Regional economic integration and international strategic alliances: evidence from the EU

Hadi S. Alhorr

*Boeing Institute of International Business, John Cook School of Business,
Saint Louis University, Saint Louis, Missouri, USA*

Kimberly Boal

Rawls College of Business, Texas Tech University, Lubbock, Texas, USA, and

Birton J. Cowden

*Boeing Institute of International Business, John Cook School of Business,
Saint Louis University, Saint Louis, Missouri, USA*

Abstract

Purpose – Regional economic integration has been a major area of research in the field of international economics and international trade, with little attention being paid to the impact of these economic collaborations on the organizational strategies of firms within the economically integrated regions. By building on the organization-environment relationship paradigm, this paper aims to address the impact of environmental changes associated with economic integration, market commonality and currency commonality, on the patterns and structures of strategic alliances within members of the economic community.

Design/methodology/approach – Using mixed linear models, the study looks at changes associated with the integration of the European Union and their effects on international alliances within the integrated area and among the various member countries.

Findings – The findings suggest that the emergence and the adoption of economic integration policies at the country level do impact the patterns and structures of strategic alliances practiced between member countries. Specifically, the adoption of common market policies among members of an economic community has implications on the pattern and structure of strategic collaborative relationships of firms within these member countries.

Originality/value – While regional economic integrations have accelerated, theoretical and empirical research addressing their impact on multinational strategies has yet to catch up.

Keywords Regionalization, Economic integration, International alliances, European Union, International business, Strategic alliances

Paper type Research paper

Introduction

A primary argument in the fields of international business and strategic management is that economic stability and growth is central to the success of multinational organizations and their various forms of collaborations worldwide (e.g. Werner *et al.*, 1996; Agarwal and Ramaswami, 1992; Kim and Hwang, 1992). The link between international strategic alliance (ISA) and the environment has been theoretically and empirically recognized, emphasizing the role of various country and environmental variables on the formation and performance outcomes of such cross-border, collaborative relations (e.g. Barkema and Vermeulen, 1997; Buckley and Casson,

2002; Delois, 2006). Principally, discussion in this area suggests that success of alliance relationships of the multinational enterprise (MNE) is dependent upon the government's efforts to reduce financial constraints and transaction costs on the firm, thus creating increased levels of collaborations (Hennart, 1988). Indeed, the relationship between economic reform and strategic alliance formation, structure, and management continues to evolve and address new dimensions surrounding these cross-border transactions. For example, a growing extension of this research stream has been the application of this relationship to emerging economies that are undertaking major economic moves towards market-driven economies, either through monetary and fiscal reforms or by signing regional trade agreements that foster international business transactions (e.g. Hyder and Abraha, 2006; Rodríguez, 2008; Uhlenbruck *et al.*, 2006). This study investigates the impact and the implications of regional economic integrations on the patterns and the structures of international strategic alliances.

The existing theory on regional economic integration suggests that economic integration has a positive impact on the overall national economies of member countries (e.g. Krugman and Obstfeld, 2002) and works to stimulate the reinforcing effects of regionalization and the strategic operations within a region (Rugman and Verbeke, 2005). In general, the removal of trade barriers and the formation of a common regional market have been associated with a positive increase in intra-regional trade among member nations (e.g. Rose, 2000; Rose and Van Wincoop, 2001). Additionally, the adoption of a common currency among members of an economically integrated region allows the transfer of economic resources from members with healthy economies to those suffering economic setbacks. Thus, it leads to improving the aggregate economic situation of the overall integrated area in the long run, creating growth opportunities for organizations to grow and expand within the region through various modes of entry, including alliance formations (Krugman and Obstfeld, 2002).

Based on this premise, this study addresses how MNEs choose among a set of alternative strategies to collaborate in the international arena when their nation-states undergo economic and monetary integrations. The impact of common market and common currency policies and the changes that organizations implement to their ISAs are examined. Whether it is the reduction in transactions costs and perceived environmental uncertainty, or the market growth potential resulting from countries' adoption of common market policies, MNCs recognize these opportunities and adjust their collaborative strategies to compete in such integrated markets. It is important to note that while the impact of the environment on the strategic alliance formation and management has predominantly been addressed at the firm level, this study seeks to take the first step towards understanding how specific government trade policies influence strategic alliances throughout a multi-national region. Hence, the major tenet of this study is that ISAs cannot be studied in a vacuum and the changes to the pattern and structure of these alliances should be examined at the country level. Specifically, this study addresses whether or not higher levels of economic integration, through common market and common currency mechanisms, affect the structure and the pattern of ISAs within the economic community.

This paper proceeds as follows. First, building on previous studies that examine factors (e.g. geographic distance, cultural distance, strategic fit, partner selection)

affecting the patterns and the success of international strategic alliances, testable hypotheses are developed regarding the research question, which is: how do economic and market integrations affect the pattern of international strategic alliances of multinational firms within member nations, and are these changes conducive to a particular structure of international strategic alliances within the economically integrated regions? Next, the hypotheses are tested by using the European Union as the empirical context to address the impact of market and currency commonality associated with economic integrations on international alliances patterns and structures. Finally, the paper concludes with a discussion of the key findings, paying particular attention to governmental policy and strategic management implications.

