Do GP Commitments Matter? *

Prof. Greg Brown
IPC & Kenan-Flagler Business School
gregwbrown@unc.edu

William Volckmann
IPC
wmvolckmann@unc.edu

December 4, 2024

Abstract

It is standard practice for private equity general partners (GPs) to commit capital to a fund alongside limited partners (LPs). Despite the ubiquity of the practice, and the belief that it aligns GP-LP incentives, there is almost no large-sample empirical analysis of GP commitments. In this analysis, we seek to fill the gap in research by examining the relation between GP commitments and fund performance for a sample of 1,503 private equity funds over a period of more than 20 years. We find that fund performance is positively associated with the amount of GP commitment for levels up to about 10% of committed capital. For example, moving from a GP Commitment of 2.2% (the 25^{th} percentile) to 4.4% (the 75^{th} percentile) is associated with an increase in IRR of about 1.5%. However, for very high levels of GP commitment the positive relation moderates. This finding is consistent with a trade-off between GP-LP incentive alignment and GP risk-aversion that results in an optimal GP commitment percentage in the range of 10-13% (depending on fund characteristics) which is substantially higher than the average commitment rate of 3.5%. Optimal GP commitment percentages are slightly lower for venture capital / growth equity funds than buyout funds, but still substantially larger than observed average commitments.

*We thank StepStone for providing data for this analysis. We are also appreciative of valuable comments from Alex Abell, Jesús Argüelles, Wesley Bradle, Mike Elio, Lisa Larsson, and Chris Schelling. All errors are our own.

1 Introduction

Delegated asset management gives rise to the classic principal-agent problem. The asset manager, by making investment decisions and overseeing operation of the fund, is acting as the agent on behalf of the principal investor that provides capital. But, their incentives are not fully aligned. Depending on the type of contract, fund managers may have an incentive to invest sub-optimally to maximize their own utility instead of the utility of the investors. A long literature in financial economics studies these sorts of delegated portfolio management problems, especially as they relate to mutual funds and hedge funds. The studies focus primarily on incentives contracts and the benefits of generating higher management fees by collecting assets under management (AUM). However, one very common alignment mechanism used in private funds is for investors to require the asset manager (e.g., the general partner, or GP, in a private fund) to invest alongside other investors (e.g., the limited partners, or LPs).

Having a GP commit their own capital to their fund—having "skin in the game"—can in theory be a two-edged sword though. On one hand a manager without any skin in the game is "playing with someone else's money" and accordingly might be careless. This carelessness could manifest as the inclusion of very risky assets, lackluster effort (shirking), or inadequate diversification, to name a few possibilities. In contrast, a manager is likely to operate more carefully when their own capital is at stake, potentially delivering a product more attuned to investor preferences. That said, a GP with too much at stake might be excessively cautious, for example by passing on risky but high-potential deals, slowing the rate of capital deployment through drawn-out due diligence, or over-diversifying to a point that results in sub-optimal returns for LPs. For example, Bienz et al. (2023), using a small sample of Norwegian private equity funds between 2000 and 2010, find that general partners (GPs) reduce risk-taking when required to invest a large portion of their own wealth in the fund.

In short, both too little GP commitment and too much GP commitment could negatively affect risk-adjusted performance. It follows that there may be an optimal amount of manager commitment that would balance out these effects. We illustrate this tension in Figure 1. Fund performance will reach a maximum when the GP commitment balances incentive alignment with GP

risk-aversion. The goal of this analysis is to empirically study the relation between performance to see if benefits from alignment or costs of excessive risk-aversion (or both) are observed in the data. To the extent we can observe this trade-off empirically, we can affect the optimal level of GP commitment and its determinant factors (e.g., fund and GP characteristics).

OPTIMAL GP COMMITMENT WITH INCENTIVE ALIGNMENT AND A RISK-AVERSE MANAGER

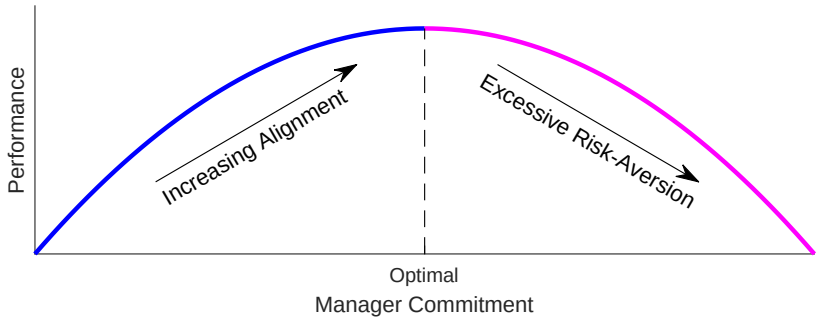

FIGURE 1: This figure shows the hypothetical upward effect on fund performance of incentive alignment (in blue) when the level of GP commitment increases, and the hypothetical downward effect on performance (in magenta) when manager commitment gets too large and risk-aversion leads to sub-optimal portfolio management. When the two effects are balanced, performance is optimal.

