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## Alliance Portfolio Effects on New Venture's Performance

Smriti Prabhakar-Sood

Fordham University, New York, USA

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### ABSTRACT

This study investigates the effects of an alliance portfolio on a new venture's performance. Specifically, this paper draws on the legitimacy perspective. It presents a model that aims to understand the influence of an alliance portfolio's different characteristics on a new venture's performance. The paper also considers the contingent role of the equity market environment. These relationships are investigated in a cross-industry sample of 123 new ventures with pre-IPO alliances. The data has been compiled from various databases selected for their comprehensiveness and extensive use in Strategy research. Hierarchical Multiple Regression models are run to analyze the data. This study suggests that new ventures can potentially send important signals regarding their quality by virtue of their partnership formations. The most important characteristic of the alliance portfolio that affects the value of the new venture is size. Consistent with prior research, this study finds that new ventures with prestigious underwriters have higher valuations at IPO across all industries. The results also extend this line of inquiry by showing that relationships with prominent underwriters, VCs and alliance partners are not prestigious equivalent relationships. This study also shows interesting results contrary to prior research that stable partner relationship benefits are not relevant. Based on these findings, this study provides key managerial implications by providing managers insight into how they should develop their venture's alliance portfolio to enhance the venture's legitimacy and thereby its IPO performance.

*Keywords:* Alliance Portfolio, New Venture, Entrepreneurship, Initial Public Offering, Legitimacy

### Introduction

New ventures undergoing an Initial Public Offering (IPO), to garner financial resources (Brau & Fawcett, 2006), are laden with uncertainty (Freeman, 1997). Since these firms lack history, conventional measures to assess them are not available, thus creating uncertainty about their

Corresponding author. E-mail address: [sprabhakarsood@fordham.edu](mailto:sprabhakarsood@fordham.edu)

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quality. Consequently, when investing in such firms, the public is likely to turn its attention to the new venture's external associations to help make inferences regarding its quality. Indeed, prior research has shown that pre-IPO an entrepreneurial firm reduces uncertainty about its quality and prospects through various external associations (e.g., Gulati & Higgins, 2003; Stuart, Hoang, & Hybels, 1999). These external associations of the new venture may include various relationships for example associations with venture capitalists, institutional investors, underwriters, accountants and attorneys that are involved in the IPO process; and the new venture's associations with external stakeholders for example alliance partners, suppliers, and customers (Stuart et al., 1999; Pollock, Porac, & Wade, 2004). The public assumes such external associations to have evaluated the new venture undergoing an IPO before lending it credence by associating with it.

However, our understanding of external associations' impact on a new venture's IPO performance is limited. Prior research has shown that firms maintaining external associations with prominent organizations are regarded as higher quality and go public faster and achieve higher evaluations (Stuart et al., 1999). In a similar vein, a recent line of inquiry suggests that technology firms forming international alliances send signals to investors regarding the firm's quality in terms of access to resources and growth potential thereby improving valuation (Smith, Moghaddam, & Pezeshkan, 2020). While this line of research suggests that by lending credence, external associations are likely to enhance the firm's legitimacy and in turn IPO performance it has focused only on one characteristic of associations, namely, prominence. However, prominence is only one of the many characteristics of associations that may confer legitimacy on a new venture. Prior research has overlooked other characteristics of associations that may confer legitimacy to the new venture.

Further, prior research has considered all types of associations (e.g. venture capitalists, investment banks, and alliance partners) under one umbrella. This paper focuses on one particular type of association, alliance partners as this is a common and important type of association. Alliances are instrumental associations, particularly for resource-constrained new ventures.

This paper aims to address these gaps. Taking a legitimacy perspective, this paper argues that characteristics of a new venture's pre-IPO alliances indicate a new venture's pre-IPO legitimacy that affects the firm's IPO performance in terms of the market valuation of the venture at IPO. The success of a new venture's IPO may be, at least in part, dependent on the extent to which the public perceives the firm to be legitimate. Legitimacy is a perceived or assumed notion that confers upon a body a preferred, suitable status within some socially constructed system of standards and principles (Suchman, 1995). Thus, if the public considers the new venture's pre-IPO legitimacy in making investment decisions, then higher levels of pre-IPO legitimacy would be expected to lead to higher levels of IPO performance. This paper argues that four types of alliance portfolio characteristics confer firm legitimacy upon a new venture (size, stability, breadth, and prominence) that will, in turn, impact the firm's IPO performance. Alliance portfolio size is represented by the total number of alliance partners a firm has and confers legitimacy to acknowledging the new venture's existence. Alliance

portfolio breadth is represented by affiliation with the alliance partner; these affiliations may be upstream, downstream, or horizontal. Alliance portfolio stability is represented by the number of repeated ties a firm has with its alliance partners and confers legitimacy to its alliance partners' stability. Alliance portfolio prominence, has been the primary focus of prior studies, is represented by the number of partnerships a firm has with established firms in all its alliance partners.

