbon footprint of the latter two is particularly large.¹⁴ Thus, higher investments into these carbon-intensive industries post-IRA may help finance their transition to a low-carbon future.

Furthermore, we apply propensity score matching to reduce the difference between sustainable and conventional funds to their sustainability label. To this end, we match both fund types on the ETF dummy, the equity fund dummy, and the funds' geographical focus. For this matched sample, we then estimate our benchmark equation 2. Results in column (1) of Table 8 show that the double interaction of interest is still positive and statistically significant at the 5% level. It increases in magnitude relative to our benchmark regressions.

Finally, we match sustainable and conventional funds based on average monthly returns. The idea is that funds with a similar performance track record are closer substitutes, and hence likely to differ only in their sustainability label, diminishing the role of any unobservable confounders. For this, we compute the correlation between the monthly average aggregate performance of sustainable funds in our sample and each of the conventional funds. We then exclude conventional funds with a correlation of less than 60% (column 2), less than 70% (column 3) or less than 80% (column 4), respectively. Results in Table 8 show that our estimate of the interaction term remains positive and statistically significant. The coefficient magnitude remains comparable to that of all previous specifications.

¹³Note that this sorting by minimum industry exposure results in overlapping samples.

¹⁴Environmental Protection. 2022. The 7 Biggest Polluters by Industry in 2022, as Ranked in New Research. 17 October. <https://eponline.com/articles/2022/10/14/the-7-biggest-polluters.aspx>

Table 7: Controlling for Industry Heterogeneity

	All Industries	Finance	Manufacturing	Utilities	Communication/Information	Trade/Transport
	(1)	(2)	(3)	(4)	(5)	(6)
	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}
$Post_t \times Sustainable_{i,j}$	0.036* (0.021)	0.043* (0.022)	0.039* (0.021)	0.147* (0.080)	0.020 (0.025)	-0.000 (0.027)
$Post_t \times FinanceShare_{i,j}$	-0.000 (0.002)					
$Post_t \times ManufacturingShare_{i,j}$	-0.002 (0.002)					
$Post_t \times Communication/InformationShare_{i,j}$	-0.003 (0.003)					
$Post_t \times UtilitiesShare_{i,j}$	-0.005 (0.003)					
$Post_t \times Trade/TransportShare_{i,j}$	-0.002 (0.003)					
Domicile \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	175,083	154,725	174,910	23,878	114,808	67,036
R-squared	0.429	0.430	0.429	0.472	0.465	0.445

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a fund's sustainability. In column (1), we control for the interactions between the post-dummy and funds' industry shares. In columns (2)–(6), we perform a sample split analysis, with each column containing only funds that have an exposure to the specific industry larger than 10%. The regressions include domicile-time, fund-economy and manager-economy-time fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

Taken together, this sub-section shows that, even after controlling for multiple dimensions of fund heterogeneity, the IRA leads to higher flows into sustainable funds relative to conventional funds.

4.4 Cross-Border Spillovers

We have previously argued that the IRA's effect on sustainable fund flows has a strong global dimension. In this sub-section, we expand on this argument and examine in particular whether international spillovers of the IRA could have arisen purely mechanically. This may be the case in at least two ways. First, non-US domiciled funds investing in the US (by mandate or de facto) can be assumed to be sensitive to the higher discounted future cash flows and hence realized returns of sustainable relative to conventional US assets after the IRA. Second, sustainable US-domiciled multiregion funds can be assumed to allocate any additional inflows to abroad in line with their pre-determined economy allocation shares.

To address the first case, we estimate equation 2 only for non-US domiciled funds investing (i) in the US (Table 9, column 1) and (ii) in the rest of the world (ROW), i.e.

Table 8: PSM and Funds with Strong Correlation

	PSM	<i>Corr</i> ≥ 0.6	<i>Corr</i> ≥ 0.7	<i>Corr</i> ≥ 0.8
VARIABLES	(1) Flows _{<i>i,c,j,t</i>}	(2) Flows _{<i>i,c,j,t</i>}	(3) Flows _{<i>i,c,j,t</i>}	(4) Flows _{<i>i,c,j,t</i>}
<i>Post_t × Sustainable_{i,j}</i>	0.052** (0.023)	0.040** (0.019)	0.039** (0.019)	0.038* (0.020)
Domicile × Time FE	Yes	Yes	Yes	Yes
Fund × Economy FE	Yes	Yes	Yes	Yes
Manager × Economy × Time FE	Yes	Yes	Yes	Yes
Observations	433,406	266,295	214,418	169,934
R-squared	0.704	0.483	0.490	0.500

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a fund's sustainability. We further control for lagged fund performance and lagged AUM. The regressions also include manager-economy-time, domicile-time, and fund-economy fixed effects. In column (1), we perform a propensity score matching between sustainable and conventional funds, using the ETF indicator, the equity fund dummy, and the geographical focus of a fund as matching variables. In columns (2)–(4), the regressions include all sustainable funds, as well as conventional funds that have a correlation with the aggregate performance of all sustainable funds in our sample of at least 60%, 70%, or 80%, respectively. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

non-US jurisdictions, (column 2). The results show that the IRA's effect on sustainable fund flows is only statistically significant for non-US domiciled funds investing in ROW, implying that mechanical spillovers are unlikely at play. Column (3) additionally drops funds for which the recipient economy of investments coincides with the fund domicile, or lies within the fund's geographic mandate.¹⁵ This allows us to focus on cross-border flows. The coefficient of interest remains positive and significant at the 1% level. This lends further credence to the absence of non-mechanical spillovers. Next, we completely exclude the US as an investment focus. In column (4), we drop all funds that report a geographic focus on the US. The post-sustainable interaction coefficient is still positive and statistically significant at the 5% level. Column (5) further drops all funds with a positive, pre-IRA US portfolio share. The interaction coefficient increases and remains statistically significant.