Literature review and hypotheses development

The literature on international strategic alliances addresses several motivations, economic and non-economic, that drive multinational organizations to engage in such cooperative strategies (Contractor and Lorange, 2002; Buckley and Casson, 2002). Technology exchange, R&D, and marketing collaboration are major motives behind many of the strategic alliances formed among international firms (Koh and Venkatraman, 1991; Glaister and Buckley, 1996). Additionally, alliances and joint ventures are viewed as a more conservative or defensive investment in a foreign market to hedge against the risk and uncertainty associated with entering new markets than mergers and acquisitions (Vernon, 1983; Xia *et al.*, 2009). Strategic alliances allow firms to gain the advantages of scale economies or learning. The ability to realize synergetic benefits can be captured by independent firms when they form strategic alliances (Anderson and Narus, 1984). There is empirical evidence that ISAs have been found to affect the firm's technological position, innovative capabilities, information exchange and reflexivity (Aulakh *et al.*, 1996; Chikudate, 1999; Stuart and Podolny, 1996). Research on ISAs has been centered on the on-going debate about precisely how, when, and why these practices can be used to build long-run competitive advantage (Das and Teng, 1998; Koh and Venkatraman, 1992; Glaister and Buckley, 1996). Some empirical and theoretical works have addressed the issues and risks associated with ISAs. Reich and Mankin (1986) argue that alliances and collaborative relationships between competitors could be risky, and firms have to be careful in these decisions because the possibility of eventual losses in competitive advantage may outweigh the benefits gained from an alliance. The effects of country or national variables on the success and survival of ISAs have been primarily discussed under partner selection literature of strategic alliances. The commitment of the partners to transfer knowledge, expertise, resources, and capabilities to the alliance is a key issue for the success of joint ventures and strategic alliances; however, it has its share of risk as well (Inkpen and Beamish, 1997; Isobe *et al.*, 2000). Hence, the effect of the environment on the ISAs' structures and formation has not been fully embraced in the realm of research surrounding ISAs.

A number of environmental, firm, and alliance factors have been found to affect various aspects of the strategic alliance relationships (Pan, 1997). Some of these aspects include trust between partners of the alliance (Dyer and Chu, 2000; Griffith *et al.*, 2000), reciprocity and governance (Kashlak *et al.*, 1998), negotiation tactics (Money, 1998), stability of the alliance formed between MNEs of different nationalities (Celly *et al.*, 1999), competitive and industry structure (Kogut and Singh, 2002), and the

political-economic environment (Xia *et al.*, 2009). Additionally, networks of alliances among multinational corporations have been found to relate to value creation, greater profits, and price and cost fluctuations (Holm *et al.*, 1996; Holm *et al.*, 1999). However, there is an emphatic need to address how these collaborative relationships of the MNE respond to changes in the economic-political environment within which these firms operate. Although the governance structure of an alliance relationship plays a major role in the success of the alliance (Osborn and Baughn, 1990), this stream of research has lacked the adequate application of the organization-environment paradigm to emphasize the role of the economic and political environment in determining the structure and pattern of alliances. Therefore, the existing explanations on alliance structures are incomplete (Ghoshal and Moran, 1996; Tyler and Steensma, 1995).

The choice of alliance structures
Companies cooperate by sharing control, technology, management, financial resources, and markets by organizing themselves into various forms, such as joint ventures, contractual programs or consortia, technology transfer licensing agreements, and management services and franchising agreements (Contractor and Lorange, 2002). Alliance forms range from informal cooperatives governed by simple agreements to highly formalized equity-based alliances (Lorange and Roos, 1992). Although differentiating between alliances structures has been problematic, differentiating between alliance structures involving some form of equity investment and alliance structures that are based on agreements with no equity involvement has been a major differentiation criterion (Gulati, 1995). Therefore, in this paper and consistent with the existing theory, alliance structures are differentiated into two types:

(1) non-equity agreements; or

(2) equity-based relationships.

Tallman and Shenkar (1994) argue that organizations, when choosing among the different governance forms of alliances, choose the alliance structure that reduces uncertainty and improves organizational performance. Equity-based alliances are utilized, according to Gulati (1995), "When the transaction costs associated with an exchange are too high to justify a quasi-market, non-equity alliance" (p. 89). Although existing research, such as transaction cost economics (Williamson, 1985) and resource dependency theory (Pfeffer and Salancik, 1978), provide powerful explanations for the choice of alliance structures, these explanations do not address changes in the environment and how these changes affect the choice of alliance structures (Tyler and Steensma, 1995). Transaction costs economics offers a link between environmental uncertainty and the choice of alliance structures through the agency of perceived transaction costs. Williamson (1985) argues that the more uncertain the firm's environment, the greater the perceived transaction costs. With high perceived transaction costs, decision makers within the firm choose highly structured equity-based alliances over non-equity forms of collaborations.

In general, past research has addressed the emergence of strategic alliances as a response to changes in the global environment, the different perceived benefits associated with internationalization (Ghoshal, 1987; Hitt *et al.*, 1997), and under different sets of economic variables such as emerging economies (Hitt *et al.*, 2000; Steensma and Lyles, 2000; Weaver and Dickson, 2000); however, it is apparent that the

existing research on ISAs has not fully embraced the increasing number of free trade blocks and the economic integration across several sovereign nation states. Scholars of international management realize that free trade agreements and market integration among countries constitute major changes to the global arena, which affects the MNE's strategic choices of operation; however, there is little theoretical and empirical research on their implications for multinational strategies, such as international strategies.

Economic integration effect: market commonality

International trade theories argue for tariff and non-tariff trade restrictions; advantages of trade barriers include protection of infant industries, protection of jobs from cheap foreign labor in the domestic market within the geographic boundaries of a nation (Krugman and Obstfeld, 2002). However, in many cases these trade restrictions often cause less competition and price discrepancies for end consumers, and trade restrictions constitute entry barriers to MNEs as they go into new foreign markets. As a country becomes a member in a regional economy and agrees to remove trade barriers between member nations, MNEs from other member nations perceive this as a removal of a barrier and an incentive to explore new market opportunities. These findings directly align with the theory of regionalization (Rugman and Verbeke, 2004), whereby MNEs find it easier to align with other firms within the integrated region to ensure their regional dominance.

