The Activity of Banks as Equity Investors, Syndication and Specialization *

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September 2023

This Version: January 15, 2024

Preliminary draft, please do not cite or circulate

Abstract

Bank-affiliated venture capitalists (BVC) are often described as less-skilled strategic investors pursuing core business complementarity. We study their investment activity, focusing on the role of syndication and specialisation in explaining their behaviour. We find that the presence of BVCs in a round is positively associated with syndicated deals. Moreover, BVCs' decision to syndicate is related to both their experience level and the experience of potential partners, even though different BVCs' syndicating behaviours are associated differently with experience and specialization levels. The results suggest that BVCs use syndication as a way to acquire investment experience. As they acquire more experience, they move from first-time syndication to repeated syndication with the same partners. This change in syndicate composition is reflected in the heterogeneity of experience levels within the syndicate, which decreases as the BVC experience increases.

Keywords: Venture Capital, Banking, Early-Stage Financing

JEL Codes: G21, G24, G32

*Acknowledgments: This work was supported by RISIS2 (Research Infrastructure for and Innovation Policy Studies 2), funded by the European Union's Horizon2020 Research and Innovation programme under the grant number n°824091. We are grateful for comments received on an earlier draft from the conference participants at the Financial Engineering and Banking Society 12^{th} International Conference; 32^{nd} EFMA Annual Meeting; IFABS 2023 Oxford; and seminar participants at the University of Sassari. All errors and omissions are our own.

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1 Introduction

Banks are becoming major investors in private equity and venture capital. Hellmann et al. (2008) document 24,659 venture capital deals in 10,578 companies in 1980-2000, 9% of which were conducted by a bank-affiliated fund; less than ten years later, in 1983-2009, bank-affiliated private equity groups accounted for nearly 30% of all the overall private equity market (e.g., Fang et al. (2013)). Research on bank-affiliated venture capitalists (BVCs) has related bank involvement in private equity deals to creating lending relationships (e.g., Croce et al. (2015); Hellmann et al. (2008); Johan and Murtinu (2018)), and cross-selling of other banking services, such as being the affiliated bank in private equity deals increase odds to be chosen as future M&A advisors and equity underwriters by the target firms (e.g., Fang et al. (2013)). Fang et al. (2013) provide interesting side evidence: banks' involvement in private equity is significantly more cyclical than the overall private equity market. Lastly, Granz (2021) reports that BVCs are not influenced by their parent bank by default, but some of them try to replicate the way Independent VC funds are managed.[1]This evidence suggests that the activity of BVCs differs from that of independent venture capitalists (IVCs). With this motivation in mind, our goal in this study is to understand the activity of banks as equity investors. Specifically, we define measures of syndication behaviour and (B)VC fund specialisation to investigate the reasons behind BVCs' investments. Additionally, we look at the outcomes associated with their presence in a round and how much can be attributed to their syndication behaviour and specialisation.

Our empirical strategy for explaining bank activity as equity investors comprises five test batteries. First, we contribute to the literature on venture capital (VC) that looks at potential reasons behind syndicate-backed rounds (e.g., Lerner (1994); Manigart et al. (2002); Du (2016)), by showing how BVCs rounds are associated with different syndication behaviours. Specifically, we focus on how BVC presence can be associated with the decision to syndicate their investments and how much this decision might be correlated with the experience levels of other funds inside

[1]Granz (2021) surveys 22 managers of 20 registered BVCs from the German Private Equity and Venture Capital Association.

the syndicate. We then expand our specification by including measures of syndication formation and repeated syndication (Buchner et al. (2023)). Finally, while focusing only on the BVC-backed round, we investigate how different BVC investment timings compared to their partners are influenced by the type of VC fund the partner is. In the analysis, BVCs' presence is strongly associated with syndicated deals. The relation is even stronger when the syndicate includes highly experienced VCs or a highly specialized one. Additionally, BVC investments are correlated with both one-off collaboration and repeated investments with the same VCs. Rounds in which BVCs are following a previous syndicate partner are more likely to involve syndication between BVC and IVC or GVC funds. Similarly, when BVCs are investing in the same round as a previous syndicate partner, the investment round is less likely to include a BVC x CVC partnership. Lastly, when the BVC fund is investing first in a new venture and is later joined by previous syndicate partners, all types of syndication (IVC, GVC, CVC) are positively related to it, suggesting that BVC signalling ability is credible.

Second, we test what factors are associated with BVCs' decision to syndicate. We find that BVC syndication is negatively related to their experience as VC investors. Additionally, we show that the likelihood of a syndicated deal involving a BVC is positively affected by other funds' experience and specialization. We interpret these results as an indication that BVCs use syndicated deals as a way to acquire experience, and that experienced BVC funds are more likely to invest in standalone deals or with other VC funds with similar experience levels.

Fourth, we highlight how BVC experience levels explain BVCs' decision to syndicate with new investors. To do so, we compare two syndicating behaviours associated with syndicated deals, one of which is also connected with repeated syndication with the same VC fund. We find that BVCs' decision to syndicate for the first time with a new VC fund is driven by their lack of experience and by the gap in experience levels among the funds, while the experience of the other fund is not enough to explain the syndicating behaviour. On the other hand, repeated syndication with the same VC fund is positively associated with the experience levels of both the BVC fund and its

partner.

In the last battery of tests, we highlight how BVC experience levels can be explained by their observed syndicating behaviours. The evidence points towards BVCs using syndication to acquire enough experience to then be able to invest alone and lead their partners towards their portfolio companies. Syndication is positively correlated with BVC experience, as BVCs decide to invest alone. Moreover, BVC syndicating behaviours associated with repeated syndication are also positively associated with BVC experience, while BVC first-time syndication is negatively correlated with it.

Our findings highlight that BVC activity is strongly associated with syndicated deals and that syndicating behaviours can be explained by their investment experience and the experience of their partners. Experienced BVCs tend to invest alone. Otherwise, BVCs tend to invest in syndicate deals, joining consolidated partnerships and leading VCs.

The remainder of this paper is organized as follows. Section 2 reviews the literature on VC syndication and specialisation. The data and main variables are described in Section 3. Section 4 presents the results, while Section 5 concludes.

2 Theoretical Framework

Syndication is a widely diffused practice in venture capital investments worldwide and is connected to several economic reasons and investment outcomes. In a seminal paper, Lerner (1994) explores several hypotheses dealing with the economics of syndication. Syndication is seen both as a mechanism through which venture capitalists resolve informational uncertainties about potential investments, as it may lead to a superior selection of investments and a way to spread risk and bring together more expertise and support. These views imply that reputable VC funds are unlikely to involve new funds or small/unsuccessful organizations as co-investors. However, he finds that top-tier firms syndicate first-round investments more frequently with second-quintile organi-

zations (35%) than with other top-quintile firms (14%). Moreover, typical later-round syndication involves less-experienced venture capitalists investing in deals initiated by reputable funds. On a similar note, Manigart et al. (2002) compare the traditional approach to syndication that considers syndication as a tool to share risk via diversification, with a more resource-based view that sees syndication as a way to access information and manage investments. The results they find seem to be driven mainly by risk-sharing motives. Young funds tend to syndicate with respected partners to increase their reputation, whereas large funds syndicate a higher percentage of their investments, probably because the demand for their support is higher.

Deli and Santhanakrishnan (2010) build on similar arguments and focus on how the stage of firm development is linked to the likelihood of syndication. They find that early-stage and later-stage target companies are more likely to receive syndicate rounds (compared to the expansion stage), as these are the phases in which VC human capital plays the greatest role. Moreover, syndication is also positively associated with the amount demanded by the target company.

