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The impacts of economic importance difference of a Joint Venture (JV) held by partners and partners' size difference on the extraction of rivalrous and non-rivalrous private benefits in a JV

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Abstract

We investigate the impacts of economic importance difference of a JV held by partners and partners' size difference on the extraction of rivalrous and non-rivalrous private benefits in a JV. Focusing on 824 JV events during the period 2001-2012 in the global markets we find that, where the economic importance difference of a JV held by partners is large, a partner with a more economically important JV extracts more rivalrous type and non-rivalrous type of private benefits. Under the situation where partners' size difference is large, a smaller partner extracts more non-rivalrous type of private benefits. Whether arbitrage trading between two partners' shares outperforms the trading strategy of buy-hold two partners' shares during the JV announcement period depends on whether there are large private benefits available or not.

JEL: G14, G32, G34

Key words: joint venture, private benefit, event study, trading strategies

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1 Introduction

Given the shared governance structure, Joint Ventures (JVs) are not only associated with synergies and common benefits, but also with significant private benefits (Kumar, 2010a, b). Particularly, private benefits are the main factor leading to differential wealth gains between two partners when they announce a JV (Kumar, 2010a). Previous literature suggest that, depending on whether private benefits acquired by a partner damage the value to the other partner, private benefits associated with a JV can be classified into two different types (Kumar, 2010a, b). Type 1 private benefits are those non-rivalrous type of private benefits which can be extracted by a partner without damaging value to the other partner. Type 2 private benefits are those rivalrous type of private benefits which can be extracted by a partner by damaging the value to the other partner.

In this research, we highlight that there are different benefit-cost tradeoffs in extracting different types of private benefits: a cooperative environment in a JV can enhance the scope of non-rivalrous type of private benefits while a non-cooperative environment in a JV can enhance the costs in extracting rivalrous type of private benefits. We explore how JV's economic importance difference and size difference between partners affect two types of private benefits extractions in a JV. Based on our analysis of 824 JV events, we argue that, under the situation that the economic importance difference of a JV held by partners is large, a partner with a more economically important JV has enhanced benefits in extracting non-rivalrous type of private benefits and reduced costs in extracting rivalrous type of private benefits. In contrast, under the situation where partners' size difference is large, a smaller partner has enhanced benefits in extracting non-rivalrous type of private benefits as well as enhanced costs of extracting rivalrous type of benefits.

We contribute to the literature in several important ways. First, Kumar (2010a, b) established the theoretical benefit-cost trade-off concept in extracting private benefits out of a

JV in a general way. Our theoretical contribution is that we further develop such a benefit-cost trade-off concept by distinguishing two different trade-offs associated with (1) enhanced scope to acquire type 1 private benefits in a JV characterized by cooperative environment and (2) enhanced costs to acquire type 2 private benefits in a JV characterized by non-cooperative environment. In this we differ from Kumar (2010a) who focuses on private benefits as the main reason leading to differential wealth gains between two partners when they form a JV. Our specific theoretical contribution is to develop a broader understanding of factors affecting different types of private benefits associated with the JV. We theorise that whether type 1 or type 2 private benefits are extracted by a partner out of the JV depends on the impacts on the benefit-cost tradeoffs associated with the economic importance difference of a JV held by partners as well as the partners' size difference.

Second, empirically, we shift the level of analysis of wealth gains in the JV from the individual partner to the dyadic level (Gulati and Wang 2003; Kumar 2007, 2008; 2010a) in order to reveal the two types of private benefits extracted out of a JV. We document two different types of private benefits extracted out of a JV using a large sample of 824 JVs, recorded in the global markets from 2001 to 2012 and find that Type 2 private benefits are more prevalent than Type 1 private benefits, extending Kumar (2010a).

Third, given the co-existence of JV's common benefits and private benefits, we empirically compare two types of trading strategies in a JV announcement event. We find that arbitrage trading between two partners' shares outperform the trading strategy of buy-hold two partners' shares when both rivalrous and non-rivalrous private benefits are large, while the trading strategy of buy-hold two partners' shares outperforms arbitrage trading when both private benefits are small. Our results can have implications for investors in terms of optimizing their trading strategies during the JV announcement period.

The paper is organized as follows: section 2 reviews relevant literature and builds up testable hypotheses; section 3 describes the data and sample; section 4 presents the results; section 5 concludes this paper.

2 Theoretical framework and hypothesis development

JVs provide firms with a means for combining imperfectly mobile and imperfectly imitable, but value creating, complementary resources possessed by partners (Teece, 1986; Hennart, 1988, Chi, 1994). Cooperative parents in a JV can share the JV's resource synergies and common benefits (Teece, 1986; Hennart, 1988; Kogut, 1991; Chi, 1994, 2000; Rothaermel, 2001; Kumar, 2005, 2011). Such valuation creation can be achieved without facing the asset valuation difficulties and inseparability in merger and acquisition (Balakrishnan and Koza, 1993), quickly before external opportunities are dissipated by rivals (Kogut, 1991; Chi, 2000, 1994; Rothaermel, 2001; Kumar, 2005), and without external transaction costs associated with market contracts such as in-licensing, out-licensing and cross-licensing of complementary knowledge bases (Kogut, 1988; Hannert, 1988; Williamson, 1991; Chi, 1994; Yiu and Makino, 2002; Lai and Chang 2010).

However, because of shared governance structure and incomplete contracting, JVs can stimulate principal-principal type of agency problems (Classens et al., 2000; Mjoen and Tallman 1997; Pearce, 1997; Yan and Gray, 1994; Inkpen and Curren, 2004; Steensma and Lyles, 2000; Li, Zhou and Zajac 2009), leading to private benefits extraction and differential wealth gains between two partners (Kumar 2010a, b). These private benefits extraction hazards are particularly pronounced considering that JVs facilitate the transfer of relatively valuable knowledge bases compared to market contracts (Hennart, 1988; Anand and Khanna, 2000). These knowledge bases may include technical knowledge, upstream/downstream production knowledge, financial resources, and knowledge related to a target market such as customer characteristics, distribution channels, knowledge of culture and institutions, and so

forth. The shared ownership and control of a JV expose these very knowledge bases to appropriation by the partner (Kumar, 2010a, b).

