

# Effects of Syndication on Investment Performance

An empirical analysis on the extent to which syndicated venture capital investments perform better than the standalones

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## Abstract

In venture capital, two or more venture capitalists (VC) often form syndicates to participate in the same financing rounds. Historically, syndicated investments have been found to have a positive effect on the investment performance. The paper provides insight into the effects of syndication on the likelihood of a successful exit for the venture-backed firm. It addresses the possible driving components such as the composition of the syndicates and, in particular, the internal investment funds being classed as external firms in two of the four models proposed, as well as a relaxation on the definition of investment round. One of the main conclusions is that in the analysis, using the chance of exiting and money in minus money out as success factors, syndication coefficients across all models are shown to have a higher chance of exiting. This supports the Value-add hypothesis and opposes the alternative, the Selection hypothesis, as it proposes that syndicated VC firms bring varying expertise to the project in order to increase the success factors post-investment. The paper advises to proceed with caution as the story is not consistent across the analysis.

**Keywords:** Venture Capital, Syndication, Financing, Investment Performance, Successful Exit

**Advisor:** Prof. Albert Banal-Estañol

## Introduction

High potential growth companies are often engaged with by venture capitalists in order to help propel the companies forward to a successful future. Venture capitalists often syndicate within these investments, and the literature has strikingly contrasting views as to why this may occur. The definition of syndication is not always clearcut, and this paper explores how changing how a syndicated investment is defined can draw inferences about successfulness and offers key insights into what may be at play.

The Selection vs Value-add hypothesis contest shows how surprisingly different views of the syndicated investments can exist. Brander, Amit and Antweiler (2002), were the first to introduce the argument for syndicated investments. The Selection hypothesis is where investments are syndicated because there exists uncertainty around the profitability of the investment, and therefore, another VC is desirable to assess the project's potential. The Value-add hypothesis is stated as, the reason that VCs syndicate, is to bring extra value to the project post-investment. In the data, they highlight the type of hypothesis which dominates can be observed by comparing the returns on the investments. If syndication has higher returns relative to non-syndication (standalone investments), it indicates that the Value-added hypothesis seems more influential than the Selection hypothesis (Brander, Amit and Antweiler, 2002). In contrast, they state that the Selection hypothesis dominates, where syndicated investments have lower rates of return than standalone investments (Brander, Amit and Antweiler, 2002), stating that syndication only occurs when selection is difficult, meaning the profitability of a project is difficult to understand, thus needing another firm to aid assessment. Testing the rates of return across definitions of syndication is the approach this paper takes.

In terms for the interactions of the two theories, Casamatta and Haritchabalet (2003) highlight that the Selection hypothesis and the Value-add hypothesis could be working together, however, they choose to assume that they do not and this is the approach taken by this paper.

In this paper different levels of syndication are defined because investors can enter into an investment within the same round, but also "new partners are introduced at later rounds of financing" (Casamatta and Haritchabalet, 2003). Within these definitions of this paper, the research has been extended to check whether there is a difference in results if separate funds of the same VC are viewed as different entities.

Defining the types of syndication this paper explores, within the definitions of syndication exists Soft or Hard, meaning regardless of investment round (Soft) or not (Hard). The second factor is External or Internal, meaning whether the different funds within the VCs are classed as External VCs or Internal VCs, giving the opportunity for internal syndication to be accounted for in the model. Soft Syndication External, is classed as one company being invested in by different investor VC firms regardless of the round. Soft Syndication Internal, is classed as one company being invested in regardless of the round but also allows for internal investment funds within the same VC to be syndicates. This assumes that different investment funds have different management and expertise, and these funds within the same VC firm going into the investment together are essentially treated as two different VCs. Hard Syndication External, is classed as one company being invested in by different VC investors but the same financing round. Hard Syndication Internal, is classed as for one company being invested in by different VC investors, in the same financing round, but, allowing for different funds within a particular VC firm to be classed as if they were different VC firms.

The definition of success is important, and the literature mainly uses returns as a success factor, however, Guo, Lou and Pérez-Castrillo (2015), use duration (time to exit), as a success factor and this is also in this paper to draw inferences following different definitions of syndication being used.

Control variables used throughout the literature vary with differing levels of significance. Year of exit has been used as a control variable (i.e., returns may be higher in good years than in bad) and was found to not be helpful in reaching conclusions. Brander, Amit and Antweiler, (2002) include this control as well as the age of the venture, where they cover the various permutations of these specifications, however, they find the coefficients to be insignificant. In this paper it finds control variables to be important to solidify the inferences drawn.

