Impact Investing[*]

Brad M. Barber
bmbarber@ucdavis.edu
Graduate School of Management
University of California, Davis

Adair Morse
morse@haas.berkeley.edu
Haas School of Business
University of California, Berkeley & NBER

Ayako Yasuda
asyasuda@ucdavis.edu
Graduate School of Management
University of California, Davis

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Abstract

We study investments in impact funds, defined as venture or growth private equity with stated intent to generate both financial returns and positive externalities. In a choice-of-funds framework, we find a 14.1% higher investment rate for impact funds compared to the benchmark investment rate of traditional venture funds, implying the supply of impact funds is incomplete, failing to meet demand. We validate results showing three times as much above-market demand in Europe and for UNPRI signatories. We then test for demand taste, finding that impact is particularly demanded in funds with environmental, poverty alleviation, social concern, or minority and women objectives – those with high public good content. Finally, we find evidence that the sources of demand are households (rather than organizations), mission investors, and those facing political/regulatory pressure to invest in impact. Legal restrictions against non-financial investment (e.g., ERISA and UPMIFA) hinder demand for impact.

If a long-lived global social planner existed, a number of social and environmental problems would be on her list of items to fix. The fixes would likely not be limited to Coasean taxes on those causing the problems, and the outcomes would likely not be Pareto improving to all bearing the costs. The world lacks a social planner to mandate fixes and allocate costs, and instead, if fixes to social and environmental problems are to be achieved, someone must voluntarily provide capital. Governments are an obvious source of capital, but government programs are generally locally confined and can be inefficient. Philanthropies are a second source of capital, but philanthropies lack the scale to fundamentally fix the global problems at hand. The other pool of untapped funds is the private financial capital of households and organizations.

Private capital has the scale required to fundamentally address global social and environmental challenges, but traditional financial instruments and intermediaries are designed to maximize financial returns for the providers of capital rather than generate positive externalities. Yet, as of 2015, nearly 1400 organizations representing $59 trillion in asset under management are signatories to the United Nations Principles of Responsible Investment (UNPRI), vowing to embed responsibility into their organizational and/or investment decisions. The massive response to the UNPRI suggests the existence of latent demand for positive externalities (impact) in investing. Likewise, virtually all major consulting groups have a social impact practice to meet a growing interest by organizations, and all major investment banks have an impact division to meet private wealth and institutional demand for social considerations in investment. Even with all of these signals of demand, very little private capital is actually deployed with the expressed intent of generating social impact. As reported in Białkowski and Starks (2016), the latest estimates from the Forum for Sustainable and Responsible Investment put socially responsible investment at $7 trillion. However, it is generally thought that a small slice of this investment actually goes toward assets with dual objectives to achieve impact and generate a financial return.

Our agenda is to shed light on whether this inaction is due to a lack of demand for impact by households and organizations, the limited range of financial instruments, and/or the rules governing investment practices. We do so by analyzing the demand for impact funds, a type of VC fund with a dual objective of generating a financial return and generating a positive externality (e.g., the alleviation of poverty or the reduction of greenhouse gas emissions). These funds are managed as private equity vehicles, which are generally organized as a limited partnership with a life of ten years (or more); investors (limited partners) make a long-term capital commitment to a fund manager (general partner), who deploys the capital over a multi-year horizon by investing in a portfolio of startup companies that are aligned with the fund's objectives.

Impact investing has emerged to mobilize private capital for public good, especially through growth and venture investments within the private equity industry. What distinguishes impact investment

from socially responsible investment (SRI) movements or direct investment in social enterprises is its focus on the deployment of capital with an expressed intent for the investments to cultivate startups or growth companies that address a social and/or environmental concern in addition to financial returns. Sometimes impact investment is defined more broadly to meet the needs of investors or agents, but we stick to this narrower, more precise definition that the investment must have a dual motive.

Impact investing in private equity stands in contrast to the long-standing tradition of SRI negative screening in public equities, where investors divest of stock in companies that engage in objectionable practices (e.g., the divestment of South African companies during the period of apartheid, tobacco companies amid concerns about the health consequences of smoking, and fossil fuel companies over concerns regarding climate change). Impact investing also stands in contrast to SRI positive investments, which are almost entirely financially-motivated investments targeting sectors, geographies or companies with the expectation of capitalizing on a competitive advantage or an underpricing related to an environmental, social, or governance factor.

Some, particularly practitioners, argue that investors can "do well by doing good" and dismiss the tension between financial returns and the generation of positive externalities. This is a difficult argument for economic models. Financial investors have unfettered choice of investments and the sole objective of financial return. In contrast, social investors have a dual objective of earning a financial return and generating a positive externality (i.e., social investors face a constrained investment opportunity set). Because their investment opportunity set is unconstrained, it follows that financial investors will have better expected returns (properly risk-adjusted) than social investors. Thus, the academic consideration of the "do well by doing good" requires that an investor is exploiting an opportunity out of equilibrium (perhaps because of a transitory competitive advantage in a particular arena or because the investor has identified an underpriced investment).

To gauge the demand for impact, we first construct a sample of impact funds. We limit our analysis to venture and growth capital funds because of the smaller role of impact investing in buyout-oriented private equity funds. We refer to venture and growth capital together as VC for ease of exposition. Using a strict criterion that the fund must state a dual objective in its motivation, we hand collect a sample of 161 impact funds launched over the period 1989-2014.

Using a Preqin dataset containing more than 25,000 capital commitments by more than 3,500 investors to more than 5,000 funds, we estimate a general model of investment demand where investors (which we call limited partners or LPs) choose whether or not to invest in each fund in its vintage fundraising year. Our investment choice model includes observable factors that might explain the LP demand for funds (LP characteristics, fund characteristics, matching characteristics between fund and LP, and vintage year fixed effects). In addition, we include fixed effects by type of LP (pension fund, bank,

etc.) and investment rates over the past few years. Our goal is to saturate the model, absorbing differences in funds, LPs, and fund-LP match characteristics that might explain choice other than impact status. Our analysis yields five principal findings.

First, we find that the impact fund designation has a positive effect on the probability that an LP invests in the fund. The interpretation is somewhat subtle in our choice framework; LPs exhibit 14.1% higher investment rates in impact funds relative to the supply of impact funds than they do in non-impact funds relative to the supply of non-impact funds. Specifically, an investor invests in 0.82 out of every 100 funds offered in the vintage year, yet invests in 0.94 out of every 100 impact funds. Assuming the market for traditional VC funds is complete (in equilibrium with supply meeting demand), our results imply that the supply of impact funds is incomplete, failing to meet demand. We refer to this throughout as *excess demand for impact*, with this particular interpretation. Subperiod analyses reveal that excess demand for impact has increased more than threefold, from 7.1% prior to 2007 to 21.8% in 2007 and later years.

Second, we find that impact funds vary in their ability to attract demand by their focus. We find that impact funds focused on environmental impact, poverty alleviation, women and minorities, and social concerns exhibit excess demand. Impact funds focused on SMEs, social infrastructure (e.g. health as education as well as mainstream infrastructure), and other geographic-focused funds do not exhibit excess demand.

Third, we document that the demand for impact is higher for UNPRI signatories and for European LPs. In particular, LPs that sign the UNPRI exhibit much more excess demand (25.8%) than non-signers (7.1% excess demand). Moreover, regardless of UNPRI status, European LPs have three times as much excess demand for impact relative to North American LPs.

Fourth, the demand for impact depends sharply on the source of capital (i.e., type of LP). To examine the sources of investor heterogeneity in their demand for impact, we manually classify all Preqin LPs into one of 10 investor types reflecting the ultimate providers of capital: development organizations, foundations, banks, insurance companies, endowments, corporate/government portfolios, institutional asset managers, wealth managers, private pensions, and public pensions. A simple univariate comparison of impact and non-impact fund investments reveals the important role of development organizations and public pensions in the demand for impact funds. In our multivariate choice framework, we find excess demand for impact by development organizations (17.7% increase in demand), foundations (11.1%), banks (22.2%), insurance companies (24.0%), and public pensions (17.3%). By contrast, some investors eschew impact funds, including endowments (-31.1%) and (with less precision) private pensions and corporate/government portfolios.

Finally, we explore the characteristics of LPs that explain variation in the demand for impact. We find evidence that excess demand for impact is found in households (rather than organizations), mission-

focused investors, and those facing political/regulatory pressure to invest in impact. Legal restrictions against non-financial investment (e.g., ERISA and UPMIFA) hinder demand for impact (see Geczy, Jeffers, Musto and Tucker (2015)). In contrast, organizational charters that require a focus on financial returns (e.g., corporate charters that require shareholder wealth maximization) do not seem to hinder demand. These results are identified by variation in investor attributes by LP type and location (e.g., U.S. v. non-US), so we do not claim a proof of causality. However, these results are potentially important in suggesting that changing the rules that govern investment could generate additional demand for investments that generate positive externalities.

Although our emphasis is on demand for impact investing, we also contribute to the literature on demand for VC funds and how investors choose VC investments. We find that, among a wide array of variables that describe fund and LP characteristics, and in striking contrast to the predictions of standard asset pricing models, two variables emerge as the primary drivers of fund choice for all the LP investor types – the prior investment relationship between the LP and VC firm and the geographic proximity between the LP and the VC firm. While prior studies document the importance of relationship or geography in LP choice of funds (e.g., Lerner, Schoar and Wongsunwai (2007); Hochberg, Ljungqvist, and Vissing-Jørgensen (2014); Hochberg and Rauh (2014)), our results document that the economic significance of these variables is enormous, particularly when compared to a myriad of other fund and LP characteristics. For example, the partial R^2 of the prior relationship variable accounts for 85% of all explained variation in fund choice, while the geographic proximity variable accounts for the majority of the remaining explained variation.

There is little prior academic work on impact investing. Kovner and Lerner (2015) analyze the characteristics and performance of investments made by 28 community development venture capital funds in the U.S.; they conclude these funds tend to invest in companies at an earlier stage, in industries outside the VC mainstream, and these investments have lower probabilities of successful exits. Chowdry, Davies, and Waters (2016) develop a theoretical model of impact investment, which is defined as an investment that generates both a social and private good. In their model, investors might over or under invest in social good, and social impact bonds (SIBs) solve the investment problem. In 2010, the UK Ministry of Justice and Social Finance issued the first SIB, which offers a dividend that is tied to prisoner recidivism rates. SIBs are related to, but distinct from impact funds, which is the focus of our investigation.

Our work relates to the burgeoning literature, spread across multiple disciplines, on socially responsible investing (SRI) that dates back as far as Milton Friedman's 1970 doctrine on responsible

investing.[1] A survey by Renneboog, Ter Horst, and Zhang (2008) highlights the tension of SRI investing, concluding that investors in SRI funds may (but not with certainty) be willing to knowingly forego some expected financial returns for social or moral considerations. Consistent with the idea that investors in SRI funds value attributes other than performance, Benson and Humphrey (2008) and Bialkowski and Starks (2016) show that SRI fund flows are less sensitive to performance than non-SRI flows while Bollen (2007) documents SRI funds have less volatile flows. One strand of the SRI literature argues the non-pecuniary interests of investors affect the expected returns of investors; stocks preferred for nonfinancial reasons earn lower returns than spurned stocks. Building on this idea, Hong and Kacpercyzk (2009) hypothesize that stocks subject to widespread negative investment screens earn strong returns and find that sin stocks (e.g., tobacco and gambling stocks) sport attractive valuation ratios and earn high returns. Similarly, Chava (2014) concludes investors demand higher expected returns when investing in the stocks of firms excluded by environmental screens, while these firms also pay higher interest rates on bank loans. Riedl and Smeets (2016) study retail investors' choice of mutual funds by linking administrative account data to survey responses. They document social preferences and social signaling affect investment decisions, while financial decisions play a somewhat limited role. All of the above studies highlight the potential importance of non-pecuniary motives when investing, which dovetails with our analysis of the demand for impact investments.[2,3]

Our paper connects to the literature on variation in institutional preferences for securities in public markets. For example, Gompers and Metrick (2001) document the growth in institutional ownership in public markets and the resulting increased demand for large stocks. Bennett, Sias, and Starks (2003) document that over time the institutional appetite for small and risky stocks has grown. Bialkowski and Starks (2016) document that demand for SRI mutual funds has grown faster than conventional mutual funds in recent years, fueled by investors' nonfinancial considerations. As in public markets, we show that the demand for private equities in general and that for impact in particular depends on the composition of investor (LP) types.

