

## **Internet Appendix**

### **“How persistent is private equity performance? Evidence from deal-level data”**

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**Table IA.I****Fund performance transition matrices: IRR and MOIC**

This table presents the conditional probabilities that the current fund of a GP ( $n_0$ ) either stays in the same performance tercile as the next one ( $n_{+1}$ ) within the fund family or belongs to another tercile based on Internal Rate of Return (IRR, Panel A) or Multiple of Invested Capital (MOIC, Panel B), both gross of fees and carried interest. Fund performance terciles are built across all funds of a given fund vintage year, e.g. we rank all funds of the vintage year 1999 according to their IRR/MOIC performance and build three terciles, containing top funds, mid-performing funds, and bottom funds, respectively. We only include mature funds that are at least 50% realised in this analysis. We obtain a sample of 534 mature funds with a mature follow-on fund.

*Panel A: IRR*

		Tercile Fund <sub>t1</sub> (%)		
		Top	Mid	Bottom
Tercile Fund <sub>t0</sub>	Top	37	31	32
	Mid	27	36	36
	Bottom	27	33	40

*Pearson chi2(4) = 7.7537 Pr = 0.101*

*Panel B: MOIC*

		Tercile Fund <sub>t1</sub> (%)		
		Top	Mid	Bottom
Tercile Fund <sub>t0</sub>	Top	45	28	26
	Mid	22	33	45
	Bottom	26	36	38

*Pearson chi2(4) = 31.1854 Pr = 0.000*

**Table IA.II**

## PME performance persistence: low/medium/high competition periods

This table presents the results from deal-level OLS regressions of gross Public Market Equivalent (PME) returns on the PME of the previous deal ( $n-1$ ) by the same GP, both winsorized at the 99th percentile. We use the three regional MSCI Performance Indices (Asia, Europe, North America) in local currency as benchmarks for our PME calculations and use the regional index where the GP is located. We only include fully realized unique deals for this analysis. We split the sample of deals into low, medium and high competition subsamples at the 33th and 66th competition level percentiles in our sample, respectively. We use the sum of buyout funds raised in the three years prior to a given transaction, in the same region and industry divided by the GDP in the same (investment) year and region as proxy for competition. Models (1), (2) and (3) report results for the low competition subsample, models (4), (5) and (6) for all investments done in a medium competition environment and, finally, models (7), (8) and (9) display results for the high competition subsample. Models (1), (4) and (7) include no control variables. In models (2), (5) and (8) we add the log of deal sequence, the log of the equity investment size in million of USD, the log of the holding period in years, the log of fund age at investment date in years as well as investment year, industry and region fixed effects. Finally, models (3), (6) and (9) show results from fixed effects regressions in which we add GP fixed effects but exclude lagged PME. The row at the bottom reports F-statistics from testing joint significance of the GP fixed effects in regressions (3) and (6). Standard errors are adjusted for serial correlation and heteroskedasticity and exhibited in parentheses. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels respectively.

VARIABLES	Deal <sub>n=0</sub> PME								
	Low Competition			Medium Competition			High Competition		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Deal <sub>n-1</sub> PME	0.172*** (0.034)	0.136*** (0.033)		0.082*** (0.022)	0.061*** (0.023)		0.058*** (0.021)	0.027 (0.021)	
LN Deal Sequence		-0.256*** (0.070)	-0.037 (0.160)		-0.152* (0.090)	-0.440* (0.260)		-0.251*** (0.073)	-0.430* (0.228)
LN Equity Investment		-0.098*** (0.034)	-0.323*** (0.043)		-0.041 (0.040)	-0.175*** (0.044)		-0.180*** (0.053)	-0.267*** (0.040)
LN Holding Period		0.148** (0.068)	0.219*** (0.074)		0.258*** (0.075)	0.385*** (0.085)		0.664*** (0.060)	0.675*** (0.083)
LN Fund Age		0.241* (0.123)	-0.259 (0.316)		0.147 (0.143)	0.727* (0.386)		0.229** (0.110)	0.106 (0.305)
Investment Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Industry FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Region FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
GP FE	No	No	Yes	No	No	Yes	No	No	Yes
Constant	1.559*** (0.067)	3.548*** (0.568)	4.420 (3.189)	1.961*** (0.070)	2.367* (1.343)	1.222 (2.547)	2.005*** (0.068)	2.353** (0.975)	3.856* (2.056)
Observations	2,403	2,403	2,524	2,471	2,471	2,559	2,415	2,415	2,485
Adj. R-squared	0.028	0.079	0.223	0.007	0.047	0.161	0.003	0.078	0.178
<i>F-test on GP FE</i>	-	-	<i>F</i> (179, 2289)= 2.536***	-	-	<i>F</i> (233, 2278)= 1.424***	-	-	<i>F</i> (225, 2225)= 1.217**