Understanding the conditions that modify the effects of pre-IPO alliances on IPO performance for new ventures is an important undertaking to understand better how new ventures may negotiate varying environmental conditions. This paper considers the contingent role of environmental factors (related to the equity market environment) (Gulati & Higgins, 2003) on the relationship between the characteristics of a new ventures' pre-IPO alliances and the venture's IPO performance. This paper suggests that the benefits of legitimacy obtained from the different characteristics of the new venture's pre-IPO alliances will be moderated by environmental factors, such that certain characteristics become more or less important under certain conditions.

This paper aims to make three key contributions to research on strategy and entrepreneurship. First, it aims to contribute to the literature by taking a legitimacy perspective and understanding how different characteristics of a new venture's alliances confer legitimacy. Second, it aims to understand the contingent role of environmental factors and seasonality on the relationship between characteristics of pre-IPO alliances and IPO performance to understand better how new ventures should negotiate varying market conditions. Finally, it also enhances our understanding of how new ventures secure financial resources.

### **Literature review and research gap**

Academic attention has shifted from single alliance management to alliance portfolio management. Hoffman (2007) argued that the effects of a firm's alliance strategy do not simply depend on the success or failure of managing one or two alliances but on the success or failure of its entire set of alliances. The most common approach to define an alliance portfolio is to take this additive perspective (e.g., George et al., 2001; Hoffman, 2007; Lavie, 2007). Studies grounded in the network literature define an alliance portfolio as a focal firm's egocentric alliance network, i.e., all direct ties with partner firms (Baum et al., 2000; Ozcan & Eisenhardt, 2009; Rowley et al., 2000).

New ventures also use alliances to access critical resources for product development and eventual product placement in the marketplace. Such firms tend to form alliances with companies that can provide them with access to distribution channels since they lack the resources to reach potential customers on their own. Entrepreneurs use their alliance partners' reputation to open doors that may be otherwise closed to them. Partners can introduce them to potential investors, suppliers, and customers. The ability to state that one's company is partnering with a Fortune "500" firm also provides potential customers and investors with a sense of security. For instance, a small fuel cell company that partners with General Electric

(GE) would capture a great deal of market and media attention due to GE's reputation in the power systems industry.

A new venture going through an IPO is a significant landmark in its development (Fischer & Pollock, 2004). While the IPO provides substantial financial resources and enhances the young firm's legitimacy, significant uncertainties remain about its capabilities, prospects and survival (Fischer & Pollock, 2004). A recent study shows that underpricing at IPO can garner more investor attention and influence its short and long term performance (Chang & Kwon, 2020). Another recent study shows that a successful IPO can enhance a venture's innovation strategy as shown in a recent study on semiconductor firms increasing their patent productivity after going public (Forti, Morricone, & Munari, 2020). Thus, considering an IPO as an important signal to reduce uncertainty and enhance a firm's visibility, subsequent to an IPO a firm's ability to attract post IPO alliance partners may be affected by an IPO. Indeed previous research shows a direct influence of investor perception on an IPO's performance as measured by the money raised during the offering indicating their motivation based on the perceived status (Filatotchev & Bishop, 2002). Stuart et al. (1999) suggest that IPO firms' use alliances to boost investor confidence in the firms. Despite this clear impact of investor confidence in the firms' alliance, very little attempt has been made to incorporate it in the studies of alliances. Thus, this paper's contribution is increasing the knowledge about a vital element of a public firm's success, namely its alliances. This study particularly explores what other factors may influence the value investors place on a firm at its IPO. This study posits that alliances compensate for the lack of a firm's legitimacy and influence a firm's IPO value.

### **Theoretical background and hypotheses development**

To ground our conceptual model, I turn to the legitimacy perspective (Suchman, 1995), highlighting that legitimacy is a conferred status. Legitimacy is a perceived or assumed notion that confers upon a body a preferred, suitable status within some socially constructed system of standards and principles (Suchman, 1995). Due to the social judgment of acceptance, appropriateness, and desirability, legitimacy enables organizations to access other resources needed to survive and grow (Zimmerman & Zietz, 2002). Indeed, empirical studies have found that legitimacy helps increase a firm's net profit (Roberts & Dowling, 2002) and improve a firm's market performance (Deephouse, 2000). However, the larger and older firms are deemed more legitimate (e.g., Pollock, Porac, & Wade, 2004).

Entrepreneurial firms undergoing an initial public offering (IPO) are relatively young (Cohen & Meyer, 2000) and suffer a low level of credibility and reputation (Stinchcombe, 1968). An IPO is an important landmark in developing a new venture's life (Fischer & Pollock, 2004). The new venture can gather significant financial resources and finance its growth from the public investors by selling its equity shares at this momentous stage. (Brau & Fawcett, 2006). A firm's IPO's success may be at least in part, dependent on the extent to which the financial markets perceive the firm to be legitimate. Firms with a higher level of legitimacy may experience investors with higher levels of optimism regarding the firm's current and

future potential value. If the firm's legitimacy influenced IPO investors, then higher legitimacy levels would be expected to lead to higher IPO values.