Our paper also relates to the growing private equity literature. Demand is central to our analysis, with a motivation akin to Lerner, Schoar and Wongsunwai (2007) who write "investors vary in their

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[1] "The Social Responsibility of Business is to Increase Its Profits," The New York Times Magazine, September 13, 1970. Also see Geczy et al. (2003).

[2] In a separate strand of the SRI literature, scholars investigate a type of agency conflict, where firm managers overinvest in pet social projects to the detriment of shareholders (e.g., DiGiuli and Kostovetsky (2014), Cheng et al. (2013)). This literature is less relevant in the VC setting that we analyze, since the impact investments made by impact funds are consistent with both the fund objective and investors' objective to generate positive externalities through the deployment of private capital.

[3] Dimson et al. (2015) provides intriguing contrary evidence that investor engagement with the management of publicly traded firms on a collection of environmental, social, and governance issues is associated with positive abnormal returns.

sophistication and potentially their investment objectives." While we focus on the demand for impact in our analysis, our analysis contributes more broadly to the literature on the determinants of the demand for private equity. Lerner et al. (2007) and Sensoy, Wang and Weisbach (2014) compare returns earned by different types of LPs, though the implicit assumption is that all LPs want to maximize financial returns but have different fund-picking skill or lack access to the best funds.. In contrast, we focus on understanding the importance of nonfinancial fund attributes as determinants of the investor demand for private equity and the sources of investor heterogeneities in their demand for nonfinancial considerations such as impact.

I. METHOD

We model the choice problem of an investor selecting VC funds for investment. Our approach takes investment choice as a reduced form of demand under the assumption that supply of investment opportunities is given in a particular vintage year. The empirical model absorbs factors affecting the investor demand for a particular fund, with the goal of isolating the role of impact motives.

Consider a market where there are $j=1,...,M$ fund managers fundraising a new fund and $i=1,..., N$ investors prepared to invest. In VC industry investors can typically invest in new funds only at the time of fund inception and once raised funds are closed to new investors. Secondary markets for fund interests exist but are small and illiquid. Thus, we focus on investors' investment decisions at the time of fund inception. This market generates NM possible investor-fund matches.[4] For each possible match, we define $Invest_{ij}$ as a dummy variable that takes a value of one if investor i invests in fund j and zero otherwise. We saturate the model with determinants of investor demand to allow us to draw inference about the demand for impact funds. Our choice model of demand is:

$$Logit(Invest_{ij}) = X_i \mathrm{A} + Y_j \mathrm{B} + Z_{ij}\Gamma + \phi IMPACT_J + \varepsilon_{ij}, \qquad (1)$$

where X_i is a matrix of investor characteristics, Y_j is a matrix of fund characteristics, and Z_{ij} is a matrix of match characteristics for investor i and fund j. The key variable is $IMPACT_j$, which is a dummy variable that takes a value of one for funds with a stated objective of generating a positive externality.

The idea of X_i is to control for different baseline rates of VC investments across investors, resulting, for example, from differences in the size of assets under management or the role for the VC asset class in their portfolios. To level baseline investment probabilities, we implement a grouping fixed effects model to capture the behavior of similar LPs dynamically. In particular, we pool LP investors into 363 groups where the grouping combines investors in the same LP type (e.g., development organization, bank, foundation, pension, etc.) with the same average number of investments per year made in the prior

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[4] Ljungqvist et al. (2006) and Bottazzi et al. (2015) use similar empirical models to examine underwriter-issuer matches and VC-portfolio company matches, respectively.

three years. This grouping is dynamic since an investor can move into different groups as its investment rate increases or decreases over time (i.e., its VC portfolio grows or shrinks over time). Thus, this group fixed effect has a distinct advantage over static investor fixed effects because it adjusts to reflect changes in the size of an investor's VC portfolio over time while an investor fixed effect would miss this temporal variation in investor demand. In principle, we could estimate a static investor fixed effects model, but with 3500 investors the logit model does not converge so we are not assured of a proper solution. Our results are similar in linear probability models with static LP fixed effects. To further capture temporal dynamics in investor investment rates, we include investors' years of experience in VC investments.

We include in Y_j two fund dimensions affecting demand – fund's expected return and fund's expected size – as motivated by the literature. First, ceteris paribus, investors have higher demand for funds managed by fund families with better past performance than those with poor performance (Gompers and Lerner (1998); Kaplan and Schoar, 2005; Hochberg, Ljungqvist, and Vissing-Jørgensen (2014); Chung et al. (2012); Barber and Yasuda (2016)). Second, funds with larger expected size will be matched with more investors and thus have a higher investment rate. However, the ex post fund size will also reflect investors' priors on manager skill and thus be positively correlated with the fund's expected return (Berk and Green (2004); Hochberg, Ljungqvist, and Vissing-Jørgensen (2014)).[5] We measure the fund's expected return using the performance of past funds managed by the same fund family. To benchmark fund performance, we use the percentile rank of each fund's performance (IRR and/or value multiple) relative to its vintage year cohort funds and then take a weighted moving average across all past funds, where recent funds receive greater weight relative to older funds. This follows the industry practice where investors often look for top quartile fund managers based on peer-adjusted relative performance measures. Funds without the performance measure are (i) all first-time funds and (ii) seasoned funds with missing past performance data. We include indicators for each of these categories. We measure expected fund size as the 3-year average of the median fund size in the vintage and market (U.S. or non-U.S.). Note that we intentionally define the expected fund size as a market-wide average from the previous three years so that this variable would not vary with the fund-specific expected return. We also include fixed effects for fund geography and industry.

The final two demand variables are match variables in Z_{ij} that are motivated by the literature. First, the prior relationships matter due to private information and dynamic benefits to commitment (Hochberg, Ljungqvist, and Vissing-Jørgensen (2014)).[6] Second, as shown by Hochberg and Rauh

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[5] At the time of making investment decisions during fundraising, prospective investors observe neither the eventual size of the fund nor the fund's financial return. Instead, prospective investors base their investment decisions on their expectations about the fund size and fund performance, among other things.

[6] Before committing capital to a given fund, prospective limited partners incur costs in assessing the fund manager's current and past fund outcomes and the stated investment strategy/thesis of the follow-on fund that the fund manager

(2014), there is a home bias in investment in private equity.[7] We measure prior relationships between investor i and fund j as an indicator that equals one if investor i has invested in any fund in the fund series managed by fund j's fund manager in the past. Finally, we measure home bias as whether the fund j focuses its investments in the home region of investor i, where we consider eight major regions.

II. DATA

A. Datasets

We employ three primary datasets. First, we use Preqin's Investor Intelligence data to identify LP investments in funds. Because the majority of impact funds are venture or growth oriented, we restrict our analysis to venture and growth funds with vintage years ranging from 1985 to 2014.[8] We augment this with Preqin's Performance Analyst database of fund performance. The resulting VC/growth fund dataset covers about 3,500 LPs and 5,000 funds, which result in over 25,000 LP capital commitments. The dataset includes detailed information on LPs (including LP name and location) and funds (including fund name, fund family name, fund size, industry focus, and fund manager's performance record from previous funds managed by the same fund family).

Our second dataset is a hand-collected dataset of 161 impact funds, which we define as a fund with a stated objective of generating a positive externality (e.g., addressing climate change, generating jobs, reducing poverty, or reducing world hunger), in addition to pursuing financial returns. We summarize the steps used to identify impact funds here, but provide details in an online data appendix. We start with the universe of funds in Preqin's Performance Analyst database. From these funds, we identify potential impact funds from a combination of keyword searches of articles about funds and managers, third-party lists of funds and managers, and a screen based on funds' that invest primarily in companies located in poverty-stricken countries/regions. We then manually read articles about funds and their managers, strictly requiring that a fund must explicitly state an externality objective to be deemed an impact fund in our dataset. We likely fail to designate some funds as impact due to a lack of detailed

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is raising. This due diligence process is costlier if you have never invested in the manager's previous funds. If you are an incumbent investor in the previous funds, you already have established personnel networks and communication channels with the fund manager, and thus you have an information advantage over outside investors in evaluating the prospective follow-on fund (Hochberg, Ljungqvist, and Vissing-Jørgensen (2014)). On the flip side, fund managers make special effort to retain investments by incumbents because of the positive signal value to outside investors.

[7] Hochberg and Rauh (2013) document that U.S. LPs, particularly U.S. public pension funds, tilt their private equity portfolios toward local funds. More generally, there is a large literature exploring the reasons for local tilts in investor portfolios. Scholars hypothesize that informational advantages (Coval and Shumway (2001), Ivkovich and Weisbenner (2005)) and/or familiarity (Massa and Simonov (2006), Atanasova and Chemla (2014)) might drive the preference for local investments. In the context of private equity, Hochberg and Rauh (2013) conjecture that U.S. state pension funds prefer local funds because these funds can be justified as spurring state economic development.

[8] We also include fund of funds that primarily invest in VC funds.

information, but our coding approach cleanly identifies impact funds as those with a dual objective of generating both financial returns and a positive externality.

Impact funds have diverse goals, so it is useful to consider specific examples of impact funds in our final sample. Bridges Ventures is a London-based family of funds "…dedicated to sustainable and impact investment…" that uses an "…impact-driven approach to create returns for both investors and society at-large."[9] Bridges has several funds in our sample including, for example, the CarePlaces Fund, which builds care homes for the elderly. Its limited partners include university endowments, banks, pension funds, and high-net-worth investors. NGEN Partners is a Manhattan-based family of funds that "…invests in companies that positively improve the environment and human wellness" and manages three funds in our impact dataset (NGEN Partners I and II, and NextGen Enabling Technologies Fund). The North Texas Opportunity Fund is a Dallas-based family of funds that "…seeks to invest in companies located in or willing to expand operations to underserved North Texas region markets, with a special emphasis on the southern sector of Dallas. The firm invests in minority or women owned or managed companies located anywhere in North Texas."[10]

To parsimoniously summarize these diverse impact goals, we construct seven impact categories: environmental impact, minority and women funding, poverty alleviation, social concerns, social infrastructure development, small and medium enterprise (SME) funding, and geography-focused impact excluding poverty regions. For each impact fund, we read fund descriptions in all of the databases (Preqin, Capital IQ, and ThomsonOne) as well as in the fund's own marketing materials on their websites and code the impact objectives of the fund using these seven categories, allowing funds to have multiple objectives. Figure 1 depicts the percentage of the 161 impact funds that have a stated impact goal, with the counts of funds displayed in the bar labels. The most rare impact categories are minority and women funding (11% of funds) and, somewhat surprisingly, social infrastructure development, which includes health and education as well as other social or physical infrastructure, (16%). The remaining impact categories are relatively uniformly distributed with the most prevalent being poverty alleviation (43%) and SME funding (42%), followed by geography focus excluding poverty (33%), environmental impact (29%) and social concerns (27%).

Our final dataset is a list of UNPRI signatories, which we downloaded from the UNPRI website (http://www.unpri.org/signatories/signatories/). As of November 16, 2015, there were 1422 signatories (297 asset owners, 931 investment managers, and 194 professional service managers) who collectively manage $59 trillion. The UNPRI pledge states:

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[9] Company website, November 17, 2015 (http://bridgesventures.com/about-us/).
[10] http://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=156715

As institutional investors, we have a duty to act in the best long-term interests of our beneficiaries. In this fiduciary role, we believe that environmental, social, and corporate governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, asset classes and through time). We also recognize that applying these Principles may better align investors with broader objectives of society. Therefore, where consistent with our fiduciary responsibilities, we commit to the following:

1. *We will incorporate ESG issues into investment analysis and decision-making processes.*
2. *We will be active owners and incorporate ESG issues into our ownership policies and practices.*
3. *We will seek appropriate disclosure on ESG issues by the entities in which we invest.*
4. *We will promote acceptance and implementation of the Principles within the investment industry.*
5. *We will work together to enhance our effectiveness in implementing the Principles.*
6. *We will each report on our activities and progress towards implementing the Principles.*

We match UNPRI signatories to our LP dataset using investor names. LPs that are subsidiaries of a UNPRI signatory are also coded as signatories, but not LPs who are parents of UNPRI signatory subsidiaries.