**Table IA.III****GPME performance persistence: full sample**

In models (1) to (6), this table presents the results from deal-level OLS regressions of gross Generalized Public Market Equivalent (PME) returns on the GPME of the previous deal ( $n-1$ ) by the same GP, both winsorized at the 99th percentile. We use the three regional MSCI Performance Indices (Asia, Europe, North America) in local currency as benchmarks for our GPME calculations and use the regional index where the GP is located. Further, we add benchmark returns for Fama-French SMB and HML portfolios as additional risk factors to estimate investment-level stochastic discount factors. We only include fully realized unique deals for this analysis. While model (1) includes no control variables, in model (2) we add the log of deal sequence, the log of the equity investment size in million of USD, the log of the holding period and the log of fund age at investment date in years. In model (3) we also include industry and region fixed effects, and model (4) adds investment year fixed effects. To control for the effect of any first-time fund sampling bias, in model (5) we exclude all deals with a deal sequence below 11 (equal to the mean number of realized deals per first-timer fund in our sample). Finally, model (6) excludes lagged performance but includes GP fixed effects; the joint significance of the GP fixed effects is tested using an F-test. Standard errors are adjusted for serial correlation and heteroskedasticity and exhibited in parentheses. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels respectively.

VARIABLES	Deal <sub>n=0</sub> GPME					
	OLS: Full Sample				OLS: deal sequence >10	GP Fixed Effects
	(1)	(2)	(3)	(4)	(5)	(6)
Deal <sub>n-1</sub> GPME	0.127*** (0.015)	0.121*** (0.015)	0.116*** (0.015)	0.082*** (0.015)	0.071*** (0.016)	
LN Deal Sequence		-0.202*** (0.043)	-0.205*** (0.044)	-0.213*** (0.044)	-0.107* (0.056)	-0.329*** (0.101)
LN Equity Investment		-0.023 (0.020)	-0.025 (0.021)	-0.080*** (0.023)	-0.058** (0.024)	-0.183*** (0.022)
LN Holding Period		0.268*** (0.034)	0.259*** (0.035)	0.357*** (0.037)	0.384*** (0.041)	0.387*** (0.044)
LN Fund Age		0.346*** (0.067)	0.350*** (0.067)	0.215*** (0.068)	0.144** (0.072)	0.313** (0.156)
Industry FE	No	No	Yes	Yes	Yes	Yes
Region FE	No	No	Yes	Yes	Yes	Yes
Investment Year FE	No	No	No	Yes	Yes	Yes
GP FE	No	No	No	No	No	Yes
Constant	0.858*** (0.031)	0.618*** (0.113)	0.672*** (0.147)	0.743 (0.649)	0.684 (0.605)	2.239** (0.995)
Observations	7,127	7,127	7,127	7,127	5,483	7,397
Adj. R-squared	0.016	0.027	0.038	0.072	0.069	0.133
<i>F-test on GP FE</i>	-	-	-	-	-	<i>F(278, 7067)= 1.979***</i>

Standard errors in parentheses

**Table IA.IV****GPME performance persistence: early vs. late period**

This table presents the results from deal-level OLS regressions of gross Generalized Public Market Equivalent (GPME) returns on the GPME of the previous deal ( $n-1$ ) by the same GP, both winsorized at the 99th percentile. We use the three regional MSCI Performance Indices (Asia, Europe, North America) in local currency as benchmarks for our GPME calculations and use the regional index where the GP is located. Further, we add benchmark returns for Fama-French SMB and HML portfolios as additional risk factors to estimate investment-level stochastic discount factors. We only include fully realized unique deals for this analysis. We split the sample of deals into an early PE market subsample of all investments done before 2001, to mimic the sample period of KS who include highly realized funds with fund vintages up to 1995 for their persistence analysis. Models (1), (2) and (3) report results for this early PE market subsample, models (4), (5) and (6) for all investment years after 2000. Models (1) and (4) include no control variables. In models (2) and (5) we add the log of deal sequence, the log of the equity investment size in million of USD, the log of the holding period in years, the log of fund age at investment date in years as well as investment year, industry and region fixed effects. Finally, models (3) and (6) show results from fixed effects regressions in which we add GP fixed effects but exclude lagged PME. The row at the bottom reports F-statistics from testing joint significance of the GP fixed effects in regressions (3) and (6). Standard errors are adjusted for serial correlation and heteroskedasticity and exhibited in parentheses. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels respectively.