Research suggests that legitimacy is a resource (Zimmerman & Zietz, 2002; Suchman, 1995) and a new venture may strategically and manipulatively use links to external structures to demonstrate its worthiness and acceptability (Elsbach, 1994; Oliver, 1991). Ventures can also use their connections as a source of governance (Garg, 2020). New ventures that adopt the values held by those who control needed resources (Zimmerman & Zietz, 2002), and obtain the endorsement of reputable underwriters (Pollock, 2004) have a higher legitimacy a higher propensity to survive. The network of external associations of the new venture going through an IPO includes various relationships for example associations with venture capitalists, institutional investors, underwriters, accountants and attorneys that are involved in the IPO process; and the new venture's associations with external stakeholders for example alliance partners, suppliers, and customers (Stuart et al., 1999; Filatotchev & Bishop, 2002; Pollock et al., 2004). Research has examined the effect these entities have on IPO firm value. In a study of firms undertaking an IPO Stuart et al. (1999) found that young firms with associations with eminent alliance partners and prestigious underwriters have better IPO performances than young firms without these networks in terms of going to IPO faster or even achieving higher valuations. Echols and Tsai (2005) found that venture capitalists embeddedness influenced their ability to take young firms to IPO. The more embedded the venture capitalist, the more young firms it took to IPO and even outperformed the stock market relative to venture capitalists with less embedded connections. There is another line of work that studies the contingency effects of these endorsements. Higgins and Gulati (2003) show how multiple legitimacy signals shape the quantity and quality of investors who invest in a young firm. Well-known and eminent stakeholders can be critical in shaping the young firm's decisions, strategies and performance by offering critical resources, access to essential connections and general guidance and direction (Arthurs & Busenitz, 2006; Dimov & Shepherd, 2005; Pollock et al., 2004). Forming Alliances with prominent partners predominantly confers a level of status (Stuart et al., 1999). Essentially, the public assumes that the external associations would have evaluated the new venture undergoing an IPO before lending it credence by associating with it. In a recent study, Smith, Moghaddam, and Pezeshkan (2020) show how firms use international alliances to access resources and markets and signal venture capitalists of their resource quality and growth potential thus persuading greater investor valuation. Thus, this line of research suggests that a new venture's alliances may be critical for the venture.

While prominence is only one of the many characteristics of associations that may confer legitimacy on a new venture, prior research has overlooked other characteristics of associations that may confer legitimacy to the new venture. Thus, I raise the questions *to what extent the pre-IPO alliance portfolio held by a new venture explains its IPO performance? Is the relationship between the pre-IPO alliance portfolio of a new venture and the IPO performance contingent on different environmental conditions at IPO? If so, to what extent?*

Hence, I propose the model depicted in Figure 1 as a way of thinking about how a new venture's alliance portfolio confers legitimacy on it and thereby enhances the venture's IPO

performance. In this model, extending the legitimacy perspective into the domain of the new venture's alliance portfolio, I argue that the new venture's alliance portfolio characteristics exert salient influences on the firm's ability to have a successful IPO by conferring legitimacy on the venture and thereby influencing investor decisions. Since an IPO is an important milestone for the new venture to garner resources, the alliance portfolio can benefit the venture to the extent that it capitalizes on it. To represent a new venture's alliance portfolio, I selected the four most relevant constructs: alliance portfolio size, alliance portfolio stability, alliance portfolio breadth, and alliance portfolio prominence.

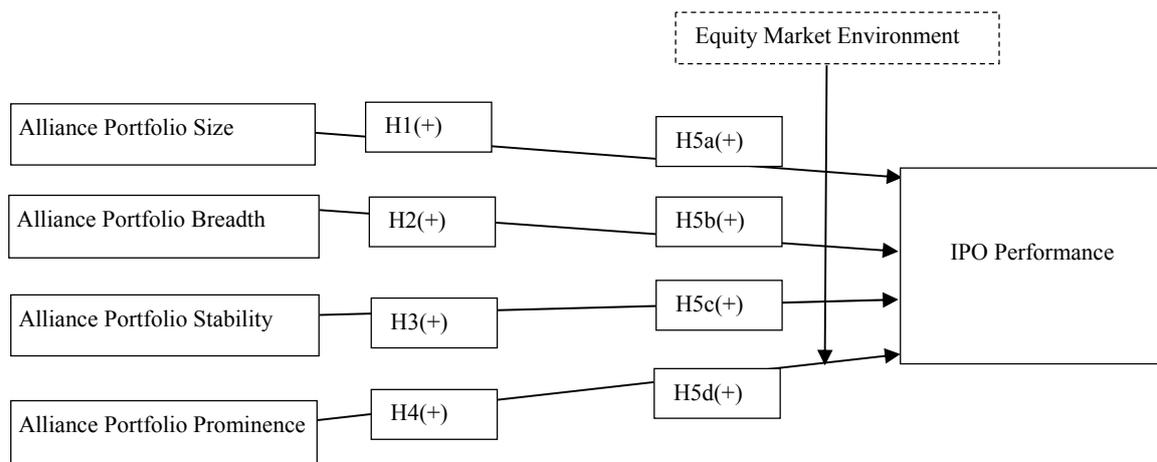


Figure 1: Proposed Model

### Alliance portfolio size

Alliance portfolio size is defined as the number of alliances and partners; a focal firm has (Ahuja, 2000; Deeds & Hill, 1996; Hoffman, 2007). I believe that the size of a new venture's alliance portfolio before going through an IPO will confer legitimacy upon the venture and affect perceptions of its quality, thereby influencing investor decisions and its IPO performance.

