Impact Investing[*]

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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 13.5% 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, especially post-2007. Investors in Europe and UNPRI signatories exhibit three times as much excess demand compared to others. Impact is particularly demanded in funds with environmental objectives and those with clear measurement of public goods. Investors driving these results are development organizations, foundations, financial institutions, and public pension. Estimates explaining the heterogeneity suggest excess demand by 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) 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 have signed the United Nations Principles of Responsible Investment (UNPRI). 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, we observe very little private capital deployed with the expressed intent of generating social impact. Our agenda is to shed light on whether this inaction is due to a lack of demand for impact by capital providers (or the constituents of capital), the limited range of financial instruments, and/or the rules governing investment practices.

Our contributions can be framed in questions covering four topics: (i) Is the supply of impact investment opportunities meeting the investors' demand for impact? (ii) Related, is the UNPRI signatory status a marker of demand and does the location of the investor matter for understanding demand?
(iii) Does the preference for impact depend on the investor type (e.g., a public pension fund vs. endowment)? (iv) Finally, we test for demand factors by asking whether the investors' ultimate constituents (organization vs. households), extent of intermediation involved, investors' primary objective (impact vs. financial return), external pressures to invest in impact, or restrictions against impact investing (by law or charters) can explain the variation in results across investor types.[1]

Impact investing has emerged to mobilize private capital for public good, especially through growth and venture facets of private equity industry. What distinguishes impact investment from socially responsible investment (SRI) movements or direct investment in social enterprises is its focus on the

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[1] In a future draft (or a companion paper), we will explore the expected return proposition that induces a given level of demand for impact versus non-impact funds.

deployment of capital with an expressed intent for the investments to provide a social and/or environmental return in addition to financial returns. Sometimes impact investment is defined more broadly to meet the needs of investors or agents, but we stick to the narrower, more precise definition. Impact investing stands in contrast to the long-standing tradition of SRI negative screening, where investors eschew investments 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[2] also stands in contrast to SRI positive investments, which are purely financially-motivated investments that target sectors, geographies or companies with the expectation of an underpricing of a macro factor related to environmental or social goods. Impact investing also differs from direct investments in social enterprises (often in the form of grants or subsidized loans); the latter has a primary agenda of social returns, with any residual financial returns being second order.

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, although it is an unfair shorthand for the growth investments. 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, time fixed effects, and LP fixed effect proxies). 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 four 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 13.5% higher investment rates in impact funds relative to the supply of impact funds than they do in non-impact

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[2] More generally, financial investors will at time choose projects that generate positive externalities, but they do so solely on the basis of the return they generate. 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. Assume 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.

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 0.93 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 keep up with demand. Subperiod analyses reveal that the demand for impact has increased more than threefold, from 7.1% prior to 2007 to 25.3% in 2007 and later years.

Second, we document that the demand for impact is higher for UNPRI signatories and for European LPs. In particular, LPs that sign the UNPRI have an investment rate that is 25% higher for impact funds relative to non-impact funds (investing in 1.4 out of every 100 impact funds rather than 1.1 funds generally). Moreover, regardless of UNPRI status, European LPs have an investment rate that is 23% higher for impact funds relative to non-impact funds. In contrast, North American LPs have an investment rate for impact funds that is only 7.8% higher than that for non-impact funds. Thus, the percentage increase in demand is three times as high for European investors. Moreover, the heightened interest in impact investing post-2007 is most evident in UNPRI signatories, who have 47.9% excess demand for impact.

Third, 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. Our choice framework allows us to draw a more comprehensive inference: We find excess demand for impact by development organizations (18.4% increase in demand), foundations (10.6%), banks (22.9%), insurance companies (23.7%), and public pensions (15.8%). By contrast, some investors eschew impact funds, including endowments (-31.4%) and (with less precision) private pensions and corporate/government portfolios. Furthermore, when split on UNPRI designation, we find that foundations, institutional asset managers and private pensions who are signers also have positive demand for impact, but not the non-signers.

Finally, we explore the characteristics of LPs that explain variation in the demand for impact. Our results suggest 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) hinder demand for impact. These conclusions are based on six investor motives or restrictions, which we identify as a function of LP type. Four factors modulate the demand for impact: First, LPs whose ultimate constituents are households have 20% additional demand for impact compared to those

LPs whose ultimate constituents are organizations. Second, development organizations and foundations, the LP types who have explicitly stated impact objectives as their primary missions, indeed have a 30% additional demand for impact compared to investors whose goals are predominately financial. Third, pressure created by the political importance of local investments (e.g., public pensions) and/or U.S. bank and insurance regulations mandating local investment in underserved communities (e.g., Community Reinvestment Act (CRA) and CRA-equivalent, respectively) induce an impact investment rate that is more than 40% higher compared to investors not facing such pressure. Fourth, we find that legal restrictions, but not fiduciary charters, dampen demand for impact by more than 40% relative to LPs that do not face these restrictions. The legal restrictions on impact include ERISA for private pensions in the U.S., UPMIFA for endowments in the U.S., UPMIFA and tax laws for foundations in the U.S., and national level legislation for public pensions worldwide (see Geczy, Jeffers, Musto and Tucker (2015)). These last two results, though suggestive, are potentially important as they suggest that changing the rules that govern investment yields additional demand for investments that generate positive externalities.

Although our emphasis is on demand for impact investing, we make several contributions 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 Tjur R^2 of the prior relationship variable accounts for 85% of all explained variation, 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.[3] 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. All of the above studies highlight the importance of non-pecuniary motives when investing, which dovetails with our analysis of the demand for impact investments.[4,5]

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.

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

[4] 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.

[5] Dimson et al. (2015) provides intriguing contrary evidence that investor activism on a collection of environmental, social, and governance issues is associated with positive abnormal returns.

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 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. While Lerner et al. (2007) and Sensoy, Wang and Weisbach (2014) compare returns earned by different types of LPs, the maintained assumption is that all LPs want to maximize financial returns, though they differ in their skill or access. 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.[6] This market generates NM possible investor-fund matches.[7] 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 baseline 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 different capital size and different roles for the VC asset class in their portfolios. To level baseline investment probabilities, we could simply include investor fixed effects. We do not take this approach for two reasons. First, and primarily, is a practicality: we have 3500 investors and are fitting a logit model, which means we are not assured of convergence or a proper solution. The second reason is an issue of statistical power. When we investigate properties of the investors that may

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[6] 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.

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

interact with *IMPACT* – in particular, whether the investor is a UNPRI signer – we want to be able to precisely estimate the baseline UNPRI effect to have power to identify how UNPRI signers and non-signers differentially invest in impact. Thus, rather than fixed effects for the individual investor, we pool investors into 363 groups and include group fixed effects. The grouping combines investors in the same LP type (e.g., development organization, bank, foundation, pension, etc.) with the same cumulative number of investments made in the prior three years. This grouping is dynamic in the sense that an investor can move into different groups as its VC portfolio grows or shrinks (and the investment rate quickens or slows) over time. Thus, the grouping variable has a distinct advantage over static investor fixed effects in absorbing the effect of investor size on the base investment rate. 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)).[8] We measure the fund's expected return by using the weighted moving average of the fund manager's all past fund performances. To benchmark fund performance and to control for significant variation in the overall macro economic conditions across vintage years, we measure the percentile rank of each fund's performance (IRR, value multiple, or both) relative to its vintage year cohort funds and then take a weighted moving average across all past funds. This follows the industry practice where, once investors have chosen to issue a mandate for investment in VC, they typically gauge skill *among* VCs using peer-adjusted, relative performance measures rather than market-adjusted 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

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[8] 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.

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)).[9] Second, as shown by Hochberg and Rauh (2014), there is a home bias in investment in private equity.[10] 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.

II. DATA

A. Datasets

We employ three primary datasets. First, we use Preqin's Investor Intelligence data to identify LP investments in funds (the fund-LP dataset). 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.[11] 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, 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). 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

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[9] 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 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.