Additionally, MNEs within the geographic boundaries of the economically integrated area are also protected against international competition from nations outside the economic community due to the liability of regional foreignness (Rugman and Verbeke, 2007). By treating these alliances as local branches of their operations, regional members can work together to create entry barriers for firms with home bases in other regions.

In addition, the integration of markets facilitates and promotes transactions between firms in member nations. The economic integration removes various trade barriers and allows goods, services, capital, labor, and technology to move freely between member countries. Economic integration also promotes regional trade, and enhances economic growth. All businesses are free to access the rest of the common market, hence creating bigger market opportunities for growth within this homogenous market. MNEs that have entered the common market are able to achieve the economies of scale, foster specialization, attract more investment, and find new customers. As a result, these MNEs within the integrated region will favor other firms that are operating in the same integrated market as alliance partners, rather than forming alliances with foreign partners that have no access to such markets. Dewenter (1995) cautions that investors experience greater costs when pursuing business transactions across different markets.

Additionally, the homogeneity of regulations within the common market applicable to all members of the integrated region reduces the risks associated with going to foreign markets. Perceiving growth opportunities within this market, firms tend to invest more equity in their alliance relationships with firms from other members of the economic integration. Equity based alliances provide more control to firms looking to expand into new parts of a region that may have previously been difficult to penetrate. Through regionalization and equity-based alliances, firms can begin to develop a

toehold in a new part of the region, which also allows deeper roots to form than non-equity based alliances. Thus, it is hypothesized:

H1. A country will have a higher percentage of international alliances between its firms and firms from the regional economic community, after the country accesses the common market of the regional economic community.

H2. A country will have a higher percentage of international equity-based alliances, as compared to non-equity alliances, between its firms and firms from the regional economic community, after the country accesses the common market of the regional economic community.

Economic integration effect: currency commonality
Transaction costs economics (TCE) is another theoretical perspective that supports this hypothesized relationship between economic integration and ISAs' structure and patterns. Further, it more specifically informs us how integration mechanisms impact the structure of ISAs within the integrated region. Generally, TCE offers a link between environmental uncertainty and the choice of alliance structures through the agency of perceived transaction costs. The more uncertain the firm's environment, the greater the perceived transaction costs (Williamson, 1985). With high perceived transaction costs, MNEs choose highly structured, equity-based alliances when forming alliances. Conversely, as the environmental risks associated with currency fluctuations and market differences are reduced, the MNE is more likely to engage in less structured, non-equity alliances to collaborate with other firms within the integrated region.

For example, exchange rate risk must be considered prior to internationalization as a major economic force affecting multinational organizations. In the same manner, foreign market uncertainty leads MNEs to be doubtful about the success of international market activities. Rose and Van Wincoop (2001) suggest that the true effect of the common currency adoption, such as the Euro, is a close to 50 percent increase in intra-region trade. Rose (2000), using data on 186 countries, dependencies, territories and colonies, set out to test the hypothesis that economic and monetary unions promote trade. By looking at the average effects of a common currency, not only across time but also across different countries, and by incorporating additional determinants of trade other than currency union – including incomes, distance between trading partners – Rose (2000) concludes that on average, two countries that are members of the same currency union trade three times as much as with each other as countries that do not share a currency. Rose also finds significant trade-creating effects of reduced exchange-rate volatility even when it occurs without currency union; however, those effects are much smaller than those of the adoption of a common currency.

Hence, with the adoption of a common currency among a regional group, exchange rate risk and the associated cost with international transactions become insignificant. This leads multinationals within the currency zone nations to expand their operations to other member nations. In addition, they tend to invest less equity in their cross border activities as one of the environmental uncertainties disappears (Williamson, 1985). Therefore, based on the main tenet of TCE, linking environmental uncertainty to the choice of alliance structures through the agency of perceived transaction costs (Weaver and Dickson, 2000), the reduction in environmental uncertainty leads

organizations going through ISAs to form alliances that minimize their investments; hence, reducing risk in case the alliance fails.

Therefore, it is hypothesized:

H3. A country will have a higher percentage of international alliances between its firms and firms from the regional economic community, after the country adopts the common currency of the regional economic community.

H4. A country will have a lower percentage of international equity-based alliances, as compared to non-equity alliances, between its firms and firms from the regional economic community, after the country adopts the common currency of the regional economic community.

Research methods
The European Union: the empirical context
The European Union (EU) serves as a highly visible and relevant context within which to test the hypotheses of this study. While over time, the European community of countries continues to evolve through several transitions regarding economic treaties and trading arrangements, the current status of the EU fits the category of an economic union, which by definition involves the free flow of products and factors of production between member countries and the adoption of both a common external trade policy and a common currency. However, according to international economic theories that address different levels of regional economic integration, the EU is not a "perfect" economic union because not all members have adopted the common currency, and differences remain in tax rates across countries. As such, the EU constitutes an appropriate context for this study.

Sample and data
The data used in this study were collected on 29 countries for the period between 1985 and 2004. These 29 countries (listed in Table I) consist of the EU-15 (Belgium, Germany, France, Italy, Luxembourg, The Netherlands, Denmark, the UK, Ireland, Greece, Spain, Portugal, Austria, Finland, and Sweden), ten EU members that were admitted in 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia), two countries that later became members of the European Union in 2007 (Bulgaria and Romania), and two countries that are not official members of the EU but represent large economies located in the European community with accession to the European market of goods and services but not official membership in the EU (Norway and Turkey). The 20-year period is pivotal for the empirical context of this study since it represents the period during which most major changes to the EU took place, whether in terms of the level of integration or in terms of the number of members. Therefore, it serves the purpose of the study as it attempts to capture the effect of each of these changes. Additionally, this time period pre-dates the emergence of the treaty establishing a Constitution for Europe, which intended to dispense with the previously overlapping treaties that comprised the current constitution. Finally, the time period allows five years for the effects of adoption of the euro on January 1, 1999 to occur. The original sample size is 580 country-years.