B. *Limited Partners and Capital Commitment Statistics*

Much of our analysis focuses on how the demand for VC in general and impact funds in particular varies across different LP types. To categorize LP Types, we conduct web searches for all LPs and categorize them into one of 10 LP types (Development Organization, Foundation, Bank, Insurance, Endowment, Corporation/Government Portfolio, Institutional Asset Manager, Wealth Manager, Private Pension, Public Pension). Development organizations include multinational, national, and regional organizations that invest with development purposes in mind (e.g., International Finance Corporation, Ireland Strategic Investment Fund, New Mexico State Investment Council, and Norfund). Corporation & Government Portfolios include corporations who invest in VC (e.g., Cisco and Siemens), state-owned corporations (e.g., China Steel and China Oceanwide Holdings), and sovereign wealth funds that are not development-oriented (e.g., Abu Dhabi Investment Authority). Institutional Asset Managers include LPs who manage money for a diverse institutional client base (e.g., Adams Street Partners, JP Morgan Asset Management), so the source of institutional capital and its constituents are mixed. Wealth Managers include family offices (e.g., Merrion Family Trust) and advisers who serve high net worth clients (e.g., BNY Mellon Wealth Management). Private pensions are primarily corporate pensions (e.g., IBM Retirement Fund and HP Pension Fund) and multiemployer retirement funds (e.g., Carpenters' Pension Fund of Illinois and UFCW Pension Fund), but also include asset managers specializing in private

pension portfolios.[11] Public pensions include city, state, and national pension funds and asset managers catering to public pensions. The remaining LP types (foundation, bank, insurance, and endowments) are self-explanatory.

In Table 1, Panel A, we provide descriptive statistics on LPs. The smallest categories in terms of LP counts are endowments and wealth managers, but even these have over 200 distinct LPs participating in the market. The total number of capital commitments by LP type generally mirrors the patterns of LP numbers with some notable exceptions. Public Pensions represent only 11 percent of LPs, but tend to be large and thus generate about a quarter of capital commitments. Private Pensions and Development Organizations also have a larger share of capital commitments relative to their share of LPs. In contrast, Banks and Corporations and Government portfolios tend to make relatively few investments. Across LP types, these patterns are similarly reflected in the average number of capital commitments per LP. On average, an LP makes capital commitments to about 7 funds over our sample period (last column), but this varies by LP type. On average, Public Pensions invest in the most funds (16.67), followed by Private Pensions (9.35 funds) and Development Organizations (8.14 funds). In terms of the timing of investment, Public Pensions, Private Pensions, Endowments, and Insurance Companies were active in earlier vintage years, while Banks, Corporation/Government, and Development Organizations are tilted toward later vintage years. We calculate the number of years since an LP makes its first VC investment. The average LP has about 4 years of experience as an LP, though this number is positively skewed. Public Pensions, Private Pensions, and Endowments are the most experienced LPs.

Overall, 9% of LPs (315) are UNPRI signatories. By far, Institutional Asset Managers are the most likely to sign the UNPRI (19.5%), followed by Insurance (13.8%) and Public Pensions (13.5%). Relative to other LPs, UNPRI signatories tend to be more experienced and larger VC investors. On average, UNPRI signatories invest in about 15.6 funds, while other LPs invest in 6.4 funds. Similarly, on average, UNPRI signatories have 6.2 years of experience as a VC investor, while other LPs have 3.9 years.

The last two rows of panel A present statistics across the 25,435 capital commitments made by the 3,504 LPs. The penultimate row of Panel A presents the percent of investments where there is a prior relationship between the LP and fund family. In about 1/3rd of all these capital commitments, the LP made a prior investment with the same series of a fund (i.e., the LP and fund family had a prior relationship). Prior relationships are even more common (around 40% of all investments) for Foundation, Endowment, Private Pensions, and Public Pensions. The high rates of prior relationships are particularly striking since

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[11] There are 81 multiemployer pension funds and the majority are union-backed. Our results by LP type and LP attributes are qualitatively similar if we group these multiemployer pension funds with public pensions.

one third of all funds are first-time funds (see Table 2 and discussion below), and first-time funds preclude the possibility of a prior fund family-LP relationship.

In Table 1, Panel B, we present the regional distribution of LP headquarters. Focusing on all LPs (last column of Table 1), nearly half of all LPs are in North America, while another 28.9% are in Developed Europe. However, the regional distribution of LPs varies by LP type. For example, 82.6% of Endowment LPs are in North America, while only 14.9% of Bank LPs are in North America. Relative to other LPs, Development Organization LPs have greater presence in Emerging Europe, Africa, Central and South America, and Emerging Asia-Pacific.

Returning to Panel A, the last row presents the proportion of capital commitments where the LP and fund are in the same region, which we label home bias.[12] The home bias in private equity investments is quite pronounced; for 76% of capital commitments, the LP and fund are in the same region. Development Organizations and Institutional investors have the smallest degree of home bias, but it's still quite large at about 60%.

C. Funds Statistics

C.1. Fund Statistics: Conventional VC and Growth Funds

We analyze capital commitments to about 5,053 funds with vintage years from 1985 to 2014; about 75% of funds have vintage years of 2000 or later. In Table 2, we present descriptive statistics on the 4,892 conventional funds on the left side and the 161 impact funds on the right side.

The conventional funds in our sample are typical of VC and growth investments. On average, the fund size is $196 million (though quite positively skewed as the median size is $100 million) with a vintage year of 2005 and 5.03 investors (LPs). Though we observe over 25,435 capital commitments, the size of the capital commitment is available for only 8,587 (33.7%) of all capital commitments. In Table 2, we calculate the average capital commitment across investors in a fund and then calculate the mean across funds. The mean capital commitment across funds is $21 million (with a median of $13 million).

The past performance of fund families that raise a new fund is good, but the performance of the current fund is average. We calculate the past fund excess internal rate of return (IRR) in two steps, which we describe briefly here and provide more details in an online appendix. First, for all past funds managed by the fund family, we calculate the excess IRR as the fund's IRR minus the IRR of the funds from the same vintage year, fund type, and region cohort. Second, we calculate a weighted average of past fund

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[12] Here and in our later regression analysis, we analyze five regions (rather than eight) by combining Emerging Europe, Africa, and Central and South America into "Rest of the World", and Emerging Asia-Pacific and Middle East into "Emerging Asia-Pacific."

IRRs for the fund family giving more weight to recent funds (using an exponential moving average of all past fund IRRs with a smoothing factor of 0.5). The past fund percentile rank is analogously calculated by first computing the percentile performance rank of all funds previously managed by the same fund family versus cohort fund and second calculating a weighted average of past fund percentile ranks.[13] The average past fund excess IRR is 4.15%, which indicates funds in the market tend to have better performance than their cohort. This is also reflected in the percentile rank for all funds (0.54). Turning to the performance of the current fund, the mean fund excess IRR is 1.08% and the mean fund percentile rank is 0.49. About a third of funds in the dataset are first-time funds, which we define as funds for which we see no prior fund offered by the family of funds. A bit more than a third of funds (38%) are missing the fund managers' past fund performance data in Preqin, though they are offered through a veteran fund family.

We use Preqin codes to identify the geographic focus of fund investments, where we collapse the geography code into 8 regions. A fund is said to have a geographic focus if more than a third of all geographic descriptors are concentrated in a given region. Most funds (84%) focus on only one of the eight global regions. The remaining funds invest in many regions. We use these data to construct a series of geography dummy variables that take a value of one if the fund focuses on the region. In Table 2, Panel B, we present the means across funds. Note that the percentages sum to a number greater than one because the same fund can invest in more than one region. As was the case for investors (LPs), investments (funds) are also concentrated in North America and Europe.

We use Preqin codes to identify the industry focus of fund investments, where we collapse the industry codes into 11 different industries (business services, energy, consumer, industrials, information technology, health care, infrastructure, food and agriculture, real estate, and media/communications). As with geography, a fund is said to have an industry focus if more than a third industry sector descriptors are concentrated in a given industry. A significant number of funds are self-described "diversified funds" while other funds provide a long list of sectors with no focus on one particular industry; we categorize both as diversified funds. In Table 2, Panel C, we present the means of these dummy variables across funds; as was the case with the fund geography dummies, the fund industry dummies sum to a number greater than one because some funds invest in more than one industry.

C.2. Fund Statistics: Impact funds

The right side of Table 2 reports descriptive statistics for our sample of 161 impact funds. Relative to other funds, the impact funds are a bit smaller (median size of $78.7 million v. $100 million)

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[13] For some funds, we observe value multiples but not IRRs. For these funds, we calculate percentile ranks based on value multiples. When we have percentile ranks based on both IRR and value multiples, we use the average of the two percentile ranks.

and also positively skewed (mean size of $128 million v. $196 million), but have about the same number of investors (5.14 v. 5.03), managed by fund families with substantially lower past fund excess IRRs (-0.49% v. 4.0%) and percentile ranks (0.42 v. 0.54). Similarly, the current fund excess IRR is lower (-5.88% v. 0.73%), which translates to lower fund percentile ranks (0.34 v. 0.48). Impact funds are slightly more likely to be a first time fund (38% v. 34%) and somewhat less likely to be missing performance data (30% v. 38%).[14]

In Panel B, we see that impact funds, relative to other funds, tilt away from developed markets and toward developing markets including Africa, Latin America, and Emerging Europe. However, impact funds are still very active in North America and Developed Europe, with 34% and 17% respectively of impact funds serving goals in those regions. In Panel C, we see that impact funds often focus on energy, but otherwise are diversified.

III. RESULTS

A. The Demand for Impact

A.1. Main Results

The first question we address is whether the supply of impact investing opportunities is meeting the demand for these investments. In Table 3, we answer that question using a logit model, where an observation is a potential investment by an LP into a fund. The estimation has over 3 million observations because we set up all potential investments by crossing all funds of a vintage with all LPs that make at least one fund investment in that vintage year. The key variable of interest is the Impact fund dummy variable.

Being an impact fund increases investors' probability of investing in the fund by 0.00116. The base investment rate for all investors is 0.0082; an LP chooses to invest in 0.82 out of every 100 VC funds offered in the market that vintage year. Thus, an increase of this rate to 0.94 out of every 100 funds is an economically significant increase of 0.116/0.82 = 14.1% in the investment rate, which we refer to us the scaled marginal effect. In the context of our choice-of-fund framework, we interpret this result as LPs exhibit higher investment rates in impact funds relative to the supply of impact funds than they do in non-impact funds relative to the supply of non-impact funds. Assuming the market for non-impact VC funds is complete, our results imply that the supply of impact funds is incomplete, failing to meet demand. Based on these assumptions, we use the language that there is *above-market demand for impact* to describe our results.

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[14] In work in progress, we analyze the performance differences between impact funds and conventional funds in more detail.

In the remaining rows of Table 3, we present estimates of the literature-motivated determinants of VC investment in our fund choice framework. Most of these determinants have the predicted effects on the investors' choice of funds. Higher performance of funds raised and managed by the family of funds in the past (interpreted either as the fund manager's skill or expected return on the current fund) has a positive and significant effect on the investor's choice probability. By contrast, first-time funds and funds missing past performance data have reliably negative effects on investor's choice probabilities. Funds with larger expected fund size attract more investors, as anticipated. Investors with fewer years in VC investing are more likely to invest. The remainder of the table summarizes the marginal effect of fund industry, fund geography, prior relationship between the LP and fund family, and the location of the LP and fund. Of these variables, the prior relationship between the LP and fund family is clearly the most important economically. Home bias is also economically important; LPs are much more likely to invest in a fund that invests in companies in the same region.