[10] Hochberg and Rauh (2013) document that U.S. LPs, particularly U.S. public pension funds, tilt their private equity portfolios toward local funds. 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.

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

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' geographic focus on poverty-stricken countries/regions. After compiling a set of potential impact funds, we manually read articles about funds and their managers to verify the impact orientation of the fund. This step ensures that our sample of impact funds is clean. However, we recognize that there are likely some impact funds that do not make our sample because we simply lack information on the funds. Additional data requirements (e.g., requiring information on LPs invested in the fund) further reduce the sample to 161 impact funds and 828 capital commitments.

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…"[12] that has several funds in our sample including 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."[13] The final example is the Leapfrog Financial Inclusion Fund, an emerging market, financial services fund that "…invests capital, people and knowledge in purpose-driven businesses, helping them to grow, to be profitable and to have real social impact."[14] It counts among its limited partners a foundation, development organizations, an insurance company, and a pension fund.

To parsimoniously summarize these diverse impact goals, we construct eight impact categories: environmental impact, social infrastructure development, social impact measured, minorities and women funding, poverty alleviation, small and medium enterprise (SME) funding, developing country impact, and geography impact. 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. We code which of the eight impact categories reflect the marketing of the fund, allowing funds to have multiple objectives. Figure 2 depicts the percentage of the 161 impact funds that have a stated impact goal. Most impact funds (75%) have some type of geography constraint though we interpret this quite

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

broadly (e.g., we code all funds that invest primarily in developing countries as having a geography impact). In contrast, funds focused on minorities and women are relatively rare.

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:

> *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 Statistics

B.1. Limited Partners Statistics: General LPs

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. Public pensions include city, state, and national pension funds and asset managers catering to public pensions. The remaining LP types (foundation, bank, and insurance) 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.

In Table 1, Panel B, we present the regional distribution of LP headquarters. We present the percentage of LPs that fall into each of eight major regions. 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.

B.2. *Limited Partners Statistics: UNPRI Signatories*

In the last row of Panel A, we present the percentage of each LP type that is a UNPRI signatory. 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%). In Figure 1, we present the percent of LPs that sign the UNPRI (y-axis) by region (x-axis). Recall that most LPs are headquartered in developed Europe and North America, but the percent of LPs in developed Europe that sign the UNPRI is more than four times that of LPs in North America. LPs based in the developing regions of Africa, South America, and developed Asia also sign at relatively high rates.

Relative to other LPs, the 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.

C. Funds Statistics

C.1. Fund Statistics: VC and Growth Funds

We analyze capital commitments to about 5500 funds with vintage years from 1985 to 2014, though about 75% of funds have vintage years of 2000 or later. In Table 2, we present descriptive statistics on funds in Panel A.

On average, the fund size is $194 million with a vintage year of 2004 and 5.03 investors (LPs). We calculate the past fund percentile rank by first computing the percentile performance rank of all funds previously managed by the same fund family (ranked against vintage year and market cohorts), sorting the funds by vintage year, and then calculating the exponential moving average of all past fund percentile ranks with a smoothing factor of 0.5 for the fund manager fundraising fund i. The average past percentile rank for all funds is 0.52, or very slightly above the median. 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. About a third of funds 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 1/3 or more of all geographic descriptive labels is concentrated in a given region. Most funds (84%) focus on only one of the eight global regions. The remaining funds either are geographically diffused or have more than one geographic focus. 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 have multiple geographic foci.) 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 1/3 or more of all sector descriptive labels is 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 types of these funds 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 focus on multiple industries.

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 (about $128 million) but have about the same number of investors (5.14 v. 5.03), managed by fund families with substantially lower past excess IRRs (-0.68% v. 3.7%) and percentile ranks (0.42 v. 0.52), and slightly more likely to be a first time fund (38% of impact funds v. 34% of all funds).

In Panel B, we see that impact funds, relative to other funds, tilt away from developed markets and toward emerging markets with the exception of Emerging Asia, which includes China. In Panel C, we see that impact funds often focus on energy or diversified industries while there is a notable lack of investment in IT and health care.

D. Fund Commitment Statistics

In order for us to examine what types of investors demand impact investors, we need to also understand what other fund characteristics investors consider when making VC fund investment decisions in general. What could explain the matches we observe in the data between VC funds and their investors? Our data will allow us to analyze about 25,000 capital commitments to infer factors of demand.

In Table 3, we present descriptive statistics on these capital commitments, focusing on the matching characteristics. In Panel A, we present the number of fund investments by LP type (columns) and LP region (rows). 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 and Middle East into "Emerging Asia," but the regional distribution of capital commitments is similar to the regional distribution of LPs (see Table 1, Panel B). In Panel B of Table 2, we present the percent of fund investments where the LP region and the fund region (i.e., the geographic

focus of the fund investments) are the same. All LPs place well over half of capital commitments in funds from the same region. The average LP has 75% of its portfolio focused in the local region.

In Panel C of Table 2, we present the percent of fund investments where the LP has made a prior investment with the same series of a fund. Prior relationships are quite common, particularly when we consider the fact that about one third of all funds are first-time funds (see Table 2, panel A), and first-time funds precludes the possibility of a prior fund family-LP relationship.

Before leaving this section, we highlight that while some investors aim to hold well-diversified VC portfolios across countries/regions and sectors, others may exhibit tilts towards certain segments. This could be due to information advantage, familiarity bias, or because investors desire generation of positive spillover effect on the local economy. Corporations may invest more heavily in VC funds that focus on sectors of strategic importance to them, e.g., pharmaceutical companies may invest more heavily in biotech VC funds than IT VC funds. Thus, in our methodology, we incorporate these factors of demand as well.

III. RESULTS

A. The Demand for Impact

The first question we posed was whether the supply of impact investing opportunities is meeting the demand. In Table 4, we answer that question in the 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 1 fund investment in that vintage year. The key variable of interest is the Impact fund variable.

Being an impact fund increases investors' probability of investing in the fund by 0.0011. 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. (The total number of funds in our sample is 5,053 invested in by 3,503 LPs.) Thus, an increase of this rate to 0.93 out of every 100 funds is an economically significant increase of 0.11/0.82 = 13.5% in the investment rate. In the context of our choice-of-fund framework, we interpret this result as LPs exhibiting 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 keep up with demand.

In the remaining rows of Table 4, we present estimates of how the literature-motivated other determinants of VC investing perform in explaining VC investment choice. 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, missing past performance induces a negative and significant effect. Similarly, being a first-time fund has a negative effect on the investors' choice probability. Funds with larger expected fund size attract more investors, as expected. Investors with fewer years in VC investing are more likely to invest.

A new contribution we make to the literature on the determinants of investing concerns not the signs of coefficients but the relative importance of these determinants. As a measure of the overall goodness of fit we report Tjur R^2 (Tjur (2013)) on the bottom right of the table. 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 that each variable set in the model (fund attributes, LP attributes, etc.) provides to the overall model, we report partial Tjur R^2 on the bottom right of the table.

We find that two variable groups—the prior relationship and the geographic match—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 85% of the overall Tjur R^2, whereas geographic matches between the fund and LPs (e.g., a North American investor-North American fund pairs)[15] explain an additional 6.4%. 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. The economic magnitude of these marginal effects is also very large. A case in point is the marginal effect of the positive local bias for emerging markets; the estimate is 0.0109, or more than 100% of baseline rate in "Rest of the World" (Africa, South America, and Emerging Europe). In comparison to the large partial Tjur R^2 of relationship and geography match variables, the impact variable group explains a relatively modest portion of the overall Tjur R^2—about 0.1%; however, the economic magnitude of the marginal effects is large. A bit surprising perhaps is the lack of variation explained by the other attributes such as fund industry focus, fund geography, and other fund or LP characteristics, which all explain at or less than 1% of the overall Tjur R^2 of the model.