Although there are various mechanisms in extracting private benefits out of a JV (Lavie, 2006), private benefits can be classified into two main types, according to the nature of the private benefits, i.e., whether private benefits acquired by a partner damage value to the other partner (Type 1 non-rivalrous type of private benefits), or not (Type 2 rivalrous type of private benefits) (Kumar 2010a, b). Type 1 non-rivalrous type of private benefits could arise, for example, due to spillovers or by observing and learning relatively diffused practices from the partner, such as the organisation of specific production processes, inventory management, market and country specific knowledge, and so forth (Inkpen and Dinur, 1998; Ahuja, 2000). The two partners' complementary knowledge bases provide opportunities for a partner to closely observe a firm's competencies and overcome barriers to imitation created due to causal ambiguity.

In contrast, type 2 rivalrous type of private benefits may arise when a partner appropriates relatively proprietary resources, including resources that are not directly deployed to the JV including poaching employees, stealing secrets, etc., or capturing a disproportionate share of common benefits by using its bargaining power to negotiate a higher equity share ex ante. In such cases, the JVs may become subject to the prisoner's dilemma, learning races, and Trojan horses (Parkhe, 1993; Hamel, 1991; Reich and Mankin, 1986).

There are benefits-costs trade-offs associated with any private benefit extraction in a JV (Kumar, 2010b). Private benefits arise due to the initial impact contract (Williamson, 1975), and may need ex-post costly monitoring and efforts devoted to learning and capturing the associated gains (Pearce, 1997). Thus the existence of private benefits does not

automatically become realised gains, rather they necessitate significant managerial effort by the firm to extract so that the firm is able to capture the resources and realise associated benefits outside the JV (Kumar, 2010b). On the other hand, the defensive attitudes on discovering a partner's intent to extract private benefits can lead to various contractual safeguards and more effort devoted to non-cooperative behaviour, leading to the higher costs in acquiring private benefits (Hamel, 1991; Parkhe, 1993; Larsson et al., 1998; Arino and de la Torre, 1998; Postrel, 2002; Kretschmer and Puranam, 2008).

Previous literature does not specifically distinguish between two different types of private benefits, and particularly, does not distinguish the different benefit-cost tradeoffs in extracting two different types of private benefits out of a JV. In this research, we make the case that the nature of JV, i.e., whether a JV is characterised by a cooperative or non-cooperative environment can significantly affect the benefit-cost trade-offs associated with type 1 and type 2 private benefits. In a JV characterised by a cooperative environment, there are reduced defensive attitudes, thus enhanced scope to acquire type 1 private benefits without damaging the other's value, while in a JV characterised by a non-cooperative environment, there are enhanced defensive attitudes, thus enhanced costs to acquire type 2 private benefits. Given such different trade-offs associated with different types of private benefits extraction, different partners' characteristics can further affect benefit-cost tradeoffs in extracting different types of private benefits of a JV.

2.2 Economic importance difference of a JV held by partners and private benefits in a JV

Private benefits can possibly be extracted out of a JV when there are large monitoring asymmetries between two partners, resulting in one partner being taken advantage of by the other (Jensen and Meckling, 1976). A JV's economic difference between two partners affects one partner's incentives for monitoring efforts devoted to private benefits extraction and the

other partner's incentives for various contractual safeguard-building efforts in order to prevent private benefits from being extracted (Diamond, 1991). Therefore, the economic importance difference of a JV held by partners ultimately can affect the benefit-cost tradeoffs in acquiring different type of private benefits out of a JV.

In terms of extracting type 1 non-rivalrous private benefits out of a JV, facing the costly observing and learning relatively diffused practices from the partner (Inkpen and Dinur, 1998; Ahuja, 2000; Inkpen, 2000), the JV's economic importance to a parent not only provides this parent firm with strong incentives to protect its own competitive resource from spillovering to its partner(s), for example by appointing relative function managers from its side (Mjoen and Tallman, 1997; Li, Zhou and Zajac, 2009), but also encourages this parent firm to devote more resources and efforts to observe and learn from the other partner. On the other hand, type 1 private benefits do not damage the value to the other partner, thus do not affect the dominated cooperative environment associated with a JV, which facilitates knowledge transferring, observing and learning from the other partner due to its less defensive attitude. Thus the asymmetric monitoring incentives due to JV's economic importance difference between two partners ultimately result that type 1 non-rivalrous private benefits can be extracted by a partner with a more economically important JV without damaging the value to the other partner to whom this JV is less economically important.

In terms of extracting type 2 rivalrous private benefits out of a JV, because it is the private benefits acquired by one partner by damaging the value to the other, the defensive attitudes on discovering a partner's intent to extract this type of private benefits should lead to various contractual safeguards and more effort devoted to noncooperative behaviour (Hamel, 1991; Parkhe, 1993; Larsson et al., 1998; Arino and de la Torre, 1998; Postrel, 2002; Kretschmer and Puranam, 2008). However, the costly ex-post monitoring activities mean that a partner with a less economically important JV may not have sufficient incentives or

resources for such close and costly monitoring. Thus the partner with the less economically important JV may fail to set up various contractual safeguards which significantly reduce the difficulties and costs for the other partner to extract type 2 rivalrous private benefits (Inkpen and Curral, 2004; Steensma and Lyles, 2000; Jensen and Meckling, 1976; Li, Zhou and Zajac, 2009; Bai, Tao and Wu, 2004; La Porta *et al.*, 2000; Mjoen and Tallman 1997; Yan and Gray, 1994). Although a non-cooperative environment associated with a JV should enhance the costs of extracting private benefits out of a JV, the asymmetric monitoring incentives due to JV's economic importance difference between two partners can significantly reduce such costs in extracting type 2 rivalrous private benefits by a partner with high economic importance attachment to the JV.