The effect of manager commitment on performance has been studied in mutual funds (Khorana et al., 2007; Evans, 2008), hedge funds (Agarwal et al., 2009), in 115 Chinese venture capital funds ranging from 2007 through 2011 (Jia and Wang, 2017), and from 837 U.S. private equity funds ranging from 1984 through 2010 (Robinson and Sensoy, 2013). All except the latter find a relationship between fund performance and manager commitment. Jia and Wang (2017) in particular find that the interaction of manager incentive alignment and caution lead to an inverted-U shape for fund performance like that shown in Figure 1, albeit with their relatively small set of Chinese venture capital funds.

In this paper, we use a novel data set from StepStone with 1,503 private equity funds to conduct the first large-sample, long-run analysis of GP commitments. Our data contains fund vintages from 1994 through 2019, so it is both much larger and more current than other studies. Unlike Bienz et al. (2023) and Jia and Wang (2017), the funds we study are not restricted to any geographical region; and unlike Robinson and Sensoy (2013), the data does not come from a single limited partner (LP) and is therefore less prone to selection bias. Accordingly, we believe that this data

set provides the most thorough and representative data on GP commitments to date. Using a regression analysis, we document a statistically and economically significant relation between GP commitment percentage and fund performance. The magnitudes of the effects on performance are meaningful. Moving from a GP Commitment of 2.2% (the 25th percentile) to 4.4% (the 75th percentile) is associated with an increase in IRR of about 1.5% and an increase in MOIC of about 0.1x. Moving from the 5th percentile to the 95th percentile is associated with an increase in IRR of about 3.0% and an increase in MOIC of about 0.3x.

Importantly, we document that the relationship exhibits an inverted-U shape when controlling for other variables. Our estimates suggest that the optimal level of GP commit is about 12-13% for buyout funds and about 11-13% for venture capital and growth equity, both of which are well above the average GP commitment in our data set of 3.5%.

2 Data and Summary Statistics

Our fund-level data set comes from StepStone, which contains 1,503 observations of funds with a recorded percent of GP commitment relative to its fund size. These funds come from 917 GPs of vintages from 2000 through 2019 making investments in 38 countries and across 15 industries. We only examine private equity funds, namely buyout with sub-classes of small, medium, large, and global; venture capital with sub-classes of early stage, balanced, late stage (we include a handful of funds classified as "expansion" in late stage); and growth equity with sub-classes of small, medium, and large. We filter out buyout funds with less than the equivalent of 100 million USD and venture/growth funds with less than the equivalent of 50 million USD in committed capital. The distribution of funds by region is shown in Panel A of Table 1, the distribution by industry focus is shown in Panel B of Table 1, and the distribution of vintages is shown in Figure 2.

TABLE 1: FUND DISTRIBUTION BY REGION AND INDUSTRY

Panel A: Regions			Panel B: Industries		
Region	**Number**	**Weight**	**Industry Focus**	**Number**	**Weight**
North America	1035	66%	Generalist	779	72%
Europe	232	22%	Technology	282	13%
Asia Australia	191	11%	Consumer	72	4%
Other	45	1%	Health Care	128	3%
			Financial Services	47	2%
			Industrials	56	2%
			Other	139	4%

Weights determined by fund size USD
Other combines categories with weights $< 1\%$