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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. For example, a development bank headquartered in Washington, D.C. that targets developing countries in the Americas would be a geographic match to a fund focused on Latin America. We intend to construct a similar mission-based geography match variable for foundations and funds, but this is still a work in progress, so the current estimates reflect headquarter locations for foundations rather than the mission location.

B. *Impact Categories and the Demand for Impact*

Before delving into the source of demand for impact, we first explore whether the diversity of impact goals matters for demand. Table 5 reports the results where we interact Impact with the impact category markers from Figure 2 and re-estimate the model of Table 4. We find excess demand for impact for investments with objectives of environmental impact (11.5%), social impact measured (16.8%), women and minority funding (10.9%), and poverty alleviation (17.6%). In ongoing work, we explore the return implications of impact investing, which we expect will lend us guidance as to the interpretation of impact category demand results. A preliminary story consistent with these findings is that excess demand for impact occurs, on one hand, for environmental investments, which may offer impact with very little potential tradeoff of financial returns. On the other hand, we find excess demand for investments with clearly measurable impact – offering identifiable social returns for categories of impact with high public good contexts. For example, poverty alleviation is easily measured by job creation in poverty funds; minority funding offers counts of opportunities afforded; and funds that explicitly measure social impact (i.e., the Social Impact Measured category) measure impact by definition.

In contrast to these categories of excess demand for impact, we find that the SME funding exhibits less demand by investors than the supply. SME funds that are not in developing countries or poverty regions (with these distinctions picked up in other variables) are often focused on providing opportunities for local investors (e.g., local financial institutions or local pensions) to support their local economy. The fact that these types of funds do not attract demand from many outside investors is intuitively sensible.

C. *UNPRI and the Demand for Impact*

It is possible that there is heterogeneity among investors in their demand for impact funds, and that variation is positively correlated with their decision to sign the UNPRI. For example, 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 conventional asset managers whose clients do not value the SRI options, the cost associated with UNPRI compliance may be too high relative to its benefits. Similarly, some pensions may sign the UNPRI because they face political pressure to do so and use UNPRI compliance as protection against potential lawsuits for breach of fiduciary duty. In such cases, a separating equilibrium may be observed where signatories are more heavily tilted towards impact funds, reflecting the underlying demand by end investors.

Alternatively, UNPRI is signed by investors for reasons other than their demand for positive externality, e.g., some sort of "cheap talk" to satisfy their constituency for regulatory or marketing purposes. If the latter effect is dominant, then we may not see much correlation between UNPRI signatory and their likelihood to invest in impact funds relative to non-signatories of the same LP type. A third, non-mutually exclusive possibility is that larger investors tend to sign UNPRI with higher frequency than smaller investors, because the cost of compliance is more affordable for larger investors than for their smaller counterparts. Again, this effect will likely weaken any relationship between being an UNPRI signatory and being an impact investor, ceteris paribus.

To investigate whether UNPRI signatories have higher demand for impact investments, we augment the main model of Table 4 with a UNPRI dummy and the interaction of UNPRI with Impact. The results of this analysis are presented in Table 6, model 2A. (Table 6, model 1A, presents results from our main model of Table 4 for easy reference.) We report marginal effects and scaled marginal effects, which is the marginal effect divided by the investors' base investment rate.[16]

Does the excess demand for impact depend on whether an LP is an UNPRI signer? In Model (2A) of Table 6, we find that for UNPRI investors, the demand for impact is even greater. The marginal effect estimate is 0.0029, an increase of 25.3% over the base investment rate, which is 1.14 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 base investment rate. The higher demand for impact among UNPRI signers is consistent with the possibility that some investors, e.g., wealth managers, sign the UNPRI in order to strengthen their brand vis-à-vis the SRI-conscious clientele they are trying to attract, and tilt their investments towards impact funds to satisfy their end constituents' demand. We examine this possibility more explicitly later when we estimate the logit model for each of 10 LP types.

D. *Temporal Variation in the Demand for Impact*

Investor, governmental, and 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). Since this attention can generate both demand for impact investments and the supply of impact funds, it is an empirical question whether the excess demand for impact shows a secular time trend during our sample period.

To investigate this question, we create a dummy variable that takes on a value of one for funds with vintage years of 2007 or later. We interact the post-2007 dummy variable with the key Impact variable to estimate model 1B in Table 6. The empirical results indicate the demand for impact is positive

in both subperiods, however the demand has increased more than threefold post-2007 relative to pre-2007.

The secular increase in the demand for impact investment can be traced to UNPRI signatories. This conclusion comes from the final column of Table 6, where we present model 2B, 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 (10.7%) for impact investments, which is more than double that of nonsigners (4.2%). After 2007, the demand for impact from UNPRI signatories increases more than fourfold.

E. Investor Location and the Demand for Impact

In this section, we document that the excess demand for impact is three times higher in Europe compared to other regions, consistent with many industry reports on sustainable investment. 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.[17] To investigate whether the demand for impact investing reflects these patterns, we separately estimate our main logit model for five investor regions: North America, Developed Europe, Developed Asia Pacific, Emerging Asia, and the Rest of the World.

The results of this analysis are presented in Table 7. Focusing on the first row of Table 7, we indeed find a much stronger demand for impact in Europe than in other regions. In Europe, impact funds are 23% more likely (in scaled marginal effects) to attract investment relative to other funds while in the U.S. the effect is a much more modest 7.8%, a third the size of demand for impact by Europeans. We find little evidence that there is positive excess demand for impact in other regions.

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 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.

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[17] *2014 Global Sustainable Investment Review*, Table 1, p.7.

F. Investor Heterogeneity and the Demand for Impact

Having shown that there is an aggregate positive demand for impact funds, in this section we examine whether the demand varies by investors type and, if so, why. We begin by discussing the potential relevance and importance of each investor type as a demander of impact investments. Next we establish the estimates of investor type-specific demand for impact in univariate and multivariate settings, splitting the data to isolate each investor type. Guided by our prior discussion of each investor type, we then formulate six attributes that are common across subsets of investors – sometimes divided by geography – to test for motives for or constraints against impact investing. We use this framework to look for suggestive evidence as to what induces (or hampers) investor 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. Foundations in the U.S., however, are subject to two structural frictions not present for development organizations. First, 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.[18] 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. Second, foundations also manage their endowment portfolios and they can invest in impact funds via their endowment portfolios. However, in practice the Uniform Prudent Management of Funds Act (UPMIFA) governs foundations' portfolio investment (as we will return to later). This implies that historically endowment investment decisions are detached from pursuit of the organizational mission for the foundations. To summarize, while foundations seem to be the obvious entities to invest heavily in impact funds, in practice these frictions may discourage impact investing.

Next in our list of LP types are financial institutions. 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

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[18] 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.

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. banks may be incentivized to invest in impact funds that meet this criterion especially if such investments garner goodwill from the customers at large. 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. We will test these motive differences later by separating the U.S. institutions subject to CRA from non-U.S. ones.

Other investor types on the list of investors include endowments, corporate and government portfolios, and institutional asset managers. These organizations may also have incentives to invest in impact funds to the extent that such activities garner goodwill from local communities or their stakeholders. However, most of these institutions face either fiduciary responsibilities (corporate portfolios and institutional asset management) or legal restrictions (UPMIFA for U.S. endowments), which may constrain their ability to invest in any instruments that are designed to generate externalities. In case of institutional asset managers (and wealth managers in the next set), the fact that they serve as intermediaries may dilute their demand for impact.

The final set of investor types – wealth managers and (private and public) pensions – consists of those serving households as the ultimate constituent. Households may derive philanthropic utility from investing in impact funds. However, as in the case for foundations, structural frictions may subdue the level of impact investing by these investors, particularly for pension funds. In the U.S., the federal guideline supplementing the 1974 Employee Retirement Income Security Act (ERISA) states that ERISA 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 dis-incentivize U.S. private pension investors to invest in impact funds, for fear of being seen as sacrificing financial returns in return for positive externality. In other words, frictions against impact investments may operate particularly strongly for U.S. private pensions. In contrast, non-U.S. private pensions face fiduciary responsibilities via their charters.