Therefore, we propose:

Hypothesis 1: The difference in economic importance of a JV held by partners in that JV increases both Type 1 and Type 2 private benefits for the partner to whom this JV is more economically important

2.3 Parents' size difference and private benefits in a JV

In contrast to the JV's economic importance difference between two partners which can enhance the scope of extracting non-rivalrous type of private benefits and reduced costs in extracting rivalrous type of private benefits for one partner (the one for whom the JV is more economically important), an organisational size difference between the two JV partners may affect the benefit-cost tradeoffs in extracting different types of private benefits. However, without distinguishing the different benefit-cost trade-offs in extracting different types of private benefits, the extant empirical research unsurprisingly provides mixed evidence on

whether size is a factor in affecting private benefit extracted out of a JV (McConnel and Nantell, 1985; Koh and Venkatraman, 1991; Gulati and Wang, 2003)².

We make the case here that the size difference between two partners is more likely to enhance the benefits in extracting type 1 private benefits for a smaller partner as well as this smaller partner's costs in extracting type 2 private benefits. In terms of extracting type 1 private benefits, size difference between two partners can create type 1 private benefits for a smaller partner for two reasons: First, researchers often equate firm size with resources (Merchant, 2014; Wright, 1987). Larger firms not only have more resources, but also a wider array of resources and usually, better quality resources (Merchant, 2000). These resource-advantages associated with larger firms are more likely to benefit a smaller partner when these superior resources are shared in the JV and the smaller partner observes and learns from its larger partner (Merchant, 2014; Canback, Samouel, and Price, 2006). Second, a smaller partner may be more efficient at minimising the cost of realising these available private benefits. A smaller JV partner may avoid the inefficiencies that are often associated with largeness (Merchant, 2014; Canback, Samouel, and Price, 2006). To realise type 1 private benefits, flexibility and willingness to change are crucial to facilitate interdepartmental coordination with a joint venture partner (Mintzberg, 1979). Organizational complexity increases with size and larger firms' resistance to change as well as their rigidity and inflexibility (Kelly and Amburgey, 1991; Williamson, 1996; Merchant and Schendel, 2000) can compromise any efficient-oriented initiatives, which can lead to high costs of learning and adapting to the relatively diffused practices from the partner across multiple firms (Gulati and Singh, 1998). In contrast, a smaller partner is more flexible than a larger partner in order

² McConnell and Nantell (1985) and Koh and Venkatraman (1991) show that, although the total value created by a JV for larger and smaller partners is equal, smaller partners on average experience higher percentage gains than larger partners. In another study, Gulati and Wang (2003) specifically examine the variation in difference in gains between partners in a sample of JVs using a network perspective. But their study finds insignificant effects with both the embeddedness of partners in prior relationships and the degree of relatedness of partners with the JV's business having no impact on the difference in returns.

to adapt and improve, and has less difficulty in accepting and implementing change (Damanpour, 1992; Nord and Tucker, 1987; Ellis et al., 2011). Smaller firms that enter into JVs have lower levels of risk tolerance (Merchant, 2000) that, in turn, compels smaller firms to leverage their resources efficiently (Merchant, 2008). This further promotes smaller firms to engage in more information sharing (Ellis et al., 2011) as well as to volunteer greater coordination within the firm.

In terms of extracting type 2 private benefits, a size difference between two partners can increase the costs of extracting type 2 private benefits for a smaller JV partner for two reasons; First, a larger partner not only has more and better quality resources for sharing and cooperative purposes, but also has smaller margins of error given several encumbrances placed upon corrective action by organizational bureaucracy (Canback et al., 2006; Mintzberg, 1979; Pfeffer and Salancik, 1978). Therefore, a larger firm can have more resources to be devoted to excessively safeguard their own resources from being exploited by the other partner, especially when this large partner has defensive attitudes on discovering a partner's intent to extract type 2 private benefits. Second, facing the resource constraint, a smaller partner is less likely to devote massive efforts to extract such type 2 private benefits when this can trigger excessively safeguarding activities from the larger partner. The lower levels of risk tolerance associated with smaller firms that enter into JVs (Merchant, 2000) further induces smaller firms to forgo such costly private benefits extraction activities, which means that on one hand they cannot leverage their resources efficiently (Merchant, 2008) but, on the other hand, pursuing such private benefit extractions could significantly increase the risk of a JV failure (Kumar 2010a, b). Therefore, we propose:

Hypothesis 2: Partners' size difference enhances Type 1 rather than Type 2 private benefits for the smaller partner in a JV.

2.4 Co-existing common benefits and private benefits of a JV and trading strategies

Previous research finds that JV is primarily a mechanism to cooperate and to create synergies. The existence of private benefits extraction, however, is the key reason leading to differential wealth gains between two partners out of JV cooperation (Kumar, 2010a, b). This suggests that common benefits as well as private benefits can co-exist in a JV. This leaves the question open, however, regarding what the optimal trading strategies are for investors during the JV announcement period.

A JV's main function to create common benefits for both partners suggests that the JV announcement carries positive information about the fundamental investment value for both partners. Thus, a trading strategy buying both partners' shares on the JV announcement day should earn a positive abnormal return.

In contrast, the potential extraction of private benefits out of a JV suggests that a JV announcement carries positive information about the fundamental investment value for one party acquiring the private benefits, and neutral information about the fundamental investment value for the other party if the private benefits are mainly Type 1 benefits. The JV announcement could also convey negative information about the fundamental investment value for the other party if the private benefits are mainly of Type 2. Although a JV can be used mainly as a mechanism to create common benefits, when there are more private benefits, especially Type 2 private benefits, an arbitrage trading strategy of short selling the partner's share with negative information content carried by the JV announcement and long buying the partner's share with positive information content carried by the JV announcement, can acquire abnormal returns from both the long and short positions, leading to double-alpha superior performance outcomes (Jacobs and Levy, 1999; Barra Roger Casey Research, 2000). According to Barra Roger Casey Research (2000), the advantages of market neutral long-

short equities investing are perceived to be independence of the market direction and more efficient use of information as compared to long only strategies. Therefore, we propose:

Hypothesis 3: During a JV announcement period the trading strategy of arbitraging between two partners outperforms the trading strategy of buying-holding two partners, when private benefits are large.