Country	Average cross-border alliances	Average European alliances	Average international joint ventures	Average European joint ventures
Austria	25.11	9.22	17.33	6.56
Belgium	39.11	15.33	21.39	9.72
Bulgaria	40.33	2.28	24.56	1.94
Cyprus	1.11	0.50	0.83	0.44
Czech Republic	10.11	4.33	7.50	3.50
Denmark	21.56	7.17	11.33	4.44
Estonia	2.44	0.56	2.28	0.56
Finland	34.33	11.22	20.17	6.72
France	208.11	64.77	118	42.8
Germany	290.88	66.38	158.33	44.11
Greece	7.61	3.33	5.44	2.50
Hungary	22.44	10.06	19.06	8.56
Ireland	24.94	7.83	11.11	4.61
Italy	103.27	37.05	62.7	24.83
Latvia	1.50	0.44	1.33	0.44
Lithuania	2.33	1.00	1.89	0.94
Luxembourg	9	3.77	3.88	2.11
Malta	0.33	0.22	0.28	0.17
Netherlands	114.67	32.61	64.44	21.44
Norway	124.78	12.56	68.61	7.83
Poland	22.00	9.94	16.72	7.78
Portugal	9.44	4.28	5.94	2.89
Romania	43.67	3.61	25.00	3.17
Slovakia	3.67	2.17	3.00	2.06
Slovenia	1.22	0.39	0.94	0.33
Spain	48.83	20.89	28.06	14.33
Sweden	61.67	21.28	31.67	10.06
Turkey	80.22	5.22	35.67	4.33
UK	422.72	79.61	219.94	47.28
Overall average	61.28	15.10	34.04	9.87

Table I.
Sample characteristics

Dependent variables
Information regarding the dependent variables of the study was collected from SDC Platinum, a comprehensive database developed and maintained by Thompson Financial Corporation. The data set developed for this study contains all strategic alliance transactions that were unconditionally completed and where the activity crossed the geographic boundaries of each of the countries included in this study. In other words, alliance transactions that occurred between two or more domestic partners (within the same country) are not included in this database.

The study utilizes two dependent variables:

(1) EU strategic alliances; and

(2) EU equity-based alliances.

The EU strategic alliance was operationalized by taking a ratio of the international alliances that took place between a country's firms and other EU firms by the total number of alliances. As for the EU equity-based alliances, Varadarajan and

Cunningham's (1995) classification of strategic alliances was adopted, which specifies only two types of alliances, namely:

(1) joint ventures; and

(2) inter-organizational entities that involve non-equity alliances.

Hence, this variable is measured as the total number of joint ventures that took place between a country's organizations and other EU organizations during a specific year divided by the total number of international alliances that took place between a country's organizations and other EU organizations during a specific year.

Overall, the original 15 EU members have the highest percentage of EU strategic alliances. Additionally, there is a dramatic increase in EU joint ventures for EU members after the year 1991. However, the percentage EU joint venture was the highest for non-member countries. Table I shows the average European alliances and average European joint ventures for all 29 countries in the study. Alliances with other EU countries across the time period of the study range from an average minimum of 0.22 to an average maximum of 79.61, with an overall average of 15.10 across 29 countries over a 20-year period. Further, joint ventures with other EU countries across the time period of the study range from an average minimum of 0.17 to an average maximum of 47.29, with an overall average of 9.87.

Independent variables
The information for the independent variables used in this study was collected from data compiled by and is publicly available at the statistical office of the EU (Eurostat). Eurostat, established in 1953, supplies statistics to the European Commission and other institutions with the goal of defining, analyzing, and implementing macroeconomic policies.

Adoption of a common market. This variable indicates whether a country is part of the single market for goods, services, and factors of production among the EU members. It indicates whether a country has removed the tariff and non-tariff barriers to trade with the rest of the EU members. It is coded as a dichotomous variable where 1 is assigned for countries that share the single market with the rest of the EU members and 0 for countries that are not part of this single market of goods and services.

Adoption of a common currency. This variable indicates whether a country has agreed to adopt the Euro as its formal currency after the Maastricht Treaty in 1992, since not all EU members belong to the euro zone (e.g. the UK and Denmark). This variable is coded as a dichotomous variable with 1 for nations that adopted the euro at a specific year and 0 for nations that did not adopt the euro or were not allowed to use the euro as their national currency during the period of the study.

Control variables
The study employs six variables to account for other explanations of the pattern and structure of strategic alliances among organizations of EU member countries. These variables are country-level variables that control for the overall differences between countries in terms of economic growth, political regime, and overall business environment. Information for these variables was obtained from the World Bank, the World Trade Organization, and the International Monetary Fund (IMF).

GDP growth. A major concern in this study is the wealth of a country compared to the other countries. Trends of international trade and foreign direct investment (FDI) suggest that developed countries tend to invest or trade with other developed countries; therefore, suggesting that organizations in developed countries tend to form cooperative relationships with other organizations in other developed countries (International Monetary Fund, 2004). Accordingly, the annual percentage growth of the gross domestic product (GDP) of each of the countries included in this study over the period 1985-2004 is used as a control variable. This variable measures the overall economic improvement and wealth of each of these nations and allows us to control for the effect of economic wealth of any two countries on the pattern of cross-border entrepreneurial investments.

Inflation levels. Macro-economic theories suggest that high levels of inflation encourage borrowing since the real interest rate is calculated by subtracting the inflation rate from the nominal interest rate. This borrowing incentive suggests that countries with high inflation levels might experience more foreign organizations borrowing money from the country's banks to establish cooperative entities in these countries. Therefore, inflation rate is used as a control variable.