To assess the economic significance of the determinants of fund choice, we propose a new measure to the literature, the Tjur R^2 (Tjur (2013)). The Tjur R^2 is the difference in the mean of the predicted probability for the two categories of the dependent variable (i.e., invested vs. non-invested funds). The Tjur R^2 has the appealing property that it ranges between zero (for models with no discriminatory power) and one (for models with perfect discriminatory power). It also allows us to calculate the equivalent of a partial R^2 in the framework of a choice model. To measure the incremental explanatory power of each variable set in the model (fund attributes, LP attributes, etc.), we report partial Tjur R^2 on the bottom right of the table.

We find that three variable groups—the prior relationship, the geographic match and the (unreported) LP investment group fixed effects—are clearly the most important in capturing the variance across the fund choices of LPs. Prior investment relationships between the VC fund family and LPs explain 87.6% of the overall Tjur R^2, whereas LP home bias (e.g., a North American investor prefers North American funds)[15] explains an additional 6.7% (or over half of the total Tjur R-squared not explained by the prior relationship variable). LPs overwhelmingly favor investing in fund families with whom they have a prior experience and in their local regions, consistent with Lerner, Schoar and Wongsunwai (2007), Hochberg, Ljungqvist, and Vissing-Jørgensen (2014), and Hochberg and Rauh (2014), among others. Importantly for our design, the LP investment group fixed effects also matter, explaining 4.4% of the total variation explained, or a third of the residual variance explained, excluding the relationship variable. Vintage year fixed effects explain 1.2% of the variation. A bit surprising perhaps

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[15] The geography-match variable is constructed using (i) the fund's geographic focus and (ii) LP location for most LP types with the exception of development organizations. For development organizations, we used the LP's mission geographic focus rather than the HQ physical location.

is the lack of variation explained by the other attributes such as fund industry focus, fund geography, and other fund or LP characteristics.[16]

One concern with our logit model is that our dependent variable captures only the incidence of a commitment, but not the actual commitment size by individual LPs. Thus, if investors in impact funds are on average making smaller capital commitments than investors in conventional funds, we might overestimate their demand for impact investments. If we observe LP commitment amounts for each LP-fund pairs, we could use that as the dependent variable. Unfortunately, LP commitments are observable for only about a third of our observations, and these observations are not random across LP types.

To address this issue as best we can, we compare the mean capital commitment for impact funds to those of conventional VC funds (see Table 2). Among observed LP commitments, LP commitments average $26.9M for impact funds and $20.9M for conventional funds, and the difference is significant at 5% level. One might wonder if this is because we observe proportionately more capital commitments for conventional funds and thus are more likely to observe smaller capital commitments. This does not appear to be the case as we observe proportionately more capital commitments for impact investments (37.9%) than for conventional funds (33.6%). So per LP commitment amounts are actually larger, not smaller, for impact funds, implying that differential per LP commitment amounts cannot explain our finding that investors are more likely to invest in impact funds.

A.2. Validation of Demand for Impact Results

Circumstantial evidence suggests that demand for impact should be higher for investors (i) signing the UNPRI, (ii) active in more recent periods, and (iii) from Europe. For example, in their 2014 report the Global Sustainable Investment Alliance (GSIA) reports that 59% of total managed assets in Europe are in SRI strategies compared to only 18% of assets in the US, 17% of assets in Australia, and 1% of assets in Asia. This suggests that Europeans value externalities more than North Americans. Likewise, those signing the UNPRI are doing so with a cost of compliance, implying that our tests should pick up a higher demand for impact among UNPRI signatories.[18] Finally, investor, governmental, and

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[16] It is perhaps surprising that the past performance variable does not explain choices. This statement is not entirely accurate, however. Only a third of the funds have observable past performance. For the missing past performance observations, we put past performance as zero and flag these observations equal to one in a missing past performance variable. When we instead implement this model with only observations that have past performance, we find that our main impact results are robust and the past performance variable explains 20% of the total Tjur R-squared.

[18] Being an UNPRI signatory may reflect different motives across investor types. For asset managers whose clients do not value the SRI options, the cost associated with UNPRI compliance may be too high relative to its benefits. However, some institutional and wealth asset managers (e.g., Robeco) specialize in catering to end investors that demand SRI in their portfolio choices. Being a UNPRI signatory may elevate the credibility of these asset managers in the eyes of their target audience. For direct (non-intermediated) holders of capital, the motivation for signing the UNPRI could be more transparent as a signal of belief in principles. Likewise, signing may be a form of protection.

media attention given to impact investing has grown in recent years (e.g., yielding the 2013 G7 Social Impact Investment Forum, spearheaded by UK Prime Minister David Cameron). Our results should also reflect a heightened demand for impact in more recent periods. We use these markers (UNPRI status, time, and geography) to test the validity of our empirical construct and provide more convincing evidence regarding the importance of these markers.

A.2.1. UNPRI signatures

In column (1) of Table 4, for reference we present the main impact result from Table 3 and the associated scaled marginal effect on fund demand of 14.1%. In column (2) of Table 4, we augment the main model of Table 3 with a UNPRI dummy and the interaction of UNPRI with Impact, reporting marginal effects and scaled marginal effects, which is the marginal effect divided by the investors' baseline investment rate conditional on signatory status. Consistent with conventional wisdom, UNPRI signatories have greater demand for impact. The marginal effect estimate is 0.00296, an increase of 25.8% over the baseline investment rate, which is 1.12 out of every 100 funds for UNPRI signers. The demand for impact is still positive and significant for non-signers, but the economic magnitude is much smaller, at only 7.1% of the baseline investment rate.

A.2.2. Temporal Variation

Next we look to validate our model by testing whether the above-market demand for impact shows a secular time trend during our sample period, as one might expect. This is not an obvious prediction because supply is likely evolving as well. In Table 4, column (3), we report estimates with the key Impact variable interacted with a post-2007 dummy (the split of our fund observation sample). The results indicate an excess demand for impact in both subperiods, however excess demand has increased more than threefold post-2007 relative to pre-2007.

The secular increase in the demand for impact is only observed for UNPRI signatories. This conclusion comes from column (4) of Table 4, which contains the marginal effects of the triple interaction of impact status, fund vintage years (pre-2007 v. post-2007), and UNPRI signer. Prior to 2007, only UNPRI signers have reliably positive excess demand for impact investments (with a 10.1% scaled marginal effect on fund demand). After 2007, excess demand for impact from UNPRI signatories increases more than fourfold (to 48.5%), but even non-signers exhibit 11.1% of excess demand for impact investment over traditional VC.

For example, public pension funds may use UNPRI compliance as protection against potential lawsuits for breach of fiduciary duty, when they face political pressure to invest with impact.

A.2.3. European v. Other Locations

We separately estimate our main logit model for five investor regions: North America, Developed Europe, Developed Asia-Pacific, Emerging Asia-Pacific, and the Rest of the World. The results of this analysis are presented in Table 5. Focusing on the first row of Table 5, we find that investors in Europe have 23.7% more demand for impact than the market demand for conventional funds. North American investors have a more modest 8.5% above-market demand, a third the size of the above-market demand for impact by Europeans.

When we run our second model, which interacts UNPRI signatory status with impact funds, we find that all of the demand for impact in North America comes from UNPRI signatories, which echoes our earlier finding that the secular increase in excess demand can be traced to UNPRI signatories. In Developed Europe, both signatories and non-signatories have positive demand for impact (although the demand is somewhat stronger among European signatories). In the remaining three regions, we find evidence of significant demand for impact by UNPRI signatories in the Rest of the World, which includes Emerging Europe, Africa, and Central and South America.

B. *The Demand for Impact by Impact Category*

Does demand for impact vary across the diversity of impact goals? In the first column of Table 6, we report results where we interact Impact with the impact category markers from Figure 1 and reestimate our main logit model. We implement two specifications. First, we estimate the full model with the main impact dummy variable and separate dummy variables for each type of impact category. (Recall the same fund can address multiple impact categories, so the impact category dummy variables are not a linear combination of the main impact dummy variable.) Table 6, column 1 report the findings from this model.

In column 2, we test the robustness of these results by estimating separate logit models for seven subsamples based on the seven impact categories. For example, we estimate the logit model for the combined sample of traditional VC funds and 46 impact funds with the focus of environmental impact; the resulting coefficient estimate on the impact dummy variable is reported in column (2) on the row labeled "Environmental Impact." There is analogous subsample estimation for the remaining impact categories, which we report on the rows for each category. We present this second column with the caveat that the estimation may associate an excess demand to one category, which is highly correlated with another category. As a result, we report this second model to alleviate concerns that multicollinearity may be generating unusual coefficient estimates given the small sample for some impact categories.

We find (interpreting only column 1) excess demand for impact for investments with objectives of environmental impact (15.2%), women and minority funding (14.5%), poverty alleviation (18.6%), and social concerns (19.5%). In ongoing work, we investigate whether the financial returns differ by impact

category and whether the variation helps us understand the variation in the demand for impact. For example, the value that investors place on impact may vary across impact category, which in turn has implications for the financial return that investors might expect to earn in each impact category.

In contrast to these categories of excess demand for impact, we find that the SME funding exhibits less demand by investors than the supply. Importantly, note that the negative demand for SME impact funds is not observed in the subsample analysis of column (2). Thus, the negative demand for SME-focused funds is only observed once we control for the other impact categories of a fund. Of particular importance is the poverty region effect, since 57% of impact funds in the SME category also have a poverty focus. SME funds outside of these poverty areas are developed to spur economic growth in an investor's backyard (e.g., local financial institutions or local pensions investing in local startups). The fact that these types of funds do not attract demand from many outside investors is intuitive, since primarily local investors will be interested in these funds hence limiting the potential investor base. Thus, it is not surprising that this result disappears in column 2, where the strong demand for poverty impact more than offsets the negative SME effect.

C. Incentives for and Impediments against the Demand for Impact

Having shown that there is an aggregate excess demand for impact funds, in this section we examine whether the demand varies by investors type and, if so, why. We begin with a descriptive analysis, which documents significant heterogeneity in the demand for impact by LP type. We then test the conjecture that specific investor attributes modulate the demand for impact. Specifically, we consider six investor attributes, which differ by investor type and geography. These attributes, described in detail below, include whether the capital being deployed is (1) provided by households or organizations, (2) intermediated, (3) mission-driven, (4) political or regulatory pressured, (5) legally constrained, or (6) constrained by organizational charter.

C.1. Univariate Results

To set the stage we present in the percent of investments by LP type for non-impact and impact investments in Figure 3, where the pie charts present the composition of investors in the two fund types. For traditional VC funds, pension funds (public and private) together comprise 42% of the investments. This ratio is in line with prior literature. Foundations and institutional asset managers (e.g., fund of funds) are also important sources of capital for non-impact funds, contributing 11.5% and 14% of total, respectively. In contrast, development organizations and public pensions are by far the most important sources of capital for impact funds: the two types together provide over 53% of the total investments. While public pensions' share of the total is similar between the two fund types, development

organizations invest far more in impact funds (28.3%) relative to their investments in non-impact funds (8.0%).

This simple pie chart reflects considerable variation in the types of investors who choose impact funds. However, it does not reveal whether the demand for impact is positive for a particular LP type since it is possible that all investor types have higher demand for impact funds than conventional funds, but there is merely variation in this demand. In the next section we further examine these differences across LP types in the multivariate logit model setting.