3 The Sample and Data

We focus on all JV announcements recorded by Bloomberg between 2001 and 2012. We require all partner firms involved in a JV announcement to be publically listed companies so we can have data to measure their stock market performance during the JV announcement period. Our initial sample included 957 JV announcements. Share price and financial report data were collected from Thomson One Banker. We removed 91 JV announcements as the partner firm's ownership data in a JV is missing, and 42 JV announcements as the partner firm's share price data is missing. As a result, our final sample includes 824 JV announcements involving 1648 partner firms.

3.1 Two types of private benefits extracted from a JV

Previous research suggests that private benefits are the main reason for differential wealth gain or relative wealth gain (RG) between two partners in a JV (Teece, 1986; Hennart, 1988; Kogut, 1991; Chi, 1994, 2000; Ueng et al., 2000; Rothaermel, 2001; Kumar, 2005, 2011). Type 1 private benefits are extracted by a partner without damaging the value to the other partner while type 2 private benefits are extracted by a partner by damaging the value to the other partner (Kumar 2010a, b). Therefore, the differential wealth gain acquired from a JV characterised by a cooperative environment is mainly from type 1 private benefits, while the differential wealth gain acquired from a JV characterised by a non-cooperative environment is mainly from type 2 private benefits. To measure the nature of a JV, we focus on the

consensus evaluation outcome from all investors in the stock markets. A JV characterised by a cooperative environment is represented by a positive JV announcement event to both partner's share price. In contrast, a JV characterised by a non-cooperative environment is represented by a positive JV announcement event to one partner only (if this partner receives private benefits which are sufficient to offset the loss of common benefits), or is represented by a negative JV announcement event to both partners (if private benefits are not sufficient to offset the loss of common benefits loss).

We create two dummy variables, JV cooperative (JVC) and JV non-cooperative (JVNC). JVC is equal to 1 if the JV announcement represents a positive event to both partner's share price, 0 otherwise. JVNC is equal to 1 if the JV announcement represents a positive event to one partner's share price but a negative event to the other partner's share price or represents a negative event to both partners' share price, 0 otherwise.

Following previous study in JVs and Mergers & Acquisition (M&A) (McConnell and Nantell, 1985; Chen, Hu and Shieh, 1991; Chen et al., 2000; Johnson and Houston, 2000; Kumar, 2010a, b; Amici, et al., 2013; Hornstein and Nguyen, 2014), this paper adopts a standard event study approach to capture partner firms' stock market performance due to the JV announcement event. The event study approach can significantly reduce the endogeneity problems between factors such as JV's economic importance and size difference between two partners and the JV consequence outcome measured by the abnormal returns due to such JV event announcements.

Especially, event studies can be seen as a particular type of Difference in Differences (DID) analysis (Atanasov and Black, 2015). In order to ensure the similarity between control group and treatment group, we have chosen the control group as being a broad set of other firms that are included in MSCI ACWI All Cap Index. We then used the market model with

the parametric control (each firm's β relative to this market index) to address differences between the treatment and control firms (Atanasov and Black, 2015). The MSCI ACWI All Cap Index ensures that the control group for different partners from different stock markets are the same so that the parametric β can be estimated against the same benchmark³. More specifically, we calculate the normal (or expected) return for the control group in the absence of the JV announcement event based on the market model (Fama et al., 1969), and compare the partner firms' (the treatment group) share return with the normal return from the control group to get the abnormal return (AR). Causal inference from an event study also relies on the condition that the "JV event" is a shock to investor information. To ensure this condition is met, we construct the portfolio of treatment firms using a large sample set including different partner firms from different markets, different industries, and different periods. This involves multiple events and thus enhances the exogenous credibility for a JV announcement event (Atanasov and Black, 2015). It also mitigates the common event period bias (Black and Khanna, 2007) when the common event period for treatment firms leads to cross-sectional correlation in returns⁴.

We estimate β using the Scholes-Williams approach because it has the advantage of adjusting non-synchronous trading data in our samples which involve different shares traded in different stock markets (Scholar and Williams, 1977). To estimate Scholes-Williams β , we follow previous research and use 180 trading days with the last trading day ending 10 days before the announcement date (Johnson and Houston, 2000). Following Kumar (2010b), we use two days Cumulative Abnormal Returns (CAR) to measure the JV announcement impact on a partner firm's investment value. Thus, CAR_1 and CAR_2 are used to measure CAR for

³ In principle beta measures risk relative to the portfolio of all assets available to international investors who are able to form an international portfolio in the globalised stock markets (Fama et al., 1969).

⁴ We also use bootstrapped standard errors, in which one compares treated to control firms outside the event period as the robust test (Larcker, Ormazabal, and Taylor, 2011). Our results remain robust.

partner 1 and 2 during the JV announcement period, respectively. We use event windows [0,1]; a better event window than [-1,0] according to Atanasov and Black (2015).