To dispel the second concern, we study whether the IRA also affected flows of US-domiciled funds to ROW (column 6). For completeness, we also restrict the analysis to flows of the US funds into the US (column 7). In both cases, the interaction coefficient

¹⁵For instance, we define a Luxembourg-based fund investing in "Europe" as domestic, but a Luxembourg-based fund investing in "Asia ex-Japan" as cross-border.

Table 9: Ruling Out Mechanical Spillovers

	ROW-US	ROW-ROW	Cross-Border, ROW-ROW	Drop US Geo Focus	Drop US Share>0	US-ROW	US-US
VARIABLES	(1) Flows _{i,c,j,t}	(2) Flows _{i,c,j,t}	(3) Flows _{i,c,j,t}	(4) Flows _{i,c,j,t}	(5) Flows _{i,c,j,t}	(6) Flows _{i,c,j,t}	(7) Flows _{i,c,j,t}
$Post_t \times Sustainable_{i,j}$	0.220 (0.142)	0.061*** (0.022)	0.053*** (0.020)	0.041** (0.018)	0.095** (0.041)	-0.018 (0.282)	0.009 (0.133)
Domicile \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,387	286,187	254,812	402,844	116,256	103,116	40,292
R-squared	0.462	0.441	0.396	0.434	0.423	0.383	0.490

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a sustainable fund. We further control for lagged fund performance and lagged AUM, with coefficients omitted for brevity. The regressions include manager-economy-time, domicile-time, and fund-economy fixed effects. In column (1), we study flows of non-US-domiciled funds into the US, and column (2) studies flows of non-US-domiciled funds to ROW. Column (3) is based on the sub-sample of column (2) only containing cross-border funds. In column (4), we drop funds with a geographic focus on the US. Column (5) is based on the sub-sample from column (3) and additionally drops funds with a positive pre-IRA US portfolio share. In column (6), we study flows of the US-domiciled funds into ROW. In column (7), we study flows into the US originating from the US-domiciled funds. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

is statistically insignificant. This means that the cross-border effects of the IRA are not driven by sustainable US-domiciled multiregion funds allocating the additional inflows across economies in line with the funds' pre-determined economy allocation shares.

5 INSPECTING THE IRA SIGNALLING CHANNEL

The previous sections established that global investors pivot towards sustainable funds after the IRA and that international spillovers do not arise mechanically. This section establishes that the IRA affects the investment decisions of non-US investors through a signaling channel.

As we argue above, the IRA announcement signaled an immediate increase in the transition risk of conventional assets. Investors take note of this shift in transition risk as evidenced by a significant increase in non-US climate attention indexes immediately after the IRA (Arteaga-Garavito et al. (2023)). The increased transition risk of conventional assets changed investors' expectations of future cash flows. As discussed in Pástor, Stambaugh, and Taylor (2021) and Ardia et al. (2023), conventional assets' cash flows can be expected to decline in expectation of tighter climate policies that may lead these assets to strand or be contested in climate litigation. Moreover, consumer

preferences likely shift towards sustainable products, hence increasing sustainable funds' future cash flows.

To identify this signalling channel, we pursue the following strategy. In a first step, we show that after the IRA announcement, the relative valuation (realized return) of sustainable funds increased, consistent with investors expecting higher future cash flows than for conventional funds. More importantly, in a second step, we identify the signaling channel by focusing on non-US domiciled “funds relying on a domestic investor base”, and test whether—upon IRA announcement—the relative returns of such non-US domiciled domestic sustainable funds are increasing in the climate attention of the domestic investor base, i.e. climate attention specific to the fund domicile. Finally, we test whether non-US domiciled domestic sustainable funds experience higher inflows as the fund-domicile-specific climate attention increases upon IRA announcement.

We select non-US domiciled “funds relying on a domestic investors base” (“domestic” funds in short) as funds with fund names spelled in the foreign language of the fund domicile. The rationale is that investors foreign to a fund domicile are unlikely to invest in funds in an unfamiliar language. For instance, a French-spelled fund domiciled in France is likely not marketed to the US or Japanese investors, and any inflows are most likely stemming from French residents. We select funds domiciled in eleven economies excluding the US due to the focus on non-US domiciles, and excluding fund domiciles with a small domestic investor base like Luxembourg.¹⁶ Importantly, we exclude all English-speaking domiciles, as English as a global language does not allow for establishing a direct link between fund names and the domestic investor base. The link may also be tenuous for Spanish as another globally dominant language, and results are robust to excluding Spanish-spelled domiciles (not reported). This language-based approach is necessary to associate investors with funds as EPFR data only reveal funds' legal domiciles, not ultimate beneficiaries and thus investors' economy of origin, .

To provide evidence for the increase in relative returns of sustainable funds upon IRA announcement, we run a fund-level regression akin to equation 1 with monthly fund returns as the dependent variable. The result of column (1) in Table 10 shows that the return of sustainable funds relative to conventional funds immediately increases upon IRA announcement. This implies that investors took note of the increase in transition risk for conventional assets and the associated shift in expected future cash flows away from such assets. While this specification focuses on non-US-domiciled funds, unreported regressions show a similar effect when the US-domiciled funds are included. This effect

¹⁶These economies are the People's Republic of China, Colombia, France, Germany, Italy, Japan, Mexico, Norway, the Republic of Korea, Spain, and Sweden.

Table 10: IRA Effect on Fund Returns

	All Funds (ex-US)	All Funds (ex-US)	Domestic Funds
	2021:M6–2021:M12	2015:M1–2023:M6	2015:M1–2023:M6
VARIABLES	(1) Return _{<i>i,j,t</i>}	(2) Return _{<i>i,j,t</i>}	(3) Return _{<i>i,j,t</i>}
$Post_t \times Sustainable_{i,j}$	0.515*** (0.072)		
$Sustainable_{i,j} \times ClimateAttention_j$		1.394** (0.607)	2.443* (1.302)
Time FE	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Observations	70,774	493,808	91,026
R-squared	0.361	0.327	0.390

Note: This table is based on our monthly fund-level data. Column (1) uses a sample from 2021:M6–2021:M12, and columns (2)–(3) a sample from 2015:M1–2023:M6. The dependent variable is fund-level monthly return. The key regressor is the interaction between the post-IRA dummy and a fund's sustainability indicator (column 1), as well as the interaction between the domicile-level climate attention index of Arteaga-Garavito et al. (2023) and a sustainable fund indicator. Column (3) focuses on domestic funds as defined before. We further control for lagged fund performance and lagged AUM, with coefficients omitted for brevity. The regressions also include time and fund-fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

is statistically significant at the 1% level and economically meaningful: sustainable funds have a relative return advantage of 0.52 percentage points each month after the IRA announcement. We show in Appendix D, that this relative return increase is not endogenously driven by higher inflows into sustainable funds.