## Data and Definitions

Each observation corresponds to an investment made in the Thomson Eikon defined venture capital space. The dataset of European firms, with investment dates between the years 2010 and 2020, with the observed company status as of 9<sup>th</sup> February 2020.

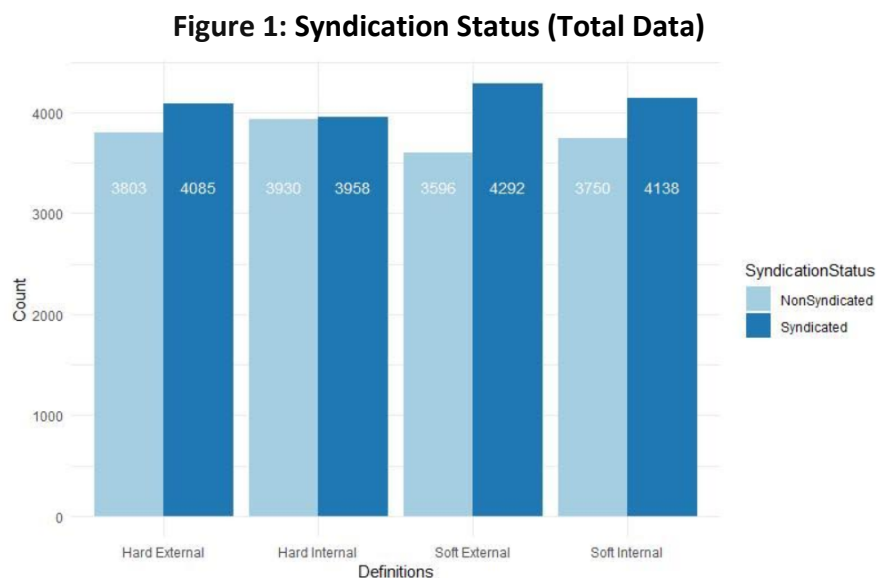
<b>Company Name</b>	The name of the company being invested in by the venture capital firm.
<b>Investment Date</b>	The date of the investment being made from the VC to the company.
<b>Firm Name</b>	Name of the venture capital firm
<b>Fund Name</b>	Name of the fund within the firm investing in the company
<b>Equity amount estimated (USD)</b>	The estimated value of the investment in the company by the VC firm.
<b>Fund Estimated Equity Invested in Company at Investment Date (USD)</b>	The estimated amount invested in the company by the VC fund
<b>Round Number</b>	The investment stage number in the financing of the company
<b>Deal value (if disclosed)</b>	The amount the investment in the company was sold for
<b>Equity Amount disclosed</b>	The amount the venture capitalist firm invested in the company in this particular investment disclosed, which suggests it may not be fully accurate
<b>Company Status</b>	Status of the company as of 9th February 2020
<b>Company world location</b>	The paper focuses on European companies
<b>Age at financing (months)</b>	The age in months of the company when it receives its first investment.

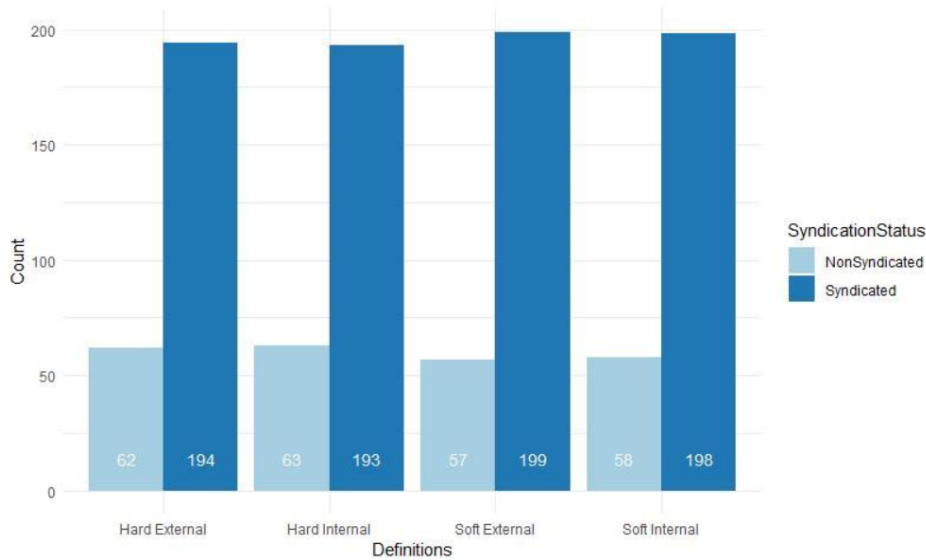
<b>First and last investment date</b>	Showing the first and final dates investment was received into the company by all investors
<b>Total funding to date</b>	Total funding received by the company between the first and last investment dates.
<b>Company IPO date</b>	If applicable, the date at which the company had its initial public offering.
<b>Exit</b>	The process of the VC getting out of the investment
<b>Money Out minus Money In</b>	The amount of money spent on the investment by a VC minus the money received for exiting the investment
<b>Duration</b>	The difference in years between the exit date and the date at which a startup receives the first investment from VC