VARIABLES	Deal <sub>n=0</sub> GPME					
	Early Investment Years (1979-2000)			Late Investment Years (2001-2012)		
	(1)	(2)	(3)	(4)	(5)	(6)
Deal <sub>n-1</sub> GPME	0.146*** (0.019)	0.100*** (0.019)		0.065*** (0.024)	0.034 (0.023)	
LN Deal Sequence		-0.299*** (0.054)	-0.423*** (0.125)		-0.032 (0.076)	-0.095 (0.266)
LN Equity Investment		-0.094*** (0.028)	-0.239*** (0.029)		-0.079** (0.039)	-0.139*** (0.037)
LN Holding Period		0.230*** (0.043)	0.281*** (0.051)		0.745*** (0.072)	0.793*** (0.096)
LN Fund Age		0.285*** (0.082)	0.752*** (0.219)		0.032 (0.121)	-0.370 (0.358)
Investment Year FE	No	Yes	Yes	No	Yes	Yes
Industry FE	No	Yes	Yes	No	Yes	Yes
Region FE	No	Yes	Yes	No	Yes	Yes
GP FE	No	No	Yes	No	No	Yes
Constant	0.712*** (0.036)	0.607* (0.367)	1.039*** (0.375)	1.222*** (0.061)	1.219 (0.811)	3.538*** (1.253)
Observations	4,875	4,875	5,073	2,252	2,252	2,324
Adj. R-squared	0.021	0.073	0.155	0.004	0.080	0.181
<i>F-test on GP FE</i>	-	-	<i>F</i> (206, 4827)= 2.497***	-	-	<i>F</i> (239, 2051)= 1.087

**Table IA.V****GPME performance persistence: low vs. high competition periods**

This table presents the results from deal-level OLS regressions of gross Generalized Public Market Equivalent (GPME) returns on the GPME of the previous deal ( $n-1$ ) by the same GP, both winsorized at the 99th percentile. We use the three regional MSCI Performance Indices (Asia, Europe, North America) in local currency as benchmarks for our GPME calculations and use the regional index where the GP is located. Further, we add benchmark returns for Fama-French SMB and HML portfolios as additional risk factors to estimate investment-level stochastic discount factors. We only include fully realized unique deals for this analysis. We split the sample of deals into low and high competition subsamples at the median competition level in our sample. We use the sum of buyout funds raised in the three years prior to a given transaction, in the same region and industry divided by the GDP in the same (investment) year and region as proxy for competition. Models (1), (2) and (3) report results for the low competition subsample, models (4), (5) and (6) for all investments done in an above median competition environment. Models (1) and (4) include no control variables. In models (2) and (5) we add the log of deal sequence, the log of the equity investment size in million of USD, the log of the holding period in years, the log of fund age at investment date in years as well as investment year, industry and region fixed effects. Finally, models (3) and (6) show results from fixed effects regressions in which we add GP fixed effects but exclude lagged PME. The row at the bottom reports F-statistics from testing joint significance of the GP fixed effects in regressions (3) and (6). Standard errors are adjusted for serial correlation and heteroskedasticity and exhibited in parentheses. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels respectively.

VARIABLES	Deal <sub>n=0</sub> GPME					
	Low Competition			High Competition		
	(1)	(2)	(3)	(4)	(5)	(6)
Deal <sub>n-1</sub> GPME	0.190*** (0.026)	0.133*** (0.026)		0.071*** (0.018)	0.040** (0.017)	
LN Deal Sequence		-0.224*** (0.063)	-0.325** (0.133)		-0.207*** (0.063)	-0.437** (0.193)
LN Equity Investment		-0.084*** (0.030)	-0.257*** (0.032)		-0.085** (0.035)	-0.167*** (0.033)
LN Holding Period		0.104** (0.053)	0.165*** (0.059)		0.577*** (0.052)	0.592*** (0.068)
LN Fund Age		0.342*** (0.103)	0.203 (0.239)		0.106 (0.094)	0.302 (0.255)
Investment Year FE	No	Yes	Yes	No	Yes	Yes
Industry FE	No	Yes	Yes	No	Yes	Yes
Region FE	No	Yes	Yes	No	Yes	Yes
GP FE	No	No	Yes	No	No	Yes
Constant	0.607*** (0.040)	0.131 (0.342)	1.847 (1.988)	1.123*** (0.048)	0.015 (0.831)	1.895 (2.015)
Observations	3,463	3,463	3,621	3,664	3,664	3,776
Adj. R-squared	0.033	0.095	0.205	0.005	0.061	0.139
<i>F-test on GP FE</i>	-	-	<i>F</i> (218, 3352)= 2.414***	-	-	<i>F</i> (243, 3489)= 1.332***