FDI and BOP. FDI and the balance of payment (BOP) figures of a nation are considered good measures of the amount of international activities of a specific country. Both variables are used as control variables to isolate the effect of the country's intensity of involvement in international trade and investments. These two activities suggest that an organization within a country that is highly engaged in the international arena is more likely to seek out investment opportunities outside of the focal country. Several studies have empirically demonstrated the positive relationship between FDI and a nation's economic growth (e.g. Bengoa and Sanchez-Robles, 2003; Borensztein *et al.*, 1998).

Political regime. As more countries join the EU, there is diversity in the political backgrounds of the member countries, especially after the admission of the Eastern European nations. Among the countries included in this study, there are various political regimes, such as post-Communist, democratic, monarchy, and republic. As of the current stage of the European Union integration, there is no obligation to adopt a single political regime among all members of the EU since the EU is still far from becoming a political and economic integration. The nature of the political regime has an effect on the forms and patterns of investment strategies exercised by individuals and organizations (Hyder and Abraha, 2006). For instance, while democratic governance has a demonstrated causal link with higher level of foreign investment and investments inflows, post-communist regimes are less attractive locations for investment inflows (Jensen, 2003). Additionally, Xia *et al.* (2009) found that as national economies in the 11 emerging nations in Eastern Europe transitioned from socialist to market-based economies, American companies switched from ISAs to M&As. However, those that originally had used ISAs/JVs to enter into those economies did not switch their strategy for entry, only newer entrants did. Therefore, this variable is used to control for the effect of political regimes on patterns and level of equity of the strategic alliances of a country during the period of study. This variable is dichotomous where 1 indicates that the country was formerly a Communist country and 0 indicates that the country was not formerly under a Communist political regime.

Founding member. Finally, whether a specific country is one of the original six countries of the European Coal and Steel Community that initially established the EU is controlled for. A dichotomous variable was created to control for this designation because EU founding members gained full access to the economic integration by default, while joining members have had to undergo and implement macro-economic reforms pertaining to foreign debt, unemployment, and the banking sector in order to be members of the European monetary system. Thus, the adoption of the common currency and the integration to the European common market for joining members typically occur after several macro-economic reforms in the banking, financial, and enterprise sectors are implemented by these countries (Sharpf, 1996). The measure is coded as a value of 1 for France, Italy, Luxembourg, Germany, The Netherlands, and Belgium and a value of 0 for the remaining 23 countries included in this study.

Method

The effects of the explanatory variables were estimated by using linear mixed regression models. In models where data is collected on the same sample of subjects over a period of time, consideration must be given to the fact that observations on the same subject are expected to be correlated, and accounting for this correlation must be considered (Johnson and Wichern, 2002). Correlated errors result in spurious results due to inflated error terms (Beck and Katz, 1995).

Our models are characterized by repeated measures where the subjects are the 29 countries that are included in this study, and the different variables collected are the characteristics observed over the period 1985-2004. Observations of the dependent variables: percentage of EU alliances and percentage of EU equity alliances for the same country are expected to be correlated; additionally, those from different countries are expected to be correlated as well. Linear mixed models assume that the same covariance matrix Σ holds for each country, and linear mixed models expand the general linear model so that data are permitted to exhibit correlated and non-constant variability.

In this study, since the data collected are cross sectional, time-series data, there are several assumptions regarding the correlations between observations. The study is conducted across 29 countries and for a period of 20 years. Hence, the data are characterized by repeated measures both in terms of year and in terms of countries. For a specific country, observations about the dependent variables are collected over a period of 20 years, and for a specific year, observations of the dependent variables are collected across 29 countries. Observations collected over one country are expected to exhibit time-series correlations, and observations collected for a specific year are expected to exhibit cross-sectional correlations. With observational studies, as opposed to classically designed experiments with balanced and complete data, it is rarely possible to achieve complete separation of between- and within-subject variables. Complete separation of between- and within-subject variables is particularly important in our case because this study is concerned with patterns within individual countries (within-subjects) across multiple time periods (between-subjects). Therefore, due to multiple courses of correlation and non-constant variability in error terms, a linear mixed models design is employed to establish the effect of economic integration (i.e. common market and currency) on changes in patterns and structures of alliances over time. Linear mixed models expand the general linear model so that data are

permitted to exhibit correlated and non-constant variability in error terms. The mixed linear model, therefore, provides the flexibility of modeling not only the means of the data, but also their variances and co-variances.

The mixed linear model used in the analyses is a version of a multilevel linear model (Goldstein, 1987) or hierarchical linear model (Bryk and Raudenbush, 1992). A general linear mixed model was used for the regression analysis in order to deal with violations of independence, which tend to inflate standard errors and make finding significance more difficult (Krull and MacKinnon, 2001). Independence is problematic in these data because the subject level (country) contains repeated measures across multiple time periods at the observation level. Thus, the longitudinal data create both time-series and cross-sectional correlations between observations. Specifically, an autoregressive design capable of controlling for the non-independence of error terms was employed. An autoregressive design was chosen rather than a multilevel model because non-constant variability (in addition to non-independence) in error terms that are caused by cross-sectional and times-series correlations were expected.

The general form for a mixed model is:

$$Y = X\beta + Zu + e,$$

where $X\beta$ denotes fixed effects, Z is a fixed design matrix, u is a random unobservable vector of random effects with $E(u) = 0$ and $\mathrm{cov}(u) = G$, and e denotes the random unobservable vector of errors, with $E(e) = 0$ and $\mathrm{cov}(e) = R$.