NUMBER OF FUNDS AND TOTAL SIZE OF FUNDS BY VINTAGE

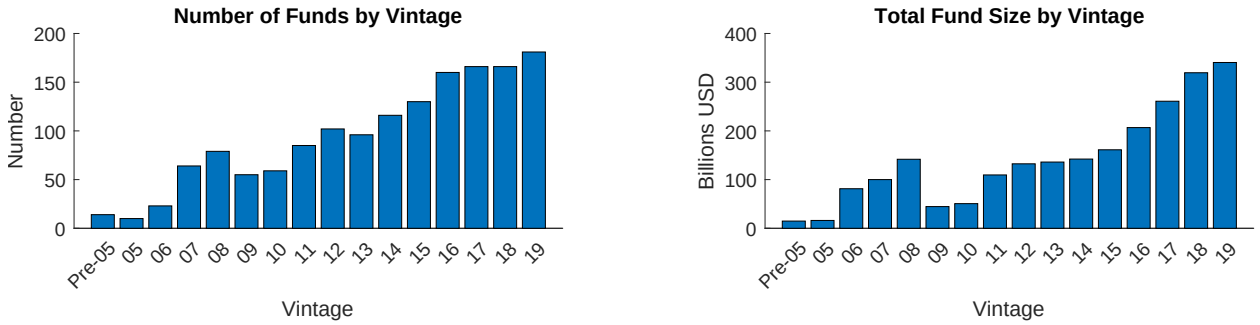

FIGURE 2: This figure shows the number of funds (left) and the total size of funds (right) in billions USD from vintages 2005 through 2019. Vintages before 2005 are combined into the left-most bar.

Figure 3 provides a histogram of GP commitment percentages using 1% intervals. Three-quarters of funds have a GP commitment of less than 5% though the distribution has a long right tail with about 5% of funds having a GP commitment of 10% or more. In addition to GP commitment percentage, our data set includes fund-level internal rate of return (IRR) and multiple on invested capital (MOIC) as performance metrics, fund size, percent of capital called, the number of investments in a fund, the sequence of the fund, and the fund GP's total assets under management (AUM). Net MOIC, net IRR, GP commitment percent, number of investments, and called capital are winsorized at the 99th percentile to prevent outliers from having a disruptively large influence on the analysis.

Summary statistics for all funds are shown in Table 2, and Table A1 of the appendix shows summary statistics specifically for buyout and for venture/growth equity. Overall, the average

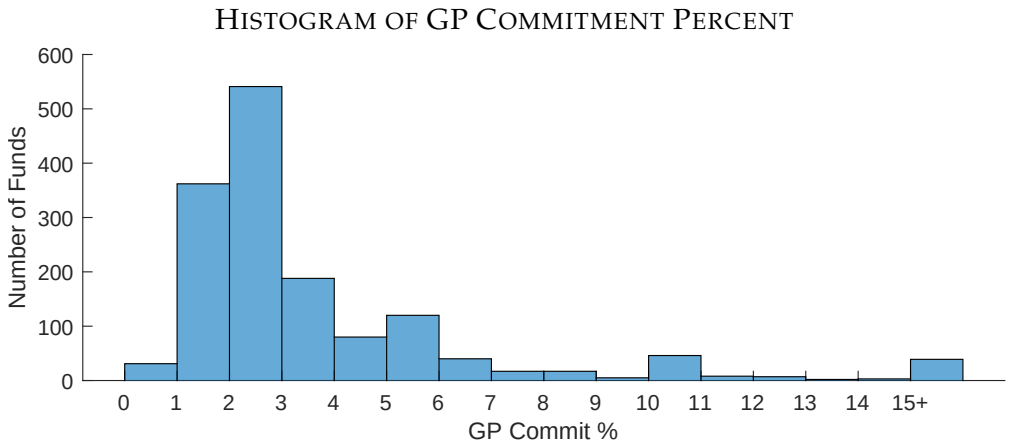

FIGURE 3: This figure plots a histogram GP commitment percent in 1% percentage point buckets (e.g., 0.00-0.99%, 1.00-1.99%, etc.). Observations with 15% or more GP commitment are combined in the right-most bar.

GP commitment is 3.5%, where buyout funds exhibit a higher average GP commitment at 3.9% than venture/growth at 2.7%. Median GP commitment is lower at just 2.0% for the full sample of funds, and likewise the median GP commit for buyout is 2.5% compared to 2.0% for venture/growth. That said, there is not much difference at the high end: buyout and venture/growth all have a 95th percentile of roughly 10% GP commit. Buyout unsurprisingly has larger average fund size of about 2.0 billion USD and also total GP AUM of 16.1 billion USD, as compared to venture/growth with 0.6 billion USD and 6.2 billion USD, respectively. On the other hand, buyout funds on average have 15 investments per fund whereas venture/growth have 27 (which is skewed by a few funds with a large number of investments). There is little difference between total capital called when comparing buyout and venture/growth, both at around 89%. Likewise, there is not much difference in fund sequence, with funds in both asset classes on average being the 4th fund in a series (the median is the 3rd fund).

Our sample of funds has a median MOIC of 1.68x and a median IRR of 18.0%. These compare to values for a larger sample (4,714) similar funds in the MSCI-Burgiss of 1.66x and 12.3%. Part of the higher IRR for Stepstone is driven by the more recent mix of funds in the StepStone sample. If we restrict the comparison to funds to those with vintage years before 2014, the median MOIC in StepStone is 1.72 with a median IRR of 13.4%, whereas MSCI-Burgiss has a median MOIC of 1.60 and a median IRR of 9.4%.