C.2. Multivariate Results by LP Type

In Table 7, we present the main logit model results estimated separately for the ten LP types. As before, an observation is a potential investment by an LP into a fund. Consistent with the heterogeneity in the clienteles that we observe in figure 2, these multivariate logit analyses confirm considerable variation in the demand for impact by LP type. We find that development organizations, foundations, banks, insurance, and public pensions exhibit excess demand for impact. Since the base investment rates vary across LP types, it is important to scale the marginal effects by the investor-specific investment rates in order to compare the economic magnitudes across LP types. We find that the effect of being an impact fund boosts the demand by between 11.1% and 24.0% of the base investment rates for these five LP types (with foundations being the lowest, and banks and insurance being the highest). Note that we found a significant positive demand effect for the majority of LP types, which was not evident in the pie charts. For example, foundations have a similar share of conventional VC funds and impact funds, but the multivariate analysis reveals they have positive demand for impact. This result suggests that the multivariate analysis absorbs important factors that determine the demand for a particular fund, allowing us to identify the distinct effect of being an impact fund.

In contrast, endowments exhibit negative excess demand for impact to the magnitude of demanding 31.1% less demand for impact funds relative to traditional VC funds. Corporations and private pensions also exhibit a negative logit coefficient as one might expect, but the results are not statistically significant.

C.3. Multivariate Results by LP Attributes

To better understand the sources of these differences across and within LP types, we consider six motives or constraints that may shift investor demand for impact. In Table 8, we present these LP attributes (across columns) and the mapping of the ten LP types (down rows) to these attributes.

In column one (Household), we categorize investors based on the constituents of the capital (organizations or households). Households may derive utility from externalities (because they enjoy the

externality of a thriving local economy, they desire environmental protection for the next generation, etc.) and thus demand social consideration in investment choices. Wealth managers and the two types of pensions serve households as the ultimate constituents, while the remaining investor types have other organizations as the underlying source of capital (e.g., endowments serve universities, insurance portfolios serve insurance companies, bank investments serve bank interests, etc.).

In column two (Intermediated), we classify the LP types based on whether the capital is intermediate or voluntarily provided to an asset manager (e.g., financial adviser, family office, or fund of funds). On one hand, intermediation may reduce the demand for impact by creating distance between the providers of capital and those who are making capital allocation decision. For example, some investors may be interested in generating impact but end up pooling their investments with other investors with divergent or nonexistent impact goals creating a coordination problem. On the other hand, intermediation may facilitate impact since wealth managers or institutional asset managers could market their services as providing an opportunity to generate impact.

In column three (Mission-Driven), we identify investors that have an impact mission as a primary goal. Ceteris paribus, we would expect those investors whose primary goal is mission-related to have stronger demand for impact. Development organizations and foundations are typically non-profit entities with an explicit organizational goal of generating positive externalities for the region they serve (development organizations) or for the social and environmental goals of their mission (foundations). These entities may exhibit a naturally higher demand for impact, reflecting preferences in their utility for externalities.

In column four (Pressure), we identify pressures toward impact investment. U.S. banks, U.S. insurance companies, and public pensions have in common a political or regulatory pressure that may induce them to invest locally or in underserved communities, either of which could be done via impact investing.

In the U.S., commercial banks are subject to certain lending and investment obligations under the Community Reinvestment Act (CRA), which is "intended to encourage depository institutions to help meet the credit needs of the communities in which they operate, including low- and moderate-income neighborhoods, consistent with safe and sound operations."[19] In particular, banks are permitted to invest in community development venture capital funds that provide equity financing to businesses in underinvested communities as a way to fulfill the investment test part of their CRA obligation.[20] U.S.

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[20]CRA Investment Handbook (2010), p.24.

banks may be incentivized to invest in impact funds that meet this criterion especially if such investments garner goodwill from bank customers.

In the U.S., insurance companies also have some state-level CRA-like requirements to invest in local communities (e.g., the State of California insurance regulation). Even in the absence of regulation, financial institutions globally may invest in impact funds as a reflection of their corporate social responsibility (CSR) motives to foster goodwill in local markets while investing their proprietary portfolios. Insurance companies in the U.S may de facto face similar pressure to invest in impact in order to either (i) preempt passage of a federal CRA-like regulation for insurance or (ii) comply with existing state-level insurance regulations akin to the CRA for some of the large U.S. states (e.g., Texas, New York, California, etc.). Banks and insurance companies in other countries face less such pressure, which we will use for identification.

Public pensions worldwide, despite their being subject to strong fiduciary duty, may also face political pressure to increase the (perceived or real) welfare of voting populations. Public pensions may be also pressured to serve the political interests of their boards, which are often pro-labor and consider local job creation as an important policy goal. Thus, public pension investors may face a sharp tension between the boards that pressure them to serve the local economy (e.g., by investing in impact funds that target improving welfare and employment conditions of underserved neighborhoods in the state, for example) on the one hand, and the fiduciary duties and legal restrictions they face, which we discuss in detail below. Interestingly, impact funds are often loath to admit the existence of any trade-offs between positive externality they generate and the financial return they earn. It is possible that the rhetoric used by impact funds is in response to these fiduciary investors' needs to appear uncompromising in their search for financial returns.

In column five (Laws), we highlight existing legal impediments to impact investing. Again, we highlight the differences between the U.S. and non-U.S. regulations. We argue that Foundations, Endowments, and Private Pensions in the U.S. face fiduciary standards that discourage impact investments, while Public Pensions face similar fiduciary standards around the world.

In the U.S., private pensions and public pensions are subject to the 1974 Employee Retirement Income Security Act (ERISA) fiduciary guidelines, which state a fiduciary "… may never subordinate the economic interests of the plan to unrelated objectives, and may not select investments on the basis of any factor outside the economic interest of the plan",[21] though non-financial factors can be considered when they do not adversely affect risk or returns. This strict interpretation of fiduciary duty is likely to discourage U.S. private pension investors to invest in impact funds, for fear of being seen as sacrificing

financial returns in return for a positive externality. Public pensions are subject to state- and national-level regulations worldwide, generally through legislative action. In practice, U.S. state regulations governing public pensions often closely follow ERISA, thus creating a fiduciary responsibility that might hinder impact investment by public pensions.

Similar to ERISA, the Uniform Prudent Management of Funds Act (UPMIFA) governs the management of foundation and university endowment funds in the U.S. and generally imposes fiduciary duties that are similar to those of pensions. However, fiduciaries of foundations and endowments have an additional duty of obedience to the unique charitable mission of the organization. For university endowments, this provision does not likely affect the demand for impact since the focus of impact funds in our sample are not generally aligned with the missions of universities. In contrast, foundations might have missions aligned with some categories of impact funds (e.g., poverty alleviation of environmental issues). We suspect foundations have nonetheless been constrained by the UPMIFA because investment decisions are generally detached from pursuit of the organizational mission. In addition, tax laws in the U.S. create an additional hurdle. The U.S. tax authority requires foundations to maintain 5% annual payout rate to keep their tax-exempt status. Foundations can make impact investments designated as program-related investments (PRIs) and count these investments towards the required 5% payout rate if certain eligibility tests are met.[22] While the policy may have been intended to encourage PRIs, the ambiguity around the test outcome and the perceived threat of tax-exempt status loss may subdue foundations' demand for impact investments to a level below where it would be otherwise.

In column six (Charters), we identify existing restrictions against impact investment in the form of organizational charters. Organizational charters that require them to act in the best interest of their owners, generally shareholders, govern banks, insurance companies, and corporations. Thus, investing in impact funds could be viewed as contrary to these organizational objectives. Similarly, institutional asset managers, who generally managed pooled capital, generally must act in the financial interests of their clients. Similarly, non-U.S. private pensions are subject to fiduciary responsibility via their organizational charters. This restriction may constrain these investors' ability to invest in any instruments that are designed to generate externalities, i.e., impact funds.

To identify which of the six LP attributes potentially affect the demand for impact, we modify our main logit model to include (i) the six LP attribute dummy variables corresponding to the six columns in

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[22] Specifically, the PRIs must further the foundation's organization mission, and the financial returns cannot be a primary purpose of the investment. In practice, PRI investors are required to demonstrate that conventional investors maximizing returns would not invest at the same term as their investment terms. This is simple if the financial instrument used is a below-market return debt security. Precisely for this reason, below-market-return loans are popular vehicles for PRIs. In contrast, equity vehicles are relatively rare, possibly because of the perceived risk of violating the PRI eligibility requirement if it makes too much profit ex post.

Table 8 (e.g., for the first column, the dummy variable Household equals one for three LP types listed in the column: Wealth Manager, Private Pensions, and Public Pensions) and (ii) each of the six LP attribute dummy variable interacted with the Impact fund dummy variable. To estimate the scaled marginal effect of the household attribute, we sum the marginal effect of impact (the direct effect) and the marginal effect of impact interacted with the household attribute, dividing by the baseline investment rate (conditional on LP types with the attribute). We similarly calculate the scaled marginal effect for the remaining five LP attributes when theses effects are reliably different from zero.

The results are presented in Table 9. We find that for LPs having each of the three LP attributes–household constituency, mission objective, and pressure towards impact–being an impact fund boosts their demand by 13.1%, 39.5%, and 26.1% of the base investment rates, respectively. The first result is consistent with the notion that investors representing households as ultimate constituents have greater demand for impact investment vehicles than those representing organizations. The second result suggests that mission-based organizations, ceteris paribus, have greater demand for impact. The third result reveals that some investors are not driven to impact in a vacuum but by the structure deliberately built into their environment by regulation and politics. In contrast, for LPs with legal restrictions against impact investments, being an impact significantly reduces their demand by a large 41.8% of the base rate. Finally, being intermediaries or having charter restrictions against impact does not materially affect their demand for impact on average. This multivariate analysis of LP attributes offers suggestive evidence that the sharp heterogeneity across the 10 investor types described in Table 9 captures meaningful variations across investors in their motives and/or restrictions that determine their demand for impact investments.

Of the investor attributes that we consider, the last three (columns four to six of Table 8) capture existing, but potentially changeable aspects of the investment environment—not features baked into a specific organizational form. This is an important lens through which to view the results presented above because two of these three mutable characteristics generate large effects on the demand for impact. On one hand, pressure, whether it stems from positive rules designed to generate impact (e.g., CRA) or local pressure (e.g., public pensions) elevates the demand for impact investments. On the other hand, rules that restrict impact investment (e.g., ERISA and UPMIFA rules regarding fiduciary responsibilities) dampen the demand. These results suggest that changing the rules and regulations that govern investment can materially alter the demand for impact investment.

IV. CONCLUSION

We study the determinants of investor demand for impact funds, which are structured as VC funds with long lives and have a dual objective of generating a positive externality and earning a financial return. Using LP and fund data for over 5,000 funds and over 3,500 investors, we examine whether the

supply of investment opportunities for impact investments keeps up with the demand for impact using a fund choice framework, which employs a battery of control variables (fund characteristics, LP characteristics, and fund-LP match characteristics) designed to absorb the broad determinants of demand for a particular VC fund. The main result to emerge from our analysis is the observation that, ceteris paribus, impact funds have 14.1% greater probability of attracting investment than traditional VC funds. Assuming the market for traditional VC funds is complete, we refer to this increased probability as excess demand.

Several empirical results provide reassurance that our fund choice framework yields reliable inferences. The demand for impact is three times as strong among UNPRI signers as non-signers; likewise, the demand for impact is three times as strong among European investors as North American investors. Thus, being a UNPRI signatory is a marker for demand for impact, and European investors have on average higher demand than the U.S. and the Rest of the World. Moreover, the demand for impact has grown more than threefold after 2007, a result that can be traced to a more than fourfold increase in the demand for impact funds by UNPRI signatories after 2007 versus earlier years.

While all impact funds seek to earn a financial return, the impact goals of the fund vary. We categorize the impact objectives into seven broad categories: environmental impact, minority and women funding, poverty alleviation, social concerns, social infrastructure (e.g., schools, health, or microfinance), economic development through small and medium enterprise (SME) funding, and geography-focused funds (excluding poverty). Of these categories, we document the excess demand for impact is greatest for funds where the impact objective is environmental impact, minority and women funding, poverty alleviation, or addressing social concerns (with excess demand effects ranging from 14.6% to 19.4%).