## Modelling Choices

In terms of timeframes, it is important to note that due to the data starting from a certain point in 2010 there is no over or under-sample from the beginning of the data. However, there exists an end date on the sampled data that potentially leads to under-sampling of long term ventures and oversample short-run cases. It is assumed this does not significantly impact the outcomes.

Below show the descriptive statistics from the paper's definitions of syndication, showing the total data set in Figure 1 and the dataset taking into account only the successful exits which will be analysed to draw results.



**Figure 2: Bar chart - Syndication Status (Only Successful Exits)**

## Results

First looking at exiting from an investment or not, “exited” is classed as success in this case, where the VC removes itself from investing in the project. It is shown that syndication leads to a higher chance of exiting in general and is the basis of the analysis. Shown in Table 1, are the coefficients and how they impact the log of the odds of exiting the investment. All coefficients are significant at the 99.9% significance level. Looking at the intercepts, these show the log odds of exiting, given a standalone investment. Despite the differences in magnitude being very small, the Soft syndication models (which do not restrict investments being in the same financing round) show the chances of exiting the investment decreases.

**Table 1: Exited information (Using Logit Model)**

	Soft Syndication External	Soft Syndication Internal	Hard Syndication External	Hard Syndication Internal
Intercept	-4.153 *** (0.132)	-4.129 *** (0.134)	-4.117 *** (0.127)	-4.100 *** (0.128)
Syndicated	1.163 *** (0.151)	1.105 *** (0.152)	1.146 *** (0.147)	1.101 *** (0.148)
N	7888	7888	7888	7888
AIC	2192.803	2200.534	2192.238	2198.377
BIC	2206.749	2214.480	2206.184	2212.323
Pseudo R2	0.035	0.032	0.036	0.033

All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust.  
 \*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05.

Another observation from the intercepts, despite small, is that within the Soft and Hard models the Internal models have a higher log-odds value, meaning that when rules were relaxed, and funds within VCs counted as separate VCs, the solo investments actually showed a higher chance of exiting. Looking at the syndicated coefficients within Table 1, these are all significant at the highest level and positive. As highlighted previously, the differences in magnitude between the models are small but the External models within the Hard and Soft classifications, the syndicated investment coefficients are higher, this suggesting that when there is a restriction on the VCs' different funds being classed as different VCs this resulted in a higher chance of exiting the investment. With the Hard vs Soft models, it is observed that Soft (when there is no restriction on the investment round) investments have a marginally higher chance of exiting when syndicated.

In general, syndication has the biggest impact on exiting in the Soft External Model, when there is a restriction on intercompany investments being classed as different firms, and when the strictness of rounds is relaxed. Relating this to a practical situation, it is inferred that when firms can enter throughout the investment period, this could highlight that the company is performing well, and has attracted more investment from different firms. The impact of funds within the same firm going into the investment together does not seem to increase the chances of an exit.

**Table 2: Exited with controls**

	Soft Model	Hard Model
Intercept	-3.916 *** (0.136)	-3.880 *** (0.125)
Syndicated	1.033 *** (0.156)	1.213 *** (0.137)
Age at Financing Months	0.099 * (0.049)	0.092 * (0.039)
Total Funding To Date (USD)	0.189 *** (0.056)	0.262 *** (0.031)
N	6270	9645
AIC	1990.680	3679.569
BIC	2017.654	3708.265
Pseudo R2	0.049	0.070