In this study, the mixed model that is used assumes three types of correlations. The first type of correlation is the time-series correlation based on common country effect, where observations in a country share a vector country$_i$. The second type of correlation is the cross-sectional correlations between countries, where countries in the same year share a vector year$_j$. The third type of correlation is the additional time-series correlation which decays over time (AR (1)).

Therefore the general form for the mixed model of this study is:

$$Y_{ij} = \beta_0 + \beta_1 X_{ij} + \text{country}_i + \text{year}_j + \varepsilon_{ij},$$

where $\beta_0 + \beta_1 X_{ij}$ denotes the fixed effects part, country$_i$ induces correlation between years, and year$_j$ induces correlation between countries.

Analyses and results

Table II summarizes the descriptive statistics and correlations for the variables used in the analysis. The initial step of the analysis was conducting tests of collinearity by checking the variance inflation factor, VIF, which should be smaller than ten for all variables (Belsey *et al.*, 1980). The models here meet this criterion, except for two of the control variables that were initially planned to be included in the models. These variables are GDP and percentage increase in GDP. Only one of those two control variables (percentage increase GDP) was used since GDP alone only captures the economic wealth of the country at a specific point in time, without accounting for trend of the GDP for the country over the period of the study.

Results for the pattern of international alliances

Table III presents the parameter estimates from the mixed linear modeling and analyses for the percentage of European strategic alliances, which measures the

Variable	Average	SD	1	2	3	4	5	6	7	8	9	10
1. European alliance percentage	25.010	23.206	1									
2. European joint venture percentage	27.758	26.803	0.883**	1								
3. Common Market	0.414	0.493	0.345**	0.373**	1							
4. Common currency	0.088	0.284	0.208**	0.221**	0.370**	1						
5. GDP growth	8.752	21.776	0.018	0.022	−0.111**	−0.109**	1					
6. Balance of payment	0.452	4.747	0.029	0.031	0.006	−0.151**	0.147**	1				
7. FDI	−10.55	−0.018	−0.091*	−0.072	−0.371**	−0.367**	0.129**	0.056	1			
8. Inflation	24.13	94.364	−0.103*	−0.104*	−0.197**	−0.074	−0.073	−0.029	0.075	1		
9. Political regime	0.172	0.378	−0.060	−0.057	−0.383**	−0.142**	0.195**	−0.004	0.146*	0.198*	1	
10. Founding member	0.207	0.405	0.158**	0.165**	0.493**	0.242**	−0.028	−0.016	−0.297**	−0.122**	−0.233**	1

Notes: * Correlation is significant at the 0.05 level (two-tailed); ** correlation is significant at the 0.01 level (two-tailed)

Table II.
Descriptive statistics and correlations

	Control variables (1)	Common market (2)	Common currency (3)	All variables (4)
Common market		14.205***		12.884***
		(2.62)		(3.345)
Common currency			10.577**	8.125**
			(3.968)	(3.861)
GDP change	0.058*	0.072*	0.057*	0.072
	(0.076)	(0.073)	(0.075)	(0.073)
Balance of payment	0.174*	0.180	0.235	0.228
	(0.172)	(0.171)	(0.173)	(0.172)
FDI	0.054	− 0.037	− 0.021	− 0.011
	(0.044)	(0.043)	(0.045)	(0.044)
Inflation	− 0.013*	− 0.012*	− 0.015	− 0.014
	(0.01)	(0.01)	(0.010)	(0.010)
Political Regime	1.922	8.062	3.146	8.311
	(6.002)	(5.678)	(5.575)	(5.556)
Founder or not	7.009	− 0.393	5.838	− 0.502
	(5.341)	(5.162)	(5.113)	(5.048)
− 2 log likelihood	3,628.8	3,613.4	3,621.9	3,609.0
AIC	3,650.8	3,637.4	3,645.9	3,635.0
Degrees of freedom	6	7	7	8

Notes: Standard errors are shown in parentheses; $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; $n = 580$
(29 countries over a period of 20 years from 1985 to 2004)

Table III.
Mixed models results for
the effects of economic
integration on alliance
patterns

direction and pattern of alliances in a specific country. Model 1 is a baseline model that includes the control variables of country's wealth, international activity, inflation, and political regime, and whether the country is a one of the original six founding countries. The model illustrates that national economic growth, measured as the annual percentage increase in GDP, is positively associated with an increase in the percentage of strategic alliances of the country with other members of the region ($p < 0.05$). Balance of payment figures (BOP) of a country is also positively related to the pattern of international strategic alliances ($p < 0.05$). Inflation rate, on the other hand, is negatively associated with the pattern of organizational cross-border strategic alliances within a specific country ($p < 0.05$). This model provides the base goodness of fit model, − 2 log likelihood of 3,628.4 and AIC of 3,650.8. Throughout the analysis, this will be used as the reference for all other models in Table III.

Model 2 shows that a country's membership to an economically integrated area is a significant factor in determining the pattern of strategic alliances that companies exercise within member countries. The model demonstrates high significance ($p < 0.001$) of the common market adoption. The lower AIC of 3637 and a $\Delta(-2\log$ likelihood) of 15 indicate a better filling model where it can initially be concluded that a country's access to the common market of the integrated region is positively associated with an increase in the number of strategic alliances practiced between the country's firms and firms of other member countries of the economic community.

It suggests that within an economically integrated region, firms tend to form international alliances with other firms within the integrated region, rather than with

firms from outside ($p < 0.001$). It shows that the adoption of a common market for goods and services and the removal of tariff and non-tariff barriers of trade induce firms to form alliances with other firms within this tariff free region.