Figure 4 shows the time series of GP commit by vintage from 2005 through 2019 for all equity, buyout, and venture and growth. When looking at all equity in the left panel, GP commit percent has increased just slightly over time from a value of 2.7% in 2005 to 3.3% in 2019, but most of the change was in vintages prior to 2010. Examining just buyout funds shows a similarly flat pattern over time. The average GP commit of 2.9% in 2005 rose to a peak of nearly 5% for 2015 vintage funds before moderating to 4.0% in 2019. In contrast, venture/growth has the most pronounced increase, from a value of 1.0% in 2005 to 2.5% in 2019, though the change from year to year is not consistent. We also note that the modest increase in GP commitment over time is likely to explain why our estimates are somewhat higher than those of previous literature that used older data.

GP Commitment Percentage By Vintages 2005 - 2019

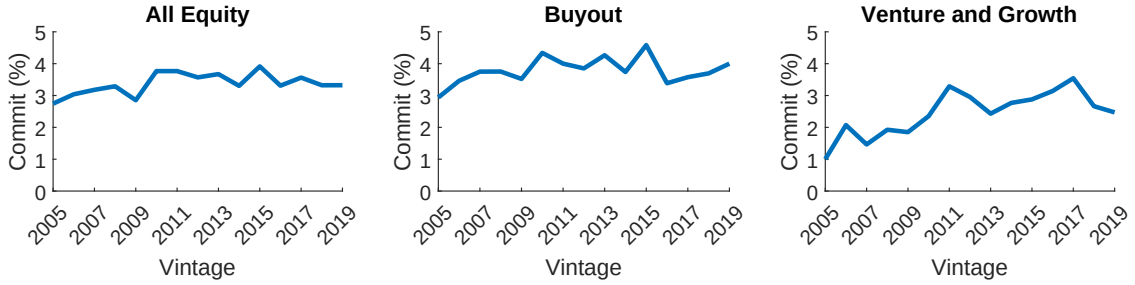

FIGURE 4: This figure shows the mean of GP commitment percent by vintage from vintages 2005 through 2019 for all equity (left), buyout (middle), and venture/growth (right). Vintages prior to 2005 were excluded due small sample sizes (fewer than 5 funds per vintage).

TABLE 2: SUMMARY STATISTICS FOR PRIVATE EQUITY FUNDS

All Equity Funds

Variable	Obs	Mean	StDev	Min	Q05	Q25	Q50	Q75	Q95	Max
GP Commit (%)	1503	3.5	3.8	0.0	1.0	1.7	2.0	4.0	10.0	28.2
Fund Size (mil USD)	1503	1500	2620	50	121	279	600	1428	6020	24729
Called (%)	1256	88.8	18.5	0.2	46.9	85.0	96.5	100.0	100.0	118.2
Number of Investments	1193	19	17	1	6	9	13	22	50	109
Fund Sequence	1503	4	3	1	1	2	3	5	9	17
AUM (mil USD)	1445	12521	32693	0	200	1073	3000	9568	64748	481000
MOIC	1430	1.85	0.86	0.02	0.96	1.34	1.68	2.12	3.35	7.76
MOIC Pre-2014	552	1.88	0.97	0.02	0.73	1.34	1.72	2.22	3.37	7.76
IRR (%)	1280	19.9	14.0	-19.9	2.7	10.8	18.0	25.6	44.2	99.4
IRR Pre-2014 (%)	474	15.3	10.8	-19.9	1.3	8.5	13.6	21.0	33.0	99.0

MOIC, IRR, GP commitment percent, number of investments, and called capital are winsorized at the 99th percentile

3 A Closer Look at GP Commitment

We explore characteristics of GP commit by considering three ranges of GP commit: *low commit* is considered to be a GP commit percent below 2.5%, *mid commit* is between 2.5% and 5%, and *high commit* above 5%. Table 3 shows averages for different variables among these GP commit groupings. The high commit group shows the highest average IRR and MOIC with 21.3% and 1.94x, respectively, whereas low commit and mid commit have average IRR of 19.3% and 20.6%, and average MOIC of around 1.81x and 1.88x, respectively. Using this simple univariate analysis, it appears that the high commitment group has generated the highest returns.