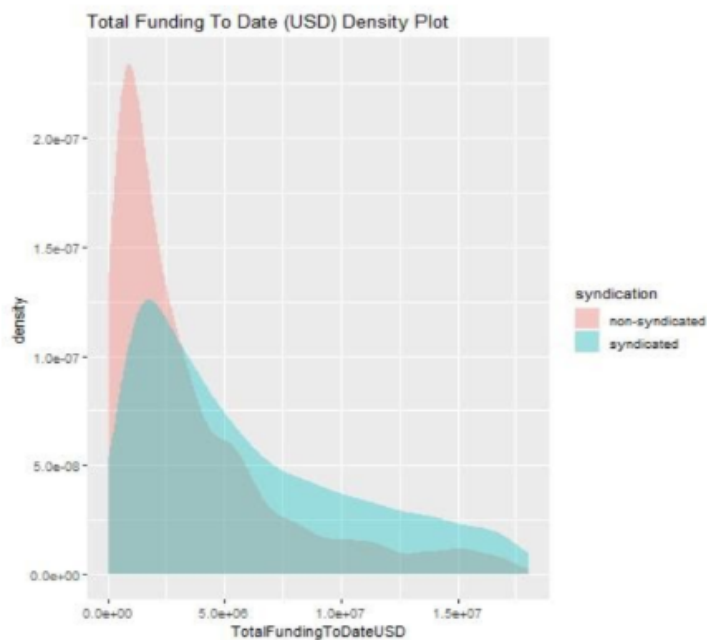
All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. \*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05.

Table 2, shows the logistic regression run for the exited event being 1, and not exiting being 0, adding controls highlighted in the literature. The controls that have been included relate to the company and are Age at Financing and Total Funding to Date. When looking at the intercept, coefficients without the controls (Table 1), the Soft syndication definition results in a lower chance of a successful exit (compared with Table 2). However, once introducing the controls, and observing the Hard definition model, syndication has a greater impact on an exit than the Soft model for syndication. Age at financing is significant at the 90% level and positive, but small in magnitude for both models, increasing the log odds of exiting the

investment. This could highlight that it is easier to exit mature venture investments. For both models, the total funding to date coefficients are positive, potentially highlighting the more money put into an investment, the greater the chances of exiting. The inferences could be due to endogeneity existing, as only successful investments would maintain their funding. It is also important to highlight that the impact of funding to date is 40% larger in the Hard syndication model definition in comparison to the Soft definition.

In terms of the density plot, shown in Figure 3, there are more syndicated investments at the higher levels of funding to date on projects, however, non-syndicated investments still exist throughout the range of the Total funding to date. This is an interesting point, as it is in line with Bygrave (1987), that the learning of VCs is taking place, which dominates the risk-sharing theory as the reason for syndication, by learning it is noted that non-syndicated investments still exist at the higher ends of the funding distribution, suggesting that they are happy to take the risk.

**Figure 3: Total Funding to Date Density Plot - 3**



Exit duration is used as a success measure because VCs are being evaluated as they invest in a company and expect that their money will make a sufficient return. At the same time, they are pushing the entrepreneurs of the company for an exit as soon as possible so they can realize their returns. The density plot of the investments in terms of exit duration (referring to Figure 4) is important to highlight, as the majority of syndicated investments have an exit duration of between 0-10 years, whereas the majority of non-syndicated investments still have the majority falling within 0-10 years of exit duration, however, a proportion do exit between 10 and 15, with the frequency of firms decreasing as this tends towards the limit of data (20 years). It is important to highlight here that non-syndicated investments tend to be held for longer in the data.