H3 states that the adoption of a common currency among the economic community positively affects the percentage of strategic alliances among members of this integrated region. The parameter estimates for the adoption of the common currency in model 3 is positive and significant ($p < 0.01$). The lower AIC of 3,645.9 indicates a better fitting model than the base model. The model suggests that adoption of a common currency by a group of countries constitutes a motive for firms within these countries to form more alliances with other firms of these countries, rather than with firms from outside this common currency zone ($p < 0.01$).

Interpreting the results of the two models (models 2 and 3), one can conclude that adoption of common market policies and the adoption of the common currency as the national currency are significantly and positively associated with the percentage of European alliances of the adopting country, as suggested in the finding of model 4 (lowest AIC of 3,635). While the general pattern of results remains the same, an interesting change to note is that as a country becomes a member of an economically integrated region and embraces the monetary reforms for the common currency adoption, the country's specific economic profile becomes less of a factor for firms trying to internationalize their activities to this country. A possible explanation is that a country's profile becomes imbedded within the supra economically integrated community.

Results for the structure of international alliances

Table IV presents the parameter estimates from the linear mixed analyses of the percentage of equity-based alliances that firms practice within an economically integrated region. As mentioned earlier, this paper only differentiates between two structures of alliances: equity-based alliances (joint ventures) and non-equity based alliances. The findings of model 5 illustrate that national economic growth, measured as the annual percentage increase in GDP, is positively associated with an increase in the percentage joint ventures of the country with other members of the economic community ($p < 0.05$). FDI of a country is also positively related to the equity-based structure of strategic alliances in the integrated region ($p < 0.01$). This model provides the base goodness of fit model with -2 log likelihood of 4,043.7 and AIC of 4,065.7. Throughout the analysis, this will be used as the reference for all other models

The parameter estimate of common market adoption in model 6 is positive and is highly significant ($p < 0.001$). Therefore, it can be concluded that a country's adoption of the common market policies for the trade of goods, services, and factors of production induces its firms to form equity-based alliances (JV) with firms within other member countries. In other words, model 6 shows that the adoption of a common market does increase the likelihood of firms engaging more in equity-based alliances with other firms within the integrated region, rather than non-equity based alliances (ΔAIC = 522). Thus, *H2* is supported.

Model 7 presents the results from the arguments about common currency. The data show that the adoption of a common currency is not a factor in determining the structure of an alliance. Therefore, *H4* is not supported, and the results suggest that

	Control variables (5)	Common market (6)	Common currency (7)	All variables (8)
Common market		9.623***		9.008***
		(2.792)		(8.96)
Common currency			5.340	3.36
			(3.371)	(3.335)
GDP change	0.080*	0.079*	0.064*	0.079
	(0.131)	(0.066)	(0.068)	(0.066)
Balance of payment	0.189	0.134	0.155	0.154
	(0.284)	(0.066)	(0.156)	(0.155)
FDI	0.053**	0.013	0.015	0.024
	(0.07)	(0.036)	(0.038)	(0.037)
Inflation	0.007	-0.010	-0.012	-0.011
	(0.175)	(0.009)	(0.009)	(0.009)
Political regime	-14.060	11.37**	7.868	-11.426*
	(7.506)	(4.470)	(4.40)	(4.418)
Founder or not	6.440	-2.297	2.081	-2.304
	(6.604)	(3.76)	(3.87)	(4.001)
-2 log likelihood	4,043.7	3,519.7	3,527.8	3,518.7
AIC	4,065.7	3,543.7	3,551.8	3,544.7
Degrees of freedom	6	7	7	8

Notes: Standard errors in parentheses; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; $n = 580$

Table IV.
Mixed models results for
the effects of economic
integration on alliance
structures (equity versus
non equity patterns)

firms' decision on the governing structure of their alliances is not influenced by the
type of currency that is adopted by the countries of the alliance.

Model 8 presents the results from a fully specified model that includes all the
variables. The results suggest that while a country's membership to an economically
integrated region and the removal of trade barriers associated with the integration
increase the likelihood of equity based alliances among organizations within the
region, the adoption of a common currency is not a significant factor in determining the
structure of alliances among firms of the integrated region. In addition, nature and the
background of the political regime is the only significant control variable.

Discussion and implications
This study suggests that changes associated with economic integration at the country
level have a direct, positive impact on ISAs within the integrated region, and that
alliances flourish within economically integrated regions. Hence, higher levels of
economic integration lead MNEs to expand to countries within the economically
integrated region and to achieve growth through strategic alliances with other firms in
the region. In summary, the results of this study generally support the primary
research question proposed in this study, which is: how do the economic integration
mechanisms of common market and common currency affect the pattern and the
structure of strategic alliances of multinational firms? Whether on the firm, country, or
regional level, the findings of this study suggest several implications for managers of
MNEs and policy makers within the countries of the economic community.

Most obvious, of course, are the implications for national leaders seeking to develop and implement economic reforms that promote cross-border, firm-level transactions and collaborations, which studies have shown to stimulate economic growth (e.g. Cox and Harris, 1985; Smith and Venables, 1988; Caves, 1996). National leaders, particularly of smaller, less developed nation-states, should note the benefits of economic integration policies, especially the adoption of common market policies. The positive implications of economic integration become imperative as these multilateral agreements provide access to regional markets, instead of isolation, for organizations in these countries. By forming alliances with other firms from countries of the economic community, MNEs from these smaller economies can capture market growth potentials from the larger integrated market, instead of solely relying on the viability of their home markets. Additionally, these firms do not need the equity investments necessary to secure their collaborative investments outside their markets since environmental uncertainty is reduced due to market and currency commonalities (Hennart, 1988). Indeed, the results of this study might serve as a meaningful argument against those stakeholders that would lobby against economic integration policies. For instance, facilitating the economic interdependence between countries would force many existing, and often large and powerful, firms to deal with increased levels of competition due to trade liberalization and an increased number of imports (Nader and Brown, 1993). Although the findings here lie at the country level, these findings are especially important given reports by the European Commission in 1994, 1998, and 2001 that encourage European governments and institutions to create appropriate environments for cross-border collaborations that can lead to regional economic outcomes such as job creation, scale and scope economies, and international competitiveness (Rugman and Verbeke, 2004).