While most of the literature focuses on VCs' reasons to syndicate, Tian (2012) considers the effects of syndication from the perspective of portfolio firms. He recognizes two possible advantages of syndication: the heterogeneous skill set deriving from it, and the potential increase in reputation deriving from multiple VCs backing the firm. He finds that syndicated deals tend to involve younger and riskier firms, investing a larger amount of money per round. Additionally, syndicate-backed firms are more likely to have a successful exit, enjoy lower IPO underpricing, and have a higher valuation. The positive effect is not limited to the IPO, syndicate-backed firms have higher long-run post-IPO stock returns than individual-backed firms. In contrast, Du (2016) finds that syndicates are more likely to be formed among VCs with a similar level of experience. However, homogeneous syndicates are not associated with better performance. On the contrary, heterogeneous syndicates seem to be correlated with a higher survival rate, especially when they involve young VC funds.

Finally, Hong and Mella-Barral (2023) define a model in which entrepreneurs would benefit from syndicate-backed rounds with different levels of experience, as their exit would not severely

hinder their chance of follow-on investments from other VCs. The empirical analysis is consistent with this equilibrium: within syndicates, VCs have regularly different levels of experience and, conditional on subsequent funding, higher heterogeneity in experience levels of VC syndicate partners is associated with higher likelihoods of any of the previous investors being involved in the following rounds.

Although evidence on BVC syndication activity in the literature is scarce, we predict syndication to be positively associated with BVC activity. In particular, we expect BVC to be more likely related to repeated syndication and with "follower" behaviour than with first-time syndication or stand-alone investments. These assumptions are consistent with the finding of Hellmann et al. (2008), as they find that banks are more likely to invest in later-stage deals, as part of larger syndicates that provide higher funding. Moreover, Fang et al. (2013) show that BVCs are not better equity investors than regular PE funds as their stand-alone deals are associated with worse outcomes, and their investments do not provide a credible certification of the target company quality.

The role of diversification is still debated in the venture capital literature, as it is the existence of a specialisation premium. In theory, it is possible to identify several reasons why diversification would benefit VC funds as well as reasons why it might be detrimental. The advantages of diversification include the potential access to a larger pool of investment opportunities across several industries (Hochberg and Westerfield (2010)), increased fundraising activity due to larger fund size and number of past investments (Demiroglu and James (2010); Ivashina and Kovner (2011)), and decreased idiosyncratic risk exposure due to diversified portfolios (Brown et al. (2022)).
In particular, capital allocation can be negatively impacted by the specialisation of a fund when there is a lack of investment opportunities in the core industry, leading managers to engage in poor investments in order to maintain their capital budget (Stein (1997)). On the other hand, generalist funds may have more difficulties than specialised ones in taking advantage of better investment opportunities in a sector. Cressy et al. (2007) look at the first three post-buyout years

and find that industry specialisation of PE firms increases the average effect associated with PE financing. However, they also report that the major contributor to post-investment performance is the funds' ability to select target companies. Gompers et al. (2009) find that generalist VC funds are associated with a specialisation premium, deriving mainly from better capital allocation. They dive deeper and focus on the specialisation at managers level and find that the negative effect associated with generalist funds is mitigated by the level of specialisation of their managers. Moreover, the benefits deriving from a higher specialisation are weaker when the managers are already highly specialised.

On the opposite side of the debate, Humphery-Jenner (2013) finds that diversification across industries increases PE funds' returns, similarly to diversification across countries. In addition, they find that this effect is not driven by risk reduction purposes. However, the benefits decrease when managers are involved in too many companies and diversification is the outcome of risk-reduction actions. On this line, Buchner et al. (2017) study the joint interaction among risk, diversification, and performance. They report that greater diversification reduces fund risk, which enables risk-averse managers to select riskier investments. In the end, the average return should be higher as the higher risk of each venture is mitigated by the greater diversification. Lastly, Hull (2021) focuses on VC performance when investing outside their preferred industry. He finds that the likelihood of a successful exit is greatly reduced when VCs invest outside their core industry and that this negative effect can be mitigated by co-investing with a VC that prefers to invest in the target company industry.

While the role of diversification in BVC deals has not been studied before, the limited evidence on BVC activity is consistent with some of the results discussed above. In our setting, we expect BVCs to be diversified investors as their investments are not associated with any specialisation premium. Furthermore, the expertise and the specialisation of their syndicate partners should predict BVCs syndication behaviour. When BVCs are not expert investors, they will be more likely to invest in companies backed by reputable investors. However, BVCs will be more likely to invest alone and to have a credible signal when they already have experience as equity investors.

3 Data and Descriptive Statistics

The data used in this paper are extracted from the VICO dataset (version 5.0). It includes data on entrepreneurial companies operating in 27 European countries (plus the United Kingdom and Israel) which received at least a financing round from a VC fund in 1998-2018. All companies included in the VICO dataset were (i) founded starting from 1988, (ii) independent at the foundation (not controlled by other business organizations), and (iii) operate in medium and high-tech manufacturing and service industries. Previous research that also have used VICO include Bertoni et al. (2015), Croce et al. (2022), and Cumming et al. (2017), among others.

We begin by dropping all the observations that have key variables missing (e.g., Firm country, Investor type, or Investor nationality). This leaves us with 56,627 observations, of which 3,693 (6.52%) are bank-affiliated funds equity investments. Then, we define deals in the dataset. As per Hellmann et al. (2008), we define a deal for each company-investor combination, therefore each investor can invest only once in a given company. Syndicated deals have as many rows (observations) as the number of unique investors participating. This requirement is very stringent, but it is necessary to avoid the potential bias deriving from staged investment, as it is not possible to disentangle multiple independent rounds from the payment of several tranches in a single funding round. The number of unique deals is 45,532, of which 3,209 (7.05%) are related to bank-affiliated investments. The next step is to compress syndicated rounds into a single observation to avoid duplicated information for some companies. Ultimately, we are left with 32,303 observations/rounds, of which 3,007 (9,31%) have at least a bank-affiliated investor involved. Table 1 reports the distribution of observations across rounds and the percentage of BVC-backed rounds in the sample. Table 2 describes the data considering the full sample (1998-2018), and the subsample in 2008-2018. A detailed breakdown of the distribution of our data across countries (Table 11) and industries (Table 12) is available in the Appendix.

Looking at Table 1, the sample consists mainly of first-round investments as they make up 79.8% of the observations (25.786 out of 32.303). The share of BVC rounds does not show any

Table 1: Data Distribution per Investment Rounds

	Investment Rounds									
BVC_D	1	2	3	4	5	6	7	8	9	Total
0	23,483	4,078	1,111	402	151	49	15	6	1	29,296
1	2,303	488	154	38	15	6	2	1	0	3,007
	8.93%	10.69%	12.17%	8.64%	9.04%	10.91%	11.76%	14.29%	0.00%	9.31%

Table 2: Descriptive Statistics

	1998-2018	2008-2018		1998-2018	2008-2018
BVC (1/0)	0.09	0.08	VCs	1.41	1.42
	(0.29)	(0.27)		(0.88)	(0.86)
MostlyDomestic (1/0)	0.77	0.77	Experience	40.06	43.67
	(0.42)	(0.42)		(76.92)	(78.39)
WeaklyDomestic (1/0)	0.02	0.01	Industry Exp.	7.09	7.97
	(0.13)	(0.12)		(14.07)	(15.46)
ExtraEu (1/0)	0.18	0.16	Specialization	0.43	0.44
	(0.38)	(0.37)		(0.33)	(0.33)
Syndicate (1/0)	0.26	0.26			
	(0.44)	(0.44)	Obs.	32,303	20,771

specific pattern across round numbers and remains at 8.5% - 12%, averaging 9.31% across the whole sample. Figures reported in Table 2 show that most of the deals in the sample originate within the target company country, as 24,847 (76.92%) deals have more than half of the investors from the same country as the target company. In contrast, only 534 (1.65%) deals have at least one investor (but less than 50% of the total investors involved in the round) from the same country as the target company, while deals that include at least one investor from outside the EU (and the UK) are 5,688 (17.61%). Syndicated deals account for 8,239 (25.51%) deals, and the average number of investors per round is 1.41, as 24,064 (74.49%) rounds involve only one investor. Lastly, the most experienced VC in a round on average, has invested in 40 companies before the round considered, and the fund with the most industry experience on average, has already carried out 7 investments in the same industry.