TABLE 3: SUMMARY STATISTICS BY GP COMMIT GROUPING

Variable	**Low**	**Mid**	**High**
Number of Funds	904	403	196
GP Commit %	1.7	3.8	11.1
IRR	19.3	20.6	21.3
MOIC	1.81	1.88	1.94
Fund Size (mil USD)	1317	1947	1428
Called Percent	89	90	85
Number of Investments	20	19	15
Fund Sequence	3.8	4.0	3.3
Vintage	2014	2014	2014
GP AUM	10720	16349	13006
Public GP %	5.4	8.2	7.7
Geography			
North America %	61	72	68
Europe %	24	22	15
APAC & Other %	15	6	17
Industry			
Generalist %	72	72	72
Tech %	12	15	15
Other Specialized %	16	13	13
IRR Pre-2014 (%)	14.5	16.7	16.2
MOIC Pre-2014	1.83	1.89	2.10

Despite the fact that the performance of high commitment funds is typically the highest, this does not mean we can confidentially say that more GP commitment leads to better fund performance. This is for two reasons. The first reason is that there must be some level of GP commit at

which performance increases plateau, otherwise all GPs would likely seek to have extremely high commitment levels and we would observe a very different market for private equity investments. The second reason is that the apparent relationship between GP commit and performance could be a coincidence and not a statistically reliable relation. There are other differences between the groups, and it is plausible that those other differences are the factors actually driving the observed performance differentials. For example, Table 3 also shows average fund size and GP AUM. The average low commit fund size of 1.3 billion USD is smaller than the average mid commit fund size of 1.9 billion USD, and likewise for the average high commit fund size of 1.4 billion USD. The same could be said by looking at AUM: the average low commitment fund comes from a GP with 10.7 billion USD, compared to 16.4 billion USD for mid commitment and 13.0 billion USD for high commitment. If these differences in fund size and AUM correlate with performance differentials, then we need to untangle those effects from the effect of GP commit.

The percent of capital called could also make a difference since less mature funds could still be in their investment period, and deployment pacing can especially affect IRR (Brown and Volckmann II, 2024). As shown in Table 3, mid-commitment funds tend to have the largest percent of capital called at 90%, followed by low commitment with 89% and high commitment with 85%. It could also be that the number of investments within a fund matters, perhaps negatively as a measure of how thinly a GP is being spread, or perhaps positively by reflecting a GP's ability to find good deals. Table 3 shows that low commitment funds tend to have the most investments per fund at 20, followed by 19 for middle commitment, and 15 for high commitment. Vintage effects might also matter since the performance within a vintage can reflect things like business cycle and capital market effects. All groups have an average vintage of 2014, but these groups' vintages could be skewed in different ways around that average.

We also find that fund region and industry are different between the three GP commitment groups. Since some regions and industries perform differently on average, it is plausible that the difference in GP commit group performance is affected by these differences. Table 3 shows differences in both. The low commit group has 61% in North America as opposed to 72% for the mid group and 68% for the high group. Likewise, the high group has 7-9% less weight in Europe and the mid group has 9-11% less weight in APAC and other. The low group has 3% less in tech.

Ultimately, we seek to understand how differences in GP commitments *and* other characteristics are correlated with differences in performance. As shown in Table A2, many of the variables discussed have some correlation with performance (e.g., correlation coefficients greater than 0.10 in magnitude) with the largest correlations coming from vintage and industry. When combining the correlations, these variables together can explain more than 40% of the variation in performance. Consequently, we conduct a multi-variate approach to better ensure that the performance differences across GP commitment groups documented above are not spurious. We employ a linear regression model which isolates the relationship between fund performance and GP commitment by explicitly controlling for variation in these other factors. Which is to say, the linear regression allows us to estimate how fund performance varies with GP commitment for funds with similar size that are managed by GPs with similar AUM that invest in similar regions, and so on.

We use the following variables to explain IRR and MOIC: GP commit percent and its square, (log of) fund size, (log of) total GP AUM, fund size divided by AUM (as a measure of fund size relative to the GP), the number of investments in a fund, the percent of total fund capital called, the sequence of the fund, the performance of the GP's previous fund (captured by percentile of that fund within its vintage), with fixed effects for vintage, industry, asset class (when applicable), asset sub-class (e.g. middle buyout versus small buyout), and region.[1] Missing observations for IRR, MOIC, and number of investments are imputed.[2] The estimates for GP commit percent and its square allow us in turn to estimate a quadratic shape for performance as a function of GP commit. If the estimated coefficient on the squared GP commitment is negative, this implies an inverted U-shape like that shown in Figure 1. We can then interpret the peak of the parabola as the optimal GP commit percent when accounting for all of the other variables in the regression.