Who holds capital affects the demand for impact. We categorize LP investors into ten broad categories and find considerable variation in the demand for impact by these investor types. Development organizations (17.7% increase in demand), foundations (11.1%), banks (22.2%), insurance companies (24%), and public pensions (17.3%) have the greatest demand for impact. In contrast, some investors eschew impact funds, including endowments (-31.1%) and (with less precision) private pensions and corporate/government portfolios.

Perhaps most importantly, we analyze the determinants of the variation in demand across investor types and provide evidence regarding the mechanisms that generate this variation. To do so, we identify six attributes of investors that plausibly modulate the demand for impact. In our multivariate fund choice model, we find evidence that demand for impact is generated by (i) investors whose ultimate constituents are households (e.g., wealth managers serve households v. corporations who serve shareholders); (ii) investors whose primary objective is impact (e.g., development banks or foundations); and (iii) investors that face political or regulatory pressure to invest in impact (e.g., banks in the U.S. that face CRA

requirements). In contrast, we find that legal and regulatory restrictions (e.g., U.S. ERISA and UPMIFA) that create strong fiduciary standards impede the demand for impact. These results suggest that implementing U.S. CRA-like regulation elsewhere, and relaxing the strict ERISA interpretation of fiduciary duty in the U.S., could potentially dramatically increase demand for impact investments.

Appendix A: Construction of Impact Fund Sample

We construct our dataset of impact funds as follows. We create a dataset of articles that mention the Preqin funds in the article text using Factiva (and particularly Private Equity Analyst, a leading trade publication with extensive reporting on PE fundraising). From the article dataset, we identify *potential* impact fund by performing a keyword search (see Table A1 for a list of keywords). We review these articles and delete illegitimate word hits (e.g., keywords referred not to the fund but to another entity discussed in the article). From this process, we identify 56 managers of impact funds (e.g., a keyword "mission investing" appears in the article and describes one of the funds managed by the manager). We consider all PE funds managed by these 56 managers as potential impact funds ("text56" sample).

We also identify potential impact funds using data from the organizations that compile lists of impact funds (ImpactBase and Preqin) or GPs with impact investments (ImpactAssets and Cambridge) or:

(1) ImpactBase (www.impactbase.org) is an online directory of impact investment vehicles. Fund managers can register their impact funds and investors can search the database to identify funds they may be interested in. We downloaded funds listed in ImpactBase as potential impact funds ("ibase" sample) as of 2014.
(2) ImpactAssets (www.impactassets.org) is a 501(c)3 organization affiliated with Calvert Foundation. ImpactAssets annually selects a list of 50 firms that engage in impact investments "to demonstrate a wide range of impact investing activities". We downloaded the ImpactAssets manager lists for all years that are available from their website as of 2014 ("i50" sample).
(3) Preqin (www.preqin.com) is a leading provider of data and intelligence for the alternative assets industry. Its fund database has a field called "fund ethos", and GPs of funds have the option to report their fund as falling into one or more of the following 6 categories – "Economic Development", "Environmentally Responsible", "Microfinance", "Sharia Compliant", and "Socially Responsible". We exclude "Sharia Compliant" but downloaded all funds that check at least one of the other five "fund ethos" categories as of 2014 ("ethos" sample).
(4) Cambridge Associates (www.cambridgeassociates.com) is a leading investment advisor to foundations, endowments, private wealth, and corporate and government entities. As part of their advisory service to their investor clients Cambridge compiles a list of mission-related investing managers (MRI Manager Database). We obtained the list of managers as of May 2013 ("Cambridge" sample). This list includes many very large GPs that do not specialize in impact investments (e.g., Blackstone).

At this stage, we cast our net broadly and consider all GPs with at least one impact investment. Specifically, we identify all funds managed by GPs that (a) manage an iBase fund, Preqin ethos fund, or text56 fund or (b) are listed as a GP with impact investments by ImpactAssets or Cambridge Associates. We identify countries with GDP per capital of less than $1400 according to the IMF 2014 (see Table A2 for the list of 37 countries) and add 66 funds that make investments in these countries according to Preqin. For funds that invest in multiple regions, we require that half of the listed regions be in these poor countries. This results in 843 funds – far more than our final sample because we include *all* funds managed by GPs with impact funds, which includes some GPs with many funds but only a few are impact funds (e.g., Blackstone and Hamilton Lane).

For these 843 funds, we read detailed fund and/or GP descriptions from vendors (Capital IQ, Thomson One), PE firm websites, and the original source articles from Private Equity Analyst. Finally, we require that there is data on at least one LP per fund in Preqin. This process yields 161 impact funds with a venture or growth focus.

Appendix Table A1: Impact Investment Search phrases

base of the pyramid	greenhouse	social objectives
bottom of the pyramid	impact investing	social responsible
clean air	impoverished	socially conscious
clean water	indigenous	socially motivated
community invest	invest ethical	socially responsible
disadvantaged	investing ethical	socially-motivated
double bottom line	low carbon	SRI
dual bottom-line	low-carbon	sustainable agriculture
environmental impact	lower-carbon	sustainable development
environmental objective	minority community	sustainable economic development
environmentally clean	minority-owned	sustainable farming
environmentally conscious	missing middle	sustainable forestry
environmentally motivated	mission driven	sustainable investment
environmentally sustainable	mission investing	sustainable property
ethical invest	mission related	sustainable water
ethical objectives	mission-driven	tribe
ethically conscious	mission-related	triple bottom line
ethically motivated	poverty	triple bottom-line
ethically-conscious	S.R.I.	women owned
ethically-motivated	social finance	women-owned
green energy	social good	
green focused	social impact	

Table A2: Countries with GDP Per Capital less than $1400

Country	GDP per capita	Country	GDP per capita	Country	GDP per capita
Pakistan	1,343	Haiti	833	Guinea-Bissau	589
Kyrgyzstan	1,299	Benin	822	North Korea	583
Chad	1,236	Sierra Leone	808	Ethiopia	575
Burma	1,221	Mali	754	Guinea	573
Bangladesh	1,172	Uganda	726	Liberia	484
Lesotho	1,130	Rwanda	722	Niger	469
South Sudan	1,127	Burkina Faso	717	Madagascar	449
Tajikistan	1,113	Nepal	699	Congo	437
Cambodia	1,081	Togo	658	Gambia	428
Senegal	1,072	Afghanistan	649	Central African Republic	380
Zimbabwe	1,031	Mozambique	630	Burundi	336
Tanzania	1,006	Eritrea	590	Malawi	242
Comoros	923				

Source: IMF World Economic Outlook 2014

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Table 1: Limited Partner (LP) Descriptive Statistics

For each of the LP types and all LPs, we present descriptive statistics by first averaging all observations for a unique LP and then calculating the mean (standard deviation) for each variable across N LPs. Funds per LP are the total number of unique fund investments by an LP. Vintage Year is the average vintage year of fund investments. Years of Experience is the number of years since the LPs first fund commitment. The % Prior Relationship is the percent of capital commitments where the LP and fund's general partner (GP) had a prior investment relationship. The % Home Bias is the percent of capital commitments by the LP type where the region of the LP and fund are the same (using the eight major global regions of Panel B). In Panel B, we present the regional distribution of LPs by LP type. Standard deviations are in parentheses.

	Dev. Org.	Found-ation	Bank	Insurance	Endow-ment	Corp. & Gov't	Institu-tional	Wealth Manager	Private Pension	Public Pension	Total
					Panel A: LP Descriptive Statistics						
# of LPs	272	464	261	326	201	417	528	203	447	385	3,504
% of Total	7.8	13.2	7.4	9.3	5.7	11.9	15.1	5.8	12.8	11.0	100.0
# of Capital Commitments	2,214	2,893	670	1,936	1,357	1,549	3,519	701	4,178	6,418	25,435
% of Total	8.7	11.4	2.6	7.6	5.3	6.1	13.8	2.8	16.4	25.2	100.0
Funds per LP	8.14	6.23	2.57	5.94	6.75	3.71	6.66	3.45	9.35	16.67	7.26
	(16.90)	(14.17)	(2.69)	(12.41)	(16.84)	(16.43)	(16.22)	(6.26)	(21.67)	(33.04)	(18.65)
Vintage Year	2006.93	2005.44	2006.07	2004.79	2004.44	2006.46	2005.24	2005.77	2004.10	2004.38	2005.31
	(4.30)	(4.15)	(4.32)	(5.01)	(4.62)	(5.24)	(4.62)	(5.15)	(4.72)	(5.10)	(4.81)
Years of Experience	4.12	3.92	2.89	4.10	4.35	2.56	3.59	3.16	4.70	6.90	4.07
	(4.12)	(4.24)	(2.88)	(4.71)	(5.00)	(3.08)	(4.13)	(3.85)	(4.63)	(6.57)	(4.60)
# UNPRI Signatories	14	11	21	45	3	4	103	25	37	52	315
% UNPRI Signatories	5.1	2.4	8.0	13.8	1.5	1.0	19.5	12.3	8.3	13.5	9.0
% Prior Relationship	23.5	41.8	10.9	26.8	38.8	22.9	25.5	24.1	38.5	41.3	33.5
% Home Bias	59.0	78.2	82.1	82.4	81.9	71.9	61.1	68.8	78.2	84.4	75.7
					Panel B: Regional Distribution of LPs by LP Type						
North America	19	83	15	49	83	23	30	34	73	60	48
Developed Europe	29	15	40	33	15	27	42	38	20	31	29
Emerging Europe	6	0	3	0	0	1	1	2	1	0	1
Africa	5	0	4	3	1	1	3	1	1	2	2
Central and South America	6	0	1	1	1	2	1	1	3	2	2
Developed Asia-Pacific	8	1	15	6	0	19	9	18	2	3	8
Emerging Asia-Pacific	25	0	15	6	1	24	11	3	0	1	9
Middle East	3	1	7	2	0	2	5	3	1	1	2

Table 2: Fund Descriptive Statistics

This table presents fund summary statistics for all funds (left columns) and impact funds (right columns). Capital Commitment is the average capital commitment across investors within a fund. Number of LPs is the number of observed LPs in Preqin. Past Fund Excess IRR is the weighted average (recent funds are weighted more than past funds) of the excess IRR for prior funds managed by the same fund family; excess IRR is a fund's IRR less the mean for similar cohort funds (year, region, and fund type). Past Fund Percentile Rank is a weighted average of percentile ranks for prior fund managed by the same fund family. Fund Excess IRR and Fund Percentile Rank are performance measures for the current fund. First-time fund and missing performance data are dummy variables that equal one if this is the fund family's first fund or if there is no historic performance data. In Panel B, we present the geography focus of fund investments where each region represents a dummy variable that equals one if the fund invests in the region. In Panel C, we present the industry focus of fund investments. Funds can have multiple geography and industry focuses.