Table 3 describes the average amount invested in each round across the European countries considered. Western European countries have higher average rounds, which is consistent with the level of financial development of those countries. BVC-backed rounds are on average € 6.9 million,

Table 3: Average Financing per Round

Country	Obs.	BVC_D	Mean 0 (th)	Mean 1 (th)	t-test		Obs.	BVC_D	Mean 0 (th)	Mean 1 (th)	t-test
Austria	198	15	4391.89	7267.04	-1.31	Italy	546	74	2792.23	4777.83	-2.96***
Belgium	534	74	4440.37	5578.07	-1.25	Latvia	81	0	843.97	.	.
Bulgaria	106	1	613.7	14979.37	.	Lithuania	48	4	1996.83	22062.98	-5.22***
Croatia	23	1	1363.97	5738.34	.	Luxembourg	44	4	8235.38	16324.58	-1.16
Cyprus	39	4	5259.02	8316.39	-0.92	Malta	7	0	2853.84	.	.
Czech Republic	69	1	2107.87	486.13	.	Netherlands	587	42	5614.03	12712.99	-4.79***
Denmark	497	16	4733.64	11189.03	-2.90***	Poland	313	3	1757.33	17726.42	-5.06***
Estonia	83	3	1425.57	7335.92	-3.04***	Portugal	166	32	1620.4	2605.46	-1.17
Finland	823	22	2633.67	9282.38	-5.96***	Slovakia	34	0	1771.21	.	.
France	4,362	602	3856.82	4990.54	-4.00***	Slovenia	16	1	1462.99	24986	.
Germany	1,846	203	6568.22	9251.19	-3.75***	Spain	1,193	173	3191.26	4461.28	-1.95*
Greece	29	7	1085.71	1680.45	-0.67	Sweden	1,136	46	3551.95	9796.44	-5.82***
Hungary	281	19	776.41	1150.62	-0.64	United Kingdom	6,678	634	4812.71	8854.24	-11.30***
Ireland	666	100	4445.83	4905.93	-0.57	Total	20,405	2,081	4242.93	6932.55	-14.87***

The financing amount is at the round level and expressed as thousands of euros. The t-test is testing the difference between non-BVC-backed rounds and BVC-backed rounds. *** p<0.01, ** p<0.05, * p<0.1.

which is significantly larger than non-BVC-backed rounds (€ 4.2 million). This difference is not driven by just a few countries, but it is found across the majority of the sample. A limitation of these data is that they are collected at round level, so it is not possible to identify which investor is contributing the majority of the funding provided.

3.0.1 Variables Definition

First, we focus on syndicated deals. We start by identifying all the possible pairs of VC funds and track whether they have portfolio companies in common. When this is true, we assign them an identification code and construct our measure of syndication formation when the two funds syndicate for the first time. After that, we count the number of repeated syndications for each pair of funds every time they end up backing the same company. In our measures, the VC funds are not required to invest in the target company in the same round, they just need to be backing it together at the same time in the sample period. This is a potential limitation of this method as we do not track exits, so it would be possible that a fund i invests when a fund j has already left the company. All variables are measured when the second investor starts to support the company.

While other studies, such as Buchner et al. (2023), use these measures to create round-level variables for syndication formation and repeated syndication, we use them to track BVC syndication behaviour. On the one hand, our empirical approach does not allow to use the common

measures as they would strongly predict the value of our dependent variable, as the number of investors is mechanically related to the number of potential syndication pairs in the round. On the other hand, our focus is to discriminate between BVCs that might follow other investors from the ones that potentially anticipate their partners in the investments. Therefore, we define three new mutually exclusive dummy variables when repeated syndication involves a BVC and a VC fund j.

BVC follower is equal to one in the round in which a BVC is investing in the company i after that a VC fund j has already invested into it in a previous round.
BVC sametime is equal to one in the round in which both a BVC and a VC fund j invest in the company i in the same round.
BVC leader equal to one when a BVC backs a company i in round r and VC fund j finances the same company in round $r+t$.

We then focus on the possible role of experience and specialisation by adopting some of the measures proposed by Gompers et al. (2008). The first variable we define is Overall Experience, which is the total number of investments made by a VC fund prior to the time of the investment in question. Although constructed similarly, Industry Experience considers only investments in the same industry (FF49) as the investment in question. The third variable, Specialisation, is the ratio between the Industry and Overall Experience. We used all previous investments by the VC fund to calculate these measures.
As these measures are estimated in the sample, they will inevitably grow over time. To avoid potential bias, we adjust them to control for the time trend. The new adjusted measures are obtained by dividing the variables for their mean value in the year in which the investment took place; this procedure will centre the mean to 1 but will not impose constraints on the standard deviation. Finally, when collapsing the data of each round in a single observation, we keep the data from the fund with the most previous investments (Leader) and from the BVC (when involved in the round). In the regressions, we use the natural logarithm of these measures.

4 Results and Discussion

4.1 BVC involvement and decision to syndicate

In Table 4 we examine BVC involvement in Venture Capital deals. First, we focus on the probability of having a BVC involved in a round (columns 1-3). In this setting, the dependent variable is a dummy variable equal to 1 if a BVC is investing in the current round, while the independent variables are measures of experience (Leader Adj. Experience), industry specialisation (Leader Specialisation), a dummy variable for syndicated deals (Syndicated), and the interaction terms between them. We also include measures of one-off syndication (Syndication Formation) and repeated investments (Repeated Syndication). Finally, we include as controls the logarithm of the target company age (Target Age) and a dummy variable equal to 1 if the target company is being backed in the first two years since foundation (Target Young). Second, we focus on the BVC syndicating behaviour we observed in the sample, each identified by dummy variables (BVC Follower, BVC Sametime, BVC Leader, and BVC Firstime). We limit the analysis to rounds that involve at least a BVC and we include the same independent variables as above. In addition, we include dummy variables that indicate the type of syndicate pair that is formed in the round among the current BVC and all the investors that backed the same company (BVC x IVC, BVC x CVC, BVC x GVC).

Bank-affiliated VC funds tend to invest in syndicated deals. Taking all the other variables at their average value, a syndicated deal is 7.2 percentage points more likely to involve a BVC (Syndicated 0.360***). Moreover, BVCs are more likely to be involved in syndicated deals when the Leader, which is defined as the VC fund with the most past investments, is more expert than other VC funds active in the same year (Syndicated * Leader Adj. Exp. 0.118***). In syndicated rounds, a standard deviation increase of the Leader Adjusted Experience is associated with an increase of 1.2 percentage points in the estimated probability of having a BVC involved in the

