What Do Impact Investors Do Differently? *

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Abstract

In recent years, impact investors – private investors who seek to generate simultaneously financial and social returns – have attracted intense interest and controversy. We introduce and analyze a novel, comprehensive data set of impact and traditional investors to assess how the non-financial characteristics of impact portfolios differ from their traditional counterparts. First, we document that their investments focus more on firms that generate positive impact, as proxied by their portfolio companies' alignment with the priorities of the federal government, and by the demographic characteristics of their portfolio companies' headquarters locations. We then examine the degree to which impact investors substitute for or complement traditional investors. We document a high degree of co-investment between impact and traditional investors, indicating some substitution. But we also document that impact investors specialize in nascent industries that may be too risky or unproven for traditional venture investors, and impact funding is resilient to market downturns, during which time traditional venture financing is greatly diminished. Finally, we examine the above patterns by impact investors areas of focus: Climate, Environment, and Jobs and Equity–and uncover important forms of heterogeneity which help explain potentially puzzling patterns in the aggregate data.

Keywords: ESG, investing, private equity, socially responsible investment, venture capital

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1 Introduction

In recent years, impact investors – private fund managers who seek to generate both financial and social returns – have attracted intense interest. Established alternative investment groups, such as Bain Capital, KKR, and TPG, have raised substantial funds seeking to accomplish these twin goals. Meanwhile, dedicated impact-focused groups have proliferated.

This boom in activity has proven controversial. In a high-profile illustration, Florida in 2023 passed a law stating that investment goals could "not include the furtherance of any social, political, or ideological interests" (Eccles 2023). Conservative observers have argued that targeting social goals is likely to lead to lower returns and limited societal benefits (Ramaswamy 2021). Meanwhile, liberal critics have wondered whether these funds can achieve desirable social goals in the absence of government regulations (e.g. Fancy 2021), or even whether their presence actually slows social progress (Giridharadas 2019). Academic research has suggested that the financial returns of impact funds have substantially underperformed private market benchmarks (Barber et al. 2021; Kovner and Lerner 2015), though Jeffers et al. (2021), whose sample of impact funds excludes concessionary funds, finds more positive results.

While the bulk of the literature has focused on the financial performance of these funds, much less is known about the social impact of impact investing. Geczy et al. (2021) studies how contracting choices in impact investing relate to measures of social impact, and finds that while impact investors rarely tie compensation to social impact, they nevertheless incorporate impact goals in other ways into both LP agreements and governance contracts. Scholars and practitioners have questioned whether the phenomenon is primarily "impact-washing," and the scant literature studying it focuses on fund intentions, rather than the real activity financed (e.g. Findlay and Moran 2019). Of course, social outcomes are more difficult to assess. But this omission is surprising, given the extensive focus in the private

equity literature on both financial returns (e.g. Kaplan and Schoar 2005; Harris et al. 2014) and social impact. Examples of the latter include studies of employment and productivity (Davis et al. 2014), innovation (Lerner et al. 2011), and numerous industry-specific studies beginning with Bernstein and Sheen (2016).

This paper seeks to characterize the non-financial determinants of impact investment, to shed light on several core mechanisms by which impact investors may create impact. We chart the industry from 1980 to 2021, documenting its rapid growth. We then compare the investment behavior of impact investors with that of traditional venture and growth equity investors, to understand the role that impact investors play in the financing landscape. We also study how the two types of investors interact. Brest and Born (2013) have argued, with some influence on practice, that impact investors who merely displace traditional venture investors have limited social impact, but little has been documented about the degree to which impact investors interact with traditional venture investors in practice. We provide the first evidence on how common it is for impact investors to co-invest with traditional investors, and document several ways in which impact investors expand the financing frontier relative to traditional venture investors alone.

To perform this analysis, we construct a new comprehensive dataset, covering a broad spectrum of impact funds. To identify the impact funds, we combine a wide variety of data from impact organizations, investment group websites, and commercial databases. Together, this information gives us an exhaustive view of impact-focused private capital groups, allowing us to document the growth of impact investing. We will make these data available to researchers interested in these topics.

In order to compare the investment activity of impact and non-impact investors, we use activity as recorded in PitchBook. This approach facilitates an "apples-to-apples" comparison. Our analysis proceeds along two lines: we first examine several proxies for the direct social impact of impact investors. Then we document how impact investors cooperate and compete with traditional venture investors, sometimes providing capital

that substitutes for traditional venture investment and sometimes providing capital to ventures that would have been overlooked by traditional venture investors.

To investigate proxies for the direct social impact of impact investors, we first analyze the degree to which impact investors finance companies aligned with the priorities of the U.S. federal government, which are presumably also aligned with the public interest. We infer alignment with government priorities in two ways. First, we identify which firms have received funding through the Small Business Innovation Research (SBIR) program, the largest government program funding high potential entrepreneurial firms. Second, following Gross and Sampat (2024), we identify the set of firms in our data that have a patent with a noted government interest – including patents where the government was an assignee but also those that were government licensed or funded.

We ask whether, relative to traditional investors, impact investors are more likely to select firms that are more aligned with government priorities. We also utilize a difference-in-differences framework to ask whether, again relative to traditional investors, impact investors cause an increase in the likelihood of receiving SBIR funding or government-interested patents post investment (i.e., do impact investors cause firms to be more aligned with government priorities?). On the former, we find clear evidence that impact investors are more likely to invest in companies that have received SBIR awards and filed government-interested patents, with estimates ranging from an 80% to a 180% higher probability. On the question of whether impact investors raise the likelihood of these awards post-investment, the evidence is more mixed. An impact investment nearly doubles the likelihood of receiving an SBIR award relative to a traditional venture investment, but impact investments do not increase the relative likelihood of filing a patent with a government interest.

Our next proxy for social impact comes from the characteristics of the location in which a portfolio company operates. We explore a battery of metrics related to whether an area is economically disadvantaged. At the international level, impact investors finance

companies from countries with a per-capita GDP of about US $4,000 less than those financed by traditional investors. Within the U.S., we do not find substantial evidence that on average impact investors finance companies in more disadvantaged areas, but as we elucidate later, this result masks substantial heterogeneity across different types of impact investors.

Our next line of inquiry explores the nature of interaction between impact investors and traditional investors. To what degree do impact investors provide financing that would have been made by traditional venture investors, and to what degree do they provide novel forms of financing that reach firms that may have been missed by the traditional venture capital and growth equity market? A first signal comes from the extent of co-investment between traditional and impact investors – i.e., investors providing financing to the same company in the same round of fundraising. Perhaps surprisingly, despite having distinct investment theses, impact investors co-invest with traditional venture investors in about 60% of their investments. In fact, this is nearly twice the rate at which traditional investors co-invest with other traditional investors, indicating that impact investors are far more likely to share deals with other investors. When doing so, they co-invest with traditional investors in a majority of cases.

We do identify two ways in which impact investors provide capital that complements, rather than substitutes, for traditional venture investment. First, we find evidence that impact investors are substantially more likely to invest in nascent industries, whose financial viability may not be sufficiently established for traditional investors. This is a narrative sometimes used to rationalize impact investing (e.g., in the facilitation of new industries like microfinance), but to our knowledge there has not been systematic evidence demonstrating that impact investors fill this role. We find, when examining companies that are among the earliest to raise capital in their PitchBook industry, impact investors are about 50% more likely to finance these companies compared to traditional investors.

Second, we demonstrate that impact investment is countercyclical relative to market

valuations. It is well established that venture capital is strongly procyclical (Gompers et al. 2008). We replicate this finding, demonstrating that traditional venture financing is strongly correlated with the market-to-book ratio at the industry sector-by-year level. Critically, we find that impact investment does not follow this trend; in fact a sector's market-to-book ratio is somewhat negatively predictive of the volume of impact investment in that sector, indicating that impact investment is countercyclical. This is consistent with the notion that impact investors have both financial and social objectives: there may be greater opportunities to have a social impact when traditional venture financing is constrained.

Finally, we revisit both lines of inquiry described above with an eye towards heterogeneity amongst impact investors. We conduct this classification in four steps. First, 6000 portfolio companies were hand-coded based on which, if any, of the UN's sustainable development goals (SDGs) they appeared to be addressing based on their PitchBook description. In a second step, we consolidated the 17 SDGs into four buckets: "Climate," "Environment" (a focus on the environment beyond climate change), "Jobs and Equity," and "Social Infrastructure." Third, we train a large language model to predict the classifications of all of our portfolio companies into one of these four buckets or "none of the above" based on our initial classifications. This procedure results in about 53% of all impact portfolio companies and 15% of all traditional portfolio companies falling into one of the above four SDG buckets. As the social infrastructure category is quite small, we omit it from our analyses. Finally, we classify an impact investor as having a focus in one of these areas if at least 20% of their investments fall within the corresponding bucket. Accordingly, about 25% of the impact investors in our data are classified as having a focus on Climate, 32% as having a focus on Environment, and 44% as having a focus on Jobs and Equity. Fewer than 20% of impact investors in our data are classified as having more than one area of focus. We further analyze heterogeneity based on whether impact inventors self-identify as being concessionary – willing to accept below-market financial returns

in exchange for outsized social impact: 17% of impact firms are classified as concessionary.

For the most part, we find that the trends above hold to varying degrees for all types of impact investors. Disaggregating by investor type, however, resolves two important puzzles. First, while the impact investing industry as a whole does not invest in poorer geographies within the United States, we find distinct patterns for Climate and Environment impact investors versus Jobs and Equity impact investors. Climate and Environment impact investors finance companies located in areas with less poverty and more education. Environment-focused impact investors also finance companies in less densely populated regions of the U.S. In contrast, Jobs and Equity-focused impact investors finance companies in areas with more poverty, a higher proportion of Black and Hispanic residents, and denser population. In short, investors with a focus on Jobs and Equity seem to prioritize investing in economically disadvantaged areas, while that pattern does not hold for the other types of impact investors. Correspondingly, we find that the portfolio companies of impact investors focused on Jobs and Equity, and to a lesser degree those of impact investors focused on the environment, are less likely to reach an IPO, merger, or acquisition.

When revisiting the finding that impact investors are more likely to provide financing to companies that have a patent with a government interest (pre-investment), we find that this pattern holds most strongly for impact investors specializing in Climate and the Environment, while the pattern does not hold for concessionary impact investors nor for those specializing in Jobs and Equity. The latter two categories seem to primarily invest in companies for which formal intellectual property is less important. Similarly, we find that while relative to traditional investors, all impact investors are more likely to invest in companies belonging to nascent industries, this proclivity is substantially stronger for impact investors focused on Climate and the Environment.

This analysis suggests several takeaways. First, our analysis offers a characterization of the ways in which impact investors indeed fund high-impact firms, as measured by

a variety of proxies, including alignment with government priorities and the degree to which they invest in disadvantaged areas. Second, we document the ways in which impact investor strategies overlap with, but also complement, traditional venture investors. While there is a high degree of co-investment between traditional and venture investors, impact investors differentiate themselves by investing in newer, likely riskier industries, as well as by providing financing that is robust to financial downturns. Finally, we demonstrate the importance of heterogeneity amongst impact investors, by providing a novel classification of their investment focuses and demonstrating substantial differentiation.

2 Data and Descriptive Statistics

2.1 Data Construction

This paper is the first to use a newly created data set, which we believe is the most comprehensive data set on impact investors and their portfolio companies. The data cover the time period from 1980 to 2021. An accompanying technical paper (Burton et al. 2021) describes the data construction process in detail. Here we focus on the key elements. Online Appendix A provides more details on the data set construction.

We define impact investors to be investors with the explicit dual objective of generating social good and financial returns.[1] To compile our catalog of impact investors and portfolio companies, we draw upon information in multiple financial databases, performing extensive matching and data quality checks. We then compare our results with expert judgments, published reports, and other independent research to remove investors that do not target both social good and financial returns.

We identify impact investors using nine established resources on impact investing[2]:

[1]We note there is not yet a single widely adopted definition of impact investing.

[2]The version of the databases that we used were as follows: ImpactBase as of January 15, 2018, Community Development Venture Capital Association (CDVCA) as of May 2019, Impact Assets for the period 2011-2019, Preqin's alternative assets database as of June 30, 2018, Impact Capital Managers

1) ImpactBase, the global directory of impact investment funds from the Global Impact Investing Network (GIIN), 2) the Community Development Venture Capital Association (CDVCA) website, 3) the Impact Assets website, 4) Preqin's alternative assets database, 5) Impact Capital Managers ("ICM") members, a consortium of general partners, 6) the list of asset managers who are GIIN members, 7) GIIN's Investors' Council members, 8) the signatories to the Operating Principles for Impact Management originated by the International Finance Corporation, and 9) the Private Equity International ("PEI") "Impact Investment Firm of the Year" top three honorees for the years from 2017 onward.

Aside from Preqin, all of these are special compilations that focus specifically on impact investors. In Preqin, the "fund ethos" variable allows investors to self-identify as having a focus on at least one of the following five categories: "Microfinance," "Economic Development," "Socially Responsible," "Environmentally Responsible," and "Sharia Compliant." We expand this preliminary list by adding investment firms whose stated industry focus corresponds with so-called impact sectors. In particular, we add investment firms that primarily invest in "Clean Technology," "Education/Training," and "Environmental Services." Finally, we add investment firms that primarily invest in low-income countries, identified as those countries with a GDP per capita of less than U.S. $1,400.[3] This process results in a total of 2,747 potential impact investors for further investigation.

We then narrow this set by eliminating those that do not align with our definition of impact investors. We manually search their websites, if available, to see if they make any mention of a dual aim of generating social and financial returns.[4] In addition, we

members as of May 2020, list of asset managers who are GIIN members as of May 2020, GIIN's Investors' Council members as of May 2020, and signatories to the Operating Principles for Impact Management originated by the IFA as of May 2020.

[3]World Bank estimates of the typical poverty line in middle-income developing nations–which are more likely to be the focus of impact investors than the very poorest nations–range between $3.65 and $4.00 per day (in PPP-adjusted dollars). See, for instance, https://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq#:~:targetText=As%20of%20October%202015%2C%20the,at%20%241.90%20using%202011%20prices and https://pipmaps.worldbank.org/en/data/datatopics/poverty-portal/poverty-geospatial?dataset=PovertyRate2.15-gsap&zoomLevel=3&lat=19.53676432208408&lng=15.02343750000001.

[4]We accomplish this by using Amazon's crowdsourcing marketplace, Mechanical Turk ("MTurk") and

eliminate development finance institutions such as the International Finance Corporation (a subsidiary of the World Bank). We combine the information from all of the above listed sources to create a list of 445 unique impact investors, which includes some standalone impact funds and traditional private equity firms that have large impact investment funds.[5]

In Online Appendix Table A.I, we summarize how we create our final set of impact investors used in our analyses. First, we review the 445 impact investors' websites and exclude 46 impact investors whose strategies do not focus exclusively on impact investing and groups that were launched without an impact mandate but subsequently added one. Here, we looked for language that was more specific than "do good" or "make the world a better place." We included all funds that articulate a goal of promoting economic growth in a specific region, alleviating poverty, or benefiting disadvantaged individuals. However, investors with a focus on specific industries (EdTech or healthcare, for example) were not automatically categorized as impact, unless they articulated a social mission. For instance, we only include investors in biotech firms that have a target objective beyond the financial returns in the development of a drug, such as helping disadvantaged persons gain access to life-saving medication. Lastly, we eliminate three foundations.

Our initial screen of investors solely identified standalone impact investors. However, this screening would have eliminated a set of 13 investors we thought appropriate to include: traditional private equity firms with significant funds dedicated to impact in-

their online workforce of "MTurkers." We asked the MTurkers to collect the description, stated mission, and investment strategy as listed on the potential impact investor's website, and to identify whether or not they make mention of the dual aim of generating both financial and social returns. For each potential impact investor, we asked three MTurkers to review its website. If two of three MTurkers voted to exclude an investor, it was excluded. Using this approach, we narrow the list of 2,747 to 624 potential impact investors. Again, following Barber et al. (2021), the remaining 624 were then manually verified by a member of the Project on Impact Investments team, through a careful review of the background and strategy on the impact investor's website to identify any mention of the dual objectives of social impact and financial returns. Only those investment managers who make explicit statements that signal a dual objective were classified as impact investors.