Thus type 1 private benefits (PB1) can be measured as:

$$PB1 = RG \times JVC$$

$$\text{Where, } RG = (CAR_1 - CAR_2), \text{ and } JVC = \begin{cases} 1, \text{ if } CAR_1 > 0, \text{ and, } CAR_2 > 0 \\ 0, \text{ if } CAR_1 \leq 0, \text{ or, } CAR_2 \leq 0 \end{cases}$$

Type 2 private benefits (PB2) can be measured as

$$PB2 = RG \times JVNC$$

$$\text{Where } JVNC = \begin{cases} 1, \text{ if } CAR_1 \leq 0, \text{ or, } CAR_2 \leq 0 \\ 0, \text{ if } CAR_1 > 0, \text{ and, } CAR_2 > 0 \end{cases}$$

3.2 The difference in economic importance of a JV held by the partners in that JV

Economic research suggests that monitoring incentives are based on the investment project's economic importance to a firm (Diamond, 1991). In accounting literature, the weight of the income generated from a single client over the overall auditor's income generated across all clients represents this client's economic importance to this auditor (Li, 2009; Gaver and Paterson, 2007; Ghosh et al. 2009). Similarly, the weight of a JV investment over a partner firms' overall market value can represent the economic importance of this JV held by this partner firm, which can have significant impacts on this partner firm's monitoring over the JV and opportunistic incentives in extracting private benefits. We therefore, measure the JV's economic importance to a partner firm using the ownership percentage of a partner firm in a

JV divided by the partner firm's market valuation using the last available share price of a partner firm prior to the JV announcement.

3.3 Size difference between two partners

Following previous research (Merchant, 2014, 2000; Canback, Samouel, and Price, 2006), size difference between two partners is measured by the difference between the natural log of two partner firms' market value of equity shares for the fiscal year before the JV announcement.

3.4 Control variables

In this research, we follow previous research (McConnell and Nantell, 1985; Chen, Hu and Shieh, 1991; Chen. et al, 2000; Johnson and Houston, 2000; Kumar, 2010a, b), and control firm-level factors including firm size (measured as the nature log of market value of equity shares of a partner firm for the fiscal year before the JV announcement), a partner firm's ownership in the JV (measured as the percentage shareholdings held by a partner firm in the JV), financial leverage (measured as the total assets divided by the total asset minus total liabilities for the fiscal year before the JV announcement); price to book (measured as the ratio of market value of equity shares over the book value for the fiscal year before the JV announcement). Following Amici et al. (2013) we also control market-level factors including GDP growth (measured as the annual GDP growth rate of the country where the announcing firm listed in the year of its JV announcement); GDP per capita (measured as the GDP per capita of the country where the partner firm is listed). To control the effect of sudden changes of investment opportunities caused by the policy change in a particular year, year dummies are used.

4 Results

Table 1 Panel A, B, C, D and E present the descriptive statistics of variables, sample distribution by nature of JV announcement, abnormal return for each day during the event

window [0, 1], [2, 3], [4, 5] and [6, 7], sample distribution by international dimensions and year, respectively. As Table 1 Panel A shows that RG has the maximum being 0.27, and minimum being -0.27. This suggests that there is a significant amount of private benefits extracted out of a JV, which can lead to differential gains between two partners as large as 27% for two days CARs. For PB1, the type 1 private benefits, the maximum is 0.16, and minimum is -0.16. For PB2, the type 2 private benefits, the maximum is 0.27, and the minimum is -0.27. The JV's economic importance difference between two partners has the maximum being 21.16, and minimum being -21.16. The size difference between two partners has the maximum being 8.07, and minimum being -8.07. The average levels for RG, PB1 and PB2 are 0 indicating that the relative gain for one partner is the relative loss for the other partner. The average level for JV's economic importance difference between two partners is 0, indicating that a JV is more economically important to one partner and less economically important to the other. The average level for size difference between two partners is 0, indicating that to a larger partner, there is a positive size difference between two partners, while to a smaller partner, there is a negative size difference between two partners.

Table 1 Panel B presents the descriptive statistics of variables, abnormal return for each day during the event window [0, 1], as well as two additional event windows [2, 3], [4, 5], and [6, 7]. As it shows, on the event day, and one day after the JV announcement, the abnormal returns (ARs) are positive and significantly different from zero. This suggests that JV as a mechanism is mainly used to create synergic and common benefits for two partners, in line with Kumar (2010a, b). This also confirms that two days CAR is the appropriate measurement to capture the impacts of a JV event on a parent firm's investment value, in line with previous research (McConnell and Nantell, 1985; Chen *et al.* 2000; Kumar, 2010a, b). The following ARs on two additional event windows [3, 5] and [6, 7] are insignificantly different from zero, indicating that the treatment group and the control group are similar with

the only difference being that the treatment group has exogenous JV announcement event (Atanasov and Black, 2015).

Table 1 Panel C shows the frequency of Type 1 and Type 2 private benefits extracted out of a JV. Our results show that only 242 announcements out of our sample 824 JVs positively promote both partners' share prices. This is similar to the finding of Kumar (2010^a) that markets positively react to both JV partners in less than 1/3 of the JV announcements. Although a JV can be used mainly to deliver common benefits to both partners, private benefits can co-exist, with Type 2 private benefits being more likely to be extracted out of a JV than Type 1. If we only look at those partners who receive the relative positive gains, as shown in the mean RG received column in Panel B Table 1, on average the relative gains are 3.93%, with PB1, on average, being 2.83%, and PB2, on average, being 4.38%.

Table 1 Panel D shows the frequency distribution of JV's international dimensions. Our results show that majority of JVs (51%) take place between international partners both from developed markets, following by the second largest tranche of JVs (28%) which take place between international partners from both developed and emerging markets. This shows that the JVs largely reflect cross-border international cooperation.

Table 1 Panel E shows that JVs become more prevalent, especially during the financial crisis period 2007-2009. Again, by constructing the portfolios of treated firms with JV announcement events (using a large sample set) and including different periods, we further enhance the exogenous credibility (Atanasov and Black, 2015) as well as mitigate the common event period bias (Black and Khanna, 2007).