With the link between IRA and fund returns established, we move on to the role of climate attention in the signaling channel. We know from stylized facts of Figure 1 that climate attention in non-US domiciles increased upon the IRA announcement. Therefore, we can examine whether the relative return of sustainable funds rises as the domicile-specific climate attention increases, with the sample period extended to 2015:M1–2023:M6. Column (2) shows that the coefficient for the interaction between the sustainability label and climate attention enters positively and significantly for all funds (ex-US). One issue in this specification is that it includes funds with mostly foreign investor bases influenced by climate attention not specific to the fund domicile (e.g., funds in Luxembourg that usually have a global investor base). Thus, there is no direct link between the climate attention in the fund domicile and the funds' investor base. Once we establish this direct link in column (3) by focusing on domestic funds as defined above, the interaction coefficient increases in size and remains statistically significant.

Thus, the increased climate attention upon IRA announcement is positively associated with higher realized returns of sustainable funds relative to conventional ones.

The above provides evidence for a relative realized return advantage of sustainable funds through the signalling effect of the IRA announcement. In turn, we investigate whether non-US domiciled sustainable funds also experienced higher inflows as the fund-domicile-specific climate attention increases upon IRA announcement.

We first focus again on our benchmark sample period that contains the few months around the IRA announcement and investigate whether the inflows into sustainable relative to conventional funds are higher in fund domiciles where the IRA implied a larger increase in climate attention. This latter is computed as the change in the domicile-specific climate attention index between the 3 post-IRA months and the 3 pre-IRA months.

Column (1) of Table 11 shows that the inflows into sustainable funds are indeed larger for funds domiciled in economies where climate attention increased more with the IRA.¹⁷ As column (2) demonstrates, the coefficient estimate gets even larger in the sub-sample of domestic funds, using the same definition as before. This is evidence that the IRA's effect on sustainable fund flows works via climate awareness in line with the signaling channel.

To strengthen this evidence, we broaden the sample period to 2015:M1–2023:M6 and gauge how an increase in the domicile-specific climate attention index raises the inflows into domestic sustainable funds, relative to conventional ones. Column (3) shows that an increase in the climate attention index is associated with higher inflows into sustainable funds. The corresponding interaction coefficient is positive and highly statistically significant. As column (4) shows, the tight link between climate attention and sustainable fund flows is even larger after the IRA, as evidenced by a significant coefficient on the interaction between the climate attention index, the sustainable fund indicator, and a post-IRA dummy.

Overall, the results of Section 5 are consistent with the IRA affecting investment decisions of non-US investors through a signaling channel. The IRA increased the transition risk of conventional funds, reducing their expected future cash flows relative to sustainable funds. As we show in this section, investors acted on this signal by reallocating flows from conventional to sustainable funds as they were aware of this relative shift in expected future cash flows towards sustainable assets, evidenced by an immediate increase in the relative valuations (realized returns) of sustainable funds.

¹⁷While this specification excludes funds domiciled in the US, including the US-domiciled funds, yields similar results.

Table 11: IRA Effects Via Changes in Climate Attention

	All Funds (ex-US)	Domestic Funds	Domestic Funds	Domestic Funds
	2021:M6–2021:M12	2021:M6–2021:M12	2015:M1–2023:M6	2015:M1–2023:M6
VARIABLES	(1) Flows _{i,c,j,t}	(2) Flows _{i,c,j,t}	(3) Flows _{i,c,j,t}	(4) Flows _{i,c,j,t}
$Sustainable_{i,j} \times ClimateAttention_j$	8.500** (4.073)	45.972* (27.281)	5.121*** (1.770)	5.188** (2.144)
$Post_t \times Sustainable_{i,j} \times ClimateAttention_j$				3.575* (2.077)
Domicile \times Time FE	Yes	Yes	No	No
Manager \times Economy \times Time FE	Yes	Yes	No	No
Time FE	No	No	Yes	Yes
Fund FE	No	No	Yes	Yes
Observations	107,595	18,045	93,796	93,796
R-squared	0.157	0.213	0.138	0.138

Note: This table is based on our monthly fund-level data. Columns (1) and (2) focus on a sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor in columns (1) and (2) is the interaction between the domicile-specific change in the climate attention index of Arteaga-Garavito et al. (2023) around the IRA and a dummy indicating a fund's sustainability. In columns (3) and (4), we focus on a sample from 2015:M1–2023:M6, where the dependent variable is fund-level inflows scaled by lagged AUM. The key regressor in column (3) is the interaction between the climate attention index in levels and the sustainable fund indicator. In column (4), it is the triple interaction between the climate attention index in levels, the sustainable fund indicator, and a dummy equal to one after the IRA announcement in 2021:M9. Columns (2)–(4) further focus on domestic funds only as defined in the main text. We further control for lagged fund performance and lagged AUM, with coefficients omitted for brevity. The regressions also include manager-economy-time and domicile-time fixed effects (columns 1 and 2) or fund and time fixed effects (columns 3 and 4). Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

6 DO MORE EFFECTIVE CLIMATE POLICIES AMPLIFY SPILLOVERS FROM THE IRA?

Previous results show that greater flows into sustainable funds are *not* confined to funds investing only in the US, but instead spill over non-mechanically to other economies. In this section, we examine how the spillovers depend on recipient economy characteristics, and particularly investigate the role of climate policies. We expect economies with more effective climate policies to attract more of the sustainable fund flows, amplifying the IRA-induced spillovers.