[5]Through this process, we identify 199 impact investors from Preqin, compared to the 159 identified by Barber et al. (2021) in the period from 1995 to 2014.

vesting. We identified these dedicated funds through the extensive media coverage on impact investing. Our research uncovered four funds with investments in the PitchBook database: Bain Double Impact, TPG Alternative & Renewable Technologies, The Rise Fund (also a TPG affiliate), and PG Impact Investments (an affiliate of Partners group). The other groups, such as Black Rock and KKR, had raised capital for impact funds in 2020 or 2021, but had no transactions by these units in the PitchBook database as of the May 2021 version of the database we used.[6] We are left with 396 impact investors.

We match the 396 impact investors to the May 2021 PitchBook universes of pre-venture, venture capital, growth equity, and private equity investors (203,898 entities). 291 of the 396 impact investors match to the PitchBook data feed.[7] We drop one investor because it does not have any deal information and nine investors because they do not have any venture capital or growth equity investments. Finally, after additional data cleaning comprised of removing subsidiaries (with the exception of the dedicated impact groups of generalist organizations) and groups with only failed transactions, we are left with 277 impact investors in our study (two of which are affiliated with the same GP, TPG). Online Appendix Table A.III provides a complete list of the 277 impact investors included in the analysis.

Having created this list of impact firms, we wish to compare their investment activity to other private equity groups. The source of our data on portfolio companies of both impact and traditional investors is PitchBook, one of the most comprehensive databases which links investors to investments. We did not use any data set that lists only impact-specific investments, as we wanted an equivalent level of comprehensiveness for both impact and traditional firms. We detail our sample inclusion criteria in Online Appendix A; the following paragraphs provide an overview.

To create a comparable set of traditional non-impact investors, we use the PitchBook

[6]Some absences may reflect difficulties in identifying transactions made by the impact affiliates of these large groups, rather than those by their main funds.

[7]There are 291 GP-level investors, and TPG has 2 separate funds.

data feed as of May 2021 and extract all investors in the Venture Capital and Private Equity universes, identifying over 200,000 investors. We remove the 445 impact investors and investor categories which do not have venture capital or growth equity as a main part of their overall investment strategy.[8] Of the remaining investors, we further restrict our sample to focus on investors that have at least four private capital portfolio companies, thus removing investors that may only have one-off venture capital or growth equity investments (e.g., we do not want to include a mutual fund that has a few private equity investments, where private equity is not a main part of its investment strategy).[9] In addition, as in the case of the impact investors, we drop groups with only failed deals and those with no venture or growth equity rounds in the PitchBook database.

For both the portfolio companies of impact and non-impact investors, we eliminate duplicate entries and firms in which all financing rounds have missing information (in particular, the date of investment, the number and identity of co-investors, and the total size of each round of funding).

At the end of the process, the 277 impact investors in the database have made investments in a total of 6,066 portfolio companies. The comparable set of non-impact investors includes about 20,000 traditional investors, which have invested in approximately 205,000 companies. Like most data sources derived from securities filings such as U.S. Securities and Exchange Commission Form D, PitchBook does not typically identify the amount of

[8]We exclude the following PitchBook categories of investors: Angel (individual), Business Development Company, Corporate Development, Corporate Venture Capital, Corporation, Family Office, Fund of Funds, Fundless Sponsor, Government, Hedge Fund, Holding Company, Investment Bank, Limited Partner, Merchant Banking Firm, Mutual Fund, Other, Private Equity-Backed Company, Secondary Buyer, Sovereign Wealth Fund, Special Purpose Acquisition Company, University, and Venture Capital-Backed Company.

[9]Given the comparatively smaller number of impact investors in our data set, we were able to manually assess each investor to ensure that venture capital and growth equity investing are a core part of their strategy. Thus we do not apply the criterion that impact investors have at least four venture capital or private equity deals. Such an effort was not really feasible for the tens of thousands of small non-impact investors. In many cases, family offices have names that resemble those of formal investment groups. Efforts to research family offices with little investment activity frequently are fruitless, as they typically attract little media attention and aggressively use Delaware and Cayman Island shell companies to obscure their ownership. For a discussion of these issues in the context of Chinese family offices, see Akcigit et al. (2024)

capital or ownership stake of each individual investor in each investment round, just the aggregate amount in the round.

To conduct our study of the demographic determinants of impact investments in Section 3.1, we match our portfolio companies to the Census demographic data. To do this, we first match the portfolio companies' zip codes to the Federal Information Processing System (FIPS) codes which uniquely identify counties. The match rate between the zip codes and the FIPS codes is 94.4%. Next, we match the portfolio companies' FIPS codes and deal year to the Census data. Here the match rate is 84.3%.[10]

For the analyses in Section 3.1 examining the overlap of impact investments with government priorities, we also match the portfolio companies against federal Small Business Innovation Research awards and U.S. government-interested patents. We use the SBIR database at www.sbir.gov/awards#, which included in the version we accessed (March 27, 2024) all awards from the program's inception in 1983 to the end of 2023, and the database of government-interested patents compiled by Gross and Sampat (2024), which includes government-interested patents that they were able to identify since the inception of the modern patent system in 1836 through the end of 2020.

To undertake this match, we did three rounds of matching. We started with the subset of U.S.-based impact-backed companies and those backed by traditional investors with a location and company name. (Eligibility requirements for the SBIR program, for instance, excluded foreign firms.) First, we matched portfolio companies where there was an exact match based on city and company name in the PitchBook and the SBIR databases. Second, we did an exact match based on state and company name. Finally, we did an exact match based on state and fuzzy match based on company name, manually checking all of the awards. We matched 8.7% of the impact portfolio companies and

[10]Prior to 2009, the Census demographic data are only available each decade. After that, the data are available on an annual basis. Thus, we have data for the years 1999 and 2009-2020. We match deals made in the years 1990-1999 to the census data from 1999, and we match deals made in the years 2000 - 2009 to the census data from 2009.

5.5% of the non-impact portfolio companies to the SBIR database, reflecting the fact that most companies did not have such awards. We performed a similar matching process on patents. In total, 24.5% of the impact portfolio companies and 16.9% of the non-impact portfolio companies were matched to patents, whether ones with a government interest or not.[11]

2.2 Classifying the Impact Investors

To examine heterogeneity across impact investors, we focus on two dimensions: the type of United Nations (UN) Sustainable Development Goals they address and whether they are concessionary or not.

To assign investors to what we term "SDG buckets," we follow the methodology delineated in Appendix A.4. In brief, we proceed as follows. We focused on United Nations Sustainable Development Goals. These 17 objectives were adopted by the United Nations in 2015 with the goal of ending poverty, protecting the planet, and ensuring peace and prosperity. We identify a set of keywords associated with each SDG. We then had three RAs classify 6,000 portfolio companies in two rounds, using the aforementioned seeding words as guidance. We then subjectively consolidated the 17 categories into four buckets: "Climate," "Environment," "Jobs and Equity," and "Social Infrastructure." With the resulting training data, we fine-tuned a BERT model to score PitchBook descriptions of each portfolio company against the five "buckets"–the four SDG buckets and a "No bucket" category (i.e., not an impact company). The BERT model used as inputs the PitchBook description, the category to which the research associate assigned the company, and the associated bucket in which the category fell.

Having used the text to classify portfolio companies into SDG buckets, we then classi-

[11] One difference was that we manually checked the awards to non-impact firms only if the similarity score from the fuzzy match was 96 or above: below this there was a sharp drop-off of match quality, so we dropped these potential matches. For the impact firms, all potential patent matches above 90 were checked, only dropping matches with a score below 90.

fied impact investors. We first counted the total number of deals for each impact investor over the entire sample period, and the number that fell into the four SDG buckets for each investor. As there were only 44 deals in the social infrastructure bucket, made by only 8 investors, we omit it from our subsequent analysis, and consider only the three other SDG buckets.

For each impact investor, if 20% or more of the investors' deals were in a given SDG bucket, we associated the impact investor with that bucket. 167 of the 277 impact investors are recorded as falling into only one of these three buckets. 53 are assigned to two such focuses, and two have three.

Online Appendix B provides examples of nine companies that fall into the three buckets, with two being in each case matches with high confidence and one being with lower confidence.

We also identify impact investment firms that explicitly note that they make concessionary investments: those that self-identify that they accept below market-rate returns. These financial objectives are inferred from investors' websites. For the impact investors in the sample, we examined their websites (particularly any material geared toward potential investors) for language related to their target return objectives from their investment strategy. We classified firms into three categories: concessionary, market return, or no return information.

- Concessionary: If we found "below-market," "concessionary," "social returns," "impact returns," or similar terms with no mention of achieving market-level financial returns, we classified them as concessionary. An example would be "We believe in making economically rewarding investments while focusing primarily on tangible social and environmental benefits."

- Market return: Here we look for mention of achieving market or above-market financial rates of return.

- No return information: Firms that did not mention achieving any type of return - financial or social returns- in their objective. 47 of the 277 impact investors were classified as concessionary.

2.3 Descriptive Statistics

In Figure 1, we document the growth of the impact investment sector, plotting over time the number of impact deals, the number of impact investors, and an estimate of the total dollar value of impact financing over time. Figure 2 plots the number of impact investors and total dollar value of impact financing broken down by SDG buckets over time. To our knowledge, these are the first comprehensive data on the size of the impact investing sector. Thirty years after the birth of impact investing, we see that 6,066 firms have received funding from impact investors, in 8,125 investment rounds. These represent approximately 2% of all venture capital and growth equity rounds and 3% of all venture capital and growth equity enterprises.

The aggregate totals in Figure 2 mirror those in Figure 1, with the exception that we present the three-year moving average for investment amounts to smooth some volatility introduced by large individual transactions. Jobs and Equity is the single largest category. The figure also makes clear the intense cyclicality of the dollar volume of Climate investing, with booms in the late 2000s, early 2010s, and 2020s, followed by busts.

Table I provides basic descriptive statistics about the investors in our sample. Column 1 presents the counts and means for the portfolios of traditional venture and growth investors and the companies they back. Column 2 presents the difference between these groups and impact investors for each outcome. We defer the discussion of the remaining columns until Section 3.3.

Panel A of Table I shows that on average, traditional investors and impact investors have similar portfolio sizes, with the former having supported approximately 24 companies

with 31 investments, and the latter one having slightly more on each measure. The average traditional and the average impact investor have been in operation for approximately 10 years. However, there are substantial differences in average deal size: the average investment in a financing round for traditional investors is $8.7 million, as against $5.0 million for impact investors. Median transaction sizes are much more similar.[12]

In Panel B of Table I, we also see significant differences in investment location. Relative to traditional investors, impact investors are more likely to invest in low income regions of the world (e.g., Sub-Saharan Africa, South Asia, Russia, Central Asia, and Latin America and the Caribbean), and less likely to invest in high-income places outside the U.S. (e.g., Canada, East Asia, Europe, and the Middle East).

We also see differences in investment focus in Panel C. The impact investors are three times more likely to be invested in companies classified into Climate and Environment, and almost twice as likely to invest in ones with a Jobs and Equity focus, than traditional investors.

In Table II, we characterize both the sectoral and geographic distribution of portfolio companies of impact investors. The first two columns give the distribution of the portfolio companies of traditional venture and growth equity investors as a benchmark; the next two columns provide this distribution for all impact investors. Here we define the industry sectors using the 11 GICS industry sectors in PitchBook. We see that impact investors are overrepresented in consumer staples, energy and utilities, and financial services. Meanwhile, they are disproportionately less likely to invest in communications, health care, and information technology (some of the most popular categories for traditional investors). Burton et al. (2021) provide even greater breakdowns, including by founding year, number of employees, and type of impact investor (e.g., concessionary and

[12]These estimates are inexact, as PitchBook and other commercial databases rely primarily on the Securities and Exchange Commission's Form D to deuce financing amounts. These forms typically only report the total amount of the financing, not the contributions of the individual parties. We assume that the contributions of each financier in the round are equal.

non-profit).

The next three columns break down the population of impact portfolio companies by geography. Geographically, we see that the majority of activity is concentrated in the developed world, but that a full 30% of impact companies are located in developing economies. Financial and real estate transactions are particularly overrepresented in developing nations, while healthcare and energy deals are underrepresented here.

Our final set of descriptive comparisons seeks to corroborate the earlier findings (highlighted in the introduction; e.g. Kovner and Lerner 2015; Barber et al. 2021) of relatively lower investment success of impact investors. As data on cash flows and valuations are not available, we instead focus on the probability that portfolio companies go public or are acquired. We see in Table III that, on average, impact portfolio companies are substantially less likely to go public or be acquired (a 2.7 percentage points lower probability, relative to a mean of 16.5% in traditional companies). These patterns hold, with smaller effect sizes, if we focus on acquisitions or IPOs only. Finally, we condition on an exit occurring and report the average number of months to exit. Conditional on a successful exit, impact portfolio companies take 15 more months to reach a successful exit.

Taken together, we find evidence that there are indeed systematic differences in geographic and industry focus of impact investments, as well as in their likelihood of financial success. In the next section, we attempt to better hone in on, and quantify, the strategies of impact investors.

3 Empirical Analyses

We organize our analyses around three questions. First, relative to traditional investors, to what degree do impact investors prioritize socially or environmentally impactful firms? We focus on two proxies of impact: the extent to which investors address social welfare needs, as delineated by U.S. government activity, and the demographic characteristics of

the location of the portfolio companies' headquarters (i.e., does the firm operate in an economically disadvantaged region?). Second, what is the nature of interactions between impact and non-impact investors? We examine the extent of deal syndication across investors, the degree to which impact investors provide financing to companies in novel industries (where traditional venture investors may be more reluctant to risk capital), and the degree to which impact investors provide financing during economic downturns, when traditional venture investors are relatively less active. Finally, we examine whether there is heterogeneity in the answers to the above questions across impact investors with varying investment theses.

3.1 To What Degree do Impact Investors Prioritize Impact?

A defining characteristic of impact investors is their objective function when selecting companies in which to invest, which includes putting some weight on investment returns, and some on social benefits. Thus, we would anticipate that relative to traditional investors, impact investors would be more likely to invest in firms that yield positive social returns.

Assessing social returns of each investment, however, is complex, particularly in a setting where companies in many different industries are being funded. Even in single-industry studies, the assessment of social costs and benefits is challenging. In particular, the beneficial and detrimental effects from entrepreneurial firms may not be immediately apparent, but only become clear over time: e.g., the harms to individuals from the overuse of social media (Allcott et al. 2020).

We therefore rely on several proxies for social impact. The first two leverage the overlap between an investors' portfolio companies and the priorities of the U.S. federal government. First, we examine whether companies received funds from the Small Business Innovation Research program (either a Phase I or Phase II award). The SBIR is the

largest government program funding high-potential entrepreneurial firms and has shown to be associated with greater firm innovativeness and substantial positive social spillovers (Howell 2017; Myers and Lanahan 2022). Key objectives of the SBIR programs include to "meet federal research and development needs" and to "increase private sector commercialization of innovations developed through federal R&D funding," so we would anticipate a strong correlation between awards and the public's research and innovation needs.

Our second proxy for social impact is the number of patents with a noted government interest. Gross and Sampat (2024) document that as a result of a combination of World War II and Reagan-era regulations, government agencies, grantees, and contractors have been required to identify all patents where the government had rights, including not just those where the government agency was an assignee, but also those that were government licensed or were government funded, even if held by another entity. Again, entrepreneurial firms awarded such patents should be more likely to be working in areas of public interest. Both of these datasets are national and comprehensive (reporting all awards made), making them ideal to match to our dataset, which contains the universe of impact and traditional portfolio companies.

These data also allow us to independently test for two channels through which impact investors could have an effect. They could initially choose to invest in companies that are focused on the social good. Additionally, but distinctly, there could be a "treatment effect," whereby companies that receive impact investment subsequently become more focused on social outcomes.

Table IV tests for selection effects. We focus here exclusively on the samples of impact-backed and matched portfolio companies at the time of their original financing. We restrict the sample (here, as well as in Tables V, X, and C.I) exclusively to U.S.-based firms, as these firms are much more likely to interact with the U.S. government.