Figure 4: Exit Duration Density Plot - 4

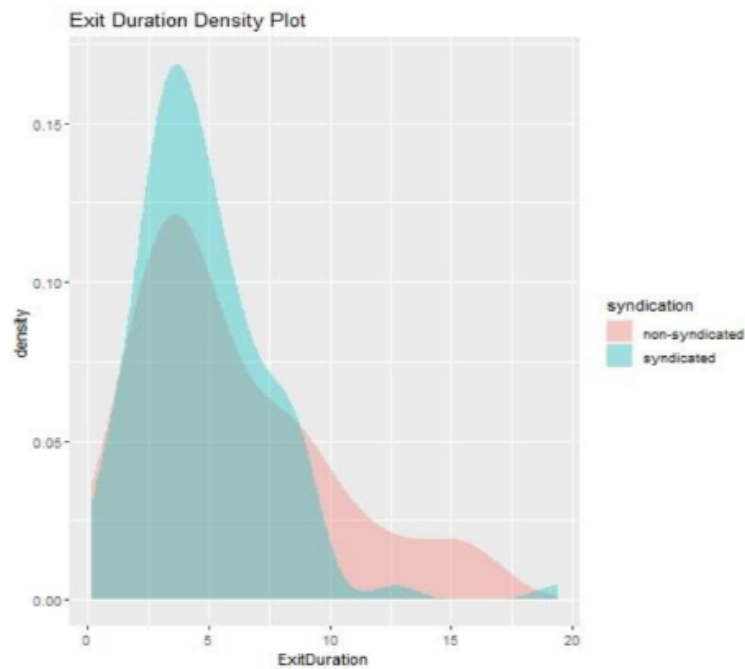
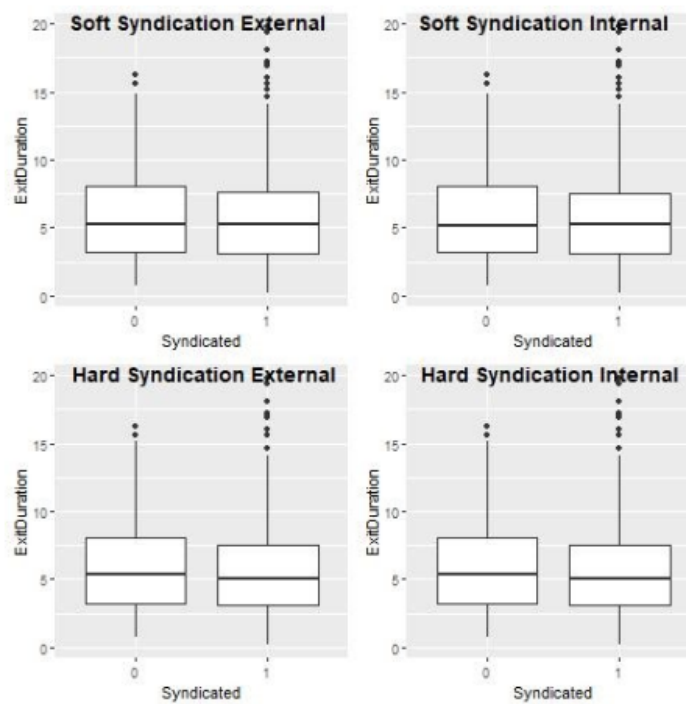


Figure 5 highlights the duration of exit across the data, and in more detail looking specifically at the distribution across the 4 models (Soft syndication External / Internal, and Hard syndication External / Internal). The averages of all four models are approximately 5 years with the upper and lower quartiles going approximately 2.5 years in either direction. The most notable point is that the spread of the duration is greater for syndicated investments.

Figure 5: Exit Duration Box Plots per Syndication Model - 5





Looking at the case of defining duration to exit as a success factor, the aim was to observe if syndication had an impact on duration to exit. The results showed a negative value for the syndicated coefficients, however, as shown in Table 3, these were not significant. Looking at the intercepts, these were all significant at the 99.9% level, and with the Hard External syndication model's intercept coefficient being the greatest in magnitude with the other models very similar in value.

Looking at the Money Out Minus Money In as a definition of success, Table 4, shows the results of the regression for the Hard and Soft models of syndication. Of the intercepts, the Hard syndication model is significant at the lowest level of significance. Both syndicated coefficients are significant, with the Soft model significant at the 95% level, and the Hard model significant at the 90% level. The syndicated coefficient is greater in magnitude for the Soft model which allows for syndication defining across investment rounds. With the syndicated coefficient positive and significant, this suggests in the data that syndicated investments have greater profit in terms of Money Out Minus Money In, however, the next step is to annualise these returns in order to take into account the investment period, and compare these results.

**Table 4: Money Out minus Money Into the Investment**

	Soft Model	Hard Model
Intercept	91759253.333 (52813553.837)	140592666.667 * (69251144.619)
Syndicated	422891075.880 ** (158767624.300)	378588729.845 * (169500049.922)
N	104	104
R2	0.013	0.012

All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust.

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

Figure 6, shows annualised returns distribution across the four models. Comparing syndicated with non-syndicated, the variation in the distribution of annualised returns is greater across syndicated investments, including many outliers. The Wilcoxon rank-sum test is a nonparametric alternative to the two-sample t-test which is based solely on the order of observations from the two samples. The non-parametric nature of the test, allows inferences to be made from the data, and it is highlighted that a normal distribution does not necessarily exist. The Wilcoxon's nonparametric rank-sum test p-values reported in Figure 6 suggest that there is no difference in the medians of the annualized returns for the Hard syndication models but there is for the Soft syndication External model as all other models have a p-Value  $> 0.05$  meaning they are significant at 95% level.