6.1 Econometric Approach

To identify the economy characteristics relevant for economies to attract global climate finance, we estimate a regression of the following form:

$$\begin{aligned} Flows_{i,c,j,t} = & \alpha_{ic} + \alpha_{mct} + \alpha_{jt} + \gamma \cdot (\text{Post}_t \times \text{Sustainable}_{i,j,pre} \times \text{Economy}_{c,pre}) \\ & + \theta \cdot (\text{Post}_t \times \text{Sustainable}_{i,j,pre}) + \sigma \cdot (\text{Sustainable}_{i,j,pre} \times \text{Economy}_{c,pre}) + \epsilon_{i,c,j,t} \end{aligned} \quad (3)$$

where the main variable of interest now is the interaction between the Post-dummy, the sustainable fund indicator, and a measure of the effectiveness of an economy's climate policies, fixed shortly before the IRA announcement in 2021:M8. To measure this effectiveness, we use the Bloomberg Government Climate Scores, henceforth climate policy scores in short.

In addition to an economy's climate policy score, we also include in the matrix $Country_{j,pre}$ an economy's trade linkage with the US and its capital account openness. The former accounts for the possibility that funds may invest more in economies with stronger trade ties with the US, and thus more likely to benefit from increased US import demand for products and resources relevant for IRA-related investments in the US. Capital account openness is important to control for as more open economies are likely to experience stronger IRA-induced spillovers.

Finally, we also provide the outcomes of several robustness checks, in which we also add to equation 3 the corresponding triple interactions of other relevant macroeconomic controls. These include GDP per capita, the rule of law, bilateral trade between recipient economies and fund domiciles, an economy's interest rate differential vis-a-vis the US, Moody's sovereign credit ratings, and bilateral foreign direct investment (FDI).

6.2 Results

Table 12 contains the results corresponding to equation 3. In column (1), we only include an economy's climate score. As expected, sustainable fund flows are larger for economies with more effective climate scores.

Table 12: Economy Characteristics and Fund Flows: Benchmark Results

VARIABLES	(1) Flows _{i,c,j,t}	(2) Flows _{i,c,j,t}	(3) Flows _{i,c,j,t}	(4) Flows _{i,c,j,t}
$Post_t \times Sustainable_{i,j} \times ClimatePolicyScore_c$	0.041*** (0.012)			0.039*** (0.013)
$Post_t \times Sustainable_{i,j} \times Trade - US_c$		-0.006 (0.026)		0.005 (0.026)
$Post_t \times Sustainable_{i,j} \times CapitalAccountOpenness_c$			0.134*** (0.050)	0.035 (0.046)
Domicile \times Time FE	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes
Observations	391,875	394,759	444,079	328,430
R-squared	0.456	0.433	0.451	0.435

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressors are the triple interactions between a post-IRA dummy equal to one after 2021:M9, a dummy indicating a fund's sustainability, and the following economy characteristics fixed in 2021:M8 (pre-IRA): Bloomberg Government Climate Score, an economy's trade linkage with the US, and an economy's Chinn-Ito index. The regressions also include economy-time, domicile-time, fund-time, and fund-economy fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

The triple interaction is positive and statistically significant at the 1% level. In columns (2) and (3), we only add the triple interactions that include an economy's trade linkage with the US and capital account openness, respectively. While trade with the US does not play any role, economies with a more open capital account also attract more sustainable fund flows after the IRA announcement. When combining all 3 interactions in column (4), however, only the climate score triple interaction retains its statistical significance. This is evidence that only an economy's climate score robustly affects the sensitivity of sustainable fund flows upon IRA announcement.

As Table 13 shows, this result is also robust to adding to the previous specification of column (4) the corresponding triple interactions with other macroeconomic covariates, which may correlate with climate policies and thus introduce bias if omitted. Column (1) controls for a recipient economy's trade linkages with a fund's domicile. This control does

Table 13: Economy Characteristics and Fund Flows: Robustness Checks

VARIABLES	(1) Flows _{i,c,j,t}	(2) Flows _{i,c,j,t}	(3) Flows _{i,c,j,t}	(4) Flows _{i,c,j,t}	(5) Flows _{i,c,j,t}	(6) Flows _{i,c,j,t}
$Post_t \times Sustainable_{i,j} \times ClimatePolicyScore_c$	0.018** (0.009)	0.040*** (0.013)	0.026** (0.012)	0.033** (0.014)	0.016* (0.010)	0.037*** (0.012)
$Post_t \times Sustainable_{i,j} \times CapitalAccountOpenness_c$	0.020 (0.036)	0.041 (0.046)	0.028 (0.057)	-0.021 (0.052)	0.031 (0.064)	-0.001 (0.055)
$Post_t \times Sustainable_{i,j} \times Trade - US_c$	0.024 (0.015)	0.005 (0.021)	0.008 (0.026)	0.007 (0.026)	-0.021 (0.037)	0.000 (0.026)
$Post_t \times Sustainable_{i,j} \times Trade - fund - domicile_{cj}$	2.325 (2.696)					
$Post_t \times Sustainable_{i,j} \times BilateralFDI_{cj}$		-0.067 (0.071)				
$Post_t \times Sustainable_{i,j} \times GDPp.c_c$			0.000 (0.000)			
$Post_t \times Sustainable_{i,j} \times RuleofLaw_c$				0.032* (0.019)		
$Post_t \times Sustainable_{i,j} \times InterestRateDifferential_c$					-0.000 (0.001)	
$Post_t \times Sustainable_{i,j} \times Rating_c$						-0.004 (0.002)
Domicile \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	292,591	305,180	284,014	328,430	154,323	328,038
R-squared	0.373	0.420	0.450	0.435	0.442	0.435

Note: This table is based on our monthly fund-level sample from 2021:M6-2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressors are the triple interactions between a post-IRA dummy equal to one after 2021:M9, a dummy indicating a fund's sustainability, and the following economy characteristics fixed in 2021:M8 (pre-IRA): Bloomberg Government Climate Scores, an economy's trade linkage with the US, and an economy's Chinn-Ito index. This table additionally adds the corresponding triple interactions with bilateral trade vis-a-vis a fund's domicile (column 1), bilateral investment linkages as measured by bilateral FDI vis-à-vis a fund's domicile (column 2), an economy's GDP per capita (column 3), rule of law (column 4) an economy's interest rate differential vis-a-vis the US (column 5), and Moody's sovereign credit rating (column 6). The regressions also include domicile-time, fund-economy and manager- economy-time fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

not affect our benchmark results either. Similarly, column (2) adds bilateral FDI vis-à-vis fund domicile, as a proxy for bilateral financial integration, and our results survive.