The regression results are shown in Table A3 and are consistent with a (statistically reliable) optimal level of GP commitment for all equity, buyouts, and venture/growth, using both IRR and MOIC as performance metrics. We plot the optimal levels of GP commitments for all equity in

[1] Fund size divided by AUM is also winsorized at the 99th percentile.

[2] 223 missing observations for IRR are imputed using MOIC and vintage with an R-squared of 0.57; 73 observations for MOIC are imputed using IRR and vintage with an R-squared of 0.54; and 283 observations for number of investments are imputed using sub-sector, fund size, industry, and fund sequence with an R-squared of 0.49. We also present regression results without any imputed values in the appendix.

OPTIMAL GP COMMIT PERCENT

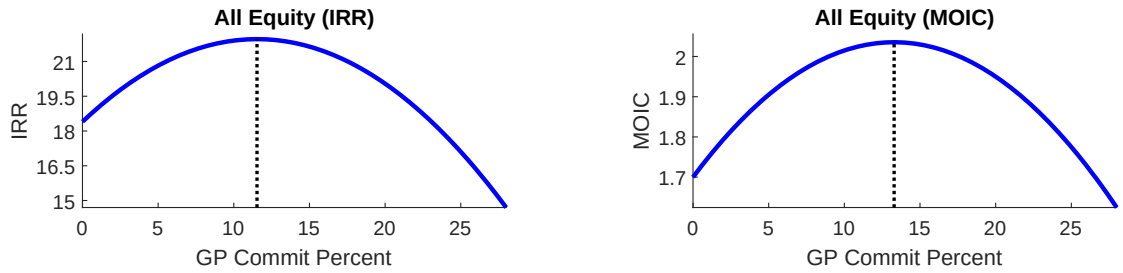

FIGURE 5: This figure shows the estimated relationship between GP commit percent and fund performance, estimated using both IRR and MOIC for all equity. The dotted line indicates the optimal percent of GP commitment.

TABLE 4: OPTIMAL GP COMMIT ESTIMATES

	All Equity		**Buyout**		**Venture + Growth**	
	IRR	**MOIC**	**IRR**	**MOIC**	**IRR**	**MOIC**
Optimal GP Commit	11.5%	13.0%	12.3%	13.0%	10.5%	12.6%

Figure 5. The optimal GP commitment for the sample of all equity funds is estimated to be 11.5% when we use IRR as the performance metric, slightly higher at 12.3% for buyout and slightly lower at 10.5% for venture. MOIC on the other hand suggests a 13.0% optimal GP commitment for the sample of all equity funds, also 13.0% for buyout, and slightly lower at 12.6% for venture/growth equity. Given that the correlation between IRR and MOIC is only 0.55 for all equity and 0.60 for buyout, the consistency of the estimates provides some reassurance about the robustness of the regression model. These estimates are summarized in Table 4. We also estimate the model without using any imputed values as shown in Table A4 and find similar results for all equity and buyout as reported in Table A5, although the results for venture capital become statistically unreliable.

4 Other Considerations

While our analysis is the most comprehensive to date, there are still a variety of other factors that may determine the optimal level of GP commitment for a particular fund. We briefly discuss these here and leave a detailed analysis to future research.

- **GP Experience.** First time (or more generally, less experienced) GPs may have a more dif-

ficult time fund-raising because of a lack of track record (greater information asymmetries with LPs). This suggests that these GPs would need higher levels of skin-in-the-game to signal quality and align incentives more tightly, ceteris paribus. We find some evidence that first and second funds have an average level of GP commitments that is about 0.4% higher than third or higher series funds, but we do not find an additional incremental effect on performance (relative to other funds).

- **GP Wealth.** The incentive alignment effect of GP commitment likely depends on not only the dollar amount of GP commit, but also the amount relative to GP wealth. A $1 million USD commitment might be 100% of a young GP's wealth and a tiny fraction of the wealth of a successful seasoned GP. Furthermore, GP commitments are rarely from a single partner and typically involve a range of investment professionals at the firm. Thus, the organizational composition of GP commitments may also matter. Future research might examine estimates of prior-fund carried interest as a way to examine the impact of GP wealth.

- **Structure of Commitment.** GPs can structure their commitment in different ways and this may matter for incentive alignment. For example, some GPs commit capital alongside LPs in a similar structure whereas other GPs allocate management fees to cover their commitment. Likewise, publicly-traded GPs and those which have sold stakes in the firm may have different incentives. We made an attempt to identify all of the publicly-traded GPs in our sample and added this binary variable to our regression analysis (it had little effect). However, the number of funds from public GPs was too small to conduct a separate analysis. A larger sample may be able to examine this issue more closely.