	Traditional VC Funds				Impact Funds			
	N	Mean	Median	Std. Dev.	N	Mean	Median	Std. Dev.
	Panel A: Descriptive Statistics							
Vintage Year	4892	2004.14	2005.00	6.58	161	2006.51	2007.00	4.77
Fund Size ($mil)	4282	196.41	100.00	293.74	149	127.98	78.71	146.91
Number of LPs in Fund	4892	5.03	3.00	6.42	161	5.14	4.00	4.33
Capital Commitment ($mil)	3013	20.93	13.00	32.90	126	26.89	15.00	32.82
Past Fund Excess IRR	1201	4.15	2.45	11.06	40	-0.49	1.39	7.91
Past Fund Percentile Rank	1319	0.54	0.56	0.22	52	0.42	0.42	0.23
Fund Excess IRR	1450	1.08	0.00	15.19	76	-5.88	-4.50	12.00
Fund Percentile Rank	1815	0.49	0.50	0.30	95	0.34	0.28	0.30
First-time Fund	4892	0.34	0.00	0.48	161	0.38	0.00	0.49
Missing Performance Data	4892	0.38	0.00	0.49	161	0.30	0.00	0.46
	Panel B: Geography Focus of Fund Investments							
North America	4892	0.51			161	0.34		
Developed Europe	4892	0.23			161	0.17		
Emerging Europe	4892	0.06			161	0.09		
Africa	4892	0.02			161	0.23		
Central and South America	4892	0.02			161	0.12		
Developed Asia-Pacific	4892	0.07			161	0.01		
Emerging Asia-Pacific	4892	0.16			161	0.14		
Middle East	4892	0.03			161	0.00		
All Regions	4892	1.10			161	1.09		
	Panel C: Industry Focus of Fund Investments							
Business Services	4892	0.03			161	0.03		
Energy	4892	0.06			161	0.19		
Consumer Discretionary	4892	0.05			161	0.03		
Diversified	4892	0.28			161	0.49		
Industrials	4892	0.04			161	0.06		
Information Technology	4892	0.45			161	0.06		
Health Care	4892	0.22			161	0.06		
Infrastructure	4892	0.01			161	0.05		
Food and Agriculture	4892	0.01			161	0.04		
Materials	4892	0.00			161	0.04		
Real Estate	4892	0.00			161	0.04		
Media and Communications	4892	0.12			161	0.03		
All Industries	4892	1.28			161	1.12		

Table 3: The Demand for Impact

The two columns present marginal effects from a single logit model. The dependent variable is a dummy variable that equals one if an LP invests in a fund. Observations are determined by crossing all vintage year funds with LPs that make an investment in that year. Impact equals one for impact funds. Fund attributes include performance ranks for past funds managed by the fund family, expected fund size, and dummy variables for funds missing performance data and first time funds. LP attributes include log of years since first fund investment. Relationship is a dummy variable that equals one if the LP invested in a prior fund managed by the same fund family. Fund-LP geography match are five dummy variables for five regions that equal one if the fund and LP are in the same region. Fund geography (industry) consists of five (12) dummy variables that equal one if the fund invests primarily in that region (industry). We include vintage year fixed effects and LP investments per year fixed effects (see text for details). The Tjur R^2 is the difference in the mean of the predicted probability for the two categories of the dependent variable (i.e., invested v. non-invested funds). The Tjur partial R^2 is calculated as the improvement in the Tjur R^2 from adding the indicated variables to the baseline model.

Group	Variable	Marginal Effects	Group	Variable	Marginal Effects
	Impact	0.00116***	Relationship	Relation Dummy	0.0157***
		[0.000154]			[0.000156]
	Past Fund Performance Rank	0.00117***		North America	0.00520***
		[0.000195]			[0.000101]
Fund Attributes	Missing Performance Dummy	-0.000230*		Europe	0.00719***
		[0.000125]			[0.000117]
	First Fund Dummy	-0.000510***	Fund-LP Geography Match	Developed Asia-Pacific	0.0117***
		[0.000129]			[0.000243]
	Expected Fund Size	0.000676***		Rest of World	0.0109***
		[0.000222]			[0.000305]
LP Attributes	Years in PE Investing	-0.000273***		Emerging Asia-Pacific	0.00780***
		[0.0000394]			[0.000175]
	Business Services	0.000972***		North America	-0.00241***
		[0.000147]			[0.000216]
	Energy	0.000172		Developed Europe	-0.00149***
		[0.000120]			[0.000104]
	Consumer	0.000314**	Fund Geography	Developed Asia-Pacific	-0.00158***
		[0.000127]			[0.000153]
	Diversified	-0.000435***		Rest of World	-0.000396***
		[0.0000941]			[0.000116]
	Industrials	-0.000263*		Emerging Asia-Pacific	0.000043
		[0.000159]			[0.000099]
	IT	-0.000050	Vintage Year Fixed Effects		Yes
		[0.000073]	LP Investment Rate Fixed Effects		Yes
Fund Industry	Health Care	0.000152**	Observations		3,089,112
		[0.000075]	Tjur R2		0.1579
	Infrastructure	0.000887***		Tjur Partial R2	Tjur Parital as % of Total Tjur
		[0.000229]			
	Food & Agriculture	0.000000	Fund Attributes	-0.00021	-0.20%
		[0.000295]	LP Attributes	0.00020	0.13%
	Materials	-0.00114**	Relationship	0.13410	87.56%
		[0.000448]	Fund Geography	0.00012	0.07%
	Real Estate	0.00127***	Fund-LP Geography Match	0.01017	6.68%
		[0.000491]	Vintage Year	0.00173	1.15%
	Media and Communications	-0.000105	Fund Industry	0.00034	0.22%
		[0.0000814]	LP Investment Group Effects	0.00671	4.39%

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 4: The Demand for Impact by UNPRI Signatories and Time

The table presents marginal effects from logit estimations. The dependent variable is a dummy variable that equals one if an LP invests in a fund. Observations are determined by crossing all vintage year funds with LPs that make an investment in that year. Impact and UNPRI dummy variables equal one for impact funds and UNPRI signatories, respectively. Model (1) present results with Impact only. Model (2) interacts Impact and UNPRI. Model (3) interacts Impact and a time dummy (prior to 2007 v. 2007 or later). Model (4) presents the triple interaction of impact, UNPRI signatory, and time. All lower order interactions are included in the estimation. Controls (fund attributes, LP attributes, and relationship variables) include all those reported in Table 3.

Model	(1)	(2)	(3)	(4)
Impact	0.00116***			
Standard Error	[0.000154]			
Scaled Marginal Effect	14.1%			
Nonsigner*Impact		0.000606***		
Standard Error		[0.000176]		
Scaled Marginal Effect		7.8%		
UNPRI*Impact		0.00296***		
Standard Error		[0.000292]		
Scaled Marginal Effect		25.8%		
Impact*Prior to 2007			0.000682***	
Standard Error			[0.000249]	
Scaled Marginal Effect			7.1%	
Impact*2007 and Later			0.00143***	
Standard Error			[0.000189]	
Scaled Marginal Effect			21.8%	
Nonsigner*Impact*Prior to 2007				0.000441
Standard Error				[0.000283]
Scaled Marginal Effect				4.9%
Nonsigner*Impact*2007 and Later				0.000639***
Standard Error				[0.000219]
Scaled Marginal Effect				10.1%
UNPRI*Impact*Prior to 2007				0.00152***
Standard Error				[0.000505]
Scaled Marginal Effect				11.1%
UNPRI*Impact*2007 and Later				0.00421***
Standard Error				[0.000373]
Scaled Marginal Effect				48.5%
Controls	YES	YES	YES	YES
UNPRI Fixed Effect	NO	YES	NO	NO
UNPRI*Pre, UNPRI*Post, Nonsigner*Post Effects	NO	NO	NO	YES
Vintage Year Fixed Effects	YES	YES	YES	YES
LP Investment Rate Fixed Effects	YES	YES	YES	YES
Observations	3,089,112	3,089,112	3,089,112	3,089,112

Robust Standard Errors are in brackets. *** p<0.01, ** p<0.05, * p<0.1

Table 5: The Demand for Impact by Investor (LP) Location

The table presents marginal effects from logit models. The data sample differs by columns according to the geography of the LP. The dependent variable is a dummy variable that equals one if an LP invests in a fund. Observations are determined by crossing all vintage year funds with LPs that make an investment in that year. Impact and UNPRI dummy variables equal one for impact funds and UNPRI signatories, respectively. Scaled effects divide marginal effects by baseline investment rates for all investor-funds in model (1) and conditional on UNPRI signatory status in model (2). Model (1) presents results with Impact only; model (2) interacts Impact and UNPRI. Control variables are those in the main logit model of Table 3.

Variable	North America (1)	North America (2)	Developed Europe (1)	Developed Europe (2)	Developed Asia-Pacific (1)	Developed Asia-Pacific (2)	Emerging Asia-Pacific (1)	Emerging Asia-Pacific (2)	Rest of World (1)	Rest of World (2)
Impact	0.000818***		0.00172***		-0.000103		-0.000444		0.000149	
Standard Error	[0.000263]		[0.000225]		[0.000606]		[0.000361]		[0.000108]	
Scaled Marginal Effect	8.5%		23.7%		--		--		--	
Nonsigner*Impact		0.000327		0.00122***		0.000041		-0.000438		0.000054
Standard Error		[0.000289]		[0.000272]		[0.000643]		[0.000361]		[0.000120]
Scaled Marginal Effect		--		18.8%		--		--		--
UNPRI*Impact		0.00306***		0.00266***		-0.000944		n.a.		0.000498**
Standard Error		[0.000562]		[0.000358]		[0.00171]				[0.000220]
Scaled Marginal Effect		18.3%		28.5%		--				10.8%
UNPRI		0.000272**		0.000077		0.000125		0.000629		0.000018
Standard Error		[0.000134]		[0.000127]		[0.000184]		[0.000705]		[0.000152]
Scaled Marginal Effect		2.8%		--		--		--		--
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Vintage Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
LP Inv't Rate Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Total Capital Commitments	17,090	17,090	5,826	5,826	900	900	1,182	1,182	437	437
Commitments to Impact	371	371	353	353	9	9	22	22	73	73
Observations	1,802,258	1,802,258	801,294	801,294	167,742	167,742	228,064	227,994	89,238	89,238

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 6: The Demand for Impact by Impact Category

The table presents marginal effects from logit models for the full sample (column 1, a single estimation with all the impact category interactions) and impact category subsamples (column 2, traditional funds and only impact funds with the row's impact category). The dependent variable is a dummy variable that equals one if an LP invests in a fund. Observations are determined by crossing all vintage year funds with LPs that make an investment in that year. Impact equals one for impact funds. Impact categories are determined by manual classification of promotion material of each fund. Impact funds can, and often do, have multiple impact categories. Estimations include all control variables from Table 3. Scaled marginal effects include the addition of the impact dummy logit marginal effect plus the category logit marginal effect, divided by the baseline investment rate for all funds (0.00823).

	Single Logit: Impact plus Cateogry Interactions	Seven Subsambles: Traditional Funds plus Row's Impact Funds
Impact Dummy	0.00034 [0.000467]	
Environmental Impact	0.000915** [0.000435]	0.00204*** [0.000249] obs = 3,014,438
Minority & Women Funding	0.000857* [0.000473]	0.00118*** [0.000394] obs = 2,992,514
Poverty Alleviation	0.00119** [0.000507]	0.00150*** [0.000230] obs = 3,024,220
Social Concerns	0.00126*** [0.000351]	0.00247*** [0.000253] obs = 3,010,840
Social Infrastructure Development	0.000026 [0.000388]	0.00167*** [0.000346] obs = 2,997,979
SME Funding	-0.00108*** [0.000348]	0.000500** [0.000251] obs = 3,023,922
Geography (non-poverty) Impact	-0.000175 [0.000506]	0.000187 [0.000288] obs = 3,015,688
All Controls from Table 3	YES	YES
Observations	3,089,112	see above

	Combined Marginal Effect	p-value from z-test	Scaled Marginal Effect (%)	Scaled Marginal Effect (%)
Impact + Environmental Impact	0.001260	0.001***	15.3%	24.8%
Impact + Minority and Women	0.001201	0.008***	14.6%	14.3%
Impact + Poverty Alleviation	0.001535	0.000***	18.6%	18.2%
Impact + Social Concerns	0.001601	0.003***	19.4%	30.0%
Impact + Social Infrastructure	0.000370	0.558	--	20.3%
Impact + SME Funding	-0.000737	0.227	--	6.1%
Impact + Geography	0.000169	0.612	--	--

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 7: The Demand for Impact by LP Type

This table presents the estimation results of our main logit model by LP Type. Observations include potential PE investments by an LP in a fund, which are determined by crossing all vintage year funds with LPs that make an investment in the same vintage year. The dependent variable is a dummy variable that takes a value of one if an LP invests in a fund. The table presents marginal effects from a logit model. Scaled effects divide marginal effects by baseline investment rates for each LP type. Impact equals one for impact funds. Controls include all variables from the main logit model presented in Table 3.