In column (3), we add GDP per capita, as higher-income economies typically score higher on climate policy. Adding this control indeed reduces the point estimate of the post-sustainable-climate score triple interactions, but it remains statistically significant at the 5% level. The GDP triple interaction itself is not significant at conventional levels. In column (4), we add an economy's rule of law. Whereas the additional triple interaction is only weakly significant, the climate policy score triple interaction is again significant at the 5% level. In column (5), we control for an economy's interest rate spread to the

US, typically an important driver of capital flows. Again, our main results are unaffected. Finally, in column (6), we add an economy's sovereign credit rating. This has no material effect on the benchmark results shown in Table 12.

The results suggest that more effective climate policies are decisive for recipient economies to benefit more from the IRA-induced spillovers. Being financially more integrated or having tighter trade linkages with the US does not play an important role. The same is true for all of the other controls added in Table 13, with the exception of the rule of law, which also helps to increase an economy's sensitivity to IRA-induced sustainable fund flows.

6.3 Do Funds Actively Reallocate Investments Towards Economies With More Effective Climate Policies?

We showed above that sustainable global investment funds received relatively more inflows upon IRA announcement, even more so when these funds invest larger portions of their AUM in economies with higher climate policy scores. The number of sustainable funds, however, is small, with only about 10% of all funds classified as sustainable (3% of all funds' total AUM). Thus, the additional climate finance through sustainable fund flows induced by the IRA is relatively limited as well. This is why we dedicate this sub-section to examining whether fund managers actively reallocate their investments towards economies with higher climate policy scores and whether this effect is limited to sustainable funds or also applies to conventional ones. If conventional funds were to reallocate investments in favor of economies with more effective climate policies upon IRA announcement, the IRA announcement may have unleashed significantly more climate finance.

We employ the monthly change in fund-level economy portfolio shares as the dependent variable, regressed on the interaction between the post-IRA dummy and an economy's climate policy score. To determine any difference in the sensitivity of sustainable and conventional funds, we employ the right-hand side setup as in equation 3. That is, we incorporate a triple interaction between the post-IRA dummy, the sustainable fund indicator, and economy-specific climate policy scores.

As per columns (1) and (2) of Table 14, both sustainable and conventional funds re-allocate their AUM towards economies with higher climate policy scores after the IRA announcement. The magnitude is slightly larger for sustainable funds. In economic terms, the estimates imply that funds increase the economy shares for an economy at the 75th percentile of the climate score distribution, relative to one at the 25th percentile,

Table 14: Results on Funds' Economy Allocations

	Conventional	Sustainable	Full sample	Full sample	Full sample
VARIABLES	(1) $\Delta Share_{i,c,j,t}$	(2) $\Delta Share_{i,c,j,t}$	(3) $\Delta Share_{i,c,j,t}$	(4) $\Delta Share_{i,c,j,t}$	(5) $\Delta CashShare_{i,j,t}$
$Post_t \times Sustainable_{i,j}$			-0.016 (0.019)		-0.027 (0.064)
$Post_t \times Sustainable_{i,j} \times ClimatePolicyScore_c$			0.003 (0.004)	0.004 (0.005)	
$Post_t \times ClimatePolicyScore_c$	0.015*** (0.001)	0.020*** (0.004)			
Economy \times Time FE	No	No	Yes	Yes	Yes
Domicile \times Time FE	Yes	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes	Yes
Fund \times Time FE	No	No	No	Yes	No
Observations	382,668	43,939	426,630	330,449	14,193
R-squared	0.139	0.150	0.155	0.190	0.151

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable in columns (1)–(4) is the fund-economy level change in economy portfolio shares. In column (5), we use the change in a fund's cash share as the dependent variable. The key regressor in columns (1)–(2) is the double interaction between the Post-dummy and an economy's climate policy score. In columns (3)–(4), it is the triple interaction between a post-IRA dummy equal to one after 2021:M9, a dummy indicating a fund's sustainability, and the Bloomberg Government Climate Score. In column (5), it is the sustainable fund-post-IRA double interaction only. Columns (1)–(2) restrict the sample to sustainable or conventional funds, respectively. We further control for lagged fund performance and lagged AUM, omitted for brevity. The regressions also include economy time (in columns 3–4), domicile time, fund time (only in column 4), and fund-economy fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

by 0.03 percentage points in each month after the IRA. That is, economies with higher climate policy scores do not only receive more sustainable fund inflows after the IRA driven by investors' increased flows into sustainable relative to conventional funds but also receive more inflows from all funds—sustainable and conventional ones—reallocating their investments in favor of economies with higher climate policy scores. So both investors' inflows and fund managers' re-allocations matter.

To determine whether sustainable and conventional funds adjust their economy portfolio shares differently, we next turn to the triple interaction specification. Column (3) shows that the triple interaction is not statistically significant. In column (4), we include fund-time fixed effects and drop all single-economy funds, which by definition cannot change their economy allocation share (it is always 100%). As before, the estimate is not statistically different from zero, meaning that the behavior of sustainable and conventional funds does not differ.

Finally, we test whether funds reduce their cash shares to invest in economies with higher climate policy scores. This possibility, however, is limited by the small average cash share of approximately 2% in our sample. In fact, as column (5) shows where we

replace the dependent variable with a fund's change in the cash share, this is not the case—the corresponding coefficient is not statistically significant.