We estimate:

$$y_i = \alpha + \beta ImpactPresent_i + \gamma_i + \delta_i + \eta_i + \varepsilon_i \quad (1)$$

where y_i is an indicator variable as to whether the company received an SBIR award or filed a government-interested patent, or the logarithm of the count of such events, in the five years prior to the financing round, $ImpactPresent_i$ is a dummy denoting whether in impact investor participated in the funding round, and γ_i, δ_i, and η_i represent state, founding year, and industry fixed effects.

Columns (1) and (2) show in each case, impact investors are substantially more likely to invest in firms which have received an SBIR award or filed for a government-interested patent. The estimates range from an 80% to 180% higher probability of having at least one award or pending or granted patent: for instance, in column 1 of panel A, the probability goes from 1.1% to 3.1%. We similarly see an increase in the number of such awards in columns (3) and (4). The effect is robust to industry, location, and time fixed effects, addressing some potential confounding effects.

Table V focuses instead on the treatment effects of impact investments. We look at the consequences of financing, and impact financing in particular, on the probability a company receives an SBIR awards or applies for a government-interested patents.

Here we modify our approach in several ways. First, rather than having one observation per company as in Table IV, we employ up to eleven annual observations for each entity, from five years before to five years after the first investment (impact, or for the matched sample, traditional investment). We do not include years before the company was founded or years after 2022 for the SBIR outcome, and after 2020 for the patent outcome, even if they fall within the eleven-year window. Second, seeking as similar matches as possible, we match each impact portfolio company to traditional companies along five dimensions: region (Northeast, Southeast, Midwest, and West), industry (the 41 PitchBook industry groups), deal type (we distinguish between first-round VC, later-round VC,

and growth equity), and year. In the latter case, we require the non-impact companies to have their earliest financing round in the year before, of, or after that of the earliest impact financing round of the impact portfolio company.[13]

In each case, we examine the following difference-in-differences specification:

$$y_{it} = \alpha + \beta_1 ImpactPresent_i + \beta_2 Raise_t + \beta_3 ImpactPresent_i * Raise_t + \gamma_i + \delta_t + \varepsilon_{it} \quad (2)$$

where y_{it} indicates if the company was awarded an SBIR award or filed for a government-issued patent in the year of the observation. $ImpactPresent_i$ is a dummy denoting an impact-backed company, $Raise_t$ is a dummy equal to 1 if the observation is from the year of the financing or the five years thereafter, and γ_i and δ_t denote firm and observation year fixed effects.

The difference-in-differences model represented by specification 2 provides the causal estimate of the impact of raising impact capital (over and above that of raising traditional venture capital) under the assumption that, for the outcomes of interest, had the impact-backed companies instead raised traditional venture capital, they would have evolved at the same rate as the matching companies that also raised traditional venture capital. In support of this assumption, Figure 3 plots the event study analog of specification 2. Reassuringly, it is visually apparent that prior to their fundraising event, the outcomes of sample companies that will eventually raise impact versus traditional venture capital exhibit parallel trends, and (for SBIR awards) diverge only after the fundraising event, thereby lending credence to our causal interpretation of specification 2.

Table V provides the estimates of specification 2 and shows evidence of a treatment effect for the SBIR measure. Both companies financed by traditional venture investors

[13]For SBIR firms, we dropped firms if multiple firms had the same name as an SBIR-awarded company (9 firms) or if the SBIR award year was missing (1 firm). Thus, we have 2,686 impact companies and 49,939 traditional companies in the SBIR analysis and 2,686 impact companies and 49,949 traditional companies in the patent analysis. The corresponding numbers of U.S. portfolio companies are 3,108 and 79,246.

and those financed by impact investors are more likely to receive an SBIR award after the financing event. But the increase is much larger for impact portfolio companies. For instance, examining column (2), we see that post-financing, companies backed only by traditional investors have a 0.7% increase in the likelihood of receiving an SBIR award, while companies backed by an impact investor have a 1.4% increase. The difference is substantial in economic magnitude relative to the average probability of 3.8% across the sample. Column (3) and (4) show there is no evidence of a similar treatment effect of impact investment for government-interested patents.[14]

As a final proxy of the social impact of a portfolio company, we compare the headquarters location of the portfolio companies, with an eye towards the demographic characteristics that might indicate a location is economically disadvantaged.[15] In column (1) of Table VI, we present the mean for the companies entirely funded by traditional investors. Column (2) presents coefficients from regression specification 1 using a sample of all impact-backed and non-impact firms, with fixed effects for industry and the year of the first financing. We defer discussion of columns (3) through (6) until Section 3.3.

[14]One might worry that firms in the portfolio of impact funds are more likely to be financially constrained, and that these constraints, rather than anything about the nature of their focus of their business, leads them to seek public funding. Thus, we create two alternative measures of public interest in columns (1) and (2) of Online Appendix Table C.I, which are independent of a specific firm's financial constraints. We first identify *industries* that are government-interest aligned, by ranking the 41 PitchBook industries by the percentage of PitchBook firms in that industry that receive an SBIR award from 1983 to 2022. We find that impact investors are more likely to invest in industries that are in the top 20% (or top 30%) of government awards. Similarly, we rank four-digit Combined Patent Classification (CPC) system subclasses by probability that a firm has a government-interested patent between 1963 and 2020. Again, we find that impact investors are substantially more likely to invest in firms which file patents in these specific sub-classes. The reader may wonder why we do not test whether portfolio companies change to more "impactful" industries following an impact investment. Firms in fact rarely change industry. Moreover, PitchBook does not preserve historical industry information.

[15]We acknowledge that the degree to which a portfolio company operates in economically disadvantaged areas is not a perfect proxy for the company's social impact. For instance, it is debatable whether payday lenders, which disproportionately operate in low-income neighborhoods, have positive social impact in their communities. Nevertheless, as a general pattern, we believe there is a positive correlation between a business operating in disadvantaged areas and its ability to further the interests of residents in those areas. This hypothesis is supported by various programs implemented by the federal government meant to provide incentives for businesses to operate in low-income areas, such as the creation of Opportunity Zones under the 2017 Tax Cuts and Jobs Act – see e.g., https://www.irs.gov/newsroom/tax-cuts-and-jobs-act-a-comparison-for-businesses.

Across countries, we see that impact investors are more likely to invest in nations with lower per capita gross domestic product. When we compare across counties within the U.S., however, the results are less clear. Impact investors are more likely to invest in counties with better educated residents and fewer Blacks and Hispanics. Deaths from drugs and alcohol as a percentage of the population are slightly higher for counties with impact portfolio companies, but the difference is modest in magnitude.

In summary, the evidence suggests that impact investors are more likely to invest in firms where social return is higher, as proxied by the alignment of these firms with government priorities. Internationally, impact investors prioritize portfolio companies operating in poorer countries, but the demographic correlates of impact investment within the U.S. are less clearly differentiated. As we will see in Section 3.3, the aggregated differences of impact and non-impact portfolio companies mask substantial heterogeneity when we look across distinct categories of impact investors.

3.2 How do Impact Investors Complement and Substitute for Traditional Investors?

We next seek to understand the ways in which impact and traditional investors interact. We focus on three dimensions: the frequency of syndicated investments with a traditional investor, the degree to which impact investors specialize in the financing of new industries, and the extent to which impact investors provide funding during market downturns when traditional venture financing slows down dramatically (e.g. Gompers and Lerner 2000).

Table VII presents the first such analysis, looking at the probability that investors engage in co-investment with a traditional investor in the same firm and financing round. We include all financing rounds in the sample (in some cases, more than one per portfolio firm). Column (1) only looks at financing rounds involving exclusively traditional investors. Transactions are coded as one if more than one traditional investor invested

in the round, and zero otherwise. The second column conditions on there being at least one impact investor in the round. Transactions are coded as one if there is at least one traditional investor in addition to an impact investor in the round, and zero otherwise.

The analysis suggests that impact investors, far from being segmented from traditional investors, are more likely to share transactions with traditional funds than traditional investors are to share transactions with one another. At 60%, the probability of coinvesting with a traditional investor is almost twice as high for the impact-present rounds than it is for the rounds where no impact investors are present. These patterns are also seen when we look at VC rounds exclusively (where the probability of co-investment is greater in general), though co-investment is also substantially higher among impact investors in PE growth rounds compared to traditional investors. Of course, the extent of co-investment we observe may reflect the small average investment size of impact investors noted in Table I, which may be a consequence of the limited capital of many impact investors.

Several theories of impact investing suggest that impact investors can create more impact if they differentiate themselves from traditional venture investors by supporting high-impact companies that might not have otherwise been able to raise capital (e.g. Green and Roth Forthcoming; Oehmke and Opp 2020). While our results suggest there may only be a limited degree of differentiation between impact and traditional investors on average, we now turn to two other ways impact investors may provide differentiated financing.

The first approach relates to the financing of firms in novel, potentially higher risk industries. Impact investors often argue that part of their strategy is to support companies in markets and industries that have substantial informational asymmetries that deter traditional investors. Successful investments may attract traditional investors to the category. For instance, many early debt and equity impact investing funds were created to finance companies in the newly emerging sector of micro-finance, which focuses on making small loans to poor women in developing countries. The sector subsequently

achieved substantial interest from traditional funds, and ultimately many IPOs. The early support of impact investors might allow companies and industries to develop the business models with demonstrated profitability necessary to attract traditional investors. In this analysis, we investigate this claim by measuring whether impact investors, relative to traditional investors, are more likely to support companies in nascent industries, using the 215 PitchBook-identified sectors.

Table VIII examines whether impact investors help create new industries by comparing their portfolio companies to portfolio companies with only traditional investors. It presents regression results using the specification:

$$y_i = \alpha + \beta ImpactPresent_i + \delta_i + \varepsilon_i \tag{3}$$

where y_i is a dummy denoting whether the company was among the first firms funded in its industry – i.e., whether the firm was a "pioneer". In Row 1, a company is defined to be a pioneer if it is among the first ten companies within its PitchBook industry to be financed in our data. In Row 2, a company is defined to be a pioneer if it is within the first twenty; Row 3, the first thirty companies; and in Row 4, within the first forty companies. As above $ImpactPresent_i$ is a dummy denoting whether in impact investor participated in the funding round. δ_i is a year-of-first-financing fixed effect.

We see that relative to traditional-only companies, impact-present companies are more likely to be pioneers, regardless of the definition of an industry pioneer.[16] In all cases, the

[16]The reader may be curious about the industries where the impact investors were especially well-represented. We find in an unreported analysis that the five PitchBook industries in which impact investors are most likely to support pioneers are Alternative Energy Equipment, Forestry Development/Harvesting, Horticulture, Other Utilities (largely composed of clean energy companies), and Plant Textiles. Within each of these industries, impact investors are present in between 20% and 30% of the pioneering deals. For concreteness, the following are examples of impact-backed pioneer companies in each of the aforementioned industries. Alternative Energy: Capstone Green Energy was incorporated in 1988 as a California based gas turbine manufacturer that specializes in microturbine power along with heating and cooling cogeneration systems. Forestry: Triton Timber was founded in 2000 in Victoria, Canada to develop technology to responsibly harvest the flooded and abandoned forests in reservoirs around the world. Horticulture: Nalweyo Seed Company Ltd (NASECO) was formed in 1996 and breeds, produces and sells a variety of hybrid field crops and vegetables to local and international non-governmental orga-

probability of an investment by an impact fund being pioneering is roughly 50% higher than that of traditional investing.

A second way impact investors could differentiate themselves is to provide funding when funding is relatively scarce. Venture capital funding is intensely cyclical (Gompers and Lerner 2000; Inderst and Müller 2004; Gompers et al. 2008; Nanda and Rhodes-Kropf 2013), as is the financing of innovative firms more generally (Brown et al. 2009; Kerr and Nanda 2015; Haddad et al. 2022). Impact investors, motivated by social impact as well as financial returns, might therefore be expected to fill in some of the gap left by traditional venture investors in market downturns.

To examine this, we use as observations each distinct year t and industry sector s, with separate observations for impact and traditional investors i. We estimate

$$y_{sti} = \alpha + \beta_1 Impact_{sti} + \beta_2 MarketBook_{st} + \beta_3 Impact_{sti} * MarketBook_{st} + \gamma_s + \delta_t + \varepsilon_{sti} \quad (4)$$

where y_{sti} is one of several measures of activity in that sector-year-fund type triple (e.g., the count of transactions or log dollar volume of transactions) and $MarketBook_{st}$ is the lagged market-to-book ratio of firms in that sector-year. We include deal-year and sector fixed effects.

Our empirical approach requires data on both privately held and publicly traded firms in the same sector. Consequently, rather than using the 215 PitchBook sectors, we use a broader measure. In particular, S&P assigns both the private firms in PitchBook and the public firms in Compustat to its GICS classification. We use the eleven broad sectors in the GICS scheme: Communication Services, Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, Materials, Real

nizations, distributors, and smallholder farmers in Uganda and beyond. Other Utilities: Cogelec Energy was created in 2014 to provide energy for productive use and act as a catalyst for economic advancement in communities across Africa. Plant Textiles: AlgaLife, a Berlin and Israel-based start-up established in 2016, seeks to develop algae-based materials for the fashion and textile industries.

Estate, and Utilities. The specification includes fixed effects for each sector and year.

We calculate the market-to-book ratio for each sector following Daniel and Titman (2006), as described in Online Appendix A.5.

Table IX shows that, consistent with the findings in Gompers et al. (2008), there is a strong cyclicality among traditional venture investments across sectors. In contrast, cyclicality is essentially zero, and in some cases negative, for the impact investment transactions, indicating that impact investors do partially fill in the void left by traditional investors in market downturns. The results are robust when we use the contemporaneous, rather than lagged, market-to-book ratio in Online Appendix Table C.II.

In short, we see some striking patterns in the way that impact investors engage with traditional investors. While they are far more likely to syndicate deals with such investors, they are also quite differentiated in their behavior in some respects. In particular, they are more likely to invest in pioneering sectors and to resist public market signals.

3.3 Heterogeneity Amongst Impact Investors

Finally, we examine the behavior of impact investors that fall into each of the SDG buckets, as well as impact investors that self-identify as concessionary, with an eye to key differences. As described above, we classify impact investors with more than 20% of their transactions as being in a given "SDG bucket."

Tables I, III, VI, VII, VIII, and IX separately analyze each subset of these impact investors, in the final four columns of each table. Table X presents the analysis in the first column of Table IV for various subsets of impact investors.

We see that in many respects, the activities of the various subclasses of impact investors are consistent. The regressions in Table VII highlight that all the subclasses of impact investors – investors focusing on the three SDG buckets and concessionary funds – are substantially more likely to coinvest with traditional investors than other investors.

Similarly, Table IX indicates that each subclass of impact funds avoids the strong cyclicality seen in traditional funds.

On the other hand, we also observe apparently distinctive strategies by fund type. One of these is highlighted in Table VI. This suggests a sharp differentiation in the parts of the U.S. selected for investments between the funds in the Climate and Environmental SDG buckets on the one hand and those focused on Jobs and Equity on the other. The former are much more likely to invest in wealthier counties as measured by median household income; for the latter, their regions of investment have 16% higher rates of poverty. Similarly, the Jobs and Equity firms are more likely to invest in areas with a substantial Black and Hispanic population and a higher population density. Overall, it seems that impact investors specializing in Jobs and Equity focus in economically disadvantaged areas within the U.S., while the opposite is true for investors specializing in Climate and Environment.[17]

Correspondingly, when looking at the likelihood that portfolio companies have a successful exit – IPO, merger, or acquisition – in Table III, we see the negative relationship between impact investment and successful exits is most concentrated amongst impact investors focused in Jobs and Equity and concessionary impact investors, and to a lesser degree in Climate impact investors. Impact investors focused on the Environment, on the other hand, exhibit higher rates of successful exits, which are statistically indistinguishable from the rates of exit for traditional investors.