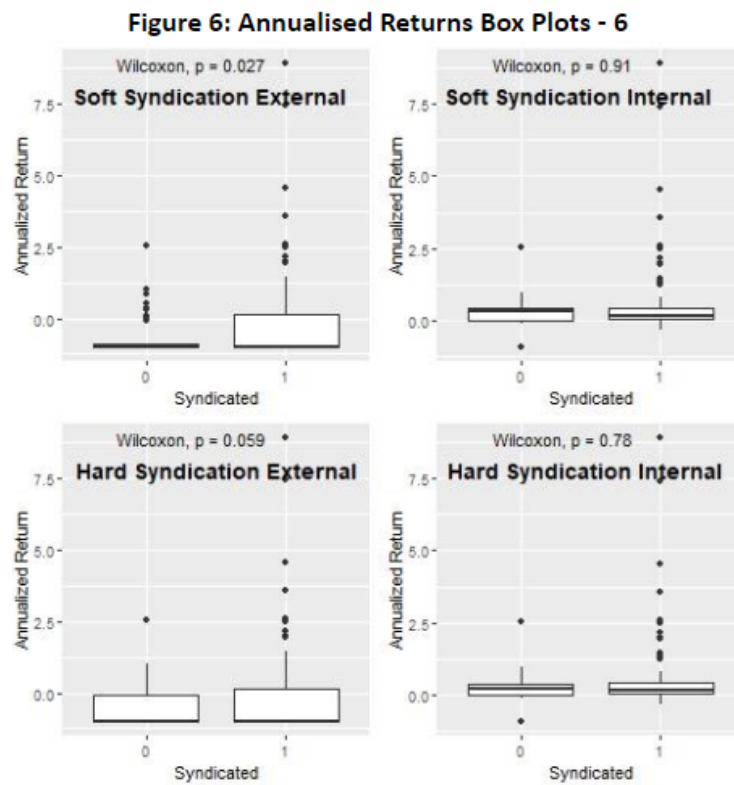


Table 5, shows the annualised returns regression, where the only significant result at the 90% level, was the intercept coefficient for the Hard model. This was even after large outliers were removed from the data. The Outliers were defined on the basis of 3 standard deviations away from the mean.

**Table 5: Annualised Returns**

	Soft Model	Hard Model
Intercept	0.37 (0.20)	0.33 * (0.17)
Syndicated	0.27 (0.26)	0.32 (0.24)
N	97	97
R2	0.01	0.01

All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust.

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

As per Table 6, including the controls for the annualised returns, resulted in significant intercepts from both the Hard syndicated and Soft syndicated models. Both controls introduced were significant at levels between 90% and 99.9% and had a small negative impact on the annualised returns. The syndicated coefficients for both models were small in magnitude but unfortunately, not significant, meaning conclusions were unable to be drawn about syndication in comparison to the stand-alone investments, when looking at success being the annualised returns.

**Table 6: Annualised Returns with controls**

	Soft Model	Hard Model
Intercept	0.49 ** (0.16)	0.39 *** (0.11)
Syndicated	0.10 (0.23)	0.03 (0.14)
Age at Financing Months	-0.31 ** (0.11)	-0.21 *** (0.06)
Total Funding To Date (USD)	-0.15 * (0.06)	-0.15 *** (0.03)
N	96	229
R2	0.06	0.05

All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust.

\*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05.

In relation to variances of the returns, areas of the literature suggested that these would differ depending on whether a VC syndicated or not. In Table 7, the p-value of F-test is 0.996, which is much greater than the significance level 0.05.

**Table 7 - Comparing Variances**

Data: syn_returns_Soft_c and nonsyn_returns_Soft_c				
Alternative hypothesis:	F	num df	denom df	p-value
True ratio of variances is less than 1	3.803	80	14	0.9962
Ratio of variances	3.80305			

In conclusion, syndicated and stand-alone investments have similar levels of variance in annual returns, however, the variance test is a parametric method with the null hypothesis: the ratio of the variances of the populations equals 1. The parametric nature of the variance test requires further testing to check the validity of the results. The QQ-plots shown in Figure 7 and Figure 8 are a test for normality in the distribution of the Soft model data, testing the quantiles of the data with the quantiles of the normal distribution. Note, that the quantile points do not follow the straight line which therefore implies that the normality condition is not satisfied, and in conclusion the variance results are inaccurate.