A new venture's alliance portfolio size suggests that many parties acknowledge the venture's very existence. When multiple partners present in a new venture's portfolio of alliances, they are essentially indicative of the venture's desirability as they acknowledge the venture's existence and accept it by forging a relationship. Thus, the investors' confidence level in the new venture is enhanced since many other parties acknowledge its existence.

Additionally, a new venture's alliance portfolio size reveals the number of times the venture would have gone through partners' scrutiny to prove its worth. Entrepreneurial ventures must be attractive partners themselves since they must offer benefits to the other party (Eisenhardt & Schoonhoven, 1996). This would increase the investors' attributions of the venture's potential as they would perceive the venture to have been effectively scrutinized and that their attributions are supported by the multitude of parties that also see potential in the venture.

Further, a new venture's alliance portfolio size would indicate the number of informed entities related to the venture. Alliances require considerable investments of time and resources (Gulati & Singh, 1998; Ireland et al., 2002) and thus, alliance partners would garner information about the new venture before forming a partnership. Thus, forming a partnership with the new venture, the alliance partners depict their support to the venture based on accurate information. Thus, having more partners may suggest that the venture may be a better choice.

Based upon the above arguments, I hypothesize,

*Hypothesis 1: Alliance portfolio size is positively related to a new venture's IPO performance.*

### **Alliance portfolio breadth**

Alliance portfolio breadth refers to the extent of resources that the firm can access through its alliance partners within the portfolio (Ahuja, 2000; Gulati, 1998). I believe that the breadth of a new venture's alliance portfolio before going through an IPO will confer legitimacy upon the venture and affect perceptions of its quality thereby influencing investor decisions and, consequently, its IPO performance.

A new venture's alliance portfolio breadth indicates the venture's completeness. Indeed, new ventures enter into alliances to gain access to knowledge and skills across value-creating activities (George et al., 2001). Thus, portfolios may comprise alliance partners that can be identified as upstream, horizontal, and downstream in the value creation process (Hagedoorn & Schakenraad, 1994), enabling ventures to achieve innovation and commercialization performances. Firms with broader alliance portfolios are likely to have better access to additional resources, knowledge and information.

Upstream partners in a new venture's alliance portfolio represent the venture's affiliations with research and development institutions such as universities or government-based institutions (Silverman & Baum, 2002). Such partnerships suggest that the new venture has affiliations that can provide it with scientific or technical information and knowledge that may help push the venture's technology forward.

Downstream partners in a new venture's alliance portfolio represent the venture's affiliations with firms that are one step closer in the business cycle to bring the new venture's products to market. Such alliances provide access to sources of complementary assets and commercialization knowledge (Silverman & Baum, 2002). Research suggests that such alliances enable commercialization activities and predict products on the market (Rothaermel & Deeds, 2006; Rowley et al., 2000).

Horizontal partners in a new venture's alliance portfolio represent the venture's affiliations with the same industry partners. Research suggests that within industry connections help an entrepreneurial venture compete effectively (Eisenhardt & Schoonhoven, 1996). Thus, horizontal alliance partners in a new venture's alliance portfolio suggest access to valuable resources.

A new venture with a broad alliance portfolio consisting of partners with the above three types of affiliations would indicate the venture's completeness. The broader a new venture's

alliance portfolio suggests that the new venture has access to the various resources and capabilities needed to implement the venture through its partners successfully.

Based upon the above arguments, I hypothesize,

*Hypothesis 2: Alliance portfolio breadth is positively related to a new venture's IPO performance.*

### **Alliance portfolio stability**

Alliance portfolio stability refers to the constancy of membership in a new venture's alliance portfolio (Inkpen & Tsang, 2005). Stability in the new venture's alliance portfolio suggests that the venture has sustained long term relationships with partners by maintaining and repeating ties with consistent partners. I believe that the size of a new venture's alliance portfolio before going through an IPO will confer legitimacy upon the venture and affect perceptions of its quality, thereby influencing investor decisions and its IPO performance.