Table 4: BVC Involvement

VARIABLES	(1) BVC in Round	(2) BVC in Round	(3) BVC in Round	(4) BVC Follower	(5) BVC Sametime	(6) BVC Leader	(7) BVC Firstime
Syndicated (0/1)	0.360***	0.277***	0.266***	0.052		-0.222	1.546***
	[7.78]	[5.78]	[6.66]	[0.28]		[-1.21]	[9.38]
Syndicated * Leader Adj. Exp.	0.118***	0.096***	0.098***	-1.215***		-0.918***	-0.123
	[4.20]	[3.40]	[4.45]	[-8.22]		[-3.32]	[-0.52]
Syndicated * Leader Spec.	0.216***	0.197***	0.152**	0.210		-0.993	-0.233
	[5.00]	[4.16]	[2.01]	[0.38]		[-0.86]	[-0.51]
Repeated Syndication		0.050***	0.060***				
		[5.33]	[5.82]				
Syndication Formation		0.019***	0.027***				
		[8.26]	[5.31]				
BVC x IVC				0.636*	-0.019	1.730***	0.920***
				[1.80]	[-0.12]	[11.63]	[9.46]
BVC x CVC				0.144	-0.291***	0.480***	0.419***
				[0.78]	[-3.62]	[2.80]	[3.58]
BVC x GVC				0.530***	0.131	0.782**	-0.022
				[3.51]	[1.13]	[2.34]	[-0.23]
Leader Adj. Experience	-0.073	-0.075*	-0.087*	0.844***	0.696***	0.550***	-0.308
	[-1.60]	[-1.72]	[-1.79]	[6.01]	[7.07]	[3.46]	[-1.39]
Leader Specialisation	-0.326***	-0.336***	-0.152	0.377	0.254	-0.958	0.107
	[-2.75]	[-2.83]	[-1.23]	[1.07]	[0.85]	[-0.88]	[0.38]
Target Young (0/1)	-0.136**	-0.184***	-0.045	-0.103	0.068	-0.145	-0.015
	[-2.08]	[-3.06]	[-0.69]	[-1.04]	[0.51]	[-0.92]	[-0.15]
Target Age	0.171***	0.143***	0.260***	-0.234**	0.005	-0.231**	0.024
	[4.18]	[3.66]	[6.34]	[-2.21]	[0.05]	[-2.06]	[0.33]
Constant	-1.463***	-1.409***	-1.862***	-0.156	-3.055***	-1.693***	-1.705***
	[-14.21]	[-14.58]	[-8.30]	[-0.29]	[-5.66]	[-3.92]	[-3.28]
Obs.	18,509	18,509	18,469	540	951	1,317	2,075
SE Cluster	Country	Country	Country	Country	Country	Country	Country
Fixed Effects	No	No	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R
Pseudo R^2	0.0423	0.0479	0.0991	0.223	0.217	0.294	0.350

round. Similarly, BVCs are more present in syndicated rounds in which the Leader is more specialised (Syndicated * Leader Specialisation 0.216***). In column 2, we focus on the potential effects of two types of syndication: repeated and formation (one-off collaboration). They are both strongly related to the presence of BVCs in a round: at mean values, they are associated with an 11.3% estimated probability of having a BVC in the round and a standard deviation increase is related to an additional 1.5 percentage points in the estimated probability of BVC presence in the current round. In column 3, we test the robustness of our estimated coefficient to the inclusion of a large set of fixed effects (Country, Year, Industry, Round) and we do not report any significant change.

In the second part of Table 4 (columns 4-7), we focus on BVC syndicating behaviour when they invest repeatedly with the same VC funds. In column 4, we deal with the probability of a BVC investing in a target company if a partner fund has already invested in it in a prior round (BVC Follower) and there are not any partners in the current round. We find that this syndicating behaviour is not related to syndicated deals (0.052), but syndication can explain the reason behind

the deal. When the BVC invests alone, its experience is positively associated with BVC Follower (Leader Adj. Experience 0.844***). However, if the deal is syndicated, the "new" partnership is not characterized by high experience levels (Syndicated * Leader Adj. Exp. -1.215***). This particular result suggests that BVC Follower is indeed following a partner that has already invested in the target company, rather than starting a partnership with a new VC fund. Lastly, this syndicating behaviour is positively associated with both Independent VC and Governmental VC funds.

In column 5, we are interested in highlighting the case in which a BVC is investing in the same round as one of its partners (BVC Sametime), while no other partner has already invested in the same target company. Since this type of behaviour can be observed only in syndicated rounds, we restrict the sample to include only deals with more than 1 VC involved. Leader Adj. Experience is positive and strongly significant (0.844***), suggesting that BVCs syndicate (repeatedly) with experienced VC funds. This kind of syndicating behaviour is negatively associated with Corporate VC funds.

In column 6, we focus on the probability of a BVC investing in a target company and being joined by its partners in the subsequent rounds, while no partner has invested in it before the BVC (BVC Leader). This type of syndicating behaviour is not associated with syndicated rounds (Syndicated -0.222). When the BVC is investing alone, Leader Adj. Experience is positive and statistically significant (0.550***), but the effect is in the opposite direction in syndicated deals (Syndicated * Leader Adj. Exp. -0.918***). These two results again help us understand that BVCs act as "leaders" when they have acquired enough experience to select investments alone. If the deal is syndicated, the new partner is not an experienced VC fund. This kind of syndication is positively associated with the three types of VC funds, suggesting that the experienced BVC funds can credibly signal an investment opportunity.

Lastly, in column 7 we consider the case in which the BVC is investing in a company with totally new VC funds and it is not joined by partners in the following rounds. This syndicating behaviour is strongly related to syndicated deals, however, there is not a statistically significant difference in experience between syndicated and standalone rounds. When looking to create new partnerships,

BVCs seem to invest more likely with Independent VC and Corporate VC.

As it appears that BVC investment activity is positively correlated with syndicated deals, in Table 5 we focus on BVCs' decision to syndicate. Therefore, we limit our analysis only to rounds that include at least a BVC fund, and the dependent variable is a dummy equal to one when the round involves more than one VC fund. The independent variables are measures of experience (BVC Adj. Experience, Leader Adj. Experience), industry experience (BVC Adj. Industry Exp., Leader Adj. Industry Exp.), and industry specialisation (BVC Specialisation, Leader Specialisation). Additionally, we control for the target company age (Target Age) and a VC deal in a company with less than two years of age (Target Young). The Leader of a round is identified as the VC fund with the most prior VC investments, while if the round includes more than a BVC, we only consider the one with the highest experience.

Table 5: BVC Decision to Syndicate

VARIABLES	(1) Syndicate 0/1	(2) Syndicate 0/1	(3) Syndicate 0/1	(4) Syndicate 0/1	(5) Syndicate 0/1	(6) Syndicate 0/1
BVC Adj. Experience	-0.205***	-0.341***	-0.229**	-1.394***	-2.242***	-2.185***
	[-2.81]	[-3.75]	[-2.53]	[-10.17]	[-11.14]	[-10.62]
BVC Adj. Industry Exp	0.256***	0.289**	0.142	0.133	0.105*	-0.003
	[2.70]	[2.53]	[1.15]	[1.54]	[1.67]	[-0.06]
BVC Specialisation	0.107	0.096	0.007	-0.245	-0.030	0.074
	[0.40]	[0.31]	[0.02]	[-0.75]	[-0.07]	[0.17]
Leader Adj. Experience				2.082***	3.145***	3.113***
				[14.91]	[15.80]	[14.07]
Leader Adj. Industry Exp.				-0.168***	-0.150*	-0.065
				[-2.59]	[-1.79]	[-1.07]
Leader Specialisation				0.935***	0.843***	0.688**
				[6.87]	[3.22]	[2.34]
Target Young (0/1)	-0.059	-0.088	-0.099	-0.175**	-0.103	-0.132
	[-1.15]	[-1.35]	[-1.23]	[-2.20]	[-1.12]	[-1.47]
Target Age	-0.213***	-0.228***	-0.248***	-0.424***	-0.307***	-0.319***
	[-3.12]	[-6.00]	[-5.37]	[-4.96]	[-4.72]	[-5.29]
Constant	0.140	-0.207	-0.335	0.020	0.264*	0.514**
	[1.33]	[-0.81]	[-0.79]	[0.14]	[1.67]	[2.11]
Obs.	2,127	2,104	2,092	2,020	1,996	1,992
SE Cluster	Country	Country	Country	Country	Country	Country
Fixed Effects	R	R/C/Y	R/C/Y/I	R	R/C/Y	R/C/Y/I
Pseudo R^2	0.0329	0.0809	0.104	0.238	0.318	0.330

In the first three columns of Table 5, we examine the BVCs' decision to syndicate only relative to their own experience. BVCs tend to syndicate more when they have less experience (BVC Adj.