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

Public pensions are subject to state- and national-level regulations worldwide, generally through legislative action. In practice, U.S. state regulations often closely follow ERISA, so they may behave similarly to U.S. private pensions with respect to impact funds. At the same time, 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. 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. We will test for presence of (i) pressure to invest in impact funds as well as (ii) legal and (iii) fiduciary restrictions against impact investing by framing these three attributes across different subsets of investors and jointly estimating the differential demands for impact by these investor subsets.

F.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. The pie charts present the composition of investors in the two fund types; the bar chart presents the difference in percent (impact less non-impact) for each LP type. For non-impact 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%). The bar chart also shows that banks invest relatively more in impact funds, whereas foundations, endowments, institutional asset managers, and private pensions invest relatively less. While the contrast across LP types is suggestive of heterogeneity in their demand for impact, it is premature to draw inferences from univariate statistics alone, given the economic significance of other fund/LP attributes (such as prior relationships and geographic proximity) in determining fund choices. In the next section we further examine these differences across LP types in the multivariate logit model setting.

F.2. Multivariate Results by LP Type

Table 8 presents the logit model results estimated separately for the 10 LP types. As before, an observation is a potential investment by an LP into a fund. Model (1) presents results analogous to those of our main model while model (2) presents results that interact the UNPRI dummy and Impact. (See Table 5, models (1A) and (2A) for full sample results.)

In Model (1), we find that the demand for impact is positive and significant for development organizations, foundations, banks, insurance, and public pensions. Since the base investment rates vary across LP types, it is important to scale the marginal effects by the type-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 10.6% and 23.7% of the base investment rates for these 5 LP types (with foundations being the lowest, and banks and insurance being the highest); thus, the effect is statistically significant and economically important. In contrast, the effect of being an impact fund reduces the demand by 31.4% for endowments.[22]

We also find a significant positive demand effect for foundations, which was not evident in our simple univariate analysis. This result suggests that the multivariate environment absorbs important factors determining demand for any fund, so that we are able to identify the distinct effect of being an impact fund.

In Model (2), we explore whether the UNPRI designation enables us to identify heterogeneity among investors in their demand for impact funds even *within* a given LP type. For example, it is plausible that some (but not all) institutional asset and wealth managers specialize in catering to SRI-leaning clientele and sign the UNPRI in order to strengthen their brand and marketing ability as intermediaries. When it comes to LP types with competing incentives such as foundations and private pensions, investors may bifurcate on their impact investment decisions, with some eschewing such investments because of the tax or other regulatory frictions they face, while others seeking impact fund investments and signing UNPRI to demonstrate alignments of their decisions with long-term interests of their beneficiaries. For example, pension administrators acting under the pressure from the board to invest in impact funds may sign the UNPRI in order to demonstrate fulfillment of their fiduciary duty. Model (2) addresses this possibility by separately estimating the effect of impact for UNPRI signers and non-signers for each LP type.

We find that the demand for impact is much stronger among UNPRI signers than non-signers for foundations, institutional asset managers (e.g., fund of funds), private pensions and public pensions. Indeed, among foundations and private pensions, non-signers either are neutral towards impact

(foundations) or actively eschew impact funds (private pensions), while signers are 42.7% and 26.5% likelier to invest in impact funds relative to the base investment rate, respectively. For development organizations, banks, and insurance companies, UNPRI is a comparatively weaker marker of investors' propensity to invest in impact.

F.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. We present these LP attributes and the mapping of the ten LP types to these attributes in Table 9.

In column one, 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, we classify the LP types on whether the capital is intermediated by asset managers (e.g., fund of funds). Intermediation may lower the tangibility of externalities or impact because of distance from the investment process.

In column three, we identify investors that have impact as a primary goal. Ceteris paribus, we would expect those investors whose primary goal is impact generation to have stronger demand for impact.

In column four, 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. Banks in the U.S. must comply with the Community Reinvestment Act (CRA). 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.

In column five, we highlight existing restrictions against impact investing in the form of laws. Again, we highlight the differences between the U.S. and non-U.S. regulations. ERISA and UPMIFA govern investments by U.S. foundations, endowments, and private pensions, mandating investment principles that maximize financial returns to protect the constituents, most importantly, pensioners. This existing legal restriction may subdue these investors' demand for impact investments to a level below what would be otherwise. For foundations, the tax law also matters. Although foundations are mission-based and should be attracted to impact investments, the U.S. tax authorities' restrictions on program-related investments (PRIs) may further restrict the foundations' ability to pursue impact investments.

In column six, we identify existing restrictions against impact investment in the form of charters. All banks, insurance companies, institutional asset and wealth managers, as well as 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.

We estimate a fixed effect logit model akin to the main model of Table 4 except that, instead of including the Impact variable, we include (i) the six LP attribute dummy variables corresponding to the six columns in Table 9 (e.g., for the first column, the dummy variable Household equals one for LP type = Wealth Manager, Private Pensions, and Public Pensions) and (ii) each of the six LP attribute dummy variable interacted with the Impact fund dummy variable. As in Model (2) of Table 4, we are interested in the scaled marginal effects of the interaction variables (e.g., Household*Impact, Intermediated*Impact, etc.) to gauge statistical as well as economic significance of the effects of LP attributes on investors' impact investment decisions.

The results are presented in Figure 4. For ease of interpretation, only the scaled marginal effects and the 95% confidence intervals of the six interaction variables are shown. We find that for LPs having each of the three LP attributes–household constituency, impact as primary objective, and pressure towards impact–being an impact fund boosts their demand by 20%, 37%, and 43% 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 41% 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 9) 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 using LP and fund data for over 5,000 funds and over 3,500 investors. We examine (i) whether the supply of investment opportunities for impact investments keeps up with the demand for impact, (ii) whether the UNPRI signatory is a marker for demand and whether the location of investors matters, (iii) whether there is heterogeneity in demand for impact across different sources of capital (LP types), and (iv) what demand factors if any explain the variation in demand for impact observed across different LP types.

In a choice-of-fund framework, we show that prior relationships and geographic proximity matter the most in explaining LP-fund matches. Other fund attributes – e.g., fund managers' prior fund performance and fund industry focus – and LP attributes – e.g., prior experience in VC investments – explain relatively little. Importance of local bias suggests that investors' interests in impact funds may interact with their overall regional tilts.

We find that being an impact fund generally has a positive effect on the choice probability that an investor invests in a given fund relative to (LP type-specific) baseline probabilities. 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.

We find excess demand for impact by development organizations (18.4% increase in demand), foundations (10.6%), banks (22.9%), insurance companies (23.7%), and public pensions (15.8%). By

contrast, some investors eschew impact funds, including endowments (-31.4%) and (with less precision) private pensions and corporate/government portfolios. Furthermore, when split on UNPRI designation, we find that foundations, institutional asset managers and private pensions who are signers also have positive demand for impact, but not the non-signers.

We analyze the likely sources of this investor heterogeneity in their demand for impact provide some preliminary evidence. We find evidence consistent with positive demand for impact by: (i) investors whose ultimate constituents are households (rather than organizations); (ii) investors whose primary objective is impact (rather than financial return); and (iii) investors that face political or regulatory pressure to invest in impact. We also find that investors that face legal restrictions against impact investment (e.g., U.S. ERISA and UPMIFA) exhibit lower 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. In Panel B, we present the regional distribution of LPs by LP type.

	Dev. Org.	Foundation	Bank	Insurance	Endowment	Corp. & Gov't	Institutional	Wealth Manager	Private Pension	Public Pension	Total
					Panel A: LP Descriptive Statistics						
Number 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
No. 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)	(18.64)
Vintage Year	2006.93	2005.44	2006.07	2004.79	2004.44	2006.46	2005.24	2005.77	2004.10	2004.38	2005.30
	(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)
No. UNPRI Signtories	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
					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	8	1	15	6	0	19	9	18	2	3	8
Emerging Asia	25	0	15	6	1	24	11	3	0	1	9
Middle East	3	1	7	2	0	2	5	3	1	1	2

Standard deviations in parentheses.