A new venture's alliance portfolio stability indicates the venture's consistency. Legitimacy is fundamentally about conforming to models and can be achieved by conforming to established models and standards, and formalizing and professionalizing operations (Suchman, 1995). It implies that if a new venture can associate with well-accepted procedures, it can build legitimacy. Additionally, a new venture's alliance portfolio stability indicates reduced perceptions of its riskiness as an investment. Alliance partners have to invest a substantial amount of time and energy in establishing a long term relationship (Burt, 1992). Such ventures may then be perceived as less risky investments as they have demonstrated their viability and predictability by maintaining long term relationships with prior alliance partners.

Relatedly, a new venture's alliance portfolio stability indicates the venture's future viability. Repeated ties with the venture suggest that partners have developed a level of comprehension and further the likelihood of the venture's continuation. Such commitment refers to a partner's attachment to the alliance and thus may be less inclined to withdraw support from the venture on encountering the first difficult problem. Thus, investors would perceive such stable relationships to indicate optimistic partners for the venture's continuation.

Based upon the above arguments, I hypothesize,

*Hypothesis 3: Alliance portfolio stability is positively related to a new venture's IPO performance.*

### **Alliance portfolio prominence**

Alliance portfolio prominence refers to prestigious partners' presence in a new venture's alliance portfolio (Gulati & Higgins, 2003, 2006; Stuart et al., 1999). I believe that a new venture's alliance portfolio prominence before going through an IPO will confer legitimacy upon the venture and affect perceptions of its quality, thereby influencing investor decisions and, consequently, its IPO performance. Building an alliance portfolio with prestigious partners is often part of start-ups IPO strategy because the affiliation to a set of well-established partners may affect IPO success (Gulati & Higgins, 2003; Stuart et al., 1999).

A new venture's alliance portfolio prominence suggests the new venture's endorsement. The mere existence of such prestigious alliance partners carries its endorsement. Since relationships have reciprocal effects on the reputation of concerned actors a prominent organization's reputation will be at stake if the new venture is of low quality hence avoid such engagements (Stuart et al., 1999). A new venture's alliance portfolio prominence suggests the new venture's quality (Certo, 2003; Gulati & Higgins, 2003, 2006; Stuart et al., 1999). Through affiliates, the venture can identify with already legitimate practices and values that are salient for their domain to enhance its legitimacy (Bianchi, 2002). A new venture's alliance portfolio prominence suggests its distinctiveness. Thus, the investors' attribution of the new venture is enhanced since they perceive the venture to have been selected among the prestigious partner's many options. A new venture's alliance portfolio prominence suggests the quality of judgments made concerning the venture. Not only are they considered to be of high quality themselves but also trusted by external parties to be able to discern quality (Stuart, 1998). Hence, more prestigious partners in a venture's alliance portfolio depict better quality judgments with respect to the venture.

Based upon the above arguments, I hypothesize,

*Hypothesis 4: Alliance portfolio prominence is positively related to a new venture's IPO performance.*

### **Equity market environment**

Although management literature has typically considered the environment an important contingency factor, the equity environment has not been studied much. Uncertainty may arise from sources, such as natural events, changes in references, or regulatory changes (Suttcliffe & Zaheer, 1998). Typically, studied in the finance literature, the equity market environment is one such source of uncertainty, and I believe management literature must incorporate it as an important contingency factor. The equity market environment may or may not be receptive, affecting the timing of IPOs (Lerner, 1994). The equity market environment conditions suggest that the market window is more favourable, relatively open in hot seasons, less favourable, or relatively closed in cold seasons (Gulati & Higgins, 2003). Literature suggests that there are essentially two main types of concerns for investors involving the uncertainty in the equity market (Gulati & Higgins, 2003). Investing in bad, or low potential, firms or missing good, or high potential, opportunities. When equity market conditions are less favourable or are relatively cold, and few firms go public investors' concerns revolve around blindness or overlooking firms, they should invest in. In cold markets, few firms try to go public, making the probability of overlooking good firms and a concern for investors (Gulati & Higgins, 2003). On the other hand, prior research has shown that investors are overly optimistic about young firms' potential when equity market conditions are more favourable or relatively hot (Ritter, 1984).

Accordingly, as an indicator of quality, a new venture's alliance portfolio may positively impact IPO performance when equity market conditions are more favourable. In favourable market conditions, the quality threshold is higher to pass muster with investors as there are

lower quality firms present in the IPO market. Thus, a new venture's alliance portfolio's benefits on its IPO performance will vary according to the equity market environment conditions.

Based upon the above arguments, I hypothesize,

*Hypothesis 5: The equity market environment conditions will moderate the relationships between the alliance portfolio characteristics and the new venture's IPO performance. Such that, in more favourable conditions, the relationships between alliance portfolio size, stability, breadth and prominence will be stronger.*