Table 1: Summary statistics and sample distribution

Panel A. Descriptive Statistics						
Variable	N	Ave.	S.D.	Med.	Min.	Max.
RG	1648	0	0.05	0	-0.27	0.27
PB1	1648	0	0.02	0	-0.16	0.16
PB2	1648	0	0.04	0	-0.27	0.27
JV's economic importance difference	1648	0	1.48	0	-21.16	12.68
Size difference	1648	0	2.68	0	-8.07	7.94
MV (\$million) ^a	1648	16,629	36,810	3,249	4.6	413,433
Parent firm's ownership in the JV	1648	0.5	0.12	0.5	0.05	0.95
Price/Book ratio ^a	1648	2.33	2.62	1.79	0.02	66.77
Financial Leverage ^a	1648	4.23	6.97	2.61	1.006	178.27
GDP Growth (%) ^b	1648	3.20	4.51	2.38	-8.54	18.00
GDP per Capita ^b	1648	30,124	18,421	37,972	7,631	99,143
Panel B. Abnormal returns						
Event Day	N	Mean	Median			
0	1648	0.14*	0.10			
1	1648	0.58***	0.21***			
2	1648	-0.85	-0.02			
3	1648	1.11	0.00			
4	1648	0.03	-0.04			
5	1648	0.08	-0.05			
6	1648	-0.04	-0.06			
7	1648	-0.97	-0.08			
Panel C: Nature of JV						
	N	Mean(RG) received				
Type 1 private benefit extraction frequency (+/+)	242	2.83%				
Type 2 private benefit extraction frequency (+/-, -/-)	582	4.38%				
Overall private benefit extraction	824	3.93%				
Panel D: Frequency distribution by JV's international dimensions^c						
	N	Percentage				
Purely domestic partners	135	0.16				
International partners both from developed markets	419	0.51				
International partners both from emerging markets	35	0.04				
International partners from both developed and emerging markets	232	0.28				
Others	3	0.01				
Total	824	1				
Panel E: Frequency Distribution by Year of Joint Venture Announcements						
	N	Percentage				
2001	5	0.01				
2002	3	0.00				
2003	22	0.03				
2004	26	0.03				
2005	32	0.04				
2006	52	0.06				
2007	123	0.15				
2008	146	0.18				

2009	133	0.16
2010	120	0.15
2011	110	0.14
2012	52	0.06
Overall	824	1

Note: ^a Data source is Thomas one Banker. ^b Data source is Bloomberg. ^c advanced market and emerging market classification from IMF(2016) World Economic Outlook.

* indicates $p < 0.10$; ** indicates $p < 0.05$; *** indicates $p < 0.01$.

Table 2 presents the Pearson correlations among our variables. As table 2 shows that, JV's economic importance difference between two partners is positively related to RG, PB1, and PB2, indicating that JV's economic importance difference between two partners provides a partner with strong incentives to extract both type 1 and type 2 private benefits out of a JV. Size difference between two partners is negatively related to RG, PB1, but weakly and negatively related to PB2. This indicating that size difference between two partners provides a partner with strong incentives to mainly extract type 1 private benefits, rather than type 2 private benefits. The correlation matrix shows that none of the correlation coefficients between the explanatory variables exceed 0.70, suggesting that multicollinearity will not be a severe problem according to accepted "rules of thumb" (Farrar and Glauber, 1967). We also conducted VIF tests, again without detecting multicollinearity problems.

Table 2: Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11
1.RG	1.00										
2.PB1	0.41***	1.00									
3.PB2	0.91***	0.00	1.00								
4 JV's economic importance difference	0.14***	0.15***	0.08***	1.00							
5.Size difference	-0.12***	-0.20***	-0.04*	-0.33***	1.00						
6 Log MV	-0.07***	-0.11***	-0.02	-0.19***	0.57***	1.00					
7 Price to Book Ratio	-0.06***	-0.02	-0.06**	-0.03	0.02	0.03	1.00				
8 Parent's ownership in the JV	0.02	0.05**	-0.01	0.07***	0.05**	0.03	0.01	1.00			
9 Financial Leverage	0.01	-0.01	0.01	0.01	0.04**	0.19***	-0.01	0.01	1.00		
10 GDP Growth (%)	-0.01	0.03	-0.02	0.03	-0.09***	-0.11***	0.10***	0.02	-0.02	1.00	
11 GDP per capita	-0.01	-0.05**	0.01	-0.01	0.07***	0.11***	-0.07***	-0.01	0.05**	-0.67***	1.00

Note: * indicates $p < 0.10$; ** indicates $p < 0.05$; *** indicates $p < 0.01$.

Table 3 presents the results of the impacts of JV's economic importance difference and size difference between two partners on private benefits extracted out of a JV. As Model 1 Table 3 shows, JV's economic importance difference between two partners is significantly and positively related to private benefits extraction. This suggests that when the JV's economic importance difference between two partners is large, a partner with high economic importance attachment to a JV extracts more private benefits. As Model 2 Table 3 shows, size difference between two partners is significantly and negatively related to private benefits extraction. This suggests that when organisational size difference between two partners is large, a smaller partner extracts more private benefits. Model 3 and Model 4 of Table 3 show that the inclusion of control variables does not affect the results in Model 1 and 2. Model 5 include all controls and JV's economic importance difference between two partners and size difference between two partners. Again results remain stable.

Table 3: JV's economic importance difference, size difference, and private benefits

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
	RG	RG	RG	RG	RG
Constant	0.001 (0.001)	0.001 (0.001)	2.71*** (1.761)	0.187 (1.348)	0.616 (0.235)
Economic importance difference	0.530*** (0.089)		0.490*** (0.124)		0.416*** (0.120)
Size difference		-0.247*** (0.049)		-0.246*** (0.068)	-0.169** (0.061)
Log MV			-0.105*** (0.039)	-0.025* (0.014)	-0.014* (0.010)
Ownership percentage			0.005 (0.023)	0.012 (0.022)	0.007 (0.024)
P/B			-0.122* (0.035)	-0.142* (0.065)	0.016* (0.036)
Financial Leverage			0.015** (0.009)	0.013* (0.010)	0.011** (0.010)
GDP Growth			-0.036 (0.025)	-0.032 (0.026)	-0.045* (0.025)
GDP per Capita			-0.001** (0.001)	-0.001 (0.001)	-0.001** (0.001)
Year fixed effects	NO	NO	Yes	Yes	Yes
Wald Chi2	35.04***	24.69***	343.10***	160.53***	346.34***
N of Obs	1648	1648	1622	1622	1622

Note: * indicates $p < 0.10$; ** indicates $p < 0.05$; *** indicates $p < 0.01$. The t-value are computed with heteroskedasticity-consistent standard errors (White, 1980).