Table 2: Fund Descriptive Statistics

This table presents fund summary statistics for all funds (left columns) and impact funds (right columns). 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. Past fund percentile rank is a weighted average of past percentile ranks for funds managed by the same fund family relative to vintage year cohort funds. Past fund excess IRR is a weighted average and demeaned performance measure for prior funds managed by the same fund family. 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.

	All Funds			Impact Funds		
	N	Mean	SD	N	Mean	SD
	Panel A: Descriptive Statistics					
Vintage Year	5053	2004.21	6.55	161	2006.51	4.77
Fund Size ($mil)	4431	194.11	290.26	149	127.98	146.91
Number of LPs in Fund	5053	5.03	6.36	161	5.14	4.33
Past Fund Excess IRR	1631	3.7	12.73	56	-0.68	10.38
Past Fund Percentile Rank	1786	0.52	0.25	68	0.42	0.27
First-time Fund	5053	0.34		161	0.38	
Missing Performance Data	5053	0.30		161	0.20	
	Panel B: Geography Focus of Fund Investments					
North America	5053	0.51		161	0.34	
Developed Europe	5053	0.23		161	0.17	
Emerging Europe	5053	0.06		161	0.09	
Africa	5053	0.03		161	0.23	
Central and South America	5053	0.03		161	0.12	
Developed Asia	5053	0.07		161	0.01	
Emerging Asia	5053	0.16		161	0.14	
Middle East	5053	0.03		161	0.00	
All Regions	5053	1.12		161	1.10	
	Panel C: Industry Focus of Fund Investments					
Business Services	5053	0.03		161	0.03	
Energy	5053	0.06		161	0.19	
Consumer Discretionary	5053	0.05		161	0.03	
Diversified	5053	0.29		161	0.49	
Industrials	5053	0.04		161	0.06	
Information Technology	5053	0.44		161	0.06	
Health Care	5053	0.22		161	0.06	
Infrastructure	5053	0.01		161	0.05	
Food and Agriculture	5053	0.01		161	0.04	
Materials	5053	0.01		161	0.04	
Real Estate	5053	0.00		161	0.04	
Media and Communications	5053	0.12		161	0.03	
All Industries	5053	1.28		161	1.12	

Table 3: LP Capital Commitment Descriptive Statistics

This table presents summary statistics on LP capital commitments to PE funds. In Panel A, we present the number of investments by LP type (columns) and region (rows). In Panel B, we present the percent of investments where the LP and the GP are in the same region (GEOMATCH=1) by LP type and LP region. In Panel C, we present the percent of investments where the LP invested in a prior fund managed by the same GP (RELATION=1) by LP type.

	Dev. Org.	Foundation	Bank	Insurance	Endowment	Corp. & Gov't	Institutional	Wealth Manager	Private Pension	Public Pension	Total
Panel A: Number of LP Capital Commitments											
North America	666	2,687	112	1,365	1,283	308	1,375	273	3,607	5,414	17,090
Europe	897	183	272	396	64	774	1,687	193	477	883	5,826
Developed Asia	154	5	91	32	-	184	205	180	10	39	900
Emerging Asia	301	10	167	121	8	256	203	35	48	33	1,182
Rest of World	196	8	28	22	2	27	49	20	36	49	437
TOTAL	2,214	2,893	670	1,936	1,357	1,549	3,519	701	4,178	6,418	25,435
Panel B: % Capital Commitments where LP and Fund are in the same Region (GEOMATCH=1)											
North America	64.3	78.7	85.7	83.1	81.4	67.2	74.0	83.9	82.6	87.4	81.8
Europe	39.2	67.8	83.1	80.3	90.6	76.7	50.7	60.6	44.4	67.5	59.3
Developed Asia	86.4	100.0	74.7	71.9	-	56.5	49.8	65.6	50.0	87.2	65.8
Emerging Asia	74.1	90.0	80.2	81.8	100.0	71.9	69.5	37.1	77.1	81.8	74.0
Rest of World	86.7	100.0	92.9	100.0	100.0	92.6	71.4	25.0	91.7	65.3	81.9
TOTAL	59.0	78.2	82.1	82.4	81.9	71.9	61.1	68.8	78.2	84.4	75.7
Panel C: % Capital Commitments where LP and Fund Family have prior Relationship (RELATION=1)											
Prior Relationship	23.5	41.8	10.9	26.8	38.8	22.9	25.5	24.1	38.5	41.3	33.5

Table 4: 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 R2 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 R2 is calculated as the improvement in the Tjur R2 from adding the indicated variables to the baseline model. Standard errors are in brackets. *** p<0.01, ** p<0.05, * p<0.1

Group	Variable	Marginal Effects	Group	Variable	Marginal Effects
Impact Variable	Impact	0.00111*** [0.000152]	Relationship	Relation Dummy	0.0157*** [0.000160]
Fund Attributes	Past Fund Performance Rank	0.000947*** [0.000156]	Fund-LP Geography Match	North America	0.00520*** [9.77e-05]
	Missing Performance Dummy	-0.000405*** [0.000107]		Europe	0.00718*** [0.000116]
	First Fund Dummy	-0.000533*** [0.000107]		Developed Asia	0.0117*** [0.000238]
	Expected Fund Size	0.000674*** [0.000208]		Rest of World	0.0109*** [0.000255]
LP Attributes	Years in PE Investing	-0.000271*** [3.82e-05]		Emerging Asia	0.00779*** [0.000166]
Fund Industry	Business Services	0.000957*** [0.000149]	Fund Geography	North America	-0.00243*** [0.000205]
	Energy	0.000194 [0.000120]		Europe	-0.00147*** [0.000100]
	Consumer	0.000327*** [0.000126]		Developed Asia	-0.00158*** [0.000157]
	Diversified	-0.000405*** [9.34e-05]		Rest of World	-0.000379*** [0.000114]
	Industrials	-0.000273* [0.000158]		Emerging Asia	4.07E-05 [9.81e-05]
	IT	-1.94E-05 [7.28e-05]			
	Health Care	0.000147** [7.42e-05]	Vintage Year Fixed Effects		Yes
	Infrastructure	0.000829*** [0.000231]	LP Investment Rate Fixed Effects		Yes
	Food & Agriculture	3.65E-05 [0.000296]	Observations		3,089,112
	Materials	-0.00119*** [0.000453]	Tjur R2		0.1579
	Real Estate	0.00122** [0.000488]		Tjur Partial R2	Percent of Total Tjur R2
	Media and Communications	-9.88E-05 [8.01e-05]	Impact Variables	0.00016	0.10%
			Fund Attributes	-0.00035	-0.22%
			LP Attributes	0.00020	0.13%
			Relationship	0.13399	84.83%
			Fund-LP Geography Match	0.01015	6.43%
			Fund Geography	0.00012	0.08%
			Fund Industry	0.00034	0.21%

Table 5: The Demand for Impact by Impact Category

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. Impact equal 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 representend. Estimations include all control variables from Table 4.