## **Methodology**

### *Sample and database*

This study's sample is compiled from two different databases provided by Thomson Reuters, Thomson ONE Banker and Thomson Financial's JV/Alliance database. Financial and related operating information for firms in the sample was collected from Standard and Poor's (S&P) COMPUSTAT database. To corroborate, I collected alliance data from various other sources such as Mergent Online, Mergent Web Reports, Hoover's, Lexis Nexis Business, and Business Resource Center and Company. These databases have been selected for their comprehensiveness and extensive use in Strategy research. The key challenge in creating the dataset for this study was matching the focal new venture's IPO data with the focal new venture's Alliance data obtained from the two separate databases. The firms that underwent an IPO between 1996 and 2011 in the US stock market were obtained from Thomson ONE Banker. This resulted in 8076 firms. The alliance activity of firms (that underwent an IPO between 1996 and 2011 in the US stock market) was obtained from Thomson Financial's JV/Alliance database. This resulted in alliance activity of 2088 focal firms. These 2088 focal firms were identified and matched across the two databases to create the dataset that assimilated the focal firms' IPO and Alliance data. Next, focal firms that allied before the IPO were identified; this resulted in 980 focal firms (that underwent an IPO between 1996 and 2011 in the US stock market) with Pre-IPO alliances. Finally, as discussed earlier, I restricted the sample to ventures up to 6 years of age at the IPO time, which resulted in 364 firms. Next, ventures were eliminated due to missing data leaving a sample of 123 new ventures. Thus, this study's final sample consists of 123 new ventures that completed an IPO between 1996 and 2011 and had 463 alliance partners before the IPO issue.

## **Measurements**

### *Dependent variable*

IPO performance has been measured as IPO valuation at one month. Consistent with previous research (Stuart et al., 1999, Gulati & Higgins, 2003) I calculated IPO valuation by taking the difference between the number of shares outstanding after IPO and the number of shares offered during the IPO multiplying by the share price at one month.

### *Independent variables*

*Alliance portfolio size:* This variable is measured as the total number of pre-IPO alliances formed by each new venture as a cumulative count variable. It is the total number of pre-IPO alliances formed by each new venture.

*Alliance portfolio breadth:* Alliances for this measure were classified along functional lines. To capture this measure, I coded alliances into marketing, manufacturing, and R&D alliances. Alliance categories derived from the SDC alliance type category and include R&D alliances, manufacturing alliances, and marketing alliances. If an alliance addressed multiple functional areas, it was coded for all alliance types that applied. Thus, this measure captured the different types of resources indicated by the alliance's functional category and ranged from 0 to 3. For example, if a new venture had all three types of alliances, R&D, marketing and manufacturing, it was scored as 3.

*Alliance portfolio stability:* This variable was designed to capture a new venture's ratio of its number of alliances with prior partners to its total number of alliances. Therefore, Alliance portfolio stability denotes the count of prior alliance partners divided by the total number of alliances for that venture.

*Alliance portfolio prominence:* This variable was designed to capture a new venture's number of alliances with large industry partners. Size is often used to assess a give company's stature in a market and may denote prominence. I coded alliance partners as large if their sales were \$500 or greater the year before the IPO. Alliance partners that did not meet this requirement were coded as 0. Therefore, Alliance portfolio prominence denotes the count of large alliance partners in a new venture's alliance portfolio.

#### *Moderating variable*

*Equity Market Environment:* The S&P 500 index for the IPO year was used to indicate the stock market's general health and the stock market's receptiveness to the new ventures undergoing an IPO. During times of general economic slowdown, there may be a reduced likelihood of new ventures attempting to undergo an IPO than during years of improved economic conditions. Equity market environment is captured as a moving average of the S&P 500 index over three months before the new venture's IPO.

*Controls.* I control for several other variables that are also likely to influence a new venture's IPO performance – firm age, firm size, underwriter prestige, venture capitalist backing and industry.

### **Data analysis and discussion**

Table 1 presents the means and standard deviations. Each of the independent variables was low to moderately correlated with each other. Thus, the independent variables, and the interactions, are not highly correlated, suggesting that multicollinearity is not an issue with this sample. Additionally, the independent variables are distinct constructs that do indeed capture different aspects of alliance portfolio characteristics.

*Table 1.* Means, and standard deviations (N=123)

Variable	Mean	SD	Mean	SD	
Firm age	1.66	0.28	Alliance portfolio size	3.76	3.34
Firm size	1.51	0.62	Alliance portfolio breadth	1.31	0.55
VC backed	0.81	0.39	Alliance portfolio stability	0.15	0.34
Underwriter prestige	0.71	0.46	Alliance portfolio prominence	0.28	0.54
Equity market environment	-38.37	289.38			

To test the hypotheses, I ran Hierarchical Multiple Regression models. I added the sets of independent variables sequentially. Model 1 constitutes the control variables and the moderator variable. Model 2 includes the control variables, the moderator variable, and the independent variables. Model 3 includes the control variables, moderator variable, independent variables, and the interactions. The results of the hierarchical regression models are presented in Table 2.