	Dev. Org.	Foundation	Bank	Insurance	Endowment	Corp. & Gov't	Institutional	Wealth Manager	Private Pension	Public Pension
Impact										
Coefficient	0.00142***	0.000809**	0.00101***	0.00171***	-0.00225***	-0.000303	-0.000463	0.000152	-0.000707	0.00199***
Standard error	[0.000228]	[0.000409]	[0.000254]	[0.000437]	[0.000839]	[0.000497]	[0.000534]	[0.000597]	[0.000564]	[0.000358]
Scaled Marginal Effect	17.7%	11.1%	22.2%	24.0%	-31.1%	--	--	--	--	17.3%
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LP Inv't Rate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	274,839	395,606	147,497	271,168	187,812	228,724	445,153	126,202	452,592	557,650

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 8: LP Attributes to Understand Impact Motives

The table lays out attribues of the LP investor types listed in the first column. Column 2 indicates whether the primary constituents of the capital are households (v. organization). Column 3 indicates whether the constituent capital is intermediated as opposed to directly invested by the constituent or an administrator (e.g., foundations and pensions). Column 4 indicates whether impact is a primary goal of the constituent. Column 5 identifies legal and political pressure to invest with impact. Finally, hte last two columns identify laws (e.g., ERISA) and charters (e.g., corporate charters) that restrict impact investment.

Limited Partner	Household	Intermediated	Mission-Driven	Pressure toward Impact	Laws Restricting Impact	Charters Restricting Impact
Development Organizations	--	--	yes	--	--	--
Foundations	--	--	yes	--	yes UPMIFA and PRI (U.S.)	--
Banks	--	--	--	yes Community Reinvestment Act (U.S.)	--	yes
Insurance	--	--	--	yes State regulation modeled after CRA (U.S.)	--	yes
Endowments	--	--	--	--	yes UPMIFA (U.S.)	--
Corporate & Government Portfolios	--	--	--	--	--	yes
Institutional Asset Managers	--	yes	--	--	--	yes
Wealth Managers	yes	yes	--	--	--	--
Private Pensions	yes	--	--	--	yes ERISA (U.S.)	yes (non-US)
Public Pensions	yes	--	--	yes Political pressure	yes State & National Laws	--

Table 9: LP Attributes and the Demand for Impact

The table presents marginal effects from a single logit model. The dependent variable is a dummy variable that equals one if an LP invests in a fund. Observations are determined by crossing all vintage year funds with LPs that make an investment in that year. The key independent variables are an impact dummy (equals one for impact funds) and the interaction of impact and investor attributes (household, intermediated, mission, pressure, laws, charter -- see Table 8). Estimations include all control variables from Table 3. Scaled marginal effects include the addition of the impact dummy logit marginal effect plus the interaction of impact with the investor attribute, divided by the baseline investment rate for investors with the attribute.

	Logit Estimation with Invested Dependent Variable
Impact Dummy	-0.000863
	[0.000902]
Household*Impact	0.00216***
	[0.000662]
Intermediated*Impact	-0.000328
	[0.000513]
Mission*Impact	0.00387***
	[0.000878]
Pressure*Impact	0.00364***
	[0.000400]
Laws*Impact	-0.00317***
	[0.000514]
Charter*Impact	0.000996
	[0.000800]
All Controls from Table 3	YES
Vintage Year Fixed Effects	YES
LP Investment Rate Fixed Effects	YES
Observations	3,089,112

	Combined Marginal Effect	p-value from z-test	Scaled Marginal Effect (%)
Impact + Household*Impact	0.001299	0.027**	13.1%
Impact + Intermediated Impact	-0.001191	0.000***	-16.2%
Impact + Mission*Impact	0.003010	0.000***	39.5%
Impact + Pressure*Impact	0.002780	0.001***	26.1%
Impact + Laws*Impact	-0.004035	0.000***	-41.8%
Impact + Charter*Impact	0.001325	0.711	--

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1
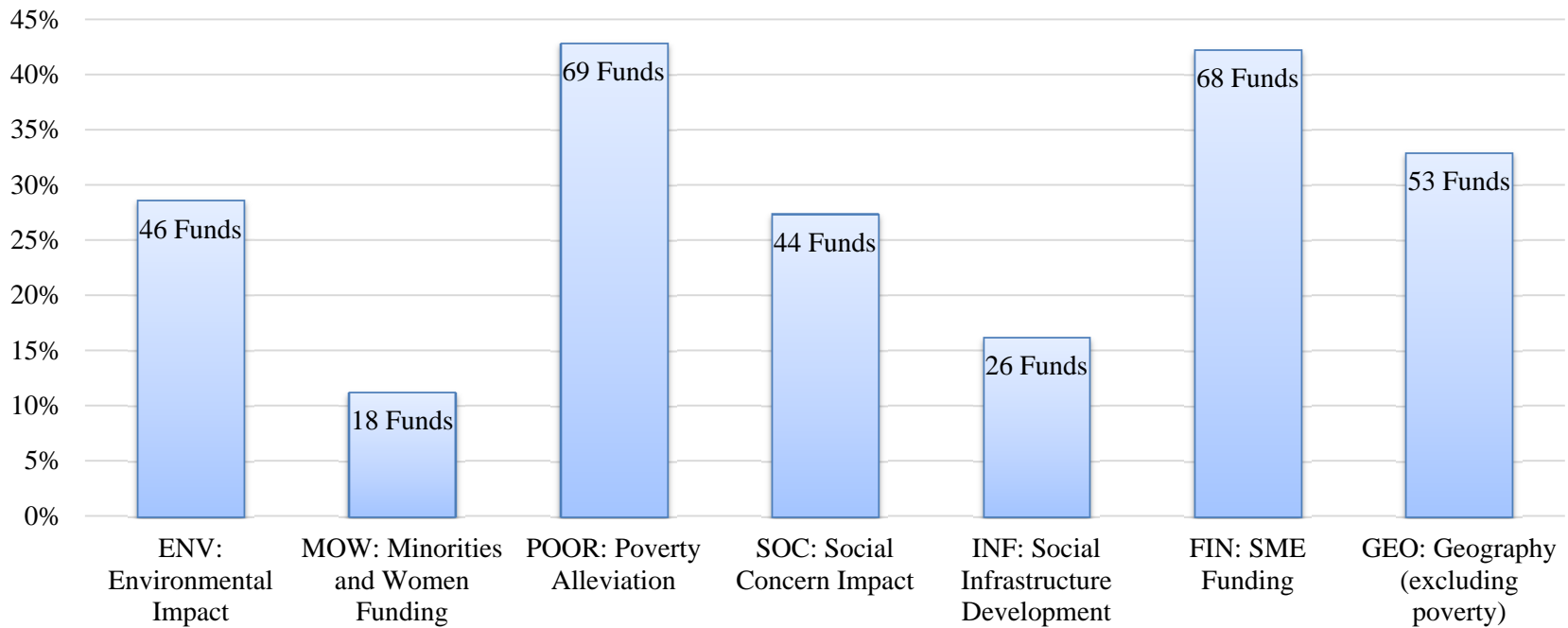
Figure 1: Distribution of Impact Categories for the Externalities that Impact Funds Target

For the sample of impact funds, we identify the impact categories targeted by each impact fund. The figure presents the percentage of sample funds that target each category. The numbers in the bars reflect counts of funds. Funds can have multiple impact categories. The categories are as follows:

Environmental Impact, delivers positive environmental impact (e.g., agriculture, energy, water, and forestry)

Minorities and Women Funding, funds firms run by minorities or women

Poverty Alleviation, funds firms in impoverished areas

Social Concern Impact, addresses social concerns or measures the social impact of its investments

Social Infrastructure Development, develops infrastructure for societal benefit (e.g., microfinance, health care, schools, and housing)

SME Funding, provides capital to SMEs and undercapitalized markets

Geography (excluding poverty), imposes a material geographic constraint on its investment criteria but is not focused on poverty alleviation

Traditional VC Funds

8.0, 11.5, 2.5, 7.6, 5.5, 6.2, 14.0, 2.8, 16.8, 25.2

Impact Funds

28.3, 8.1, 5.8, 8.7, 1.4, 4.1, 9.7, 2.3, 6.5, 25.1

Legend:
- Dev. Org.
- Foundation
- Bank
- Insurance
- Endowment
- Corp. & Gov't
- Institutional
- Wealth Manager
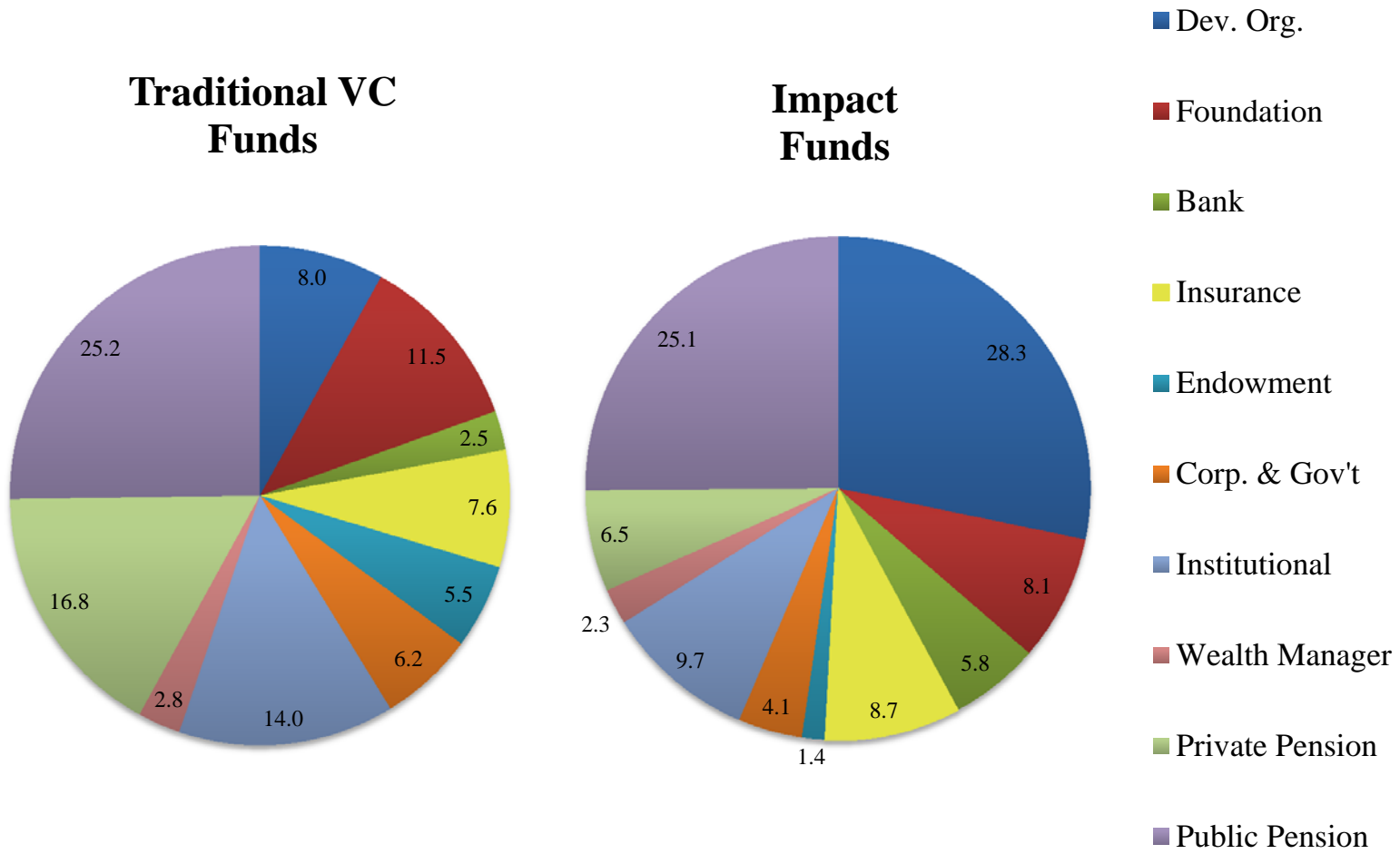- Private Pension
- Public Pension

Figure 2: Percent of LP Investments in Traditional VC Funds v. Impact Funds