Table 4 presents the results of the impacts of JV's economic importance difference and size difference between two partners on different types of private benefits extracted out of a JV. As Model 1 and Model 2 of Table 4 show, JV's economic importance difference between two partners is significantly and positively related to type 1 as well as type 2 private benefits extraction. This suggests that when the JV's economic importance difference between two partners is large, a partner with high economic importance attachment to a JV extracts more rivalrous type and non-rivalrous type of private benefits. Thus our hypothesis 1 is supported. In contrast, size difference between two partners is significantly and negatively related to type 1 private benefits extraction only. This suggests that when organisational size difference between two partners is large, a smaller partner extracts more non-rivalrous type of private benefits only. Thus our hypothesis 2 is supported.

Table 4: JV's economic importance difference, size difference, and different type of private benefits

Variable	Model 1 Type 1 Private benefits (PB1)	Model 2 Type 2 Private benefits (PB2)
Constant	-0.285** (0.201)	0.697 (1.343)
JV's economic importance difference x 100m	0.140*** (0.044)	0.288** (0.129)
Size difference	-0.146*** (0.019)	-0.029 (0.064)
Log MV	0.004 (0.002)	-0.007 (0.008)
Ownership percentage	0.009*** 0.003	-0.002 (0.025)
P/B	-0.006 (0.033)	-0.111* (0.069)
Financial Leverage	-0.001 (0.001)	0.012*** (0.004)
GDP Growth	-0.011 (0.008)	-0.034 (0.025)
GDP per Capita	-0.001* (0.001)	-0.001 (0.001)
Year fixed effects	Yes	Yes
Wald Chi2	160.00 ***	73.90***
N of Obs	1622	1622

Note: * indicates $p < 0.10$; ** indicates $p < 0.05$; *** indicates $p < 0.01$. The t-value are computed with heteroskedasticity-consistent standard errors (White, 1980).

Regarding to the control variables, we find that the firm size is not significantly related to private benefits extraction. This suggests that parent size is not the factor in

affecting the relative gains between two partners, rather, size difference between two parents is. This may explain the mixed results to date on firm size impacts on the parent firm's stock market performance during the JV announcement period (McConnell and Nantell, 1985; Koh and Venkatraman, 1991; Gulati and Wang, 2003; Merchant, 2014). Thus it is important to shift from the individual partner perspective into the dyadic perspective to investigate the private benefits extraction out of a JV, in line with Kumar (2010a, b). We also find that a parent firm's ownership in a JV is positively and significantly related to type 1 private benefits extraction only. This suggests that a partner's ownership in the JV align its interests with the JV, which strengthen its incentives to prevent knowledge spillover to the other partner, in line with Mjoen and Tallman (1997) and Li, Zhou and Zajac (2009), also to learn from the other partner via JV in a cooperative dominated environment rather than non-cooperative dominated environment. A parent firm's high P/B ratio is significantly and negatively related to type 2 private benefits extraction, suggesting that a parent firm's high resource advantages and intangible assets enhance its risk of being appropriated by other partner in a JV, in line with Kumar (2010a, b). A parent firm's high financial leverage is significantly and positively related to type 2 private benefits extraction, suggesting that a partner with enhanced financial distress possibility is more likely to have stronger incentives to engage in non-cooperative activities and extract type 2 private benefits out of a JV. We also find, as a market level impact, a parent firm from a more developed economy measured by GDP per capita is more likely to be exploited by the other partner. Given 51% of our JVs are related to international partners between two developed markets and 28% are related to international partners between developed and emerging markets (see Table 1 Panel D), our results show that JVs fertilise cross-border private benefits transfers from relatively more developed to less developed markets. This is in line with Tsang (2002) and Vasudeva, Spencer and Teegen (2013) who suggest that JVs have resource benefits and extends their

work by revealing how JVs' resource benefits can be transferred cross-border between two partners.

Table 5 provides the comparison results between two trading strategies. We sort our observations by economic importance difference into three groups, small JV's economic importance difference between two partners (bottom 1/3), median JV's economic importance difference between two partners (middle 1/3) and large JV's economic importance two trading strategies: first is buying two partners during the JV announcement period and hold for 2 days, second is buying one partner if it has relatively higher economic importance attachment in the JV and short-selling the other partner if it has relatively lower economic importance attachment in the JV. Then we compare the CARs of these two trading strategies to see which one is better. As Panel A Table 5 shows, when JV's economic importance difference between two partners is small, buy-hold both partners' shares deliver abnormal return, which is positive and significantly different from 0. This not only suggests that JV is mainly used as a mechanism to create synergic and common benefits for both partners (Kumar, 2010a, b), but also suggests that such common benefits are bigger than market initial assessment so that it provides abnormal profits opportunities. Also such buy-hold strategy significantly outperforms arbitrage strategy, suggesting that private benefits are too small to provide any profitable arbitrage opportunity when JV's economic importance difference between two partners is small. In contrast, when JV's economic importance difference between two partners is large, the trading strategy of buy-hold both partners' shares fails to deliver positive abnormal return. This suggests that JV's capability to create synergic and common benefits for both partners is correctly assessed by the market and efficiently priced in so that it does not provide abnormal profits opportunities any more. Differently, arbitrage opportunity appears. It can not only deliver positive abnormal return, which is significantly different from 0. But also it outperforms buy-hold trading strategy. This suggests that, during a

JV announcement period the trading strategy of arbitraging between two partners can outperform the trading strategy of buying-holding two partners, when private benefits are big, supporting our hypothesis 3.