Yet another set of differences appear in Table X. When we look at SBIR awards as an indicator of social purpose in Panel A, we see that the patterns in all four subsets of impact companies mirror the general pattern. The impact investors are more likely

[17]One pattern worth mentioning is the differentiation between funds falling into the Climate and Environmental buckets internationally. Climate companies are concerned with reducing carbon footprint (e.g., renewable energy) and enhancing resilience against climate change, while Environment companies address a broader range of topics, including water conservation, land restoration, and sustainable farming, which aim at improving the condition of the environment today. Environment impact firms are consequently located more often in poorer developing countries compared to Climate firms.

to choose firms that have won such awards. When we look at government-interested patents in Panel B, significant effects are confined to portfolio companies of Climate and Environment investors. The coefficients for companies in the Jobs and Equity SDG bucket and concessionary funds are much smaller and insignificant. One possibility, suggested by the company profiles in Online Appendix B, is that these two subclasses of impact investors may primarily invest in firms where formal intellectual property protection is less important.

Finally, Table VIII highlights some differences with regards to how much impact investors specialize in nascent industries. While all subclasses are more likely to be pioneer investors than traditional venture and growth equity funds, these patterns are most pronounced for impact investors with a focus in Climate and Environment. As with the case of patents above, this result may reflect the innovative nature of Climate- and Environment-focused impact investors and portfolio companies.

4 Discussion

This paper analyzes the first comprehensive dataset that matches impact investors to their portfolio companies. In doing so, we shed light on several long-standing questions regarding the behavior of impact investors and their role in the private financing landscape.

First, we analyze the several proxies for the degree to which impact investors prioritize impact. We find relative to traditional investors, impact investors are more aligned with government (and presumably the public's) interest, as measured by the rate at which their portfolio companies receive SBIR grants and file for government-interested patents. We find not only that impact investors are more likely to select companies that have received an SBIR award or filed a government-interested patent pre-investment, but also that post-financing, impact investors seem to causally increase the likelihood that a company

will receive an SBIR award. As one additional proxy for the social impact of impact investors, we also examine the demographic characteristics of the headquarters of their portfolio companies. We find that relative to traditional investors, impact investors on average invest in countries with lower GDP per capita. Within the U.S., there are fewer differences in the regions focused on by impact and traditional investors, but this result masks important heterogeneity across the impact investors.

Second, we analyze the degree to which impact investors substitute for or complement traditional venture investors. We document a strong degree of co-investment between traditional and impact investors, with upwards of 60% of all impact investments being co-invested with traditional investors. Nevertheless, we identify two important ways in which impact investors differentiate themselves from traditional investors, thereby expanding the financing frontier relative to what would be achieved by traditional venture investment alone. We find that impact investors are more likely to finance companies in nascent industries, where the economics of the businesses may not be sufficiently derisked for the modal traditional venture investor. And we find that impact investors are more likely to provide capital during market downturns than are traditional venture investors, which may add resilience to the venture financing landscape.

Finally, we investigate heterogeneity in the above patterns across the impact investors. We infer investment theses based on the concentration of an investors' portfolio companies in Climate, Environment (outside of climate change), and Jobs and Equity. While we find a strong degree of consistency across many of our results, several important forms of heterogeneity emerge. Relative to traditional investors, impact investors focused on Jobs and Equity typically focus their resources in substantially poorer and more disadvantaged counties within the U.S., while the opposite is true for Climate and Environment impact investors. Investors focused in Climate and Environment, on the other hand, are relatively more likely to support innovative firms in nascent industries, and to invest in companies with government-interested patents.

Ultimately, the differences between impact and traditional investors, and across impact investors, raise the question of how best to quantify and aggregate the social tradeoffs associated with these investors. While we analyze several proxies for social impact, they are not so granular so as to illuminate the precise cost-benefit considerations inherent in impact investing. To what extent do the net societal benefits from impact investors' portfolio companies offset the lower financial returns to their limited partners documented in the earlier literature? How do the costs and benefits differ across different classes of impact groups? We hope that future research will help quantify these tradeoffs.

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5 Main Tables and Figures

Table I: Summary Statistics by Investor Type

	(1) Traditional Investor Mean	(2) Impact Investor Difference	(3) Climate Impact Investor Difference	(4) Environment Impact Investor Difference	(5) Job and Equity Impact Investor Difference	(6) Concessionary Impact Investor Difference
Panel A: Portfolio Profile						
Number of Companies	24.438	1.042	-8.453***	-7.549***	5.232	-5.161
		(3.637)	(1.998)	(2.057)	(7.335)	(4.532)
Number of Deals	30.612	1.399	-8.744***	-9.312***	5.578	-7.719
		(4.086)	(2.922)	(2.547)	(7.853)	(5.326)
Average Investment Size	8.703	-3.720***	-1.196	-3.534***	-4.521***	-4.620***
		(0.754)	(1.724)	(0.854)	(0.915)	(1.115)
Years in Operation	9.902	-0.197	-0.444	-0.345	-1.183***	-0.289
		(0.310)	(0.540)	(0.474)	(0.407)	(0.771)
Panel B: Global Regions						
US	0.451	-0.007	-0.001	-0.009	-0.161***	-0.026
		(0.026)	(0.049)	(0.043)	(0.035)	(0.063)
Advanced Economies	0.433	-0.240***	-0.109**	-0.265***	-0.254***	-0.221***
		(0.019)	(0.045)	(0.028)	(0.027)	(0.048)
Developing Economies	0.112	0.250***	0.112***	0.278***	0.418***	0.248***
		(0.025)	(0.042)	(0.044)	(0.037)	(0.062)
Panel C: SDG Buckets						
Climate Investments	0.032	0.104***				
		(0.014)				
Environment Investments	0.040	0.119***				
		(0.013)				
Job and Equity Investments	0.079	0.157***				
		(0.017)				
Number of Investors/Deals	20,228/360,158	277/8,125	68/1,422	90/1,849	121/4,005	47/1,062

Specification: Observations are venture capital or growth equity investors with an investment by May 2021. In column 1, we present the mean of the outcome shown in the rows for Traditional Investors. In columns 2-6, we show the coefficient and standard error of the difference between Traditional Investors and the group indicated in the header of the column. Robust standard errors in parentheses.

Outcomes: Outcomes are described in the rows of the table and represent averages at the investor level. In Panel A, we present summary statistics of the investors' portfolios. In Panel B, we show what fraction of an investor's portfolio companies are headquartered across the global regions listed in the panel. Advanced Economies includes Canada, United Kingdom (UK), North/South/Western Europe, Middle East and North Africa (MENA), Oceania, and East Asia. Developing Economies includes Eastern Europe, Russia, Central Asia, Latin America and Caribbean, Southeast Asia, South Asia, and Sub-Saharan Africa. In Panel C, we show the fraction of the investors' portfolio companies that are classified in the SDG buckets listed in the panel. The final row of the table shows the number of investors and number of deals that fall in each of the categories indicated in the column header.

Data source: PitchBook data feed as of May 2021.

Table II: Industry and Geographic Breakdown of Portfolio Companies

	All Traditional		All Impact		Impact Portfolio Companies by Global Region		
Industry	**N**	**Pct**	**N**	**Pct**	**US**	**Advanced Economies**	**Developing Economies**
Communication Services	12,674	6%	253	4%	52%	22%	26%
Consumer Discretionary	20,844	10%	617	10%	46%	20%	35%
Consumer Staples	9,414	5%	378	6%	48%	18%	34%
Energy	2,532	1%	198	3%	45%	31%	23%
Financials	3,363	2%	210	3%	25%	11%	63%
Health Care	42,508	21%	1,003	17%	64%	15%	20%
Industrials	41,099	20%	1,207	20%	51%	20%	29%
Information Technology	61,406	30%	1,671	28%	55%	17%	28%
Materials	7,693	4%	318	5%	45%	22%	33%
Real Estate	1,878	1%	146	2%	21%	13%	66%
Utilities	603	0.3%	53	1%	40%	25%	36%
Total	**204,189**	**100%**	**6,055**	**100%**	**51%**	**18%**	**30%**

Note: In this table, we display the distribution of impact investor portfolio companies by geographic region and industry sector. Advanced Economies includes Canada, UK, North/South/Western Europe, MENA, Oceania, and East Asia. Developing Economies includes Eastern Europe, Russia, Central Asia, Latin America and Caribbean, Southeast Asia, South Asia, and Sub-Saharan Africa. The industry sectors are the 11 GICS industry sectors. The industry labels of one impact portfolio company and 175 traditional portfolio companies were missing and these were included only in the final Total row.
Data sources: PitchBook data feed as of May 2021.

Table III: Exit Outcomes of Impact Investments

	(1) Traditional Company Mean	(2) Impact Present	(3) Climate Impact Present	(4) Environment Impact Present	(5) Job and Equity Impact Present	(6) Concessionary Impact Present
IPO, Merger, or Acquisition	0.165	-0.027***	-0.012	-0.038***	-0.052***	-0.049***
		(0.005)	(0.011)	(0.009)	(0.006)	(0.011)
Merger or Acquisition	0.133	-0.017***	-0.012	-0.029***	-0.042***	-0.035***
		(0.004)	(0.011)	(0.008)	(0.005)	(0.011)
IPO	0.032	-0.009***	0.000	-0.008**	-0.011***	-0.014***
		(0.002)	(0.006)	(0.004)	(0.002)	(0.004)
Months Btwn First Deal and Exit	62.562	15.267***	17.013***	21.924***	17.814***	22.936***
		(1.677)	(3.789)	(3.975)	(2.790)	(4.666)
Sector FE		Yes	Yes	Yes	Yes	Yes
First Financing Year FE		Yes	Yes	Yes	Yes	Yes
Number of Impact Firms	0	6,066	1,019	1,425	3,063	881
Number of Traditional Firms	204,640	204,640	204,640	204,640	204,640	204,640

Specification: Observations are companies funded by venture capital or growth equity investors by May 2021. In column 1, we present the mean of the outcome shown in the rows for Traditional Companies. Traditional Companies have never had an impact investor; there are 204,640 in our sample. In columns 2 through 6, we show the coefficient and standard error of the difference between Traditional Companies and the group indicated in the header of the column. In column 2, Impact Present indicates a company that has at least one impact investor; there are 6,066 such companies. Columns 3 through 5 represent companies who have had at least one impact investor in the SDG bucket listed in the header. Impact Present companies that have never had an SDG bucket impact investor listed in the header are dropped from the column. For example, column 3 represents companies who have had at least one Climate impact investor. Impact Present companies with no Climate impact investor are not included in Columns 3-5. The same logic applies to column 6 as well, which represents concessionary impact investors. We characterize impact investors as concessionary based on the information presented on their website. Fixed effects for sector and first year of financing are noted. Robust standard errors are in parentheses.

Outcomes: Outcomes are described in the rows of the table. The outcome in row 1 is whether the company had an IPO, a merger, or an acquisition. It is the union of the outcomes in rows 2 and 3. The outcome in row 4 is the number of months between the date of the first deal and the date of an exit (IPO, acquisition, or merger). The sample in row 4 is limited to companies that achieve an exit (as defined above) and for which the first investment date and the exit date are not missing.

Data source: PitchBook data feed as of May 2021. We use Pitchbook's detailed 215 industry classifications as sector fixed effects.

Table IV: Do Impact Investors Invest in Government-Interested Companies?
An Analysis Using Small Business Innovation Research (SBIR) Awards and Patents

	(1) Any Predeal Award	(2) Any Predeal Award	(3) Log Predeal Awards	(4) Log Predeal Awards
Panel A: SBIR Awards				
Impact Present	0.020***	0.019***	0.024***	0.022***
	(0.003)	(0.003)	(0.004)	(0.004)
State Fixed Effect	No	Yes	No	Yes
Founding Year Fixed Effect	No	Yes	No	Yes
Industry Fixed Effect	No	Yes	No	Yes
Adj. R-squared	0.001	0.026	0.001	0.024
N Observations	74,622	74,622	74,622	74,622
Mean Traditional	0.011	0.011	0.012	0.012
	(1) Any Predeal Gov't-Interested Patent	(2) Any Predeal Gov't-Interested Patent	(3) Log Predeal Gov't-Interested Patents	(4) Log Predeal Gov't-Interested Patents
Panel B: Gov't-Interested Patents				
Impact Present	0.004**	0.003*	0.005**	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)
State Fixed Effect	No	Yes	No	Yes
Founding Year Fixed Effect	No	Yes	No	Yes
Industry Fixed Effect	No	Yes	No	Yes
Adj. R-squared	0.000	0.013	0.000	0.011
N Observations	74,622	74,622	74,622	74,622
Mean Traditional	0.004	0.004	0.004	0.004

Specification: Observations are U.S. companies funded by venture capital or growth equity investors by May 2021. Impact Present indicates whether the company received an investment from an impact investor. Both panels estimate Specification 1 in the paper. In Panel A, Mean Traditional value under columns 1 and 2 is the proportion of traditional firms that have received a predeal SBIR award. Mean Traditional value under columns 3 and 4 is the average log of predeal SBIR awards among traditional firms. In Panel B, Mean Traditional value under columns 1 and 2 is the proportion of traditional firms that have filed predeal for a government-interested patent. Mean Traditional value under columns 3 and 4 is the average log of government-interested patents among traditional firms. Prior to taking the log of SBIR awards and patents, we add a value of one to account for zeros. Fixed effects for state, founding year, and industry are noted. Robust standard errors are in parentheses.

Outcomes: In Panel A, the outcome in columns 1 and 2 is a dummy indicating if the firm received an SBIR award within 5 years prior to the first deal; in columns 3 and 4, the log of the number of awards within 5 years prior to the first deal. We count the number of SBIR awards of either phase and do not count rejected SBIR proposals. In Panel B, the outcome in columns 1 and 2 is a dummy indicating if the firm received any government-interested patent in the 5 years prior to the first deal; in columns 3 and 4, the log of the number of government-interested patents filed in 5 years prior to the first deal. We count the number of government-interested patents ultimately granted, which excludes unsuccessful or withdrawn applications.

Data sources: PitchBook data feed as of May 2021. SBIR awards are from SBIR database at www.sbir.gov/awards# (version of March 27, 2024). Government-interested patents are from the sample created by Gross and Sampat (2024).

Table V: Do Impact Investors Invest in Government-Interested Companies?
A Difference-in-Difference Analysis Using Small Business Innovation Research (SBIR) Awards and Patents

	(1)	(2)	(3)	(4)
	Any SBIR Award	Any SBIR Award	Any Gov't-Interested Patent	Any Gov't-Interested Patent
Impact * Raise	0.0092**	0.0070**	-0.0002	-0.0004
	(0.0036)	(0.0031)	(0.0020)	(0.0019)
Impact	0.0195***		0.0076***	
	(0.0044)		(0.0019)	
Raise	0.0184***	0.0071***	0.0020***	0.0005
	(0.0007)	(0.0006)	(0.0003)	(0.0003)
Firm Fixed Effect	No	Yes	No	Yes
Year Fixed Effect	No	Yes	No	Yes
Adj. R-squared	0.0032	0.7448	0.0008	0.4310
N Observations	397,300	397,300	358,262	358,262
Mean Value	0.0375	0.0375	0.0051	0.0051

Specification: This table estimates Specification 2 in the paper. Observations are on a company-year level, and the sample includes U.S. companies funded by venture capital or growth equity investors by May 2021. In columns 1 and 2, there are 2,686 impact companies and 49,939 non-impact companies. In columns 3 and 4, there are 2,686 impact companies and 49,949 non-impact companies. Impact is a binary indicator for whether the company has at least one impact investor. Raise is a binary indicator that takes a value of one for the year in which the company has a raise (normalized to year 0 in our analysis) and all years after (years 1-5); it takes a value of 0 for all years prior to the raise (normalized to years -5 to -1). Impact*Raise is an interaction between these two binary indicators. Fixed effects for firm and year are noted. Robust standard errors clustered at the company level are in parentheses.
Outcomes: The outcome in columns 1 and 2 is a dummy indicating if the firm received an SBIR award in that year. We count SBIR awards of either phase, and do not count rejected SBIR proposals. The outcome in columns 3 and 4 is a dummy indicating if the firm filed a government-interested patent in that year. We only examine government-interested patents ultimately granted, which excludes unsuccessful or withdrawn applications.
Data sources: PitchBook data feed as of May 2021. SBIR awards are from SBIR database at www.sbir.gov/awards# (version of March 27, 2024). Government-interested patents are from the sample created by Gross and Sampat (2024).