*Table 2.* Hierarchical multiple regression results

Variable	Model 1	Model 2	Model 3
Firm age	-0.28*	-0.09	-0.19
Firm size	0.29*	0.35**	0.34**
VC backed	-0.01	-0.04	0.01
Underwriter prestige	0.17	0.14	0.15
Equity market environment	0.00	-0.01	0.01
Alliance portfolio size		0.51***	0.43***
Alliance portfolio breadth		-0.05	-0.04
Alliance portfolio stability		-0.25**	-0.22*
Alliance portfolio prominence		0.03	-0.01
Equity market environment x Alliance portfolio size			0.28*
Equity market environment x Alliance portfolio breadth			-0.17
Equity market environment x Alliance portfolio stability			0.01
Equity market environment x Alliance portfolio prominence			0.11
$\Delta R^2$		0.23***	0.06*
$R^2$	0.20	0.43	0.49
$F(R^2)$	1.30	3.05***	3.16***

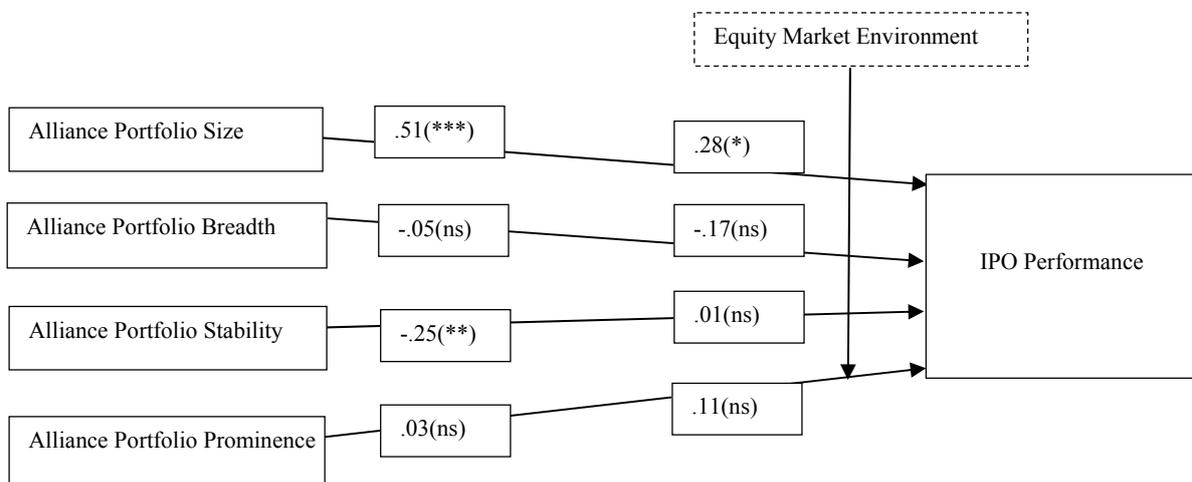
\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; N=123

Results indicate that the alliance portfolio size variable's coefficient is positive and statistically significant ( $\beta = 0.51$ ,  $p < .001$ ). Thus, the size of a new venture's alliance portfolio positively impacts the new venture's IPO performance as hypothesized. Hypothesis 1 is supported and suggests support for the legitimacy argument.

Results indicate, the coefficient for Alliance portfolio breadth is negative but is not statistically significant ( $\beta = -0.05$ , ns). Thus, Hypothesis 2 was not supported. As results indicate, the Alliance portfolio stability coefficient is negative and statistically significant ( $\beta = -0.25$ ,  $p < .01$ ). Thus, Hypothesis 3 was not supported. As indicated in the results table, the

Alliance portfolio prominence coefficient is positive; however, the relationship is not statistically significant ( $\beta=.03$ , ns). Thus, Hypothesis 4 was not supported.

The results suggest that the interaction between the Equity market environment and Alliance portfolio size is positive and significant ( $\beta=.28$ ,  $p<.05$ ). This suggests that a rise in the equity market environment’s receptivity complements a rise in alliance portfolio size to impact IPO performance positively. The interaction effect is graphed and presented in Figure 3. No other interaction effects were significant. The results show that the interaction between the Equity market environment and Alliance portfolio breadth is not significant ( $\beta=-.17$ , ns). The results show that the interaction between the Equity market environment and Alliance portfolio stability is not significant ( $\beta=.01$ , ns). The results show that the interaction between the Equity market environment and Alliance portfolio prominence is not significant ( $\beta=.11$ , ns). Thus, Hypothesis 5 is partially supported (Figure 2).



Controls: Firm age, Firm size, VC backed, Underwriter prestige, Industry.  
 N = 123; \* $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$

Figure 2. Results model

This paper’s main motivation originates from the need to understand the influences on a new venture’s IPO performance based on its alliance portfolio’s different characteristics. In that respect, it is the first to offer a model underscoring an alliance portfolio’s characteristics that would be valuable to a new venture in achieving better IPO performance. Second, the paper offers a legitimacy perspective. In highlighting the importance of the new venture’s alliance portfolio, this paper adds another dimension to our understanding of alliance formation behaviour. The model developed in this paper further illustrates the differential impact of the new venture’s alliance portfolio on the venture’s IPO performance across varying levels of environmental uncertainty conditions.