Environs	
Environmental Impact	0.000954**
Standard Error	[0.000403]
Scaled Marginal Effect	11.5%
Social Infrastructure Development	-0.00018
Standard Error	[0.000394]
Scaled Marginal Effect	-1.2%
Society	
Social Impact Measured	0.00138***
Standard Error	[0.000329]
Scaled Marginal Effect	16.8%
Minority & Women Fund.	0.000903*
Standard Error	[0.000466]
Scaled Marginal Effect	10.9%
Geography	
Developing Countries Impact	0.00014
Standard Error	[0.00036]
Scaled Marginal Effect	1.7%
Poverty Alleviation	0.00145***
Standard Error	[0.000356]
Scaled Marginal Effect	17.6%
SME Funding	-0.00127***
Standard Error	[0.000343]
Scaled Marginal Effect	-14.6%
Geography (Other) Impact	-0.00032
Standard Error	[0.000574]
Scaled Marginal Effect	-3.6%
Impact Dummy	0.00014
Standard Error	[0.000399]
Scaled Marginal Effect	1.6%
Controls from Table 4	YES
Vintage Year Fixed Effects	YES
LP Inv't Rate Fixed Effects	YES
Observations	1,802,258

Standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 6: The Demand for Impact by UNPRI status 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. Models (1) present results with Impact only; models (2) interact Impact and UNPRI. The B columns differ from the A columns by further interacting the key variables shown with a time split. All lower order interactions are included in the estimation. Controls (fund attributes, LP attributes, and relationship variables) include all those reported in Table 4. Also included are Fund-LP geography match dummies, fund geography, fund industry, vintage year, and LP investments per year fixed effects (see text for details).

Model	(1A)	(2A)	(1B)	(2 B)
Impact	0.00111***			
Standard Error	[0.000152]			
Scaled Marginal Effect	13.5%			
Nonsigner*Impact		0.000554***		
Standard Error		[0.000176]		
Scaled Marginal Effect		7.1%		
UNPRI*Impact		0.00291***		
Standard Error		[0.000276]		
Scaled Marginal Effect		25.3%		
Impact*Prior to 2007			0.000623**	
Standard Error			[0.000249]	
Scaled Marginal Effect			6.4%	
Impact*2007 and Later			0.00139***	
Standard Error			[0.000185]	
Scaled Marginal Effect			21.2%	
Nonsigner*Impact*Prior to 2007				0.000381
Standard Error				[0.000284]
Scaled Marginal Effect				4.2%
Nonsigner*Impact*2007 and Later				0.000591***
Standard Error				[0.000217]
Scaled Marginal Effect				9.5%
UNPRI*Impact*Prior to 2007				0.00147***
Standard Error				[0.000490]
Scaled Marginal Effect				10.7%
UNPRI*Impact*2007 and Later				0.00416***
Standard Error				[0.000341]
Scaled Marginal Effect				47.9%
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

Table 7: 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. Model (1) presents results with Impact only; model (2) interacts Impact and UNPRI. Control variables are those in the main logit model of Table 4.

Variable	North America (1)	North America (2)	Developed Europe (1)	Developed Europe (2)	Developed Asia Pacific (1)	Developed Asia Pacific (2)	Emerging Asia (1)	Emerging Asia (2)	Rest of World (1)	Rest of World (2)
Impact	0.000743***		0.00167***		-0.000072		-0.000361		0.000165	
Standard Error	[0.000257]		[0.000228]		[0.000597]		[0.000363]		[0.000118]	
Scaled Marginal Effect	7.8%		23.0%		0.0%		-5.8%		3.3%	
Nonsigner*Impact		0.000253		0.00117***		0.000070		-0.000355		0.000070
Standard Error		[0.000287]		[0.000279]		[0.000632]		[0.000363]		[0.000130]
Scaled Marginal Effect		2.8%		18.0%		1.3%		-5.8%		1.2%
UNPRI*Impact		0.00299***		0.00260***		-0.000907		n.a.		0.000512**
Standard Error		[0.000518]		[0.000346]		[0.00172]				[0.000238]
Scaled Marginal Effect		17.9%		27.8%		-17.5%				11.2%
UNPRI		0.000273**		0.000080		0.000128		0.000630		0.000024
Standard Error		[0.000128]		[0.000125]		[0.000188]		[0.000671]		[0.000152]
Scaled Marginal Effect		2.8%		1.0%		2.2%		12.2%		0.4%
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

Standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

Table 8: The Demand for Impact by LP Type and UN PRI Signatory

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. Impact and UNPRI are dummy variables that take a value of one for impact funds and UNPRI signatories, respectively. Model (1) presents results with impact as the key independent variable, while model (2) interacts Impact and UNPRI. Controls include all variables from the main logit model presented in Table 4.

Variable	Development Organizations		Foundations		Banks		Insurance		Endowments	
Model:	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Impact										
Coefficient	0.00148***		0.000772*		0.00104***		0.00169***		-0.00227**	
Standard error	[0.000216]		[0.000433]		[0.000249]		[0.000426]		[0.000916]	
Scaled Marginal Effect	18.4%		10.6%		22.9%		23.7%		-31.4%	
Nonsigner_impact										
Coefficient		0.00123***		0.0005		0.000949***		0.00163***		n/a
Standard error		[0.000241]		[0.000454]		[0.000264]		[0.000455]		
Scaled Marginal Effect		17.5%		6.9%		21.1%		22.3%		
UNPRI_impact										
Coefficient		0.00214***		0.00466***		0.00166***		0.00203*		n/a
Standard error		[0.000391]		[0.00127]		[0.000597]		[0.00104]		
Scaled Marginal Effect		14.0%		42.7%		34.3%		32.8%		
UNPRI										
Coefficient		0.000927***		-0.000042		0.0000004		-0.000345		
Standard error		[0.000175]		[0.000379]		[0.000199]		[0.000252]		
Scaled Marginal Effect		6.1%		-0.4%		0.0%		-5.6%		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vintage Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
LP Inv't Rate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	274,839	274,839	395,606	395,606	147,497	147,497	271,168	271,168	187,812	

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 8: (continued)

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. Impact and UNPRI are dummy variables that take a value of one for impact funds and UNPRI signatories, respectively. Model (1) presents results with impact as the key independent variable, while model (2) interacts Impact and UNPRI. Controls include all variables from the main logit model presented in Table 4.

| Variable	Corporate & Government Portfolios		Institutional Asset Managers		Wealth Managers		Private Pensions		Public Pensions	
Model:	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Impact										
Coefficient	-0.000234		0.000279		0.000107		-0.000832		0.00182***	
Standard error	[0.000501]		[0.000512]		[0.000644]		[0.000588]		[0.000354]	
Scaled Marginal Effect	-3.5%		3.5%		1.9%		-9.0%		15.8%	
Nonsigner_impact										
Coefficient		-0.00039		-0.000735		2.88E-05		-0.00188***		0.000938**
Standard error		[0.000534]		[0.000710]		[0.000698]		[0.000704]		[0.000430]
Scaled Marginal Effect		-6.1%		-10.5%		0.5%		-20.6%		9.1%
UNPRI_impact										
Coefficient		0.00119		0.00154**		0.000448		0.00275***		0.00368***
Standard error		[0.00140]		[0.000708]		[0.000320]		[0.00102]		[0.000537]
Scaled Marginal Effect		6.5%		15.5%		7.9%		26.5%		22.3%
UNPRI										
Coefficient		-0.000497		0.000139		0.000448		0.000399		0.000151
Standard error		[0.000450]		[0.000172]		[0.000320]		[0.000257]		[0.000148]
Scaled Marginal Effect		-2.7%		1.4%		7.9%		3.8%		0.9%
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	228,724	228,724	445,153	445,153	126,202	126,202	452,592	452,592	557,650	557,650