Table VI: What are the Socioeconomic Predictors of Impact Investments?

	(1) Traditional Company Mean	(2) Impact Present	(3) Climate Impact Present	(4) Environment Impact Present	(5) Job and Equity Impact Present	(6) Concessionary Impact Present
United-Stated Based Companies						
Median Household Income USD	70000.66	-396.29	4089.44***	3230.83***	-281.64	411.62
		(317.92)	(762.10)	(737.26)	(505.48)	(943.43)
Population Density (Person/sq.mi)	9520.22	-2.11	795.23	-1327.89*	1608.70**	-956.88
		(372.31)	(798.72)	(731.34)	(682.44)	(1042.02)
Black and Hispanic Population Percent * 100	30.12	-1.30***	-0.78	-2.02***	1.86***	-0.95
		(0.34)	(0.74)	(0.75)	(0.54)	(0.96)
Deaths from Drugs or Alcohol Percent * 100	0.69	0.01**	-0.02***	-0.03***	-0.00	0.03***
		(0.00)	(0.01)	(0.01)	(0.00)	(0.01)
No High School Diploma Percent * 100	13.99	-0.33***	-0.16	-0.61**	0.08	-0.55*
		(0.10)	(0.25)	(0.25)	(0.15)	(0.29)
Bachelor or Graduate Degree Percent * 100	48.16	1.16***	3.39***	2.57***	1.01***	0.70
		(0.24)	(0.58)	(0.57)	(0.35)	(0.71)
Poverty Percent * 100	13.11	-0.02	-0.15	-0.30***	0.16**	0.02
		(0.05)	(0.11)	(0.11)	(0.08)	(0.14)
All Companies						
GDP Per Capita USD	40750.89	-4123.59***	706.71	-12466.70***	-9220.11***	-7431.97***
		(330.85)	(713.53)	(731.65)	(493.83)	(858.29)
Industry FE		Yes	Yes	Yes	Yes	Yes
First Financing Year FE		Yes	Yes	Yes	Yes	Yes
Number of Impact Firms	0	6,066	1,019	1,425	3,063	881
Number of Traditional Firms	204,640	204,640	204,640	204,640	204,640	204,640

Specification: Observations are companies funded by venture capital or growth equity investors by May 2021. In column 1, we present the mean of the outcome shown in the rows for Traditional Companies. Traditional Companies have never had an impact investor; there are 204,640 in our sample. In columns 2 through 6, we show the coefficient and standard error of the difference between Traditional Companies and the group indicated in the header of the column. In Column 2, Impact Present indicates a company that has at least one impact investor; there are 6,066 such companies. Columns 3 through 5 represent companies who have at least one impact investor in the SDG bucket listed in the header. Impact Present companies that have never had an SDG bucket impact investor listed in the header are dropped from the column. For example, column 3 represents companies who have had at least one climate impact investor. Impact Present companies with no climate impact investors are not included in columns 3. The same logic applies to column 6 as well, which represents concessionary impact investors. We characterize impact investors as concessionary based on the information presented on their website. Fixed effects for industry and first year of financing are noted. Robust standard errors clustered at the company level are in parentheses.

Outcomes: Outcomes are described in the rows of the table. The outcomes in rows 1-6 are calculated at the U.S. county level and hence only U.S. companies are considered. In row 7, GDP Per Capita USD is presented at the country level. Outcomes are assigned to companies based on the headquarters of the company as specified in the first round of investment. Observation numbers vary across rows due to missing data on location of company headquarters or due to missing outcome data.

Data sources: PitchBook data feed as of May 2021. Household income (United States Census Bureau 2011); Population density (United States Census Bureau 2021); Education attainment and Black-Hispanic population (United States Census Bureau 2020): Causes of drug and alcohol deaths (National Center for Health Statistics 2020); and GDP per capita (constant 2015 USD) (World Bank 2020).

Table VII: Percentage of Rounds that are Co-invested With a Traditional Investor

	(1) Only Traditional Investors	(2) At Least One Impact Investor	(3) At Least One Climate Investor	(4) At Least One Environment Investor	(5) At Least One Job and Equity Investor	(6) At Least One Concessionary Investor
Entire Sample	31.3%	60.3%	73.49%	58.79%	54.01%	64.4%
VC Rounds	33.0%	63.7%	79.41%	64.72%	57.22%	67.0%
PE Growth Rounds	11.7%	26.1%	29.59%	25.54%	25.97%	27.1%
2000-2005	56.7%	65.9%	86.27%	55.32%	52.00%	50.0%
2005-2010	45.1%	68.4%	71.50%	61.31%	63.01%	45.7%
2010-2015	33.4%	56.0%	73.73%	54.79%	44.93%	63.1%
2015-2020	31.2%	63.5%	77.45%	61.25%	56.91%	69.5%
2020-2022	41.5%	77.8%	81.92%	75.78%	78.50%	91.9%
1st Round	24.2%	45.3%	61.51%	41.45%	38.36%	51.3%
Later Round	49.3%	78.0%	84.82%	79.56%	71.83%	79.6%
Total Deals	355,811	8,125	1,422	1,849	4,005	1,062

Note: In this table, we present the percent of financing rounds that are co-invested with a traditional investor. In column 1, we limit the sample to financing rounds that only have traditional investors (and so the numbers reflect the percentage of rounds with more than one traditional investor). In column 2, the sample comprises all financing rounds with at least one impact investor. Columns 3 through 6 show the percentages for financing rounds that include at least one Climate, Environment, Job and Equity, and concessionary investor. At the bottom of the table are the total rounds in each of the relevant samples. Row 1 presents the co-investment percentages for the full sample reflected in the column headers. Rows 2 and 3 present the co-investment percentages for the samples restricted to either VC or growth equity. Rows 4 through 8 present the co-investment percentages for the samples restricted by financing year. Rows 9 and 10 present the co-investment statistics for the sample restricted by whether the round is the first round in which a traditional/impact/SDG impact/concessionary impact investor was present, or whether it is a subsequent round.
Data source: PitchBook data feed as of May 2021.

Table VIII: Do Impact Investors Help Create New Industries?

	(1) Traditional Company Mean	(2) Impact Present	(3) Climate Impact Present	(4) Environment Impact Present	(5) Job and Equity Impact Present	(6) Concessionary Impact Present
Pioneer (First 10)	0.013	0.006***	0.010**	0.010***	0.007***	0.007*
		(0.002)	(0.005)	(0.004)	(0.002)	(0.004)
Pioneer (First 20)	0.026	0.012***	0.020***	0.029***	0.012***	0.018***
		(0.002)	(0.006)	(0.006)	(0.003)	(0.006)
Pioneer (First 30)	0.038	0.019***	0.034***	0.045***	0.020***	0.026***
		(0.003)	(0.008)	(0.007)	(0.004)	(0.008)
Pioneer (First 40)	0.050	0.024***	0.044***	0.060***	0.023***	0.037***
		(0.003)	(0.009)	(0.008)	(0.004)	(0.009)
First Financing Year FE		Yes	Yes	Yes	Yes	Yes
Number of Impact Firms	0	6,066	1,019	1,425	3,063	881
Number of Traditional Firms	204,640	204,640	204,640	204,640	204,640	204,640

Specification: This table estimates Specification 3 in the paper. Observations are companies funded by venture capital or growth equity investors by May 2021. In column 1, we present the mean of the outcome shown in the rows for Traditional Companies. Traditional Companies have never had an impact investor; there are 204,640 in our sample. In columns 2 through 6, we show the coefficient and standard error of the difference between Traditional Companies and the group indicated in the header of the column. In Column 2, Impact Present indicates a company that has at least one impact investor; there are 6,066 such companies. Columns 3 through 5 include companies who have had at least one impact investor in the SDG bucket listed in the header. Impact Present companies that have never had an SDG bucket impact investor listed in the header are dropped from the column. For example, column 3 represents companies who have had at least one climate impact investor. Impact Present companies with no climate impact investors are not included in columns 3. The same logic applies to column 6 as well, which represents concessionary impact investors. We characterize impact investors as concessionary based on the information presented on their website. Fixed effects for first year of financing are noted. Robust standard errors clustered at the company level are in parentheses.

Outcomes: Outcomes are described in the rows of the table. The Pioneer outcomes are indicators for whether the company is among the first 10, 20, 30, or 40 companies, respectively, within its industry to have a financing round in our dataset. We use the first deal date of the company to create the indicator. If the first deal date is missing, we omit the company from the analysis.

Data source: PitchBook data feed as of May 2021. We use PitchBook's detailed 215 industry classification of the companies in our sample.

Table IX: Are Impact Investors Cyclical Investors?

				Log Deal Number			
	(1) Log Deal Number	(2) Deal Number	(3) Log Deal Amount	(4) Climate Impact Present	(5) Environment Impact Present	(6) Job and Equity Impact Present	(7) Concessionary Impact Present
Impact*$MB_{(t-1)}$	-0.232***	-475.317***	-0.150***	-0.321***	-0.303***	-0.333***	-0.369***
	(0.046)	(110.494)	(0.055)	(0.062)	(0.066)	(0.060)	(0.068)
$MB_{(t-1)}$	0.150***	246.476**	0.136**	0.227***	0.216***	0.186***	0.219***
	(0.052)	(120.088)	(0.066)	(0.075)	(0.076)	(0.064)	(0.074)
Impact	-2.607***	170.777	-4.171***	-3.346***	-3.282***	-2.825***	-3.333***
	(0.172)	(347.562)	(0.232)	(0.231)	(0.241)	(0.222)	(0.251)
Deal Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.937	0.389	0.897	0.906	0.912	0.926	0.914
N Observations	682	682	682	682	682	682	682

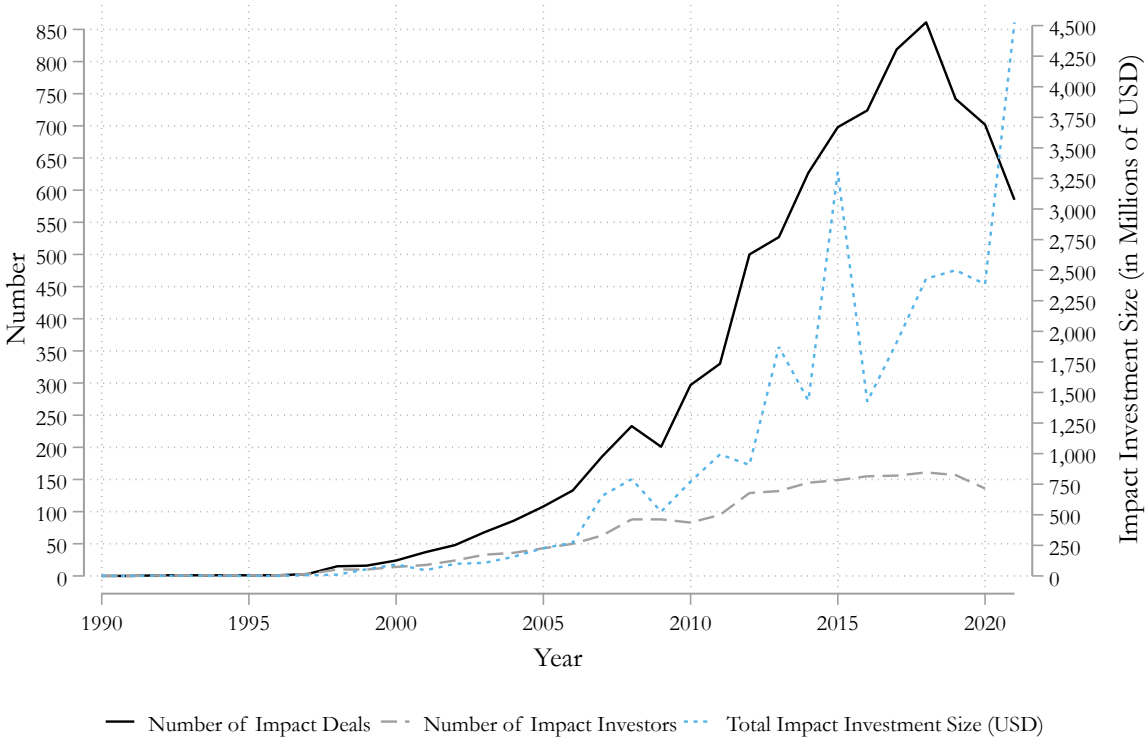
Specification: This table estimates Specification 4 in the paper. Observations are at a sector (based on the 11 GICS industry sectors)-by-year level for the period from 1990 to 2021, as well as impact vs. non-impact. Impact is a dummy that is equal to 1 for the deals that receive funding from at least one impact investor, and 0 otherwise. $MB_{(t-1)}$ is the lagged sector market-to-book ratio, calculated following Daniel and Titman (2006) and Fama and French (1992). All regressions include deal year and sector fixed effects. Robust standard errors are in parentheses. Results are also robust to using log of market-to-book instead of levels. Columns 4 through 7 are subsets of column 1 and include only traditional investors and impact investors in the SDG bucket listed in the header or concessionary investors.
Outcomes: The outcomes in columns 1 and 4 through 7 are the log of the total annual number of deals. The outcome in column 2 is the (unlogged) total annual number of deals. The outcome in column 3 is the log of the total annual deal amount.
Data sources: PitchBook data feed as of May 2021. The MB ratios are computed using WRDS.

Table X: Do Impact Investors Invest in Government-Interested Companies?
An Analysis Using Small Business Innovation Research (SBIR) Awards and Patents

	Any Predeal Award				
	(1) All Impact Present	(2) Climate Impact Present	(3) Environment Impact Present	(4) Job and Equity Impact Present	(5) Concessionary Impact Present
Panel A: SBIR Awards					
Impact Present	0.020***	0.038***	0.036***	0.009**	0.032***
	(0.003)	(0.010)	(0.009)	(0.004)	(0.011)
State Fixed Effect	No	No	No	No	No
Founding Year Fixed Effect	No	No	No	No	No
Industry Fixed Effect	No	No	No	No	No
Adj. R-squared	0.001	0.001	0.001	0.000	0.000
N Observations	74,622	72,146	72,145	72,807	71,989
Number of Impact Firms	2,981	505	504	1,166	348
Number of Traditional Firms	71,641	71,641	71,641	71,641	71,641
	Any Predeal Gov't-Interested Patent				
	(1) All Impact Present	(2) Climate Impact Present	(3) Environment Impact Present	(4) Job and Equity Impact Present	(5) Concessionary Impact Present
Panel B: Gov't-Interested Patents					
Impact Present	0.004**	0.010*	0.014**	-0.000	0.002
	(0.002)	(0.005)	(0.006)	(0.002)	(0.004)
State Fixed Effect	No	No	No	No	No
Founding Year Fixed Effect	No	No	No	No	No
Industry Fixed Effect	No	No	No	No	No
Adj. R-squared	0.000	0.000	0.000	-0.000	-0.000
N Observations	74,622	72,146	72,145	72,807	71,989
Number of Impact Firms	2,981	505	504	1,166	348
Number of Traditional Firms	71,641	71,641	71,641	71,641	71,641