Similarly, we also sort our observations by size difference into three groups, small size difference between two partners (bottom 1/3), median size difference between two partners (middle 1/3) and large size difference between two partners (top 1/3). Panel B Table 5 provides such comparison results, which are similar as the results for Panel A Table 5. This confirms that, during a JV announcement period the trading strategy of arbitraging between two partners can outperform the trading strategy of buying-holding two partners, when both either type 1 or type 2 private benefits are big, supporting our hypothesis 3.

Panel C Table 5 provides further results on the comparison between buy-hold and arbitrage trading strategies when two types of private benefits interact with each other. In this comparison, we sort our observations into 9 portfolios, firstly by JV's economic importance difference into three groups, then by size difference between two partners into three groups. Panel C Table 5 shows that when both JV's economic importance difference and size difference between two partners are small, buy-hold both partners' shares deliver positive abnormal return, which is significantly different from 0, and outperform arbitrage trading strategy. When JV's economic importance difference between two partners is large, but size difference between two partners is small, arbitrage strategy does not outperform buy-hold trading strategy. Similarly, when JV's economic importance difference between two partners is small, but size difference between two partners is large, arbitrage strategy does not outperform buy-hold trading strategy. This reveals, when either Type 1 or Type 2 private benefits are small, arbitrage strategy does not outperform buy-hold trading strategy. Only when both type 1 and type 2 private benefits are big, arbitrage strategy significantly

outperform buy-hold trading strategy, as shown in the right-bottom of the Panel C Table 5.

This again supports our hypothesis 3.

Table 5. Arbitrage trading performance

Panel A	Buy and hold	Arbitrage	T-test	Panel B	Buy and hold	Arbitrage	T-test
Small JV's economic difference	0.66%***	0.20%	0.46%*	Small size difference	0.59%**	0.26%	1.13%***
Median JV's economic difference	0.35%	0.28%	0.01%	Median size difference	0.48%	0.89%***	-0.41%
Large JV's economic difference	0.27%	1.27%***	-1.00%**	Large size difference	0.22%	1.03%***	-0.81%**

Panel C	Buy and hold	Arbitrage	T-test	Buy and hold	Arbitrage	T-test	Buy and hold	Arbitrage	T-test
	Small size difference			Median size difference			Large size difference		
Small JV's economic difference	0.59%*	-0.09%	0.69%**	0.62%	0.73%	0.10%	1.70%**	0.74%	0.96%
Median JV's economic difference	0.41%	-0.69%	-1.11%	0.47%	0.38%	0.09%	0.18%	0.74%	-0.56%
Large JV's economic difference	1.00%	0.47%	0.53	0.32%	1.89%**	-1.57%*	0.07%	1.20%**	-1.13%**

Note: * indicates p<0.10; ** indicates p<0.05; *** indicates p<0.01.

5. Conclusion

In literature, there has been relatively little examination of evidence pertaining to how JV leads to differential types of private benefits extraction between two partners. Our study sheds light on this aspect by focusing on relative gains between two partners directly and distinguishing two types of private benefits out of such relative gains in JVs of different natures. We investigate how a JV's economic importance difference between two partners and organisational size difference between two partners affect the rivalrous and non-rivalrous private benefits extracted out of a JV. The results of our study indicate that although JVs create value and are often positive sum games rather than zero sum games, in line with Kumar (2010a, b), there are significant different private benefits extraction behaviours that we can examine. Extending Kumar (2010a,b) which indicate that obtaining private benefits is the main reason leading to differential wealth gains between two partners in a JV, we find that type 2 private benefits are more likely to be extracted out of a JV than type 1 private benefits. Furthermore, we found that the JV's economic importance difference between two partners and a size difference between two partners affect the partner's incentives to extract different types of private benefits out of a JV. This is evidenced after controlling for various factors and using a large sample set composed of 824 JV events in global markets during the period 2001-2012.

Our research offers theoretical contributions to JV research. By highlighting the enhanced scope to acquire type 1 private benefits in a JV dominated by a cooperative environment and the enhanced costs to acquire type 2 private benefits in a JV dominated by a non-cooperative environment, we further develop the benefit-cost trade-off concept in extracting different types of private benefits out of a JV. Under the different benefit-cost trade-off in extracting different types of private benefits, we find that, when JV's economic importance difference between two partners is large, a partner with a more economically

important JV extracts more rivalrous type and non-rivalrous type of private benefits. When organisational size difference between two partners is large, a smaller partner extracts more non-rivalrous type of private benefits and only this type of private benefit. Thus our specific theoretical contribution is to further develop a broader understanding of factors affecting the different type of private benefits associated with the JV.

Our practical implications are especially useful for investors who need to optimise their trading strategies during a JV announcement period. By focusing on two important indicators linked to JV partners' characteristics such as their JV's economic importance difference, and size difference, investors can choose buy-hold two partners' shares when such indicators predict both rivalrous and non-rivalrous private benefits are small so that investors should be able to maximize their trading profits based on JV's synergic properties. In contrast, when such indicators predict either rivalrous or non-rivalrous private benefits or both are big, investors' optimal trading strategies should be arbitrage between these two partners in the JV.

We focus on two important indicators related to JV's economic importance difference between two partners and size difference between two partners in affecting two types of private benefits extracted out of a JV. However, the benefit-cost trade off in extracting different types of private benefits out of a JV can also be affected by other factors such as an institutional environment difference between the JV partners. This is especially true when the JV is international involving different partners from different markets with different formal legal regulations, informal norms, and cultural background, which ultimately affect incentives in extracting different types of private benefits. Therefore, an extended analysis of possible effects of the institutional environment (and the differences between JV partners in this regard) and the different type of private benefits extracted out of a JV in such cases would be useful for a better understanding of factors affecting the different types of private benefits associated with such JVs.

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