Experience -0.229***). This result is also economically significant, a standard deviation increase of BVC Adj. Experience is associated with a 1.9 percentage point decrease in the likelihood of syndicating. The decision to syndicate seems to also be correlated with BVC industry experience (BVC Adj. Industry Exp. 0.289**), but the result is industry-related as it is no longer significant when we introduce industry fixed effects in column 3.

In the last three columns (4-6), we also consider some measures of Leader (industry) experience and specialisation. The BVCs' tendency to invest in syndicates when their experience is low is highlighted even more. BVC's experience level is significantly negative and statistically different from zero (BVC Adj. Experience -2.185***). A standard deviation increase is associated with a decrease of 14.9 percentage points in the likelihood of a syndicated round. On the other hand, BVCs' decision to syndicate is positively related to the experience level of the other VC funds involved in the round (Leader Adj. Experience 3.113***) and to their industry specialisation (Leader Specialisation 0.688***). A standard deviation increase in these two measures leads to an increase in the estimated probability of a syndicated round of 33.6 and 4.2 percentage points, respectively.

4.2 Main Results

From the first evidence presented above, it appears that BVC tend to syndicate and that the degree of experience is an important factor in explaining the decision to syndicate. In particular, we find that BVCs use syndication as a way to acquire experience in VC deals (as in negatively related with BVC Adj. Experience) while investing with highly experienced and specialised VC funds (positive correlation with Leader Adj. Experience and Leader Specialisation).

To better understand how BVC experience is related to the experience levels of their syndicate VC funds, following Hong and Mella-Barral (2023) we estimate the Coefficient of Variation using both Adj. Experience and Adj. Industry Exp. at the fund-deal level. However, these two measures are available only if the round includes more than one VC fund. To correct for this potential source of bias, we follow a 2-step Heckman procedure. The decision to syndicate is modelled as in Table 5,

with the addition of a dummy variable for rounds including a BVC (BVC Round). The rationale behind this specification is that the decision to syndicate might be driven by a lack of experience on the side of BVCs and/or the opportunity to invest with a highly experienced VC fund. The second step includes all the independent variables used in the selection model, with the addition of two dummies indicating BVCs' syndicating behaviours (BVC Firstime, BVC Sametime), and an interaction term measuring the level of Leader Adj. Experience when a BVC is investing in the round (BVC Round * Leader Adj. Exp.). In addition to controlling for the target company age (Target Age and Target Young), we also include the natural logarithm of the number of VCs involved in the deal (N. VCs in Round). Furthermore, as the decision to invest might differ across rounds, we run our analysis on the full sample, on the first two rounds individually, and then on all the rounds after the second one. Results are presented in Table 6.

The coefficients estimated in the selection model are in line with the ones observed before; we report a negative coefficient for BVC Adj. Experience and a positive one for both Leader Adj. Experience and Leader Specialisation. The Inverse Mills's Ratio (IMR) is statistically significant in all specifications but one, highlighting the importance of adjusting for selection to obtain consistent estimates.

Rounds involving a BVC are associated with greater heterogeneity in experience levels (BVC Round 0.521***), the effect is significant in magnitude as it is equal to 179% its standard deviation (or 80.4% of its mean value), keeping all the other variables constant. However, this result does not imply that BVCs invest with more experienced VC funds than others but that BVCs have lower experience levels, as the interaction term is not significant (BVC Round * Leader Adj. Exp. -0.004).

As seen before, BVCs tend to not syndicate when their experience levels are high (column 1, BVC Adj. Experience -0.612***), and when they syndicate, the heterogeneity of the round is inversely correlated to their experience (column 2, BVC Adj. Experience -0.444***). The magnitude is significant as a 1% increase in BVC experience is associated with a reduction in round heterogeneity equal to 68.5% of its mean value. On the same note, also BVC Specialisation is negatively related

Table 6: Heckman Coefficient of Variation Experience

	Syndicate Self-selection All Rounds		Syndicate Self-selection Round 1		Syndicate Self-selection Round 2		Syndicate Self-selection Round ≥ 3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Syndicate (0/1)	Coeff Var	Syndicate	Coeff Var	Syndicate	Coeff Var	Syndicate	Coeff Var
BVC Round (0/1)	0.785***	0.521***	0.768***	0.459***	0.903***	0.489***	1.006***	-0.043
	[11.98]	[7.86]	[13.92]	[7.21]	[6.87]	[4.45]	[8.72]	[-0.23]
BVC Round * Leader Adj. Exp		-0.004		0.016		-0.012		0.106**
		[-0.14]		[0.65]		[-0.32]		[2.93]
BVC Firstime		0.021		0.021		-0.092*		-0.008
		[0.91]		[0.68]		[-1.86]		[-0.06]
BVC Sametime		-0.128***		-0.141***		-0.156***		-0.084*
		[-5.72]		[-4.12]		[-5.41]		[-2.04]
BVC Adj. Experience	-0.612***	-0.444***	-0.706***	-0.456***	-0.358**	-0.288***	-0.690***	-0.012
	[-9.39]	[-8.07]	[-12.55]	[-7.53]	[-2.12]	[-9.19]	[-2.60]	[-0.15]
BVC Adj. Industry Exp.	0.224**	0.139***	0.215*	0.128***	0.236	0.113**	0.204	-0.140***
	[2.54]	[4.40]	[1.68]	[3.87]	[1.63]	[2.79]	[0.99]	[-3.24]
BVC Specialisation	-0.109	-0.274***	0.015	-0.184*	-0.636*	-0.509***	-0.132	-0.105
	[-0.40]	[-5.21]	[0.04]	[-2.01]	[-1.83]	[-3.90]	[-0.33]	[-1.13]
Leader Adj. Experience	0.646***	0.386***	0.630***	0.339***	0.739***	0.343***	0.808***	-0.020
	[7.09]	[6.22]	[5.26]	[5.95]	[10.96]	[4.52]	[7.29]	[-0.15]
Leader Ad. Industry Exp.	-0.033	-0.010	-0.017	0.004	-0.130*	-0.087***	0.026	0.029*
	[-1.28]	[-1.43]	[-0.43]	[0.74]	[-1.91]	[-5.11]	[0.24]	[1.90]
Leader Specialisation	0.384***	0.146***	0.373***	0.134***	0.362***	0.136*	0.531**	-0.286**
	[6.91]	[3.44]	[4.71]	[3.33]	[2.75]	[1.85]	[2.08]	[-2.54]
N. VCs in Round		-0.091***		-0.094***		-0.088***		-0.067*
		[-4.38]		[-3.86]		[-3.62]		[-2.12]
Target Young (0/1)	0.007	0.005	-0.030	-0.014	0.116	0.041**	0.033	-0.008
	[0.19]	[0.54]	[-0.88]	[-1.20]	[1.26]	[2.82]	[0.61]	[-0.23]
Target Age	-0.122***	-0.067***	-0.133***	-0.069***	-0.107**	-0.018	-0.087*	-0.014
	[-4.21]	[-4.02]	[-4.79]	[-3.61]	[-1.99]	[-1.45]	[-1.70]	[-0.63]
IMR		0.734***		0.640***		0.536***		-0.192
		[5.53]		[5.19]		[3.30]		[-0.78]
Constant	-0.870***	-0.332*	-1.070***	-0.212	0.074	-0.065	0.240	0.990**
	[-6.30]	[-1.76]	[-6.83]	[-1.19]	[0.19]	[-0.29]	[0.75]	[2.77]
Obs.	17,862	5,253	12,892	3,588	3,356	1,147	1,580	498
SE Cluster	Country	Country	Country	Country	Country	Country	Country	Country
Fixed Effects	C/Y/I/R	C/Y/I/R	C/Y/I	C/Y/I	C/Y/I	C/Y/I	C/Y/I	C/Y/I
Round	All	All	1	1	2	2	3+	3+
Pseudo R^2	0.115		0.124		0.118		0.128	
Adj R^2		0.0954		0.104		0.0708		0.124

to round heterogeneity (-0.274***). On the other hand, BVC Adj. Industry Exp. is positive and statistically significant in both the selection model and the actual estimation (0.139***). This suggests that when BVCs invest in sectors in which they are not specialised, they do it by investing with more experienced funds.