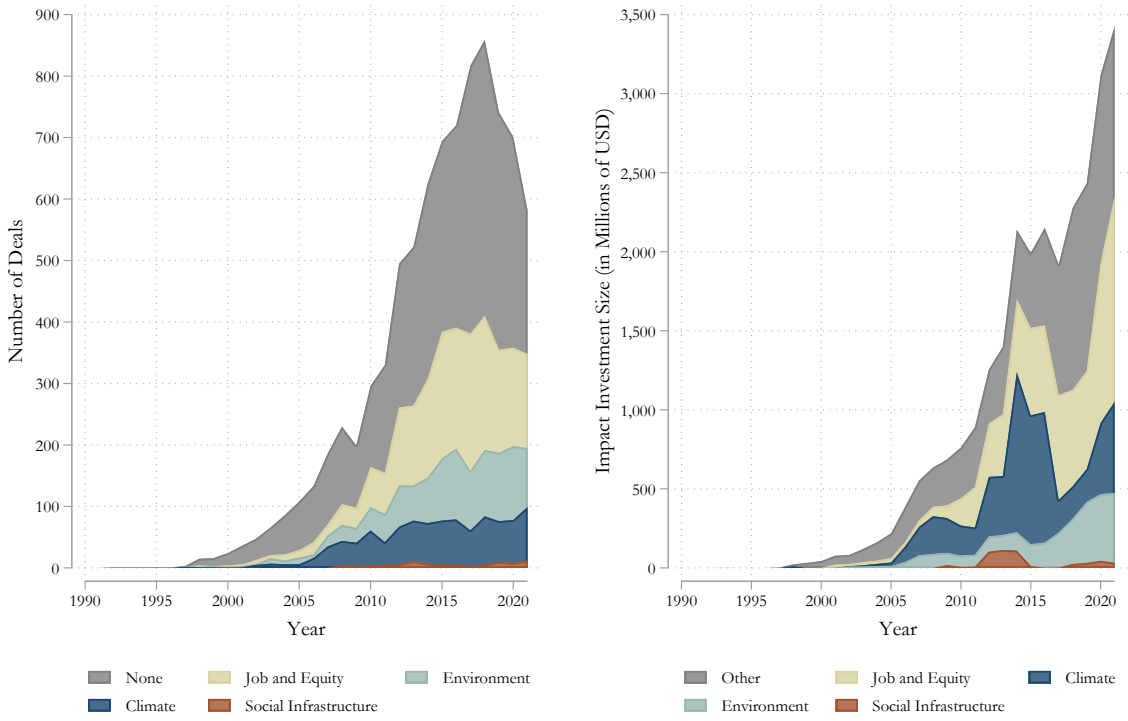
Specification: In Panels A and B of this table, observations are U.S. companies funded by venture capital or growth equity investors by May 2021. Impact Present indicates whether the company received an investment from an impact investor. Both panels estimate Specification 1 in the paper. In both panels, Columns 2 through 5 are subsets of column 1 and include only traditional investors and impact investors in the SDG bucket listed in the header or concessionary investors. Fixed effects are noted; we use the 25 GICS industry groups in Pitchbook for industry fixed effect. Robust standard errors are in parentheses.
Outcomes: The outcome in Panel A is a dummy indicating if the firm received an SBIR award in the 5 years prior to the first deal. The outcome in Panel B is a dummy indicating if the firm filed for a government-interested patent in the 5 years prior to the first deal. We only consider granted government-interested patents and successfully awarded SBIR grants.
Data sources: PitchBook data feed as of May 2021. SBIR awards are from SBIR database at www.sbir.gov/awards# (version of March 27, 2024). Government-interested patents are from the sample created by Gross and Sampat (2024).

Figure 1: Number of Impact Deals, Number of Impact Investors, and Estimated Investment Amount by Year



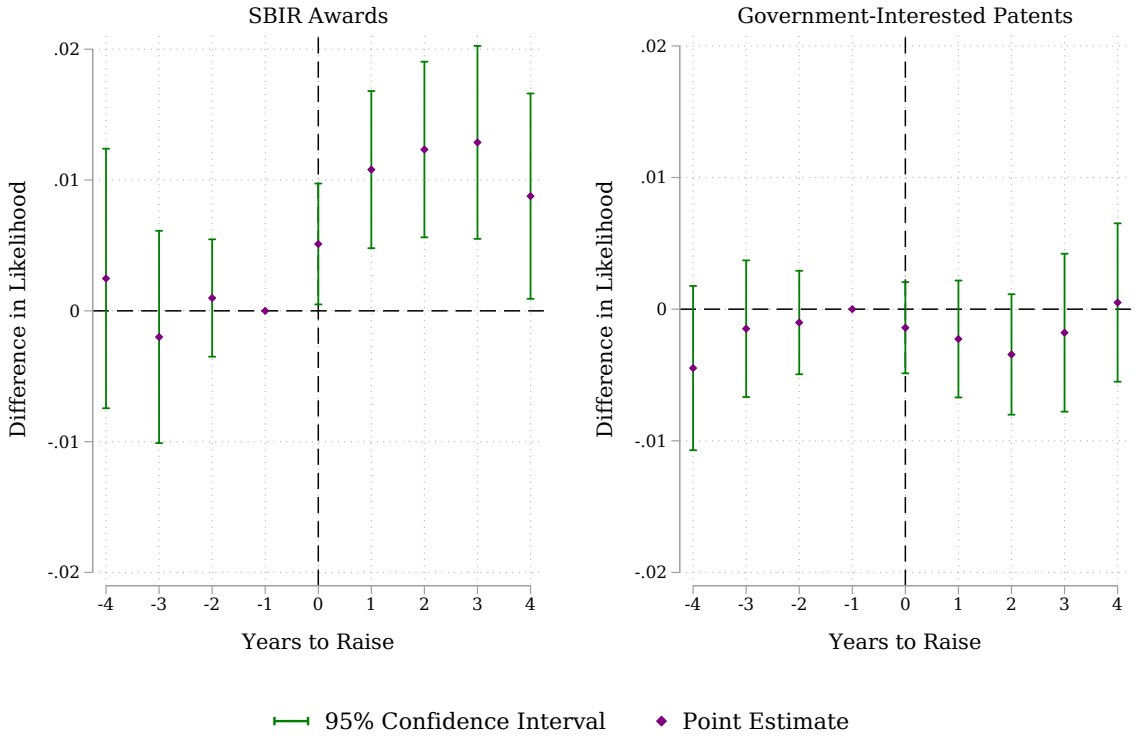
In this figure we plot the total number of impact deals (left axis), number of unique impact investors (left axis), and total investment from across impact deals in millions of USD (right axis) in our dataset between the years 1990 and 2021. We have data only from January to April 2021, so we normalize the 2021 number of impact deals and total impact investment size by linearly projecting based on the first four months in 2021. There are no impact deals in the years 1990 and 1991. We do not observe the investor-specific financing in each round; we only observe the total financing by all investors in that round. We therefore divide the total financing in each round by the number of investors in that round and assign that (equal) portion to each investor. The outcome in the right axis is thus the sum of this measure for all impact investors in each year. During the sample period, a total of 277 impact investors invested in 8,125 unique deals involving 6,066 distinct portfolio companies.

Figure 2: Number of Impact Deals and Moving Average of Investment Amount by SDG Bucket and Year



In this figure, we plot the total number of impact deals (left graph) and a moving three-year average of the total investments from across impact deals in millions of USD (right graph) in our dataset between the years 1990 and 2021 across four SDG buckets. We have data only from January to April 2021, so we normalize the 2021 number of impact deals and total investment size by linearly projecting based on the first four months in 2021. The moving average is calculated by averaging the focal year with one year prior and after. For 2021, we average only the year prior and the focal year (2021). There are no impact deals in the years 1990 and 1991. We do not observe the investor-specific financing in each round; we only observe the total financing by all investors in that round. We therefore divide the total financing in each round by the number of investors in that round and assign that (equal) portion to each investor. The outcome in the right graph is thus the sum of this measure for all impact investors in each year in the SDG bucket.

Figure 3: Impact of SBIR Awards and Government-Interested Patents on Outcome Over Time: Pre- and Post-Award Analysis



In this figure, we plot the event study estimates of the increased likelihood of receiving an SBIR award (left graph) or a government-interested patent (right graph) around the time of a company's first investment. The point estimates are the difference in likelihood between impact and non-impact companies of receiving an SBIR award or filing a government-interested patent in each year. The green lines depict the 95% confidence intervals for point estimates. The x-axis shows the years relative to the first investment, with 0 indicating the year the first deal was made. The y-axis represents the estimated change in likelihood of receiving an SBIR award of filing a patent.

Online Appendix for "What Do Impact Investors Do Differently?"

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November 21, 2024

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A Data Appendix

This Online Appendix provides a description of the construction of the data set and the sample selection decisions made for this paper. The impact database construction process is described in great detail in Burton et al. (2021).

A.1 Impact Investor Identification

In Table A.I, we summarize how we create our final set of impact investors used in our analyses. Table A.II provides the geographical location of these investors. 150, or about 55 percent, of the investors are based in the United States.

Table A.I: Creating the Set of Impact Investors analyzed in Study

	Modification	Remaining
PII Impact Investors		445
Investors with no specific impact mandate	-46	399
Foundations	-3	396
No match found in PitchBook data feed	-105	291
No deal information in PitchBook	-1	290
No VC or PE growth investments	-9	281
Subsidiaries or groups with failed transactions	-5	276
Fund-level investor	+1	277
Impact Investors After Screening		***277***

Table A.II: Impact Investors by Location

Location	Number of Investors
US	150
Non-US	123
Missing location	4
Total	***277***

In Table A.III below we provide a complete list of the 277 impact investors in our sample.

Table A.III: All Impact Investors in the Analysis

1	1st Course Capital
2	3Sisters Sustainable Management
3	3x5 Partners
4	Aavishkaar Capital
5	Accion
6	Actis
7	Acumen Fund
8	Adena Ventures
9	Adenia Partners
10	Adobe Capital
11	Advance Global Capital
12	Advantage Capital (Saint Louis)
13	AgDevCo
14	Agora Partnerships
15	AiiM Partners
16	AKAMAI Capital
17	Albright Capital Management
18	Alitheia Capital
19	AlphaMundi Group
20	Alter Equity
21	Alterfin
22	Ambar Capital y Expansion SEGCR
23	Ananda Impact Ventures
24	Ankur Capital
25	Aqua-Spark
26	Aravaipa Ventures
27	Arborview Capital
28	ArcTern Ventures
29	Armstrong Asset Management
30	Bain Capital Double Impact
31	Bamboo Capital Partners
32	BELLE Impact Fund
33	Bethnal Green Ventures
34	Better Ventures
35	Big Issue Invest
36	Big Society Capital
37	BlueHub Capital
38	BlueIO
39	BlueOrchard Finance
40	BonVenture
41	Breakthrough Energy Ventures
42	Bridges Fund Management
43	Bridgeway Capital Management
44	BrightPath Capital Partners
45	Bronze Investments Investment
46	Business Partners International
47	California Clean Energy Fund
48	Calvert Impact Capital
49	Capria Ventures
50	Caspian Impact Investment Advisors
51	CEI Community Ventures
52	CEI Ventures Management
53	Centre for Innovation Incubation and Entrepreneurship
54	City Light Capital
55	Clean Energy Ventures
56	Cleantech Ventures
57	Climate Change Capital
58	Climate Fund Managers
59	Closed Loop Partners
60	Co-Creation Hub
61	Community Development Venture Capital Alliance
62	Community Investment Management
63	Community Reinvestment Fund
64	Congruent Ventures
65	Contrarian Drishti Partners
66	Convergence Partners (Africa)
67	Core Innovation Capital
68	Corporacion Inversor
69	Creation Investments Capital Management
70	Cultivian Sandbox Ventures
71	Dayton Development Coalition
72	DBL Partners
73	DC Community Ventures
74	Dev Equity
75	Developing World Markets
76	Développement international Desjardins
77	Dolma Impact Fund
78	Easton Capital Investment Group
79	EcoEnterprises Fund
80	Edge Growth
81	Elevar Equity
82	Encourage Capital
83	Endeavor Catalyst
84	Energy Access Ventures
85	Energy Foundry
86	EnerTech Capital
87	Enhanced Capital Partners
88	Ennovent
89	Enterprise Community Investment
90	Equator Capital Partners
91	ETF Partners
92	European Financing Partners

Note: See Online Appendix Section A for an explanation of how we arrived at this final list.

Table A.III: All Impact Investors in the Analysis (cont.)

93	FE Global Clean Energy
94	Fifth Season Ventures
95	Finance in Motion
96	Fledge
97	Flint Atlantic Capital
98	Found8
99	GAWA Capital Partners
100	Generation Investment Management
101	Global Cleantech Capital
102	Global Energy Efficiency and Renewable Energy Fund
103	Global Environment Fund
104	Global Partnerships
105	Good Capital
106	Goodwell Investments
107	Grassroots Business Fund
108	Grassroots Capital Management
109	Gray Ghost Ventures
110	Green Investment Group (UK)
111	Greenhouse Capital Partners
112	Greenmont Capital Partners
113	Greensoil Investments
114	Grupo ECOS
115	HCAP Partners
116	IGNIA Partners
117	Ignite Impact Fund
118	Impact America Fund
119	Impact Engine
120	Impact Finance Management
121	Impact First Investments
122	Impact Investment Exchange Asia
123	Impact Investment Group
124	Impact Investment Partners
125	Impax Asset Management Group
126	Incofin Investment Management
127	Inerjys
128	Injaro
129	Innosphere Ventures
130	Insitor Impact Asia Fund
131	Invest Detroit
132	InvestEco Capital
133	Invested Development
134	Investisseurs & Partenaires
135	Iona Capital
136	iYa Ventures
137	Jacana Partners
138	Jadeberg Partners
139	Juvo Ventures
140	Kaizenvest
141	Kendall Investments
142	Kentucky Highlands Investment
143	Kingdom Capital
144	Kukula Capital
145	Lafise Investment Management
146	Leapfrog Investments
147	Leopard Capital
148	Lightrock India (formerly known as LGT Lightstone Aspada)
149	Lightrock
150	Lightsmith Group
151	Linn Grove Ventures
152	Local Initiatives Support Corporation
153	LoftyInc Capital Management
154	Lok Capital
155	Lotus Impact
156	Maine Venture Fund
157	Masdar Capital
158	MCE Social Capital
159	Media Development Investment Fund
160	Medical Credit Fund
161	Menterra Venture Advisor
162	Meridiam Infrastructure
163	Meridian Management Group
164	Meritus Ventures
165	MGM Innova Capital
166	MicroVest Capital Management
167	Mindfull Investors
168	Minerva Capital Group
169	Mirova
170	Moringa
171	Mountaineer Capital
172	Murex Investments
173	Natural Capital Investment Fund
174	Nesta Impact investment
175	New Hampshire Community Loan Fund
176	New Markets Venture Partners
177	New Mexico Community Capital
178	New Sparta Assets Management
179	NewSchools Venture Fund
180	NewWorld Capital Group
181	Next Wave Impact
182	NextEnergy Capital
183	NGEN Partners
184	Nordic Impact Funds

Note: See Online Appendix Section A for an explanation of how we arrived at this final list.

Table A.III: All Impact Investors in the Analysis (cont.)

185 North Sky Capital
186 Novastar Ventures
187 Oikocredit Ecumenical Development Cooperative Society
188 Oltre Venture
189 Omnivore
190 Pacific Community Ventures
191 Pangaea Ventures
192 Patamar Capital
193 PC Capital
194 Pearl Capital Partners
195 Pegasus FinInvest Advisory
196 Penn Venture Partners
197 Persistent Energy Capital
198 PG Impact Investments
199 Phatisa
200 Physic Ventures
201 PrairieGold Venture Partners
202 Progression Capital Africa
203 Quadria Capital Investment Management
204 Qualitas Equity
205 Quona Capital
206 RAIN Source Capital
207 Reach Capital
208 Renewal Funds
209 responsAbility
210 Rethink Capital Partners
211 Ronoc
212 Root Capital
213 RSF Social Finance
214 Rubio Impact Ventures
215 Safer Made
216 Sarona Asset Management
217 Secha Capital
218 Ship2B Ventures
219 SI Capital
220 Silk Invest
221 Sindicatum Carbon & Energy Management
222 SJF Ventures
223 Small Business Community Capital
224 Small Enterprise Assistance Funds (SEAF)
225 Social Capital
226 Social Impact Capital
227 Social Venture Fund
228 Social Ventures Australia
229 Spark Ventures
230 StartGreen Capital
231 Strategic Development Solutions
232 SunFunder
233 Sustainable Growth Management
234 SustainVC
235 Symbiotics
236 The Builders Fund
237 The Ecosystem Integrity Fund
238 The Forest Company
239 The JumpFund
240 TPG Alternative & Renewable Technologies
241 The Nature Conservancy
242 The Osiris Group
243 The Reinvestment Fund
244 The Social Entrepreneurs Fund
245 The Southern Appalachian Fund
246 The Water Council
247 Third Sphere Capital (Formerly known as Urban US)
248 The Rise Fund
249 Trillium Group
250 Triodos Investment Management
251 Triple Jump
252 Triple P Capital
253 True Wealth Ventures
254 Tsing Capital
255 Unitus Ventures
256 University Venture Fund
257 University Ventures
258 Unreasonable Capital
259 Uprising Capital
260 VentureWave Capital
261 Vermont Works Management Company
262 VestedWorld
263 VIC Venture Fund
264 Village Capital
265 Virgin Green Fund
266 Vision Ridge Partners
267 Vital Capital Investments
268 Vox Capital
269 Voxtra
270 WAVE Equity Partners
271 Wermuth Asset Management
272 West Virginia Jobs Investment Trust Board
273 WindSail Capital Group
274 Wireframe Ventures
275 Women's World Banking
276 XSML
277 Yunus Social Business

Note: See Online Appendix Section A for an explanation of how we arrived at this final list.