**Table IA.VI**  
Top and bottom quartile GPME performance persistence

This table presents the results from deal-level logit regressions of gross Generalized Public Market Equivalent (GPME) binary quartile performance with the current deal ( $n_0$ ) on binary quartile performance with the previous deal ( $n_{-1}$ ). We use the three regional MSCI Performance Indices (Asia, Europe, North America) in local currency as benchmarks for our GPME calculations and use the regional index where the GP is located. Further, we add benchmark returns for Fama-French SMB and HML portfolios as additional risk factors to estimate investment-level stochastic discount factors. We only include fully realized unique deals for this analysis. In models (1) to (4) we use a top quartile dummy for the current deal as dependent variable and an equivalent one for the previous deal by the same GP as independent variable. Models (5) to (8) include equivalent bottom quartile dummies instead. For both performance quartiles, we also run separate regressions for the low and a high competition subsample. We use the sum of buyout funds raised in the three years prior to a given transaction, in the same region and industry divided by the GDP in the same (investment) year and region as proxy for competition. Hence, models (1), (2) report results for the top quartile dummies and the low competition subsample, models (3) and (4) for the high competition subsample and the same variables. Accordingly, models (5) and (6) show regression results using the bottom quartile dummies and the low competition subsample, models (7) and (8) for the high competition subsample. In models (1), (3), (5) and (7) we control for the log of deal sequence, the log of the equity investment size in million of USD, the log of the holding period in years, the log of fund age at investment date in years as well as investment year, industry and region fixed effects. Finally, models (2), (4), (6) and (8) display results from fixed effects regressions in which we add GP fixed effects but exclude lagged PME. The row at the bottom reports F-statistics from testing joint significance of the GP fixed effects in regressions (2), (4), (6) and (8). Standard errors are adjusted for serial correlation and heteroskedasticity and exhibited in parentheses. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels respectively

VARIABLES	Deal <sub>n=0</sub> GPME Performance Dummy							
	Top Quartile				Bottom Quartile			
	Low Competition		High Competition		Low Competition		High Competition	
Deal <sub>n-1</sub> GPME Quartile Top/Bottom	0.581*** (0.091)		0.173** (0.088)		0.465*** (0.091)		0.432*** (0.089)	
LN Deal Sequence	-0.194*** (0.057)	-0.375*** (0.140)	-0.138*** (0.048)	-0.396** (0.181)	0.101* (0.054)	0.414*** (0.156)	0.075 (0.047)	0.066 (0.183)
LN Equity Investment	-0.009 (0.022)	-0.085** (0.034)	-0.026 (0.021)	-0.057* (0.031)	-0.063*** (0.020)	-0.059* (0.033)	-0.101*** (0.021)	-0.042 (0.032)
LN Holding Period	-0.006 (0.056)	-0.022 (0.061)	0.523*** (0.057)	0.563*** (0.066)	-0.171*** (0.060)	-0.190*** (0.066)	-0.833*** (0.061)	-0.958*** (0.073)
LN Fund Age	0.251*** (0.091)	0.191 (0.262)	0.077 (0.072)	0.371 (0.245)	0.067 (0.087)	-0.419 (0.272)	0.050 (0.072)	-0.042 (0.249)
Investment Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GP FE	No	Yes	No	Yes	No	Yes	No	Yes
Constant	-1.635 (1.138)	-2.720 (1.710)	0.207 (0.970)	1.288 (1.276)	-2.364** (1.037)	-2.226 (1.828)	-0.744 (1.732)	-0.946 (2.197)
Observations	3,452		3,660		3,439		3,664	
Pseudo R-squared	3,399		3,604		3,288		3,498	
<i>LR-test on GP FE</i>	-		Chi2(147)= 230.92***		-		Chi2(176)= 225.55***	
			Chi2(190)= 192.08				Chi2(139)= 192.89***	