- **Fund Size.** Our results show a negative relation between fund size and performance in our sample, and we control for size in our regression analysis. However, fund size as it relates to incentives and GP commitment may be better characterized by AUM per partner or investment professional. Large firms could find it more difficult to align a large number of partners who may feel that their individual efforts have little baring on the overall success of a fund or firm.

5 Conclusion

This paper provides the first large-sample evidence on the relation between GP commitment levels and fund performance. We document a strong, and statistically reliable, positive relation between GP commitment levels and fund performance for both buyout funds and venture / growth funds over a wide range of GP commitment levels. However, we also find evidence consistent with very high levels of GP commitment moderating the incentive effects, perhaps due to GP risk aversion. Thus there is an empirically observable optimal level of GP commitment in the range of 10-13% depending on the type of fund and performance metric we utilize. Our results are robust to controlling for a range of GP and fund characteristics such as vintage year, geography, fund size, GP AUM, the number of investments in a fund, and previous fund performance, among others.

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Appendix

TABLE A1: SUMMARY STATISTICS FOR PRIVATE EQUITY FUNDS

Buyout Funds

Variable	Obs	Mean	StDev	Min	Q05	Q25	Q50	Q75	Q95	Max
GP Commit (%)	969	3.9	4.1	0.0	1.0	2.0	2.5	4.4	10.0	28.2
Fund Size (mil USD)	969	1974	3008	100	168	378	814	2229	7737	24729
Called (%)	822	89.1	17.7	0.2	50.2	84.3	96.7	100.0	100.0	118.2
Number of Investments	807	15	13	1	5	8	11	17	36	109
Fund Sequence	969	4	2	1	1	2	3	5	8	17
AUM	933	16011	39019	1	300	1313	4000	13074	71125	481000
MOIC	922	1.79	0.72	0.02	0.99	1.37	1.67	2.04	2.97	7.76
MOIC Pre-2014	387	1.82	0.81	0.02	0.73	1.35	1.71	2.13	3.07	7.76
IRR (%)	832	19.4	12.7	-19.9	3.5	11.2	18.0	24.9	39.9	99.4
IRR Pre-2014 (%)	337	15.4	10.9	-19.9	0.9	8.9	14.1	21.0	32.6	99.0

Venture Capital and Growth Equity Funds

Variable	Obs	Mean	StDev	Min	Q05	Q25	Q50	Q75	Q95	Max
GP Commit (%)	534	2.7	3.1	0.0	1.0	1.0	2.0	3.0	10.0	28.2
Fund Size (mil USD)	534	640	1329	50	74	200	350	645	2166	24729
Called (%)	434	88.2	19.9	2.1	41.3	85.3	96.0	100.0	100.0	118.2
Number of Investments	386	27	22	1	7	13	21	33	76	109
Fund Sequence	534	4	3	1	1	2	3	5	9	17
AUM	512	6162	13450	0	140	735	2160	5664	25106	134080
MOIC	508	1.95	1.05	0.14	0.92	1.29	1.70	2.34	3.82	7.76
MOIC Pre-2014	165	2.04	1.26	0.14	0.75	1.29	1.74	2.51	3.97	7.76
IRR (%)	448	20.9	16.0	-12.0	2.2	10.2	18.0	27.5	52.8	99.4
IRR Pre-2014 (%)	137	14.8	10.7	-12.0	1.5	8.0	13.1	21.0	33.6	60.3

MOIC, IRR, GP commitment percent, number of investments, and called capital are winsorized at the 99th percentile

TABLE A2: CORRELATION METRICS

Metric	Fund Size	AUM	Percent Called	# Investments	Vintage	Region	Industry	Combined
MOIC	-0.086	0.104	0.142	0.103	0.236	0.141	0.235	0.476
IRR	-0.079	0.023	-0.081	-0.058	0.322	0.100	0.224	0.437

Fund size and AUM are in logarithms. Vintage, region, and industry correlations are from roots of univariate regression R-squareds.