A.2 Traditional Investor Identification

Table A.IV: Breakdown of PitchBook Primary Investor Types[1]

Accelerator/Incubator	6,308	***Limited Partner***	***1,335***
Angel (individual)	***48,544***	***Merchant Banking Firm***	***205***
Angel Group	1,638	Mezzanine	151
Asset Manager	1,988	***Mutual Fund***	***96***
Business Development Company	***65***	Not-For-Profit Venture Capital	268
Corporate Development	***168***	***Other***	***12,556***
Corporate Venture Capital	***1,248***	Other Private Equity	116
Corporation	***67,539***	***PE-Backed Company***	***16,048***
Family Office	***1,300***	PE/Buyout	8,913
Fund of Funds	***204***	Real Estate	2,517
Fundless Sponsor	***43***	SBIC	48
Government	***1,893***	***Secondary Buyer***	***33***
Growth/Expansion	1,439	***Sovereign Wealth Fund***	***74***
Hedge Fund	***1,027***	***Special Purpose Acquisition Company***	***286***
Holding Company	***719***	***University***	***512***
Impact Investing	433	***VC-Backed Company***	***4,228***
Infrastructure	194	Venture Capital	19,439
Investment Bank	***869***	***Missing***	***915***
Lender/Debt Provider	539	***Total***	***203,898***

Next, we create a comparable set of traditional non-impact investors. In our study, we focus on venture capital and growth equity transactions because impact investors primarily invest in these deal types. Thus, we begin by screening for investors that primarily engage in these types of investments. Using the PitchBook data feed, we collect all the investors in the Venture Capital and Private Equity universes. These two universes include all the investors that have provided capital to private companies that have ever received venture capital, private equity, or growth equity funding. There are 203,898 investors in total.

We begin by removing our 445 impact investors from the 203,898 total investors. This results in removing 322 impact investors that match.[2] Next, we restrict attention to

[1]Primary Investor Types available in the PitchBook pre-venture, venture, and private equity data feed universes.

[2]We begin by matching the entire universe of 445 impact investors, but only 322 match to PitchBook.

investors that primarily invest in earlier-stage private capital investments (i.e., venture capital and growth equity). Table A.IV provides a breakdown of the total investors by PitchBook Primary Investor Type. As an initial screen, we exclude investors whose Primary Investor Types do not include venture capital or growth equity as a main strategy (e.g., hedge funds, foundations). Thus, we remove the types of investors that are italicized in Table A.IV.[3] This results in removing 160,035 investors. Next, to further ensure that the traditional investors are focused on VC and growth, we restrict our sample to focus on investors that have at least four private capital portfolio companies, thus removing investors that may only have one-off venture capital or growth equity investments (e.g., we do not want to include a mutual fund that has a few private equity investments, where private equity is not a main part of its investment strategy). Here, we remove 22,253 investors. Lastly, after some additional data cleaning steps, which include removing investors that did not engage in venture capital or growth equity transactions, duplicate investors, and investors with only failed transactions, we are left with 20,228 traditional investors in the final data set. See Table A.V for a summary of our screening process.

From Table A.VI, we see that 42 percent of traditional investors are headquartered in the United States.

Had we first removed the ambiguous cases and foundations, we would have had the 291 matches reported above in Table A.I.

[3]Based on our research, a few of the impact investors were misclassified by PitchBook into the italicized investor-type categories. We leave for future research reviewing the investor types of the non-impact investors.

Table A.V: Creating the Set of Traditional Investors Analyzed in Study

	Dropped	Remaining
Total Number of Investors in PitchBook's VC and PE Universes		203,898
PII Impact Investors (322/445 matched to Pitchbook)	322	203,576
Angel (individual)	48,544	155,032
Business Development Company	65	154,967
Corporate Development	168	154,799
Corporate Venture Capital	1,246	153,553
Corporation	67,534	86,019
Family Office	1,299	84,720
Fund of Fund	201	84,519
Fundless Sponsor	43	84,476
Government	1,893	82,583
Hedge Fund	1,025	81,558
Holding Company	719	80,839
Investment Bank	869	79,970
Limited Partner	1,333	78,637
Merchant Banking Firm	205	78,432
Mezzanine	150	78,282
Missing	915	77,367
Mutual Fund	96	77,271
Other	12,551	64,720
PE-Backed Company	16,046	48,674
Secondary Buyer	33	48,641
Sovereign Wealth Fund	74	48,567
Special Purpose Acquisition Company	286	48,281
University	512	47,769
VC-Backed Company	4,228	43,541
Investors with Fewer Than 4 Portfolio Companies	22,253	21,288
Investors Not Engaged in VC or PE Growth Transactions	488	20,800
Investors Dropped from Data Cleaning	572	20,228
Traditional Investors After Screening		***20,228***

Table A.VI: Traditional Investors by Location

Location	Number of Investors
US	8,551
Non-US	10,131
Missing location	1,546
Total	***20,228***

A.3 Portfolio Company Data for Impact and Traditional Investors

In this section, we describe the process by which we obtain the portfolio companies of both the impact investors and traditional investors and our data cleaning process.

First, we match the 277 impact investors to their portfolio companies, and then get 7,395 matches. We remove companies with missing impact deal information (103 companies dropped), companies that have only failed or postponed transactions (4 companies dropped), and companies that did not have any private equity growth or venture capital investments (973 companies dropped). Our last data cleaning step removes companies whose first transaction is a buyout (43 companies dropped), companies that have multiple buyout rounds (104 companies dropped), and companies that have an impact investment occurring only after the first exit (102 companies dropped). Since we are focused on studying earlier-stage investing, these steps eliminate situations when a publicly traded company is taken private, a subsidiary is spun out, or a private mature company is bought out by a private equity firm. We are left with 6,066 companies, which comprise our set of "impact portfolio companies." See Table A.VII for a summary of our data screening process. From Table A.VIII, we find that about 50 percent of the 6,066 impact companies

are headquartered in the United States.

Table A.VII: Number of Impact Portfolio Companies ("IPC")

	Dropped	Remaining
IPC of Impact Investors (N=277)		7,395
IPC missing deal information about impact investment	103	7,292
IPC only has failed/postponed transactions	4	7,288
No VC or PE growth investments	973	6,315
IPC dropped from data cleaning	249	6,066
Impact Portfolio Companies After Screening		***6,066***

Table A.VIII: Impact Portfolio Companies by Location

Location	Number of Companies
US IPCs	3,108
Non-US IPCs	2,947
Missing location	11
Total	***6,066***

Next, we gather the portfolio companies of the 20,228 traditional non-impact investors and conduct the same data cleaning steps as we did above.

We match 20,228 traditional investors to the PitchBook Investment data feed and obtain 320,037 portfolio companies. We remove 4,801 companies that also receive impact investments in addition to capital from traditional investors. We drop 66 portfolio companies that have only failed or postponed transactions. We drop 101,327 companies that did not receive either venture capital or growth equity investments. Our last data cleaning

step removes companies whose first transaction is a buyout (2,873 companies dropped), companies that have multiple buyout rounds (3,331 companies dropped), and companies that have a traditional investment occurring only after the first exit (2,999). Again, as we mentioned above, we are focused on studying earlier-stage investing, and these cleaning steps are used to eliminate situations when a publicly traded company is taken private, a subsidiary is spun out, or a private mature company is bought out by a private equity firm. We are left with 204,640 traditional companies from 20,228 traditional investors. All details of the data cleaning process are shown in Table A.IX below.

Table A.IX: Portfolio Companies of Traditional Investors ("Traditional PC")

	Dropped	Remaining
Traditional PCs (20,228 traditional investors)		320,037
Impact Portfolio Companies	4,801	315,236
Traditional PC only has failed/postponed transactions	66	315,170
No VC or PE growth investments	101,327	213,843
Traditional PCs dropped from data cleaning	9,203	204,640
Traditional Portfolio Companies After Screening		***204,640***

Of these 204,640 traditional companies, 79,246 (39 percent) are in the United States. See Table A.X below.

Table A.X: Traditional Portfolio Companies by Location

Location	Number of Companies
US Traditional PCs	79,246
Non-US Traditional PCs	124,943
Missing location	451
Total	***204,640***

A.4 Classifying Venture Groups into SDG Buckets

We wished to associate the impact investors with the different subclasses of investment, using the United Nations Social Development Goals. These 17 objectives were adopted by the United Nations in 2015 with the goal of ending poverty, protecting the planet, and ensuring peace and prosperity. We classify the impact investors into "buckets" associated with these SDGs by proceeding as follows.

Step 1

We first want to characterize each SDG with a set of keywords. To yield the first set of seeding words, we prompted ChatGPT 4 to provide a list of seeding words. We set the temperature parameter to 0 to make the output replicable. The prompt we used is:

> "Hey, I'm going to study the character of impact investment portfolio companies with the text of the company description. Can you try to provide me a dictionary of seeding words most likely to appear in company descriptions, by these categories: Sustainable farming, Air quality, Habitat conservation, Climate resilience, Gender Equality, Educational access, Job creation, Renewable energy, Microfinance, Healthcare access, Sustainable housing, Land restoration, Marine conservation, Pollution reduction, Waste reduction, Water conservation, Sustainable infrastructure. Ideally, 15 words for each category. I will provide one report to learn more about the impact

investment and you can also use your own knowledge. Report 1:"

Following this prompt, we provided three sections from the IRIS+ and SDGs report: the Methodology, Appendix A, and Appendix B sections of the Global Impact Investing Network's report *IRIS+ and the SDGs*.[4] We repeated this with Meta and Mistral to verify the list of seeding words, finding about 90% similarity between outputs (though we ultimately relied on the list from ChatGPT).

Table A.XI displays the seeding words associated with the 17 SDG categories.

[4]https://iris.thegiin.org/document/iris-and-the-sdgs/. We used the version originally published originally published in May 2019, revised in November 2023.

Table A.XI: SDG Seeding Words

Microfinance	**Healthcare Access**	**Sustainable Housing**	**Land Restoration**	**Marine Conservation**	**Pollution Reduction**	**Waste Reduction**	**Water Conservation**	**Sustainable Infrastructure**
financial inclusion	quality healthcare	affordable housing	land conservation	marine conservation	pollution control	waste management	water management	resilient infrastructure
microfinance services	healthcare services	housing access	habitat protection	marine protection	pollution reduction	waste reduction	water conservation	infrastructure development
financial aid	healthcare access	housing support	land restoration	marine restoration	pollution prevention	waste prevention	water sustainability	infrastructure systems
financial access	healthcare programs	housing programs	land protection	marine sustainability	pollution management	waste initiatives	water initiatives	infrastructure projects
financial support	healthcare systems	housing initiatives	land sustainability	marine initiatives	pollution integration	waste development	water development	infrastructure equity
financial resources	healthcare development	housing resources	land initiatives	marine programs	pollution development	waste resources	water resources	infrastructure support
financial initiatives	healthcare resources	housing support	land development	marine health	pollution initiatives	waste training	water training	infrastructure resources
financial services	healthcare training	housing training	land recovery	marine development	pollution systems	waste opportunities	water opportunities	infrastructure training
financial training	healthcare training	housing equity	land programs	marine opportunities	pollution projects	waste systems	water systems	infrastructure funding
financial access	healthcare access	housing sustainability	land health	marine support	pollution research	waste projects	water projects	infrastructure opportunities
financial systems	healthcare opportunity	housing growth	land equity	marine equity	pollution resources	waste resources	water funding	infrastructure initiatives
financial support	healthcare opportunities	housing development	land restoration	marine funding	pollution funding	waste improvement	water improvement	infrastructure growth
financial growth	healthcare training	housing restoration	land improvement	marine growth	pollution support	waste health	water health	infrastructure development
financial investment	healthcare projects	housing projects	land growth	marine sustainability	pollution solutions	waste sustainability	water sustainability	infrastructure improvement
financial initiatives	healthcare improvement	housing improvement	land quality	marine health	pollution health	waste health	water quality	infrastructure sustainability

Sustainable Farming	**Air Quality**	**Habitat Conservation**	**Climate Resilience**	**Gender Equality**	**Educational Access**	**Job Creation**	**Renewable Energy**
sustainable agriculture	clean air	habitat protection	climate adaptation	gender inclusion	quality education	job creation	clean energy
organic farming	air pollution	conservation efforts	climate resilience	gender roles	educational access	training programs	energy efficiency
crop rotation	emission reduction	habitat conservation	natural habitats	gender equality	education environments	job training	energy access
soil health	air monitoring	natural habitats	climate infrastructure	gender equity	education systems	job growth	energy access
pollution control	pollution control	biodiversity conservation	climate strategies	gender initiatives	education programs	job support	energy solutions
food security	air standards	protected areas	climate impacts	gender rights	education opportunities	job initiatives	energy projects
smallholder farms	air filters	conservation efforts	climate resilience	gender diversity	education equity	job skills	energy systems
rural economies	air purification	habitat management	climate adaptation	gender equity	education inclusion	job access	energy initiatives
farm training	air health	species protection	climate planning	gender opportunities	education quality	job stability	energy programs
crop productivity	air sustainability	habitat sustainability	climate initiatives	gender justice	education training	job growth	energy sustainability
agricultural risk	air health	conservation initiatives	climate projects	gender representation	education support	job stability	energy projects
food productivity	air improvements	conservation programs	climate impacts	gender diversity	education development	job support	energy sustainability
sustainable practices	air improvements	habitat health	climate policies	gender justice	education training	job access	energy growth
local support	air safety	air health	climate resilience	gender support	education quality	job employment	energy funding

Step 2

Next, we had three RAs classify 6,000 firms in two rounds, using the aforementioned seeding words as guidance. In the first round, we had them code PitchBook descriptions of 100 portfolio firms (50% impact, 50% traditional) to 3 RAs and had them (a) determine if the firm is an impact company, and (b) if so, determine one of the 17 categories for the firm. Note that we did not let the RAs know which companies in this sample were actually portfolio companies of impact or traditional investors. The RAs independently classified the **same** 100 companies in this round so that we could assess consistency in their results. The two original RAs agreed on the category 76% of the time. However, they tended to over-classify companies as traditional and had trouble with Job and Equity impact category. We consequently developed some examples and met with them prior to round 2 to suggest improvements in their categorization decisions. We later added a third reviewer, who agreed with the first to reviewers' classification decisions 68% of the time. We advised them similarly and added them to round 2 to speed up the process.

In the second round, we had the RAs **separately** classify the remaining 5,900 companies in the training sample.

Step 3

We then subjectively consolidated the 17 categories into four buckets: Climate, Environment, Jobs and Equity, and Social Infrastructure. Our motivation for doing so was that many of the topics had very few associated impact investments. Table A.XII below displays the 17 categories and their corresponding bucket to which they were assigned.

Table A.XII: SDG Buckets to Categories

Bucket	**Category**
Climate	Climate Resilience
Climate	Renewable Energy
Environment	Air Quality
Environment	Habitat Conservation
Environment	Land Restoration
Environment	Marine Conservation
Environment	Pollution Reduction
Environment	Sustainable Farming
Environment	Waste Reduction
Environment	Water Conservation
Job and Equity	Educational Access
Job and Equity	Gender Equality
Job and Equity	Healthcare Access
Job and Equity	Job Creation
Job and Equity	Microfinance
Social Infrastructure	Sustainable Housing
Social Infrastructure	Sustainable Infrastructure

We assigned each of the 6,000 firms to the corresponding SDG bucket.