7 CONCLUSION

This paper studies international spillovers of the IRA announcement in September 2021 through investment fund flows based on granular data from EPFR Global. The IRA is the most forceful climate policy action in the US history, combining tax credits, grants, and loans worth at least \$370 billion to accelerate the transition to net-zero in the US by stimulating private sector investments in clean energy. We document in a difference-in-differences setting that the IRA triggered significantly increased investor flows into sustainable investment funds, notably those domiciled outside of the US. Detailed evidence on the IRA's signaling channel shows that the IRA implied an immediate increase in global investors' climate attention and improved the realized returns of sustainable funds in expectation of higher future cash flows of sustainable relative to conventional assets. In turn, sustainable funds increased their cross-border portfolio investments worldwide. Non-US domiciled funds investing in the US or the US-domiciled funds with a global portfolio do not mechanically account for this result. Results are robust to a battery of robustness checks. Moreover, we show that economies with more effective climate policies are better positioned to harness the spillovers in terms of access to foreign climate finance. Such economies not only attract higher inflows from sustainable funds, but also from conventional funds as fund managers of both sustainable and conventional funds shift investments to economies with more effective climate policies. Thus, the combination of higher sustainable fund inflows and all funds' shift towards economies with more effective climate policies leads to a significant increase in the supply of climate finance globally.

These results are of first order importance for policymakers. First, recipient economies' access to financing their green transition is subject to spillovers from foreign green industrial policies like the IRA. However, it is important for recipient economies to attract and retain climate finance from abroad by taking policy measures to tackle climate change effectively. That is, domestic policies can promote the transition to net zero by attracting international climate finance. Second, the results have important implications for the regulation of investment funds in dominant fund domiciles like Ireland and Luxembourg. These jurisdictions provide a legal base for the majority of non-US domiciled investment funds, which in turn act as important conduits for the spillovers of

green industrial policies benefiting developing economies in need of foreign climate finance.

Appendixes

A DATA

Table A1: Variable Definitions and Sources

Variable	Definition	Unit	Source
$Flows_{i,c,j,t}$	Monthly flows into fund i-recipient economy c pair, scaled by one-month lagged fund-level AUM	%	EPFR
$\Delta Share_{i,c,j,t}$	Monthly change in portfolio share of fund i allocated to recipient economy c	%	EPFR
$Sustainable_{i,j}$	=1 when a fund is classified as sustainable	0/1	EPFR
$Env. Score_{i,j}$	Environmental score based on a fund's market value-weighted holdings	0-100	Bloomberg
$Return_{i,j,t}$	The one-month lagged performance of fund i	%	EPFR
$AUM_{i,j,t}$	The one-month lagged AUM of fund i	\$ billion	EPFR
$US Share_{i,j}$	The portfolio share of fund i invested in the US	%	EPFR
$ETF_{i,j}$	=1 if a fund is an ETF	0/1	EPFR
$Equity Fund_{i,j}$	=1 if a fund is an equity fund	0/1	EPFR
$Single-Economy Fund_{i,j}$	=1 if a fund's geographic investment scope is restricted to one economy	%	EPFR
$Manufacturing Industry Share_{i,j}$	The share of a fund's AUM invested in the manufacturing industry	%	EPFR
$Finance Industry Share_{i,j}$	The share of a fund's AUM invested in the finance industry	%	EPFR
$Utility Industry Share_{i,j}$	The share of a fund's AUM invested in the utilities industry	%	EPFR
$Trade/Transport Share_{i,j}$	The share of a fund's AUM invested in the retail trade and transport industry	%	EPFR
$Information/Communication Share_{i,j}$	The share of a fund's AUM invested in the information/communication industry	%	EPFR
$Post_t$	=1 after 2021:M9	0/1	author calculated
$Climate Policy Score_c$	Bloomberg Government Climate Score	-	Bloomberg
$Trade-US_c$	An economy's imports and exports vis-a-vis the US, scaled by the sum of an economy's and the US nominal GDP	%	IMF, author calculation
$Capital Account Openness_c$	An economy's Chinn-Ito index	[0, 1]	Chinn and Ito (2006)
$GDP p.c_c$	An economy's PPP-adjusted GDP per capita in nominal \$	\$	IMF
$Rule of Law_c$	An economy's rule of law	-	World Bank
$Trade-fund domicile_c$	An economy's sum of exports and imports vis-a-vis a fund's domicile, over both economies' GDP	%	IMF, author calculation
$Bilateral FDI_c$	An economy's sum of inward and outward direct investment position vis-a-vis a fund's domicile, over both economies' nominal GDP	%	IMF, author calculation
$Interest Rate Differential_c$	An economy's short-term interest rate differential vis-a-vis the US	%	Haver, author calculation
$Rating_c$	An economy's credit rating	1-21	Moody's

Source: Authors.

Table A2: EPFR's Key Words for Sustainable Fund Classification

Key Word	Frequency	Key Word	Frequency
esg	1320	csi	46
sustainable	1220	zero	44
climate	297	net	43
sri	254	candriam	43
responsible	252	environmental	43
green	178	change	42
impact	172	sdg	36
carbon	135	aware	36
isr	135	ethical	34
future	103	agif	33
transition	102	water	33
sustainability	82	ctb	32
pab	69	fossil	31
social	58	socially	26
clean	58	systematic	26
solutions	51	ecofi	23
nachhaltigkeit	51	neutral	20
emu	49	impax	19
hydrogen	18	action	18

Note: This table shows the keywords used by EPFR to determine whether a fund is sustainable. The numbers indicate the frequency of key words in the prospectus of all funds in the data set.
Source: Authors.