This study suggests that partnership formation can potentially send important signals regarding the quality of the new ventures for new ventures. The most important characteristic of the alliance portfolio that affects the attributions of the value of the new venture is the

alliance portfolio's size. The results demonstrate that having multiple alliance partners impacts the IPO performance of a new venture. Thus, a new venture can compensate for its lack of history as a basis of success with alliance partnerships. Prior research has suggested that underwriter prestige improves IPO performance (Stuart et al., 1999; Gulati & Higgins, 2003). As expected across all industries, new ventures with prestigious underwriters do indeed have higher valuations at IPO. Results also indicate that relationships with prominent underwriters, VCs, and alliance partners are not prestigious equivalent relationships. Indeed, findings show that only underwriter prestige significantly affected IPO valuation. This suggests that forming relationships with prominent alliance partners and VCs are all important signals for ventures prior to an IPO. However, once a venture has positioned itself for an IPO and is about to undergo an IPO, the predominating signal is sent by the underwriter's prestige. All things equal, the level of valuation seems to be mostly influenced by choice in underwriter. Whether a venture is taken public by Morgan Stanley or an equally high prestige underwriter, other associations seem to carry almost no weight compared to this parameter. Perhaps, underwriters, which are investment banks, are deemed to be the most objective among the venture's partners when it comes to evaluating the quality of a given venture. Indeed to protect their reputation and reduce their legal exposure, investment banks seek to market only those IPOs that will experience relatively better long-term performance (Carter et al., 1998). Moreover, prestigious underwriters are also the ones with the best access to capital markets, and thus can most directly influence the level of valuation. Thus, once a prestigious underwriter has committed to supporting a venture, valuations of that venture will be positively impacted. Since choice of underwriter has such a strong effect, future research might explore the specific relationship between forming relationship with prominent alliance partners and VCs, and underwriter choice.

I study how alliances along different functional lines, R&D, manufacturing, and marketing, influence a venture's IPO performance. Alliances addressing different functional areas are important as a means to access resources and capabilities where building these capabilities in house would be too time consuming or cost prohibitive for new ventures and having alliances along these functional areas will have positive outcomes. These results suggest that new ventures need not have a complex web of intertwined resources but can focus on developing their core capabilities.

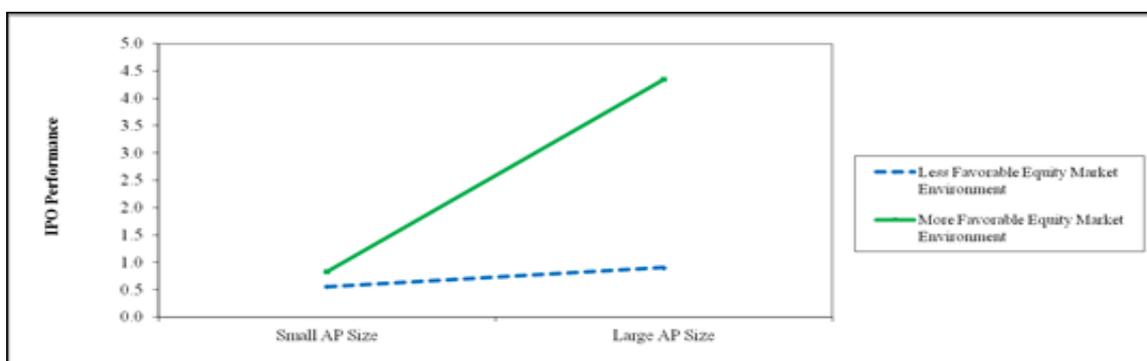


Figure 3: Interaction effect

This study shows interesting results regarding a new venture's pre-IPO alliance portfolio stability. Contrary to prior research, this study shows that alliance portfolio stability has a statistically significant negative relationship with IPO performance. Although prior research on alliances suggests the benefits of repeated, stable partner relationships (e.g., Gulati, 1995; Goerzen, 2007), these benefits are not relevant in terms of performance benefits at IPO. Perhaps, when new ventures undergo an IPO, it is the most recently formed relationships that positively influence. For instance, Chen et al. (2008) show that the year before its IPO, a firm aggressively hires executive and directors to accumulate prestige. Perhaps similar processes may be relevant in forming alliance partnerships just prior to a new venture's IPO. This relationship warrants further examination and may be an interesting avenue for future research.

## Conclusion

From a theoretical perspective, despite its limitations, this study takes a first step towards the specific exploration of alliances in the context of new ventures. Moreover, by using a large multi-industry sample, this research also advances our understanding of how early relationships influence publicly traded companies' performance across different industry groups, thus generalizing our understanding of the biotechnology context. Finally, our model also has managerial implications. By providing an understanding of how a new venture's alliance portfolio can be important for the venture to influence its IPO performance, it offers managers insight into how they should develop their venture's alliance portfolio to enhance the venture's legitimacy thereby its IPO performance. In building the venture's legitimacy through partnerships, there are various considerations, each of which may influence the success of the venture's IPO.

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## Conflict of Interests

No, there are no conflicting interests.

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