Standard errors in brackets

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 9: 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	Constituent	Intermediated by Asset Manager	Impact as Primary Objective	Pressures toward Impact Investment	Laws Restricting Impact Investment	Charter Restricing Impact Investment
Development Organizations	Organization	--	yes	--	--	--
Foundations	Organization	--	yes	--	yes ERISA and PRI (U.S.)	--
Banks	Organization	--	--	yes Community Reinvestment Act (U.S.)	--	yes
Insurance	Organization	--	--	yes State regulation modeled after CRA (U.S.)	--	yes
Endowments	Organization	--	--	--	yes ERISA (U.S.)	--
Corporate & Government Portfolios	Organization	--	--	--	--	yes
Institutional Asset Managers	Organization	yes	--	--	--	yes
Wealth Managers	Household	yes	--	--	--	--
Private Pensions	Household	--	--	--	yes ERISA (U.S.)	yes (non-US)
Public Pensions	Household	--	--	yes Political pressure	yes State & National Laws	--
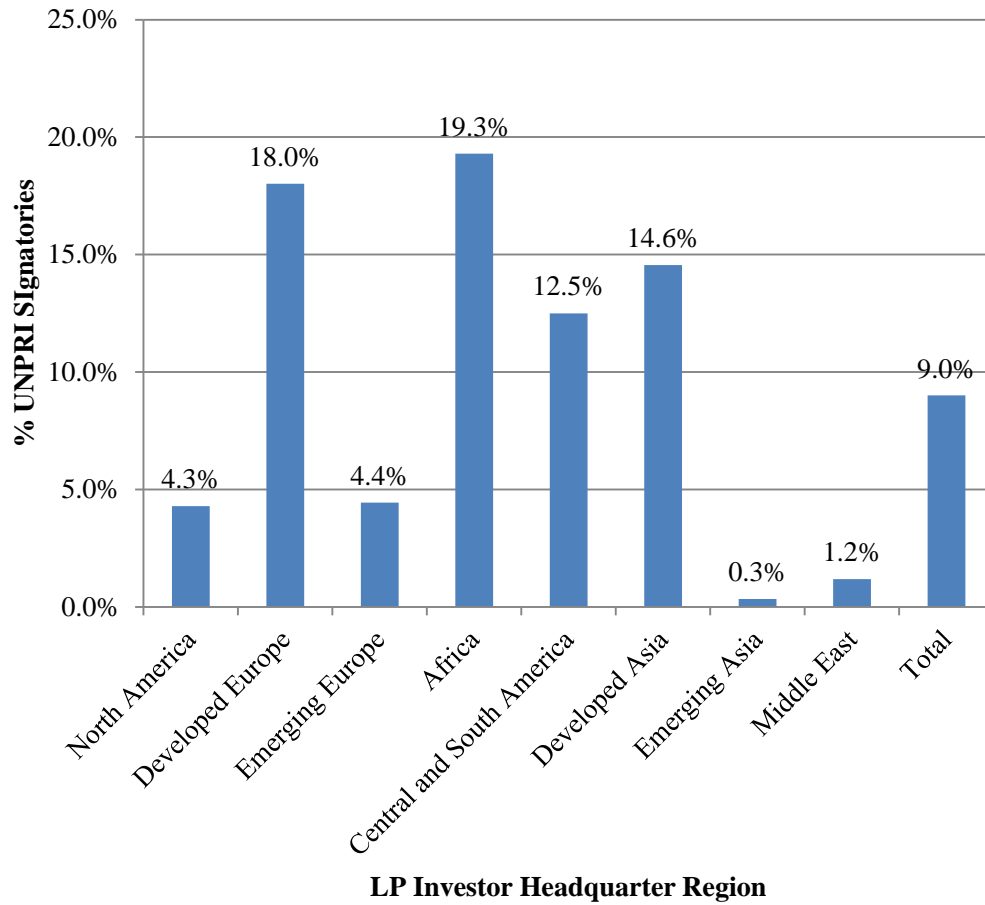
Figure 1: Percent of LPs that are UNPRI Signatories by Region
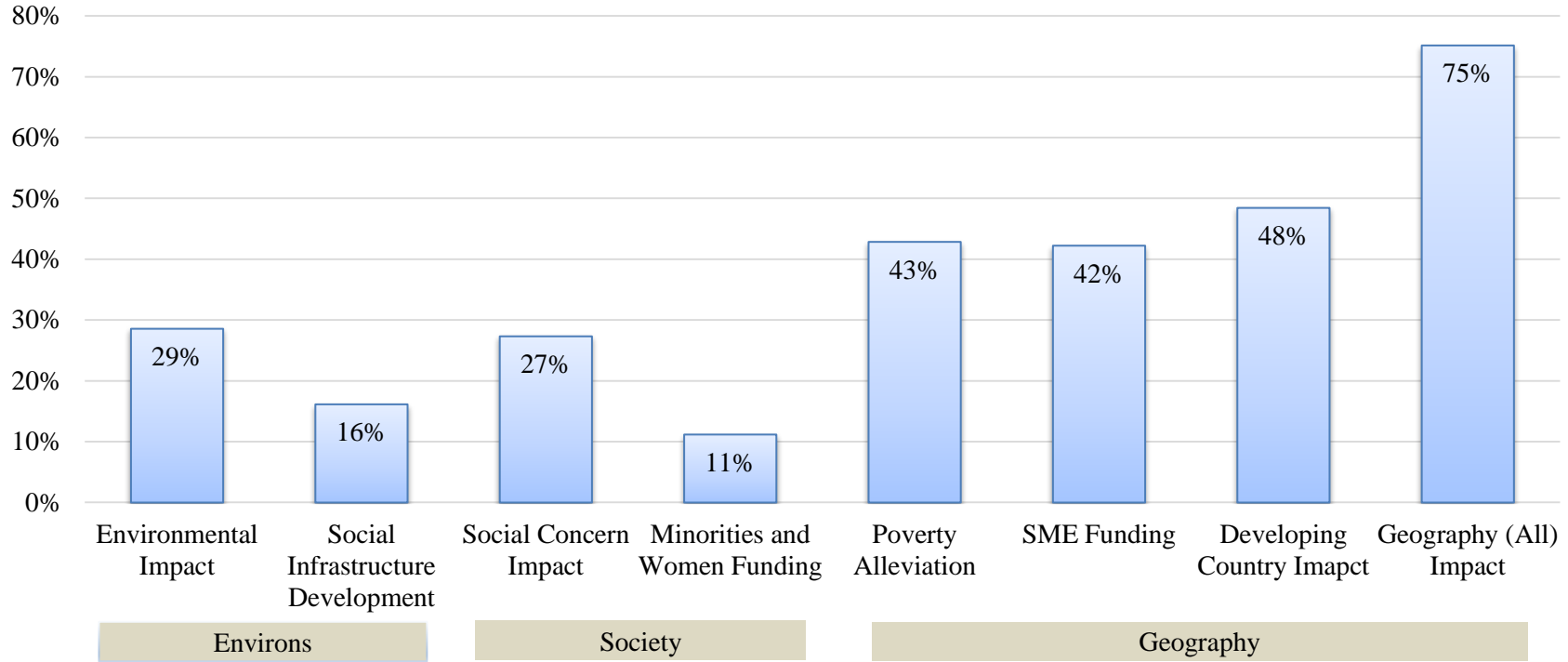
Figure 2: Impact Categories that Impact Funds Target

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:

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

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

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

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

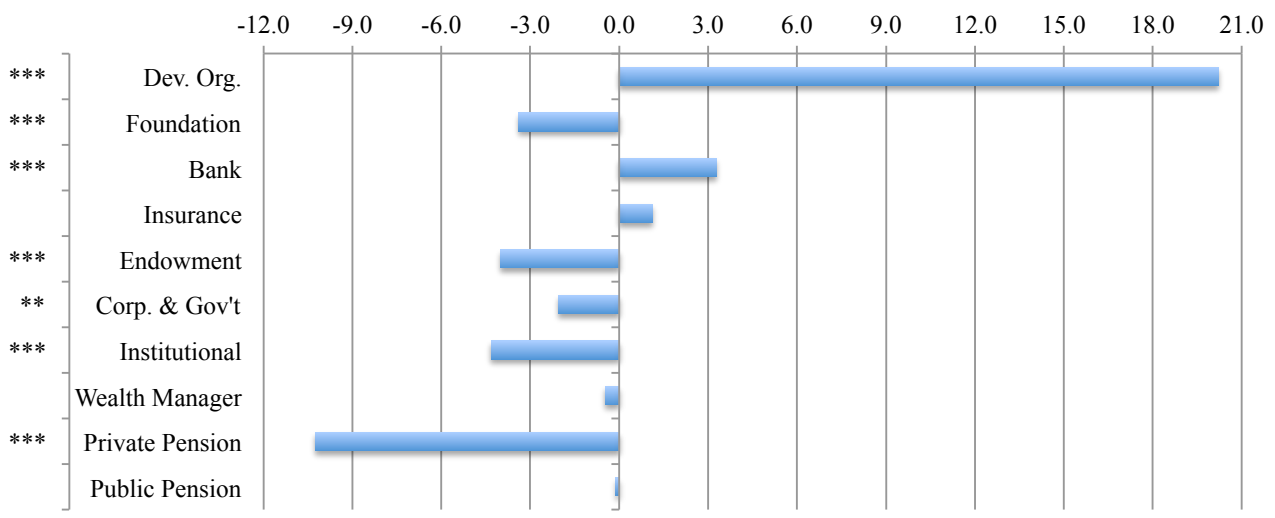**Poverty Alleviation**, funds firms in impoverished areas