TABLE A3: Regressing Performance (With Imputed Values)

	IRR			MOIC		
	All Equity	BO	VC+GE	All Equity	BO	VC+GE
GP Commit Percent	0.618^{**}	0.627^{**}	0.659	0.051^{**}	0.037^{**}	0.096^{**}
	(0.018)	(0.028)	(0.184)	(0.019)	(0.041)	(0.048)
GP Commit Percent Sq	-0.027^{**}	-0.025^{**}	-0.031^{*}	-0.002^{**}	-0.001^{*}	-0.004^{**}
	(0.024)	(0.046)	(0.091)	(0.016)	(0.053)	(0.012)
Fund Size (Log)	-4.526^{***}	-4.045^{***}	-5.343^{**}	-0.320^{***}	-0.270^{**}	-0.409^{**}
	(0.002)	(0.004)	(0.011)	(0.002)	(0.021)	(0.029)
AUM (Log)	3.193^{***}	3.158^{***}	3.149^{**}	0.265^{***}	0.242^{***}	0.328^{**}
	(0.000)	(0.000)	(0.018)	(0.000)	(0.000)	(0.035)
Fund Size/AUM	1.603^{**}	1.710^{**}	0.975	0.189^{***}	0.171^{***}	0.280
	(0.011)	(0.016)	(0.766)	(0.001)	(0.001)	(0.362)
Number of Investments	0.016	0.029	0.007	0.001	−0.001	0.000
	(0.643)	(0.477)	(0.914)	(0.726)	(0.775)	(0.966)
Percent Called	−0.009	−0.041	0.043	0.003^{*}	−0.001	0.011^{***}
	(0.820)	(0.285)	(0.281)	(0.081)	(0.500)	(0.004)
Fund Sequence	0.152	−0.009	0.455^{*}	0.022^{**}	0.022^{*}	0.030^{*}
	(0.243)	(0.961)	(0.071)	(0.033)	(0.097)	(0.073)
Previous IRR Performance	0.034	0.033	0.033			
	(0.110)	(0.299)	(0.354)			
Previous MOIC Performance				0.001	0.000	−0.002
				(0.748)	(0.991)	(0.770)
Constant	18.375	−7.868	24.507	0.205	-1.151^{*}	0.253
	(0.298)	(0.285)	(0.500)	(0.816)	(0.063)	(0.852)
N	1162	765	397	1162	765	397
Adj R-sq	0.193	0.209	0.143	0.180	0.199	0.167

Fixed effects for vintage, industry, region, asset subclass, and asset class (when applicable) are omitted from table
Standard errors clustered by vintage
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

TABLE A4: Regressing Performance (Without Imputed Values)

	IRR			MOIC		
	All Equity	BO	VC+GE	All Equity	BO	VC+GE
GP Commit Percent	0.609**	0.598**	0.982	0.056**	0.045**	−0.135*
	(0.018)	(0.034)	(0.412)	(0.019)	(0.013)	(0.097)
GP Commit Percent Sq	−0.025**	−0.024**	−0.075	−0.002**	−0.002**	0.023**
	(0.013)	(0.028)	(0.561)	(0.021)	(0.014)	(0.022)
Fund Size (Log)	−5.014***	−4.876***	−5.039***	−0.362***	−0.351***	−0.356***
	(0.002)	(0.007)	(0.001)	(0.000)	(0.008)	(0.006)
AUM (Log)	3.068***	3.209***	2.693	0.265***	0.282***	0.161
	(0.000)	(0.000)	(0.159)	(0.000)	(0.000)	(0.119)
Fund Size/AUM	1.354*	1.384	0.582	0.169***	0.195***	−0.145
	(0.058)	(0.105)	(0.917)	(0.007)	(0.004)	(0.643)
Number of Investments	0.016	0.018	0.025	0.001	−0.002	0.003
	(0.721)	(0.702)	(0.751)	(0.706)	(0.514)	(0.432)
Percent Called	−0.042	−0.084*	0.077*	−0.000	−0.002	0.008**
	(0.269)	(0.052)	(0.085)	(0.939)	(0.338)	(0.019)
Fund Sequence	0.196	0.139	0.338	0.027**	0.034**	0.029
	(0.228)	(0.522)	(0.141)	(0.010)	(0.025)	(0.150)
Previous IRR Performance	0.048	0.042	0.050			
	(0.105)	(0.252)	(0.433)			
Previous MOIC Performance				−0.000	−0.001	−0.003
				(0.922)	(0.624)	(0.610)
Constant	53.463***	25.514**	39.793	1.357	1.095	2.098
	(0.000)	(0.022)	(0.154)	(0.205)	(0.102)	(0.194)
N	821	557	264	920	621	299
Adj R-sq	0.161	0.169	0.121	0.198	0.227	0.194

Fixed effects for vintage, industry, region, asset subclass, and asset class (when applicable) are omitted from table
Standard errors clustered by vintage
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

TABLE A5: OPTIMAL GP COMMIT ESTIMATES (WITHOUT IMPUTED VALUES)

	All Equity		Buyout	
	IRR	MOIC	IRR	MOIC
Optimal GP Commit	12.2%	14.0%	12.5%	11.3%