The most experienced VC fund in the syndicate is also an important factor in explaining the heterogeneity in the syndicate. Leader Adj. Experience is positive and statistically significant (0.366***), which translated to an increase in the coefficient of variation equal to 59.6% of its mean value for each 1% increase in the adjusted experience. Similarly, also Leader Specialisation is positively related to the coefficient of variation, while Leader Adj. Industry Exp. is not statis-

tically different from zero.

Finally, looking at how different BVC syndicating behaviours are associated with syndicate experience heterogeneity, we observe that BVC Firstime has on average the same heterogeneity as other rounds involving BVCs. On the other hand, when BVCs invest with their partners in the same round (BVC Sametime -0.128***), the level of heterogeneity decreases by 24.6% compared to the average value of BVC rounds.

While the evidence clearly points towards the importance of experience in determining BVCs' syndicating decisions and, ultimately, syndicate composition, it is unclear the role of industry experience. To better understand whether industry experience shows the same heterogeneity within syndicates as overall experience, we replicate the analysis conducted before using the coefficient of variation estimated on the Adjusted Industry Experience as the dependent variable. Results are reported in Table 7.

Rounds involving a BVC are associated with greater heterogeneity in industry experience levels (BVC Round 0.795***), the effect is significant in magnitude as it is equal to 261% its standard deviation (or 111% of its mean value), keeping all the other variables constant. However, the amount of industry experience heterogeneity inside a syndicate involving a BVC is negatively related to the Leader Adj. Experience (BVC Round * Leader Adj. Exp. -0.077***). When BVCs syndicate, the heterogeneity of the round is inversely correlated to their experience (column 2, BVC Adj. Experience -0.463***). On the same note, also BVC Specialisation is negatively related to the round industry experience heterogeneity (-0.451***). On the other hand, BVC Adj. Industry Exp. is positive and statistically significant in both the selection model and the actual estimation (0.118***). This suggests that when BVCs invest in sectors in which they are not specialised, they do it by investing with funds with greater experience in that industry.

On the other hand, while the positive correlation between Leader Adj. Experience, Leader Specialisation and the industry experience coefficient of variation are expected from the previous table, it is surprising to find a negative coefficient for Leader Adj. Industry Exp. (-0.047***), which

Table 7: Heckman Coefficient of Variation Industry Experience

	Syndicate Self-selection All Rounds		Syndicate Self-selection Round 1		Syndicate Self-selection Round 2		Syndicate Self-selection Round ≥ 3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Syndicate (0/1)	Ind. CofV	Syndicate	Ind. CofV	Syndicate	Ind. CofV	Syndicate	Ind. CofV
BVC Round (0/1)	0.785***	0.795***	0.768***	0.749***	0.903***	0.712***	1.006***	0.289
	[11.98]	[13.02]	[13.92]	[14.36]	[6.87]	[11.19]	[8.72]	[1.61]
BVC Round * Leader Adj. Exp		-0.077***		-0.064***		-0.060		0.011
		[-4.62]		[-7.78]		[-1.40]		[0.15]
BVC Firstime		0.015		-0.011		0.009		-0.024
		[0.98]		[-0.80]		[0.21]		[-0.15]
BVC Sametime		-0.097***		-0.129***		-0.066		-0.172***
		[-3.56]		[-3.88]		[-1.25]		[-3.37]
BVC Adj. Exp	-0.612***	-0.463***	-0.706***	-0.459***	-0.358**	-0.368***	-0.690***	-0.127
	[-9.39]	[-18.19]	[-12.55]	[-8.23]	[-2.12]	[-4.24]	[-2.60]	[-0.66]
BVC Adj. Industry Exp.	0.224**	0.118***	0.215*	0.066	0.236	0.206***	0.204	-0.048
	[2.54]	[4.45]	[1.68]	[1.65]	[1.63]	[3.18]	[0.99]	[-0.33]
BVC Specialisation	-0.109	-0.451***	0.015	-0.288***	-0.636*	-0.814***	-0.132	-0.518**
	[-0.40]	[-7.80]	[0.04]	[-3.92]	[-1.83]	[-8.12]	[-0.33]	[-2.62]
Leader Adj. Experience	0.646***	0.513***	0.630***	0.471***	0.739***	0.454***	0.808***	0.087
	[7.09]	[10.18]	[5.26]	[8.53]	[10.96]	[11.71]	[7.29]	[0.84]
Leader Adj. Industry Exp.	-0.033	-0.047***	-0.017	-0.035**	-0.130*	-0.103***	0.026	0.004
	[-1.28]	[-3.30]	[-0.43]	[-2.25]	[-1.91]	[-4.70]	[0.24]	[0.11]
Leader Specialisation	0.384***	0.508***	0.373***	0.469***	0.362***	0.459***	0.531**	0.296**
	[6.91]	[13.63]	[4.71]	[12.54]	[2.75]	[16.53]	[2.08]	[2.92]
N. VCs in Round		-0.100***		-0.108***		-0.105***		-0.070
		[-5.66]		[-4.52]		[-3.84]		[-1.63]
Target Young (0/1)	0.007	0.002	-0.030	-0.031***	0.116	0.056***	0.033	0.025
	[0.19]	[0.30]	[-0.88]	[-3.69]	[1.26]	[3.19]	[0.61]	[1.12]
Target Age	-0.122***	-0.087***	-0.133***	-0.097***	-0.107**	-0.023*	-0.087*	-0.047
	[-4.21]	[-7.79]	[-4.79]	[-7.50]	[-1.99]	[-1.82]	[-1.70]	[-1.06]
IMR		1.115***		1.030***		0.898***		0.054
		[12.63]		[10.55]		[10.31]		[0.25]
Constant	-0.870***	-0.789***	-1.070***	-0.661***	0.074	-0.506***	0.240	0.631**
	[-6.30]	[-6.03]	[-6.83]	[-4.24]	[0.19]	[-4.34]	[0.75]	[2.23]
Obs.	17,862	4,315	12,892	2,950	3,356	946	1,580	397
SE Cluster	Country	Country	Country	Country	Country	Country	Country	Country
Fixed Effects	C/Y/I/R	C/Y/I/R	C/Y/I	C/Y/I	C/Y/I	C/Y/I	C/Y/I	C/Y/I
Round	All	All	1	1	2	2	3+	3+
Pseudo R^2	0.115		0.124		0.118		0.128	
Adj R^2		0.123		0.122		0.127		0.0797

suggests that VC funds with greater industry experience might prefer to invest with funds with similar past investments in that industry.

Finally, looking at how different BVC syndicating behaviours are associated with syndicate industry experience heterogeneity, we observe that BVC Firstime has on average the same heterogeneity as other rounds involving BVCs. On the other hand, when BVCs invest with their partners in the same round (BVC Sametime -0.097***), the level of heterogeneity across the syndicate members is lower.

4.3 Additional Evidence

From the analyses presented previously, it appears that the factors behind BVCs' decision to syndicate change as a function of their experience and the experience of their potential partners. To further highlight the role of experience, we focus our attention towards two syndicating behaviours: BVC Firstime and BVC Sametime. Although they both imply that the round is syndicated, in one case the BVC is investing together with a partner (Sametime) while the other is a form of one-off collaboration, as the funds have never invested together before. The results are this comparison are presented in Table 8. We limit the analysis to those rounds involving a BVC, and the dependent variable is either a dummy for BVC Firstime (columns from 1 to 3) or a dummy for BVC Sametime (columns from 4 to 6).