Figure 7: Soft Model - Syndication QQ Plot - 7

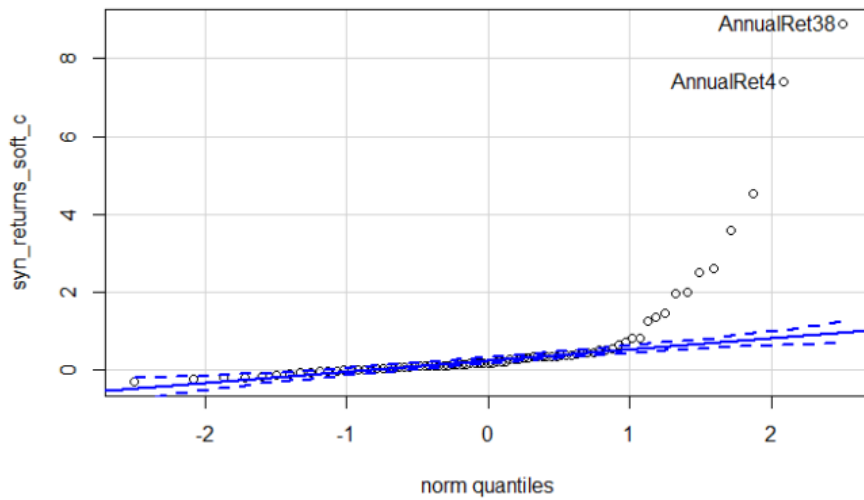
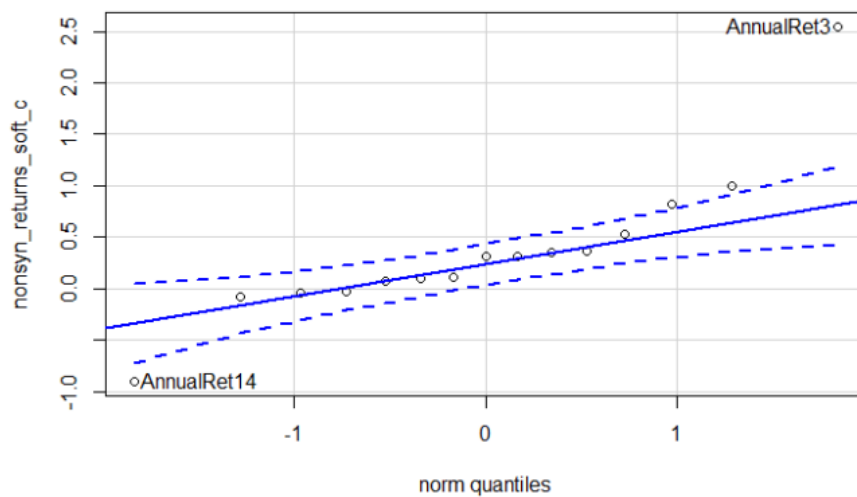


Figure 8 Soft Model - Stand-alone QQ Plot - 8



## Conclusion

The paper aimed at looking to add to the literature of debates on reasons for syndication, such as the Value-add vs Selection hypothesis as set out from various points of views. Uncertainty around profitability is the reason for syndication through the Selection hypothesis, however, the Value-add hypothesis suggests that VCs syndicate to add additional value to the venture post-investment. This is where the varying definitions of syndication we introduced, in order to draw inferences from the data. If the Soft definition of syndication (where syndication can occur across multiple investment rounds), was more successful, it may favour the Value-add hypothesis. However, in the initial test using “exited” as success, the Soft syndication models did not show a significant difference compared to the Hard syndication models.

Using the chance of exiting as a success factor, syndication coefficients across all models showed a higher chance of exiting. Using this as a success factor, you could argue for the Value-add and against the Selection hypothesis, as syndicated investments across all models resulted in a higher chance of exiting the investment. Including the key controls, resulted in

similar conclusions to be drawn, with syndication increasing the log odds of exiting. This does support the conclusions of Brander, Amit and Antweiler (2002) that highlight that the Value-add hypothesis dominates.

Using Money Out minus Money In as a success factor it was shown syndicated investments increased this which would be in line with the Value-add hypothesis according to Brander, Amit and Antweiler (2002), however, this could be down to successful companies being input with greater investments which are already successful.

Using exit duration as a success factor, conclusions were unable to be drawn about syndication, as the syndication coefficients were not significant. A potential reason for this, as the literature suggests, Guo, Lou and Pérez-Castrillo (2015), highlight, that the type of fund the investment is being purchased for has an impact on the duration and amount of funding, therefore impacting the returns of the VCs. They find that CVC (corporate venture capital) backed startups receive a significantly higher investment amount and stay in the market for longer before they exit (Guo, Lou and Pérez-Castrillo, 2015). The data did not allow us to analyse the type of fund, meaning the investment strategy could differ from the outset. As no control variable exists for the type of fund it is therefore assumed this does not significantly impact the outcome. Controlling for the type of fund may have shed light on this aspect of the results.