**Table IA.VII**  
Long-term GPME performance persistence

This table presents the mean GPME performance within deal performance quartiles, keeping the quartile groups for the 10 subsequent investments after a given deal by the same GP. To begin with, we put each deal in our sample into one of four performance quartiles based on its relative performance among all the deals in the same investment year. We compute mean GPMEs (winsorized at the 99th percentile) for these four formation portfolios. This formation based on performance of deal  $n_0$  is kept for the ten following deals by the same GP. This means we put each next deal ( $n_1$ ) into the same category as the formation deal ( $n_0$ ) (irrespective of its own performance) and compute mean GPMEs (winsorized at the 99th percentile) for these four portfolios of next deals. We repeat this procedure for all ten deals following deal  $n_0$  always using the formation set by deal  $n_0$ . For each group of following deals  $n_1$  to  $n_{10}$  we run a F-test to compare means across all quartiles, one one-sided T-test comparing the top quartile deals' mean with all other quartiles, and another comparing the bottom quartile's mean with all other quartiles. The F- and T-values and the corresponding significance levels are reported below. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels respectively. Panel A shows investments (and their subsequent deals by the same GP) done in low competition years. Panel B displays mean values for those deals  $n_0$  done in high competition years.

*Panel A: Low Competition Formation Years*

Quartile $n_0$	Obs.	Mean Deal GPME										
		$n_0$	$n_1$	$n_2$	$n_3$	$n_4$	$n_5$	$n_6$	$n_7$	$n_8$	$n_9$	$n_{10}$
1 (Top)	920	3.75	1.31	0.99	1.03	1.15	1.14	1.01	1.06	1.08	1.01	0.96
2	983	0.56	0.72	0.67	0.78	0.70	0.66	0.69	0.75	0.76	0.73	0.87
3	976	-0.25	0.58	0.66	0.72	0.66	0.77	0.80	0.82	0.64	0.82	0.75
4 (Bottom)	913	-0.89	0.38	0.66	0.59	0.57	0.58	0.68	0.63	0.66	0.76	0.59
<b>Total</b>	3,792	0.76	0.74	0.74	0.78	0.76	0.78	0.79	0.81	0.78	0.83	0.79
<b>F test</b>		1158.3 ***	23.04 ***	3.59 **	7.98 ***	8.61 ***	7.89 ***	2.79 **	3.95 ***	4.87 ***	1.72	3.10 **
<b>T test</b>												
Top vs. 2-4		-54.1 ***	-7.75 ***	-3.28 ***	-3.30 ***	-4.54 ***	-4.61 ***	-2.70 ***	-3.06 ***	-3.68 ***	-2.15 **	-2.09 **
Bottom vs 1-3		24.1 ***	4.97 ***	1.04	2.51 ***	2.57 ***	2.63 ***	1.42 *	2.35 ***	1.52 *	0.86	2.55 ***

*Panel B: High Competition Formation Years*

Quartile $n_0$	Obs.	Mean Deal GPME										
		$n_0$	$n_1$	$n_2$	$n_3$	$n_4$	$n_5$	$n_6$	$n_7$	$n_8$	$n_9$	$n_{10}$
1 (Top)	987	4.54	1.48	1.40	1.50	1.20	1.13	1.31	1.23	1.27	1.24	1.23
2	905	1.15	1.46	1.23	1.18	1.27	1.30	1.36	1.33	1.23	1.21	1.13
3	922	-0.05	1.06	1.16	1.06	1.18	1.11	1.01	1.02	1.06	1.07	0.99
4 (Bottom)	962	-0.88	0.87	0.99	0.93	1.11	1.12	0.97	0.93	0.98	0.83	1.07
<b>Total</b>	3,776	1.21	1.22	1.19	1.17	1.19	1.16	1.16	1.13	1.14	1.08	1.11
<b>F test</b>		1854.7 ***	11.19 ***	3.36 **	6.77 ***	0.42	0.86	3.85 ***	3.14 **	1.68	3.15 **	0.82
<b>T test</b>												
Top vs. 2-4		-64.6 ***	-3.38 ***	-2.55 ***	-4.10 ***	-0.17	0.38	-1.67 **	-1.11	-1.49 *	-1.70 **	-1.30 *
Bottom vs 1-3		31.7 ***	4.51 ***	2.61 ***	3.00 ***	0.92	0.55	2.25 **	2.26 **	1.70 **	2.84 ***	0.39