B ROBUSTNESS CHECKS

In this section, we present the results of various robustness checks. We start in Table A3 with four regressions that adjust the sample period coverage. In column (1), we drop 2021:M6, so as to have a symmetric window around the announcement with 3 pre-IRA months and 3 post-IRA months. In column (2), we drop the announcement month from the sample, which we treated as pre-announcement in our benchmark analysis because the IRA was only announced at the very end of the month (September 27, 2021). In columns

Table A3: Robustness Checks (1)

Months before/after IRA	3/3 (without 2021:M6) (1)	3/3 (without 2021:M9) (2)	1/1 (3)	2/2 (4)
VARIABLES	Flows _{<i>i,c,j,t</i>}	Flows _{<i>i,c,j,t</i>}	Flows _{<i>i,c,j,t</i>}	Flows _{<i>i,c,j,t</i>}
<i>Post_t × Sustainable_{i,j}</i>	0.047** (0.019)	0.040** (0.020)	0.049* (0.029)	0.042** (0.021)
Domicile × Time FE	Yes	Yes	Yes	Yes
Fund × Economy FE	Yes	Yes	Yes	Yes
Manager × Economy × Time FE	Yes	Yes	Yes	Yes
Observations	390,344	387,613	196,530	326,023
R-squared	0.470	0.470	0.591	0.500

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The regression in column (1) drops 2021:m6, the one in column (2) drops the announcement month 2021:M9, column (3) is restricted to 2021:M8–2021:M10, and column (4) to 2021:M7–2021:M11. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a fund's sustainability. We further control for lagged fund performance and lagged AUM, omitted for brevity. The regressions also include domicile-time, fund-economy and manager- economy-time fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

(3) and (4), we shorten the time window around the announcement to 1 and 2 months, respectively. Our coefficient of interest remains positive and statistically significant in all four regressions.

In Table A4, we first control for a fund's 24-month lagged performance, similar to Ciminelli, Rogers, and Wu (2022). Our coefficient of interest becomes larger and more precisely estimated, but the sample size shrinks by more than 100,000 observations as we lose funds that do not exist for at least 24 months. Columns (2)–(3) scale fund flows differently, namely by fund-economy-specific AUM (in the baseline analysis it was fund-specific AUM) and a recipient economy's nominal GDP. In both specifications, our coefficient of interest is estimated even more precisely. In column (4), we drop small funds with less than \$10 million AUM from the sample, as suggested by Converse, Levy-Yeyati, and Williams (2023). The coefficient estimate hardly changes, which is not very surprising because only a small number of funds in our sample is that small and thus dropped. In this specification, we only lose about 17,000 observations (4% of the sample).

Finally, in column (5), we estimate a collapsed difference-in-differences version, with the data first collapsed into one single pre-IRA and one single post-IRA observation. Based on the collapsed data, we then compute the outcome as the difference between both, which we regress on the sustainable fund indicator. This approach has been advocated by Bertrand, Duflo, and Mullainathan (2004) and Bottero, Lenzu, and

Mezzanotti (2020) to reduce the serial correlation of standard errors. Our finding of higher flows into sustainable funds after the IRA is announced still survives.

Table A4: Robustness Checks (2)

VARIABLES	(1) Flows _{<i>i,c,j,t</i>}	(2) Flows _{<i>i,c,j,t</i>}	(3) Flows _{<i>i,c,j,t</i>}	(4) Flows _{<i>i,c,j,t</i>}	(5) Flows _{<i>i,c,j,t</i>}
$Post_t \times Sustainable_{i,j}$	0.077*** (0.023)	0.345* (0.205)	0.00003*** (0.000)	0.043** (0.186)	
$24MonthsLaggedPerformance_{i,j,t}$	0.000 (0.002)				
$Sustainable_{i,j}$					0.395** (0.018)
Domicile \times Time FE	Yes	Yes	Yes	Yes	No
Fund \times Economy FE	Yes	Yes	Yes	Yes	No
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes	No
Manager FE	No	No	No	No	Yes
Economy FE	No	No	No	No	Yes
Domicile FE	No	No	No	No	Yes
Observations	342,573	446,345	445,785	437,942	211,037
R-squared	0.442	0.443	0.494	0.456	0.105

Note: This table is based on our monthly fund-level sample from 2021:M6–2021:M12. The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is the interaction between a post-IRA dummy equal to one after 2021:M9 and a dummy indicating a fund's sustainability. We further control for lagged fund performance and lagged AUM, omitted for brevity. The regressions also include manager-economy-time, domicile-time, and fund-economy fixed effects in columns (1)–(4) and manager, economy, domicile fixed effects in column (5). Column (1) controls for the 24-month lagged performance of a fund. In Columns (2)–(3), we scale flows by fund-economy-specific AUM and GDP, respectively. Column (4) drops small funds with less than \$10 million AUM. Column (5) presents a collapsed difference-in-differences specification that collapses the data into one single pre- and one single post-announcement observation and computes the dependent variable as the difference between both, then regressed on the sustainable fund indicator. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

C STUDYING SUSTAINABLE FUND FLOWS AROUND OTHER EVENTS

In Section 3, we show that the IRA raised climate attention worldwide. In this sub-section, we study whether other key climate change-related events similarly changed investors' flows into sustainable funds. To this end, we estimate versions of equation 2 centered on the months around the respective event. Table A5 displays the results.

In column (1), we start with the European Union (EU) Green Deal. The double interaction estimate is positive, but not statistically significant. It thus appears that EU policies do not have the same impact on investor behavior as the US climate actions. Column (2) studies investor behavior around the announcement of the Paris Agreement, but again we do not find any significant effect. Columns (3) and (4) use the first global climate strike of March 2019 and Trump's announcement to abandon the Paris Agreement in June 2017 as events. In both cases, the coefficient estimates are not significant at conventional significance levels.

In column (5), we look at flows around President Biden's earlier announced Infrastructure Investment and Jobs Act. While containing some elements related to climate action, the Act did not put special emphasis on the green transition. Thus, a signaling effect to global investors similar to the IRA is missing, and we do not expect the act to have a disproportionate effect on sustainable flows. This specification hence serves as a placebo test to our benchmark results and the validity of the parallel trend assumption underlying our analysis. The results confirm this conjecture as the coefficient of interest remains statistically insignificant.

Overall, the tests on other and placebo events emphasize the unique signaling effect of the IRA on global investors, inducing additional flows into sustainable funds with global spillovers, notably to economies with more effective climate policies.