From a firm-level perspective, this study investigates one aspect of how organizations change their ISAs in response to environmental changes. These findings suggest that when countries integrate into a common market, firms within this integrated region tend to form alliances among each other, and tend to invest more equity in their alliance practices. This is mainly due to the market growth opportunities and homogeneity in the major policies of operating within the common market of the economically integrated region. On the other hand, while the adoption of a common currency constitutes an incentive for firms within the common currency zone to form alliances with other firms in this zone, there is little support that the adoption of a common currency influences the structure of the alliance relationships and the firms' decision on how much equity to invest in their alliance practices. It is possible that support was not significant for the effects of the common currency on alliance structure because countries could join the EU at one point in time, but decide to adopt the Euro later (independent choices). Hence, a future study might examine the true effects of adopting the common currency within economically integrated regions by looking at the patterns and structures of JVs/ISAs pre- and post decision of currency adoption. In general, future studies could also look at actual performance of the ISAs and parent companies from a firm-level perspective as a result of the findings from this paper.

Another contribution of this study is that it sheds light on the factors within economically integrated regions that matter and favor equity-based alliance structures, and that it offers strong empirical support to the regional aspect of international

business activities (Rugman and Brain, 2003; Rugman and Verbeke, 2005). The findings of the paper show that when countries adopt economic integration policies and join an economic community, MNEs within the integrated regions shift the direction of their collaborative relationships inwards toward other firms within the region. The formation of regional strategic alliances enables firms to create value by reaching beyond home country boundaries in search of knowledge and other complementary resources, region-specific advantages (RSAs) as noted in Rugman and Gestrin's (1993) framework, while simultaneously reducing the MNEs' exposure to environmental political and economic risks that might be outside the integrated region. Through the formation of alliances, these firms are able to capitalize on advantages that are much larger in scope and more plentiful than what is offered from their home country. Clearly, firms utilize the speed of alliances to gain control of some of the region's advantages to stave off competitors and ensure regional control. These alliances also can form region-bound, firm-specific advantages (Rugman and Verbeke, 2004). By accessing resources through their partners in the region, a firm can develop specific resources and capabilities to which only they have access because of the partnerships within that region. Therefore, this paper shows the use of ISAs as a core strategy for regionalization, especially during the period of economic integration.

Ultimately, the theoretical explanations of the increased patterns in regional strategic alliances within the integrated regions suggest that the reduction in transaction costs and regional market growth potentials can potentially improve the performance of the MNE. In summary, the findings of the paper suggest MNEs shift the international scope of their international alliance portfolio to a regional scope due to the perceived benefits of operating within a region (Rugman and Verbeke, 2005); hence, achieving the benefits of internationalization, such as economies of scale and economies of scope, while operating on a regional scale rather than a global scale. While the findings of the study are based on country-level data and analysis, a future extension of this study that examines firm-level alliance data within an economically integrated region can potentially suggest that MNEs can gain by searching and collaborating with a regional scope of operations. Such findings will be contrary to the findings of Zaheer and Hernandez (2011), which suggest that a regional scope of the MNE does not necessarily lead to a higher profitability for the MNE.

This paper creates a union between international economics and international strategy. The major contribution of this study is that it attempts to further apply the organization-environment paradigm to the study of ISAs' formation and structures. When international alliances and other cooperative strategies are examined as patterns on a country level, they offer valuable insights about the critical political and economic elements that implicate the flow, risks, and regulations surrounding capital flows outside the firm's domestic market. These collaborative strategies, mainly equity-based alliances, can be seen as part of the country's aggregate direct or portfolio investments abroad. Therefore, addressing the impact of economic regulations of regional integration on the pattern and structure of strategic alliances adds support to the economic literature that examines the relationship between political and economic risks and the regulations of international capital flows (Berg and Guisinger, 2001). By 2001, nearly all of the WTO's 136 members had participation in one or more regional trade agreement, and more countries are expected to undergo such integration as new regions attempt to boost their economies and as new countries

join the WTO. Therefore, the study offers a major contribution to the field of international strategy by explaining an expected trend in alliance strategies and capital flows within specific regions as these countries attempt to integrate.

Conclusion

In general, international alliance strategies and the different governing structures of these strategies have received a major share of the international management stream of research. However, regional economic integration on the nation level has not been adequately incorporated in multinational strategy literature. This study does so by exploring the environmental changes that make such integrated areas conducive to specific types of alliances.

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About the authors
Dr Hadi S. Alhorr is an Assistant Professor in the Boeing Institute of International Business at Saint Louis University. His research lies at the crossroads of international strategy, international economics, and international entrepreneurship, examining the effects of institutional changes associated with economic integration on the multinational firm's strategy. Dr Alhorr is an active member of the Academy of International Business and has served as the Placement Center Director during the AIB Annual Conference for the last four years. Hadi S. Alhorr is the corresponding author and can be contacted at: halhorr@slu.edu

Dr Kimberly Boal is a Rawls Professor of Management at Texas Tech University. His research has focused on contemporary issues in strategic management and organizational behavior and has been published in the top peer-reviewed management journals. Dr Boal has served as the Vice-President, Program Chair, and Past President for the Western Academy of Management. He has also served as the Co-Editor in Chief for *Journal of Management Inquiry*.

Birton J. Cowden is an International Business doctoral candidate at the Boeing Institute of International Business at Saint Louis University. His research and publication focus is in international strategy, cross-border networks, international entrepreneurship and innovation.