Table 8: BVC syndication formation and repeated syndication

VARIABLES	(1) Firstime	(2) Firstime	(3) Firstime	(4) Sametime	(5) Sametime	(6) Sametime
Leader Adj. Experience	0.048		0.241***	1.058***		1.057***
	[0.58]		[3.15]	[11.09]		[10.01]
Leader Adj. Industry Exp.	-0.058		-0.083	-0.072		-0.078
	[-0.64]		[-0.83]	[-0.76]		[-0.94]
Leader Specialisation	0.291		0.711**	0.721***		0.114
	[1.41]		[2.26]	[4.27]		[0.44]
BVC Adj. Experience		-0.404**	-0.480***		0.474***	0.023
		[-2.51]	[-3.40]		[6.55]	[0.19]
BVC Adj. Industry Exp.		-0.075	-0.072		0.060	0.093*
		[-0.44]	[-0.37]		[1.20]	[1.87]
BVC Specialisation		-0.211	-0.535		0.639***	0.839**
		[-0.63]	[-1.19]		[3.01]	[2.54]
Target Young (0/1)	-0.163	-0.171	-0.194	-0.070	-0.084	-0.080
	[-1.34]	[-1.39]	[-1.64]	[-0.74]	[-1.07]	[-0.83]
Target Age	-0.095*	-0.091**	-0.100**	-0.159***	-0.152***	-0.175***
	[-1.91]	[-1.97]	[-2.22]	[-2.73]	[-3.50]	[-2.61]
Constant	-1.440***	-1.187*	-1.567***	-3.546***	-1.442***	-3.427***
	[-6.84]	[-1.94]	[-6.56]	[-6.04]	[-3.32]	[-6.51]
Obs.	1,803	1,928	1,803	1,875	1,932	1,875
SE Cluster	Country	Country	Country	Country	Country	Country
Fixed Effects	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R
Pseudo R^2	0.0516	0.0822	0.0859	0.263	0.143	0.273

BVC Firstime is strongly influenced by the different levels of Adj Experience between the BVC and the Leader of the syndicate. Leaders' attributes do not appear to be significant alone, as they

are never different from zero in column 1. Nevertheless, when considering both BVC and Leader experience (and specialisation) levels, Leader Adj. Experience positively affects the probability of BVC first-time syndication (0.241***), while BVC Adj. Experience is negatively correlated with it (-0.480***), suggesting that what matters is the BVC inexperience and the gap in experience between the two funds.
On the other hand, BVC Sametime seems to be more influenced by the Leader Adj. Experience (1.058***). Although BVC Adj. Experience is not statistically significant in column 6, BVC Specialisation is positively associated with BVC Sametime (0.839***), suggesting that BVCs syndicate repeatedly in industries in which they are specialised.

Lastly, we evaluate the robustness of our findings by changing our point of view. So far we have tried to explain BVCs' decision to syndicate and their syndicating behaviour as a function of their experience, now we test whether BVC experience levels can be explained by their investment decisions. The analysis is limited to rounds involving at least a BVC and the dependent variables are BVC Adj. Experience, BVC Adj. Industry Experience, and BVC Specialisation, respectively. We also introduce a new dummy variable, Leader BVC, that is equal to one when the BVC is the fund with the most experience in the round (standalone and syndicated). Results are reported in Table 9.

As we have discussed throughout this paper, the evidence points towards BVCs using syndication to acquire enough experience to then be able to invest alone and lead their partners towards their portfolio companies. This interpretation holds also in this setting: BVC Adj. Experience is positively associated with syndication (0.258***), and BVCs invest alone when they are experienced investors (Leader BVC 0.675***). Furthermore, when BVCs are the most experienced members in the syndicate, the syndicate does not include any highly experienced members (Syndicate * Leader BC -0.152**). Finally, BVC syndicating behaviours associated with repeated syndication (Follower, Sametime, and Leader) are all positively correlated with BVC Adj. Experience, while the only dummy indicating first-time syndication is negative (BVC Firstime -0.072***).

Table 9: BVC Experience and syndicate behavior

VARIABLES	(1) BVC Adj. Exp.	(2) BVC Adj. Exp.	(3) BVC Adj. Ind. Exp.	(4) BVC Adj. Ind. Exp.	(5) BVC Spec	(6) BVC Spec
Syndicate (0/1)	0.253***	0.258***	0.243***	0.126***	0.127***	0.088***
	[9.45]	[9.82]	[10.28]	[5.92]	[8.46]	[6.10]
Leader BVC (0/1)	0.670***	0.675***	0.470***	0.433***	0.137***	0.125***
	[20.55]	[20.54]	[26.67]	[19.28]	[10.46]	[13.99]
Syndicate * Leader BVC	-0.148**	-0.152**	-0.045	0.025	-0.099***	-0.077***
	[-2.23]	[-2.44]	[-1.03]	[0.51]	[-6.19]	[-7.00]
BVC Follower	0.063***	0.054**	0.109*	0.105***	0.041**	0.039***
	[3.19]	[2.19]	[2.04]	[3.36]	[2.51]	[4.90]
BVC Firstime	-0.070***	-0.072***	-0.083***	-0.102***	-0.018	-0.026
	[-3.51]	[-3.35]	[-3.42]	[-3.93]	[-1.14]	[-1.67]
BVC Sametime	0.376***	0.370***	0.372***	0.355***	0.064***	0.057***
	[26.95]	[26.11]	[6.43]	[10.32]	[2.90]	[3.31]
BVC Leader	0.096**	0.089**	0.183***	0.066	0.034	-0.003
	[2.44]	[2.31]	[3.79]	[1.43]	[1.68]	[-0.22]
Target Young (0/1)	0.011	0.010	-0.016	-0.003	-0.003	0.000
	[0.29]	[0.28]	[-0.37]	[-0.12]	[-0.21]	[0.01]
Target Age	0.043	0.039	-0.022	0.006	-0.013	-0.004
	[1.39]	[1.38]	[-0.56]	[0.28]	[-1.43]	[-0.67]
Constant	-0.068	-0.064	0.071	0.096**	0.033	0.043**
	[-0.96]	[-0.99]	[1.04]	[2.24]	[1.70]	[2.59]
Obs.	2,122	2,117	2,122	2,117	2,122	2,117
SE Cluster	Country	Country	Country	Country	Country	Country
Fixed Effects	C/Y/R	C/Y/I/R	C/Y/R	C/Y/I/R	C/Y/R	C/Y/I/R
Adj R^2	0.305	0.303	0.141	0.365	0.0841	0.296

Considering BVC Adj. Industry Experience as the dependent variable does not lead to significantly different results. This time the interaction term is not statistically different from zero, indicating that BVCs might be Leaders in a syndicate not because of their overall experience, but because of their industry-specific investments. Looking at BVC Specialisation tells a similar story as BVC Adj. Experience.

4.4 Robustness

While the focus of the paper has been on the BVCs' activity as equity investors, we know little on what are the characteristics of rounds involving a BVC and if there are any differences from deals involving common VCs. In Table 10 we address this point by analysing how the number of unique VCs involved in a round and the amount invested in a round is affected by the presence of a BVC. In the first half of the table (columns 1 to 3), the dependent variable is the number of unique VCs in a round, in column 4 it is the natural logarithm of the total amount invested in the round, and in column 5 it is the natural logarithm of the total amount invested in the round scaled by the number of investors.