D THE IRA AND FUND RETURNS: ADDITIONAL EVIDENCE

In Section 5 we document the relative increase in realized returns of sustainable funds post-IRA. In this appendix, we show that this result does not emerge endogenously through higher inflows.

To this end, in column (1) of Table A6, we control for current fund-level inflows over lagged assets under management. The coefficient of interest increases in size relative to column (1) of Table 10. In columns (2) and (3), we split the sample into funds with inflows in the lower 25% of the distribution and those in the upper 75%. The post-sustainable double interaction coefficient is statistically significant in both

Table A5: Results for Other Events

	Green Deal	Paris	Climate Strike	US Withdrawal	US Infrastructure Investment and Jobs Act
	(1)	(2)	(3)	(4)	(5)
VARIABLES	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}	Flows _{i,c,j,t}
$Post_t \times Sustainable_{i,j}$	0.038 (0.031)	-0.033 (0.101)	0.025 (0.040)	0.025 (0.052)	-0.013 (0.019)
Domicile \times Time FE	Yes	Yes	Yes	Yes	Yes
Fund \times Economy FE	Yes	Yes	Yes	Yes	Yes
Manager \times Economy \times Time FE	Yes	Yes	Yes	Yes	Yes
Observations	420,376	273,175	401,686	318,523	442,448
R-squared	0.446	0.452	0.451	0.475	0.456

Note: This table is based on our monthly fund-level sample and each regression includes the 3 pre-event months, the event month itself, and the 3 post-event months. The events considered are: the European Green Deal of 2019:M12 (column 1), the Paris Agreement of 2015:M12 (column 2), the first global climate strike of 2019:M3 (column 3), the announcement of the US withdrawal from the Paris Agreement of 2017:M6 (column 4), and the US Infrastructure Investment and Jobs Act of 2021:M6 (column 5). The dependent variable is the fund-economy level inflow scaled by fund-level lagged AUM. The key regressor is a dummy equal to one in the 3 months after the respective event, zero otherwise, interacted with a sustainable fund indicator fixed in the pre-event period. We further control for lagged fund performance and lagged AUM, omitted for brevity. The regressions also include manager-economy-time, domicile-time, and fund-economy fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

sub-samples, and slightly larger in the low-inflow sub-sample. This implies that the relative increase in realized returns of sustainable funds upon IRA announcement is unrelated to higher asset valuations due to these funds experiencing increased inflows post IRA. Instead, the pivot in realized returns shown in Section 5 is associated with the immediate increase in transition risk of conventional assets upon IRA announcement.

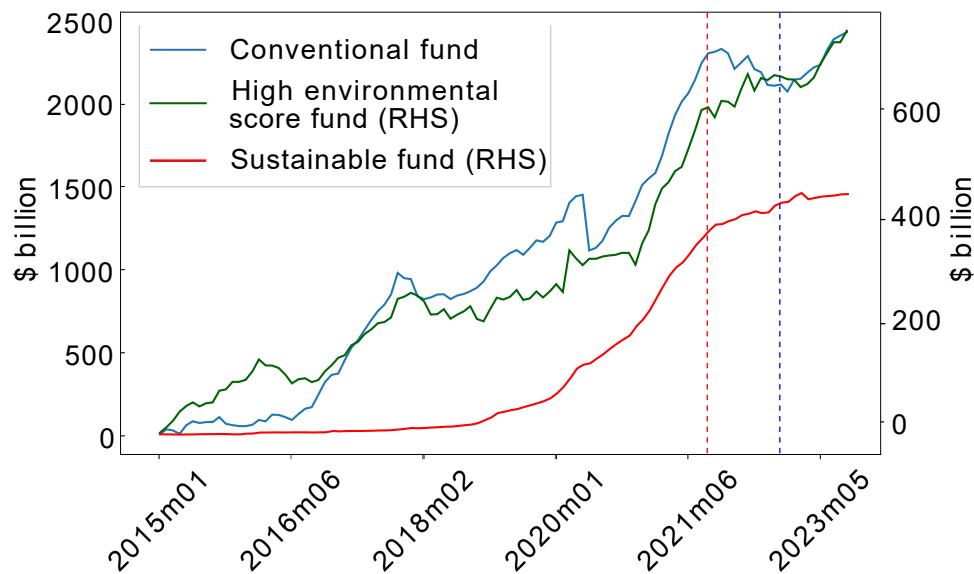
Table A6: The IRA's Effect on Fund Returns: Additional Evidence

	Full Sample	Low Inflows	High Inflows
VARIABLES	(1) Return _{<i>i,j,t</i>}	(2) Return _{<i>i,j,t</i>}	(3) Return _{<i>i,j,t</i>}
$Post_t \times Sustainable_{i,j}$	0.519*** (0.073)	0.569** (0.271)	0.525*** (0.078)
$Flow_{i,j,t}$	-0.021*** (0.003)		
Time FE	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Observations	70,773	13,976	53,813
R-squared	0.362	0.464	0.414

Note: This table is based on our monthly fund-level data. Column (1) uses a sample from 2021:M6–2021:M12 and controls for fund-level inflows over lagged assets under management. In columns (2) and (3), we split the sample into funds with inflows in the lower 25% of the distribution and those in the upper 75%. We further control for lagged fund performance and lagged AUM, with coefficients omitted for brevity. The regressions also include time and fund fixed effects. Standard errors clustered at the fund level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Source: Authors' calculations.

Figure A1: Cumulative Flows, by Fund Type



Note: The chart plots cumulative flows by fund type.

Source: EPFR, Authors' calculations.

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Greening Thy Neighbor

How the United States Inflation Reduction Act Drives Climate Finance Globally

Industrial policies greening the economy aim to accelerate the transition to net zero. The paper shows that the United States Inflation Reduction Act improved the supply of climate finance globally. Using granular data on global investment funds, the paper identifies a novel international spillover channel of industrial policies. Sustainable global investment funds received more inflows upon the act announcement, in turn increasing their cross-border portfolio investments worldwide. Recipient economies better prepared to address climate change benefited most from sustainable global funds' additional investments.

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