SME Funding, provides capital to SMEs and undercapitalized markets

Developing Country Impact, funds firms in developing countries

Geography-Focused Impact, imposes a material geographic constraint on its investment criteria
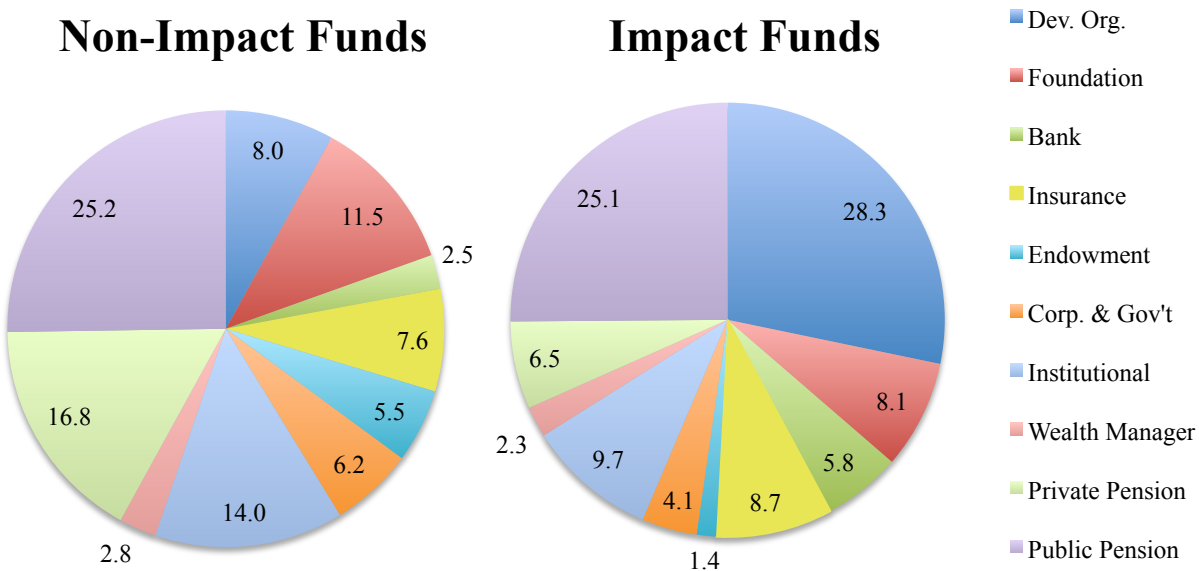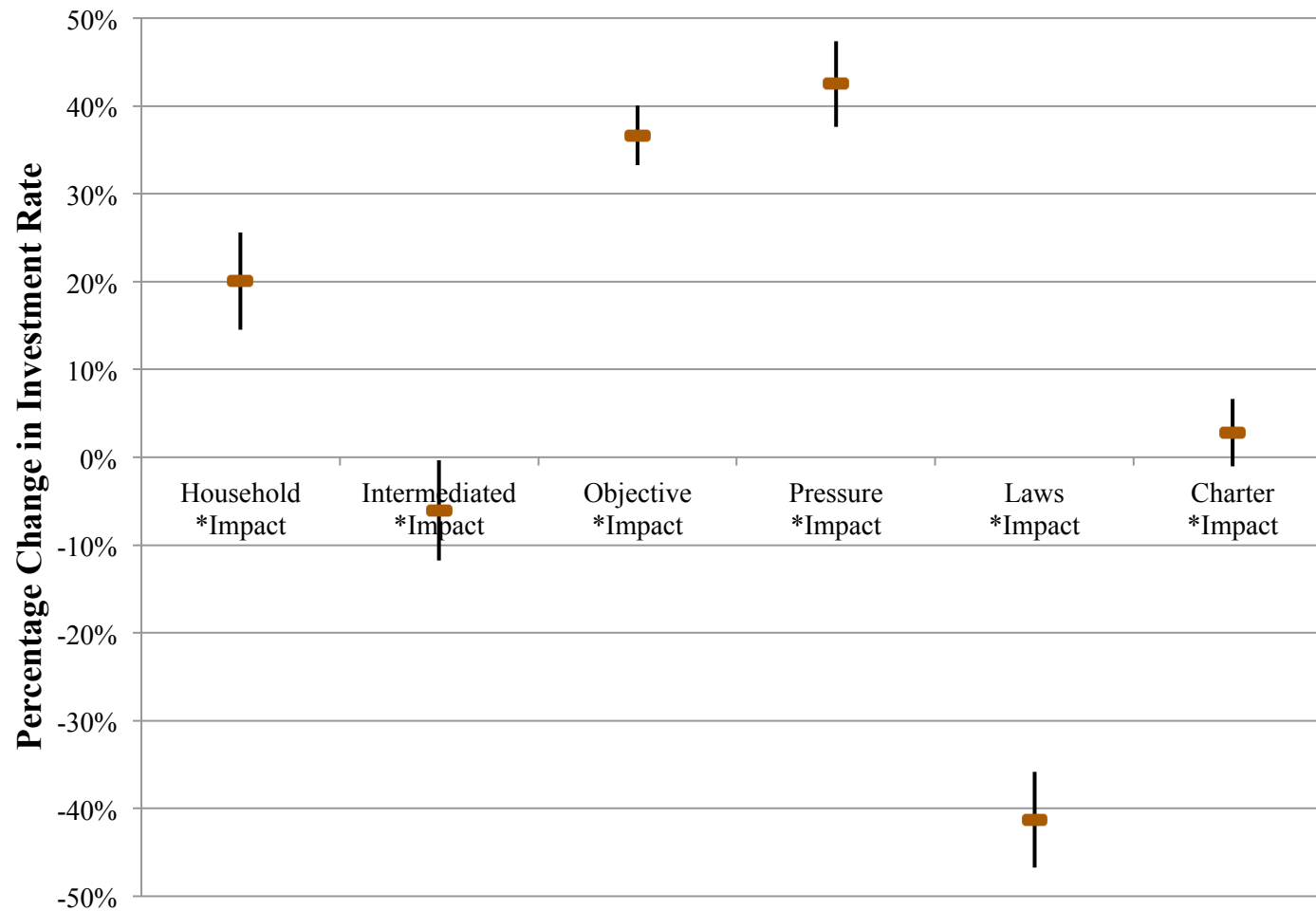
Figure 3: Percent of LP Investments in Impact and Non-Impact Funds
The figure presents the percent of investments by LP type separately for non-impact investments (left pie) and impact investments (right pie). The bar chart presents the difference in the percentage (impact less non-impact).
***, **, * - significant at the 1, 5, and 10% level (respectively).

Figure 4: The Effect of Investor Attributes on the Demand for Impact

Scaled effects equal marginal effects divided by baseline investment rates. The figure presents the 95% confidence interval for each of the scaled marginal effects corresponding to LP attributes from Table 9. The dark vertical line represents the width of the 95% confidence interval and the brown horizontal dash represents the point estimate.