Table 10: Round characteristics and BVC involvement

VARIABLES	(1) VCs in Round	(2) VCs in Round	(3) VCs in Round	(4) Amount Invested	(5) Amount Invested / VCs
BVC Round (0/1)	0.482***	0.467***	0.602***	0.157*	-0.093
	[13.90]	[21.55]	[18.02]	[1.91]	[-1.04]
BVC Adj. Experience	-0.222***		-0.443***	0.099	0.307**
	[-3.00]		[-7.35]	[0.77]	[2.18]
BVC Adj. Industry Exp.	0.273**		0.264**	0.131**	0.024
	[2.48]		[2.63]	[2.35]	[0.42]
BVC Specialisation	-0.027		-0.094	-0.153	-0.204
	[-0.13]		[-0.45]	[-0.90]	[-1.45]
Leader Adj. Experience		0.377***	0.393***	0.123	-0.052
		[7.18]	[7.35]	[1.05]	[-0.52]
Leader Adj. Industry Exp.		-0.002	-0.009	0.075	0.086*
		[-0.11]	[-0.48]	[1.67]	[2.04]
Leader Specialisation		0.174***	0.164***	0.158***	0.061
		[4.48]	[4.53]	[2.86]	[0.96]
Target Young (0/1)	0.004	0.001	0.004	-0.009	-0.013
	[0.14]	[0.05]	[0.14]	[-0.18]	[-0.31]
Target Age	-0.066***	-0.077***	-0.074***	0.290***	0.331***
	[-3.46]	[-3.48]	[-3.44]	[7.52]	[9.54]
Constant	1.513***	1.291***	1.283***	7.125***	6.564***
	[37.92]	[21.67]	[22.23]	[72.46]	[80.28]
Obs.	18,647	17,867	17,867	12,176	12,176
SE Cluster	Country	Country	Country	Country	Country
Fixed Effects	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R	C/Y/I/R
Adj R^2	0.0657	0.124	0.127	0.271	0.144

BVCs invest in large rounds. The presence of a BVC in a round is associated with an increase in unique investors that ranges from 0.482 to 0.602, keeping all the other variables constant. Although we find that the number of VCs is negatively affected by the BVC Adj. Experience (-0.443***), it is positively affected by its Adj. Industry Exp. (0.264**), while the BVC Specialisation correlation is not different from zero. On the other hand, Leader Adj. Experience and Specialisation are both positively correlated with the number of VCs in a round (0.393*** and 0.164***, respectively).

BVCs' presence is weakly associated with an increase in total funding (0.157*), and this effect is increasing with BVC Adj. Industry Exp. (0.131**). Surprisingly, the amount invested in a round is positively correlated only with the Leader Specialisation (0.158***), while both Leader Adj. Experience and Leader Adj. Industry Exp. are not statistically different from zero. However, the results change when the total amount is scaled by the number of VCs involved in that round. BVC Adj. Experience is now positively correlated with an increase in funding (0.307**), as it is

Leader Adj. Industry Exp. (0.086*).

5 Conclusions

This paper examines the activity of banks as equity investors with their experience levels and the investment history of their potential partners. The evidence suggests that BVCs prefer to invest in syndicates, which can be one-off collaborations or repeated investments with the same partners. When BVCs lack past investment experience, they are more likely to invest with new partners with higher experience than them. However, these new partners are not the most experienced among the VC funds active in that period, what matters in this syndicating behaviour is the difference in experience within the syndicate. On the other hand, as BVCs progressively become more experienced investors, they are more likely to invest with the same partners, which are similarly experienced. Also, BVC standalone deals are positively associated with highly experienced funds.

The view of BVCs as less skilful investors is challenged by our results: BVCs are not as industry-concentrated as believed, and their investment decisions appear to be partially motivated by their willingness to learn from their partners.

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Appendix

Table 11: Data by Countries

	1998-2018			2008-2018				1998-2018			2008-2018		
Country	Obs.	BVC_D	%	Obs.	BVC_D	%	Country	Obs.	BVC_D	%	Obs.	BVC_D	%
Austria	405	33	8.1	252	5	2.0	Italy	951	129	13.6	673	61	9.1
Belgium	802	109	13.6	455	30	6.6	Latvia	134	1	0.7	101	0	0.0
Bulgaria	165	2	1.2	154	2	1.3	Lithuania	99	8	8.1	82	1	1.2
Croatia	43	8	18.6	21	0	0.0	Luxembourg	72	10	13.9	40	3	7.5
Cyprus	62	5	8.1	57	5	8.8	Malta	17	0	0.0	15	0	0.0
Czech Republic	125	3	2.4	86	1	1.2	Netherlands	1,357	70	5.2	858	34	4.0
Denmark	859	27	3.1	475	8	1.7	Poland	589	4	0.7	476	1	0.2
Estonia	137	3	2.2	119	2	1.7	Portugal	330	50	15.2	200	25	12.5
Finland	1,278	28	2.2	636	15	2.4	Slovakia	60	1	1.7	42	1	2.4
France	5,944	809	13.6	3,829	481	12.6	Slovenia	32	2	6.3	23	1	4.3
Germany	4,643	449	9.7	2,976	215	7.2	Spain	1,822	226	12.4	1,298	165	12.7
Greece	54	16	29.6	23	3	13.0	Sweden	1,755	62	3.5	1,133	26	2.3
Hungary	376	20	5.3	297	13	4.4	United Kingdom	9,293	823	8.9	5,879	418	7.1
Ireland	899	109	12.1	571	57	10.0	Total	32,303	3,007	9.3	20,771	1,573	7.6

Table 11 reports the number of rounds for each of the 27 countries considered in the paper. From this table, it is clear how heterogeneous the VC market is across Europe and how the presence of bank-affiliated funds does not seem to be strongly related to its degree of development. Looking at the three most developed VC markets in Europe (France, Germany, and the UK) we can see how banks tend to be involved in 9-11% of the overall rounds, while this number is drastically lower when looking at the Nordic countries (around 3%).

Table 12: Industry (FF49) Distribution

FF49	Obs.	BVC_D	t-test	FF49	Obs.	BVC_D	t-test
Agriculture	72	4	1.06	Precious Metals	4	2	-2.82***
Food Products	210	19	0.06	(Non) Metallic Industrial Mining	298	37	-1.94*
Tobacco Products	359	38	-0.93	Petroleum & Natural Gas	22	1	0.75
Recreation	1	0	.	Utilities	87	12	-1.49
Entertainment	305	24	0.79	Personal Services	4,414	466	-3.46***
Printing & Publishing	220	13	1.68*	Business Services	542	52	-0.34
Consumer Goods	102	7	0.80	Electronic Equipment	3	0	0.55
Apparel	91	14	-2.05**	Measuring & Control Equip.	60	10	-2.01**
Healthcare	49	6	-0.74	Business Supplies	620	78	-2.97***
Pharmaceutical Products	11	1	0.00	Shipping Containers	335	20	2.04**
Chemicals	326	43	-2.52**	Transportation	1,584	209	-5.70***
Rubber & Plastic Products	24	2	0.14	Wholesale	35	7	-2.22**
Textiles	124	8	1.05	Retail	623	68	-1.52
Construction Materials	590	38	2.32**	Restaurants, Hotels, Motels	1,770	169	-0.56
Construction	93	5	1.27	Banking	680	69	-0.89
Steel Works Etc	53	3	0.88	Insurance	1,456	65	6.39***
Machinery	180	22	-1.42	Real Estate	42	8	-2.21**
Electrical Equipment	9	0	0.95	Trading	7,187	502	7.41***
Automobiles & Trucks	15	0	1.23	Almost Nothing	6,392	637	-2.48**
Total	28,988	2,659			28,988	2,659	

In Table 12 highlights the distribution of VC investments across different industries using the Fama and French 49 industry classification. We use a dummy for each ff49 sector, the t-test confronts the mean value of each dummy in the case in which no banks were involved (0) against the case in which a BVC took part in the round (1). Therefore, a positive value indicates a greater relevance of non-BVC investments in that sector. The most significant differences in investment decisions involve the financial sector, in which bank-affiliated funds invest less than their counterparts. *** p<0.01, ** p<0.05, * p<0.1.