Step 4

With the resulting training data, we fine-tuned a BERT model (bert-based-uncased) to score PitchBook descriptions of each firm against the five "buckets"–the four SDG buckets and a "No bucket" category (i.e., not an impact firm). The BERT model used as inputs the PitchBook description, the category to which the RA assigned the firm, and the associated bucket in which the category fell.

We split the 6,000 into training and test data. The training data was 80% of the observations (n = 4,800) and the test data was 20% (n = 1,200). We used a random state of 42 when splitting the data for replicability. After training the model, we ran it on the testing sample to calculate the F-1 score and assess accuracy, in addition to hand-checking results and distribution of scores. Originally, we trained the model to predict

the 17 SDG categories but the F-1 score was low (0.46) because the training data did not provide enough granularity for the model to predict accurately. So, we instead trained the model to predict the four aggregated buckets and the model was much stronger, with an F-1 score of 0.71. Based on this training data, the model examined the descriptions of the remaining 209 thousand PitchBook firms. For each company, the model returned a value from 0 to 1 for each of the five categories, with the sum of all categories adding to 1. The value was determined from BERT's cosine similarity between the description and its trained understanding of each SDG bucket. The model assigned the firm to the predicted SDG bucket (including no bucket) with the highest similarity score, such that each portfolio firm was assigned to one bucket.

Step 5

Having used the text to classify portfolio companies into SDG buckets, we now turn to classifying impact investors. We first counted the total number of deals for each impact investor over the entire sample period. We also counted the number of deals for each impact investor over the entire sample period that fell into the four SDG buckets.

For each impact investor, we divided the number of deals in each SDG bucket by the number of total deals. If 20% or more of the investors' deals were in a given bucket, then we associated the impact investor with that bucket. For example, if an investor had 100 deals and 30 of those were in Climate-categorized companies, then the investor is associated with the Climate bucket. Note that, unlike portfolio companies, investors may be placed into multiple SDG buckets. There were a very small number of investors associated with the Social Infrastructure bucket (8 impact investors and 61 impact present portfolio companies), so we dropped this from the analysis.

Table A.XIII below outlines the distribution of investor portfolios by SDG bucket. In total, 167 of the 277 impact investors are recorded as falling into only one of these three buckets. 53 are assigned to two such focuses, and two have three.

Table A.XIII: Investor Portfolio Composition Across SDG Buckets

Pct of Portfolio in SDG Bucket	Number of Impact Investors	Pct of Impact Investors	Number of Traditional Investors	Pct of Traditional Investors
Climate				
$\geq 10\%$	103	37%	2,274	11%
$\geq 20\%$	68	25%	1,167	6%
$\geq 40\%$	38	14%	425	2%
$\geq 50\%$	32	12%	321	2%
$\geq 60\%$	17	6%	187	1%
Environment				
$\geq 10\%$	132	48%	3,098	15%
$\geq 20\%$	90	33%	1,582	8%
$\geq 40\%$	34	12%	529	3%
$\geq 50\%$	24	9%	403	2%
$\geq 60\%$	16	6%	205	1%
Jobs and Equity				
$\geq 10\%$	153	55%	5,724	28%
$\geq 20\%$	121	44%	2,823	14%
$\geq 40\%$	60	22%	765	4%
$\geq 50\%$	49	18%	523	3%
$\geq 60\%$	36	13%	224	1%

Specification: This table shows the number and percentage of impact and traditional investors across different SDG buckets based on portfolio fraction thresholds. Portfolio fractions are calculated by dividing an investor's number of deals in a specific SDG bucket by the investor's total number of deals. The thresholds listed capture investors whose portfolios consist of at least that percentage of deals within the given SDG bucket. For example, the "$\geq$ 40%" under Climate displays the number of investors whose portfolios are composed of at least 40% Climate deals. The "Pct of" columns calculate the percentage of all (Impact or Traditional) investors whose portfolio falls into the given threshold. In this sample, there are 277 total impact investors and 20,220 total traditional investors.

A.5 Calculating the Sector Market-to-Book Ratios

We calculated the lagged market-to-book (M/B) ratio for each sector as follows:

Step 1

We use the WRDS SAS program written by Denys Glushkov to September 2011 to cal-

culate the M/B ratio for individual companies. The program is based on book equity definition from Daniel and Titman (2006). The description that we will describe below follows the information provided on this webpage: https://wrds-www.wharton.upenn.edu/pages/wrds-research/applications/risk-and-valuation-measures/market-book-mb-ratio/#market-to-book-sas-code.

The methodology we use calculates firm and industry-level Market-to-Book using only the Compustat Xpressfeed database. This approach uses Compustat Fundamentals and Security Pricing data and does not rely on CRSP. The advantage of this methodology is that it captures many firms that are in Compustat but not in CRSP. (Alternatively, we could use the CRSP-Compustat Merged product, but this restricts the sample to only those companies for which CRSP market values are available and focuses on the U.S.-incorporated companies reporting financial results in dollars.)

Market Value of Equity: Market value of equity as of the December end of any given fiscal year can be obtained as a product of the close market price at the calendar year end (PRCC_C variable in FUNDA) times the shares outstanding (CSHO). CSHO represents the net number of all common shares outstanding at year-end, excluding treasury shares and scrip. If this market value of equity is not available, we take the product of monthly close market price (PRCCM) and the quarterly shares outstanding (CSHOQ) as of December from the Compustat Security pricing table (SECM). Note that in case a company has more than one common stock issue, the program selects the price of the primary issue identified by Compustat as the issue with the highest average trading volume over a period of time (PRIMISS='P'). One potential concern here is that the price used represents the price of a single issue, whereas the shares outstanding reflect all common shares. According to WRDS analysis, it does not appear to affect the results as the aggregation of shares outstanding across various stock issues is done by Compustat primarily in cases when issues have similar price.

Book value of equity: On the WRDS website, it says that BV is calculated as

follows: "Book value of equity reported any time within a given calendar year is calculated following Daniel and Titman (2006). If the fiscal year end falls between January and May, then the M/B ratio for, say, calendar year 2005 will be the market value of equity as of Dec 2004 scaled by the book equity reported for the fiscal year 2003 (fyear=2003). If the fiscal year end falls between June and December, then M/B ratios for calendar year 2005 will be the market value of equity of as Dec 2004 divided by book equity in fiscal year 2004 (fyear=2004)."

However, this does not seem to be consistent with the SAS program posted in WRDS. From the SAS program:

/* CSHO is a company level item and includes all classes of common stock */

/* prcc_c is the price as of Dec of the FISCAL year. So, for instance, if a */

/* company's fiscal year end falls b/w jan and may 1990, then prcc_c will be */

/* the Dec end price as of Dec 1989. However, if the fiscal year end falls b/w */

/* june and dec 1990, then prcc_c will be the price as of Dec 1990 */

The description on the WRDS website is inconsistent with what the SAS code does, and the code is aligned with how we believe the ratio should be (and is) calculated.

Step 2

Sector Market-to-Book Metric: Sectors are determined using 11 GICS sectors. We calculate the average market-to-book by each sector, trimming the extreme outliers at 1% (Fama and French 1992). We also looked at median market-to-book by sector and it tracks the average. See graphs in Online Appendix Figure A.I.

Figure A.I: Log Market to Book by Sector

After calculating the M/B for 240,081 firm-year observations from Compustat in step 1, we calculate the metric at the sector level metric. The firms are uniquely identified using the Global Company Key (GVKEY). We pull in their sector information provided by Compustat by joining their GVKEY to a dataset with the firm's sector code. The sector code is provided as an integer, like 10, 15, 25, etc. Two firms did not match on GVKEY and were dropped. We also drop the year 1989.

We then calculate the 1st and 99th percentiles of the companies' M/B per year and sector and drop the outliers at the 1st and 99th percentiles per year and sector. Next, we calculate the mean company M/B across sectors and years. Thus, we have a dataset with the average M/B for each year and sector. We drop the year 2024 and an observation with an empty gsector. Finally, we translate the gsector codes to strings with the standard GICS classification (see page 5 of this document: `https://www.spglobal.com/marketintelligence/en/documents/112727-gics-mapbook_2018_v3_letter_digitalspreads.pdf`). We join this to our PII data on sector name and keep the observations which matched (704) and drop the 22 which did not match.

B Examples of SDG Bucket Classification of Impact Portfolio Companies

Table B.I: Company Descriptions and Predicted SDG Bucket

Predicted Bucket	**Percent Match**	**Description**
Climate	Very Likely (96%)	Developer of solar modules and panels designed to reduce cost in energy production. The company's solar modules and panels employ co-evaporated copper indium gallium selenide (CIGS) and monolithic integration glass architecture that utilizes monolithic integration (MLI), using automated laser scribes and is designed to cut the manufacturing steps in half, compared to simulated cell approaches, enabling companies to set up a solar plant and generate solar power at a lower cost.
Climate	Very Likely (72%)	Developer of heat pump technology intended for subsequent usage in industrial applications. The company's heat pumps combine a previously unused physical process with centrifugal force to create entirely new applications and have lower operating costs due to less loaded wearing parts, making a significant contribution to green heat transformation, helping industries protect the environment and save costs.
Climate	Likely (55%)	Designer, manufacturer and marketer of customized industrial motors. The company's products include electric motors, brake motors, generators and control systems for industrial automation, enabling its clients to meet their customization needs and improve automation performance and reduce environmental impact.
Environment	Very Likely (99%)	Operator of a food marketplace intended to reduce food waste. The company's marketplace sources imperfect produce from local farmers and retailers for local businesses by monetizing imperfect food and harvesting it with delicious and functional blends, enabling consumers to have affordable nutritious meals.
Environment	Very Likely (84%)	Manufacturer of disposable industrial uniforms intended to cater to the needs of biodegradable material. The company supplies biodegradable and recyclable food-grade uniforms to companies in the aquaculture, dairy, and poultry fields, enabling clients to improve the sustainability of commercial sectors.
Environment	Likely (57%)	Developer of plant diagnostic sensors designed to facilitate early detection of stress among plants. The company's sensors capture electromagnetic waves sent and received by plants for detecting stress, pest attacks, water requirements, and other parameters, improving support by utilizing electrophysiology of the plant in situ, enabling plant researchers and botanists to monitor and manage plant health.
Job and Equity	Very Likely (98%)	Operator of a female education platform intended to provide cognitively optimal learning techniques through an introduction to computer science. The company provides learning of STEM through cognitively optimal learning techniques that take advantage of the way brains learn, process, and retrieve information along with techniques for effective learning and retrieval, enabling girls from underprivileged communities to avail education and succeed in any field, with a chance to apply the context of learning new skills in the important field of computer science.
Job and Equity	Very Likely (75%)	Manufacturer of ethical apparel intended to provide African organic cotton garments and home textiles. The company's apparel is worker-owned, organic certified, and carbon-neutral, comprising of resort and swimwear, enabling consumers to be aligned in making economic choices that result in the eradication of poverty and the empowerment of workers through the fair exchange of quality goods and services.
Job and Equity	Likely (51%)	Developer of an online learning platform designed to allow users to learn new languages by connecting with educators via live 1-on-1 video conferencing. The company's platform lets users choose a language they want to learn, schedule a time that works for them and meet with professors via Skype and begin learning, enabling people of all ages to learn new languages easily, conveniently and at an affordable price.

C Supplemental Analyses

Table C.I: Do Impact Investors Invest in Government-Interested Companies?
An Analysis Using Small Business Innovation Research (SBIR) Awards and Patents

	(1) Top 20% SBIR Industry	(2) Top 20% SBIR Industry	(3) Top 30% SBIR Industry	(4) Top 30% SBIR Industry
Panel A: SBIR Awards				
Impact Present	0.011	0.015**	0.043***	0.045***
	(0.007)	(0.007)	(0.008)	(0.008)
State Fixed Effect	No	Yes	No	Yes
Founding Year Fixed Effect	No	Yes	No	Yes
Adj. R-squared	0.000	0.037	0.000	0.039
N Observations	74,622	74,622	74,622	74,622
Mean Traditional	0.167	0.167	0.198	0.198
	(1) Any Patent In Top 20% Gov't Subclass	(2) Any Patent In Top 20% Gov't Subclass	(3) Any Patent In Top 30% Gov't Subclass	(4) Any Patent In Top 30% Gov't Subclass
Panel B: Patents in Gov't-Interested Subclasses				
Impact Present	0.035***	0.029***	0.046***	0.039***
	(0.005)	(0.004)	(0.006)	(0.005)
State Fixed Effect	No	Yes	No	Yes
Founding Year Fixed Effect	No	Yes	No	Yes
Industry Fixed Effect	No	Yes	No	Yes
Adj. R-squared	0.001	0.115	0.001	0.166
N Observations	74,622	74,622	74,622	74,622
Mean Traditional	0.032	0.032	0.056	0.056

Specification: Observations are U.S. companies funded by venture capital or growth equity investors by May 2021. Impact Present indicates whether the company received an investment from an impact investor. Both panels estimate Specification 1 in the paper. In Panel A, the Mean Traditional row in columns 1 and 2 reports the proportion of traditional firms that are in an industry among the top 20% of SBIR awards. The Mean Traditional row in columns 3 and 4 is the proportion of traditional firms that are in an industry with the top 30% of SBIR awards. We count the number of SBIR awards of either phase, and do not count rejected SBIR proposals. In Panel B, the Mean Traditional row in columns 1 and 2 reports the proportion of traditional firms that have filed for a patent whose subclass is in the top 20% of government-interested patent subclasses. The Mean Traditional row in columns 3 and 4 reports the proportion of traditional firms that have filed a patent whose subclass is in the top 30% of government-interested patent subclasses. We only consider patents ultimately granted and exclude unsuccessful or withdrawn applications. Fixed effects for state, founding year, and industry are noted. Robust standard errors are in parentheses.

Outcomes: In Panel A, the outcome in columns 1 and 2 is a dummy indicating if the firm is in an industry among the top 20% of SBIR awards; in columns 3 and 4, a dummy indicating if the firm is in an industry among the top 30% of SBIR awards. In Panel B, the outcome in columns 1 and 2 is a dummy indicating if the firm filed a patent classified among the top 20% of government-interested patent subclasses; in columns 3 and 4, a dummy indicating if the firm filed a patent classified among the top 30% of government-interested patent subclasses.

Data sources: PitchBook data feed as of May 2021. SBIR awards are from SBIR database at www.sbir.gov/awards# (version of March 27, 2024). Government-interested patents are from the sample created by Gross and Sampat (2024).

Table C.II: Are Impact Investors Cyclical Investors?
An Analysis Using Contemporaneous Activity

	(1)	(2)	(3)
	Log Deal Number	Deal Number	Log Deal Amount
Impact*MB	-0.237***	-506.667***	-0.177***
	(0.043)	(123.700)	(0.053)
MB	0.142***	294.712**	0.128**
	(0.052)	(146.086)	(0.064)
Impact	-2.539***	351.504	-3.996***
	(0.165)	(394.893)	(0.231)
Deal Year Fixed Effect	Yes	Yes	Yes
Sector Fixed Effect	Yes	Yes	Yes
Adj. R-squared	0.935	0.392	0.895
N Observations	704	704	704

Specification: This table estimates Specification 4 in the paper. Observations are at a sector (based on the 11 GICS industry sectors)-by-year level from 1990 to 2021. Impact is a dummy that is equal to 1 for the deals that receive funding from at least one impact investor, and 0 otherwise. The market-to-book ratio for each sector for a given year (MB) is calculated following Daniel and Titman (2006) and Fama and French (1992). Deal year and sector FE are noted. Robust standard errors are in parentheses. Results are also robust to using log of market-to-book instead of levels.
Outcomes: The outcome in column 1 is the log of the total annual number of deals. The outcome in column 2 is the (unlogged) total annual number of deals. The outcome in column 3 is the log of the total annual deal amount. For logged variables, we add a value of one to account for log of zeros.
Data sources: PitchBook data feed as of May 2021. The MB ratios are computed using WRDS.