Looking at the distribution of annualised returns, this was in line with Casamatta and Haritchabalet (2003), that there was more variation in syndicated investments as they made choices over risky investments, therefore, supporting the Selection hypothesis. However, running the regression on the annualized returns and testing in relation to the variances, meant conclusions can not be significant.

The paper has found that to some extent the Value-add hypothesis is the most dominant in the analysis, meaning that firms syndicate across different areas of expertise, and are ultimately able to make a project more successful, due to the pooling of knowledge.

Conclusions are unable to be drawn in relation to internal and external syndication with no significant results, however, the limitations of the data and analysis must be considered in order to bring significant results to future studies.

The drawbacks were that there were limitations within the data, and to go further here additional variables would be needed.

In terms of venture capitalist experience, Casamatta and Haritchabalet (2003), argued that different levels of venture capitalist experience have different attitudes towards syndication, this is due to the assumption that when a company decides to syndicate, they are no longer competitors. Their objectives align in getting the company sold at a higher price, as they share the project profits. The descriptive statistics also suggest that other dynamics relating to VCs could be at play, with non-syndicated investments tending to be held for longer, suggesting syndicated firms look to realise their return sooner.

In relation to the experience of VC firms, the literature suggests that the experienced firms have a better understanding of projects, and therefore, have relatively less uncertainty, meaning they are less open to syndication. On the other hand, inexperienced VCs are open to syndication, as their valuation of the investment is not accurate, so are willing to syndicate more often. In the data there is no age information on the VC firm, which could be used for experience, therefore, it is assumed that the age of firms is equally distributed throughout

syndicated and non-syndicated and this does not impact the returns. This is a big assumption, as the literature looks to test if older, therefore more experienced VCs, tend to avoid syndication and variation of the returns between the groups of syndicated and non-syndicated firms (Casamatta and Haritchabalet, 2003). There is also literature which proposes that Syndication is very costly for inexperienced firms. If the Age of the VC data existed, this could be added to analysis for inferences into the Selection vs Value-add hypotheses debate, and study if the process has multiple dimensions in the fact that learning may be a factor “for younger less experienced venture capitalists” Casamatta and Haritchabalet (2003). There is also literature which suggests that given syndication normally occurs between inexperienced VCs, it creates greater variation in the success factor returns, this could then be controlled for in the results. Ultimately, it is mentioned that VC experience can have an impact on the investment. Due to limitations in the data, it was assumed that experience of the VC firms does not affect the success of the investment in a directional way.

There is vague evidence in the literature on the type of investment the entrepreneur receives as having an impact on the effectiveness of the venture. Convertible preferred equity provides the venture capitalist with a stronger claim on the liquidation value of the company in the event of bankruptcy, thereby shifting the risk from the venture capitalist(s) to the entrepreneur (Cumming, 2000). In the analysis, due to limitations in the data, it is assumed that the type of investment has no impact on the outcome of the project however, in reality, this can create different incentives for the entrepreneurs and thus impact results.

Assumptions are also made about the control rights, as highlighted in the literature, control rights can play an important role in the returns. Cumming (2008), explores the exits, and highlights that higher control rights of the VC over the project are associated with different types of exits which could be related to the return on the investments. The probability of acquisition is approximately 30% more likely when VCs have effective contractual control rights Cumming (2008). Higher control rights are also mentioned, resulting in a lower probability of IPOs and write-offs Cumming (2008). It was assumed that control rights had no impact on the results.

Accounting for controls such as those highlighted, would help to draw more valid insights. In addition to the controls, it is important to highlight that endogeneity most likely exists, with successful companies more likely to get syndicated. In particular, it is assumed that the lead venture capitalist makes the syndication decision. Thus, the syndication decision is endogenous to the lead venture capitalist, but exogenous to the venture. The models could have different implications if the venture (i.e., the entrepreneur) made this decision (Brander, Amit and Antweiler, 2002). Unfortunately, there was no variable in the dataset which could have been used as an instrument.

On a final note, revisiting the results following an analysis of the limitations, the only strongly statistically significant results for syndication are shown in the exits, and not the annualized returns models. Despite evidence of supporting the value-added hypothesis in the results, it is now clear that this can be refuted. It is true that the exits are more frequent with syndication, but drawing conclusions from the direction is quite controversial, as many of those syndications were towards the later rounds, suggesting the success of the companies was a signal to syndicate in order to realise success, and on the other hand, among the exited companies, data indicates that the effect of being syndicated or a standalone is vague.

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