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Determinants for Political Risk Insurance of Direct Investments in Emerging Markets

Sao Paulo
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Projeto de Dissertação apresentado à Escola de Administração de Empresas da Fundação Getulio Vargas, como requisito para obtenção do título de Mestre em Administração de Empresas

Campo de Conhecimento:

Mercados Financeiros e Finanças Corporativas

Orientador: Prof. Dr. Richard Saito

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RESUMO

Esta dissertação analisa os principais determinantes para investidores contratarem seguro de proteção de riscos políticos (PRI) para seus investimentos diretos, assim com o racional de sair de um PRI não renovando suas políticas. Esta dissertação contribui para a literatura existente sobre PRI, investigando os principais motivadores para PRI, tais como, riscos políticos, riscos econômicos, capacidade do patrocinador, instrumento utilizado para realizar o investimento (horizonte do investimento) determina combinações de PRI utilizando um modelo binário de resposta não linear. Um banco de dados único da *Multilateral Investment Guarantee Agency (*MIGA) no período de 1990 até 2010, contendo informações sobre 693 investimentos incluindo sua cobertura para: seguro de risco de conversibilidade, seguro para risco de expropriação, riscos de guerras e distúrbios civis e riscos de quebra de contrato. Entretanto, percebemos que 47% destes seguros não permanecem ativos até o prazo originalmente contratado. Adicionalmente, instituições financeiras como garantidoras utilizam proporcionalmente mais dívida do que capital como instrumento de investimento e são largamente seguradas dentro da União Européia (EU). Por outro lado, investidores nos BRICs tendem a cobrir primariamente seus investimentos em infraestrutura. Resultados empíricos incluem que um aumento nos riscos de quebra de contrato e guerra civil estão totalmente correlacionados com a renovação de contratos de seguro, assim como um aumento da percepção de risco do pais que está recebendo o investimento.

Palavras chave: Administração de riscos políticos, Seguros, Mercados emergentes, Investimentos estrangeiros e risco do países.

ABSTRACT

This paper analyzes the main determinants for investors to enter into political risk insurance (PRI) for its direct investments as well as the rationale for exiting PRI by not renewing its policies. This paper contributes to the existing PRI literature by investigating how major drivers for PRI, such as, political risks, economic risks, sponsor capacity, instrument used to invest (investment horizon) determine PRI schemes by using a non-linear binary response variable model. A unique database of the Multilateral Investment Guarantee Agency (MIGA) from 1990 to 2010 containing information on 693 investments including its coverage for: convertibility risk insurance, expropriation risk insurance, war and civil disturbance risks. However, we find that 47% do not remain active until the original contracted tenor. In addition, financial institutions as guarantee holders use more debt proportionally more than equity as an investment instrument, and are largely insured within the EU. On the other hand, BRICs investors tend to mainly cover its investments in infrastructure. Empirical findings include that an increase in breach of contract and civil unrest risks is fully correlated with the renewal of the insurance policies as well as the increased risk perception of the host country. The policies seem to have a unique combination of coverage: for instance, breach of contract and transfer risks are directly influenced by the breach of contract risk. Another preferred combination includes transfer risk and breach of contract and civil unrest risks.

Key words: Country Risk, Political Risk, Insurance, Risk and Risk Exposure, Foreign Direct Investment Policy, Latin American Financial Markets

1. INTRODUCTION

This paper analyzes the main determinants for investors to enter into political risk insurance (PRI) for its direct investments as well as the rationale for exiting PRI by not renewing its policies. This paper contributes to the existing PRI literature by investigating how major drivers for PRI, such as, political risks, economic risks, sponsor capacity, instrument used to invest (investment horizon) determine PRI schemes by using a non-linear binary response variable model. A unique database of the Multilateral Investment Guarantee Agency (MIGA) from 1990 to 2010 containing information on 693 investments including its coverage for: convertibility risk insurance, expropriation risk insurance, war and civil disturbance risks.

Academic literature has not explored the determinants that make investors contract political risk insurances. In an attempt to fulfill this gap, this article explores what leads investors to contract PRI when making investments in emerging markets. However, there is vast literature that explores the risk determinants of FDI in emerging markets. Therefore, we focused our literature research on articles that focuses on risks in FDI investments providing a link with insuring these risks.

Emerging markets countries own particularities make investors contract different combinations of insurances. For that reason, this paper studies all the possible insurance combinations among the four types of political risk insurances offered by MIGA.

Additionally, the PRI industry has been growing fast, reaching 30% of all foreign direct investments in developing countries in 2008 (Gordon, 2009). This relevant figure has been reached in spite of the few agencies that offer project political risk insurances. The World Bank's Multilateral Investment Guarantee Agency was s created in 1998. According to

Berger (1989), the main objective of this agency was to help with the development of emerging economies. Other political insurance providers are linked to the developed sponsor countries who are more concerned with enhancing investor country performance. Most governmental institutions provide PRI with the main objective of enhancing investor (home) country performance, filling gaps in private sector coverage and fulfilling diplomatic objectives.

The only multilateral agency that does not favor any particular country is the World Bank's Multilateral Investment Guarantee Agency (MIGA), created in 1988 (Berger, 1989). The main objective of MIGA is the development of developing economies. Because of MIGAs neutrality, its presence in several countries and because of the quality of data they provided, we utilized their database. Data from the Belgium political Risk Agency *Office National Du Ducroire Delcrederient (ONDD)* was also utilized and this institution was referred to us by MIGA. The World Bank Database was utilized for control variables, the OECD database for countries credit ratings, and specific country risk determinants were obtained from a private risk agency company, named Political Risk Services (PRS).

In terms of methodology, we utilized two approaches. The first approach is statistical, based on joint-distribution analysis. The second approach is econometric, a non-linear binary model (logit), utilizing the contract of one insurance or a combination of up to the four insurances offered by MIGA as dependent variables. The use of these methodologies is justified by the binary or discrete nature of the variables utilized. Other reason for utilizing this econometric approach is that other methods were tested and results were neither satisfactory nor corroborated by literature

Joint distribution analysis explains several findings. Among these findings, we can emphasize that financial institutions as guarantee holders utilize debt proportionally more

than equity as an investment instrument, contrary to non-financial institutions, and are largely insured within the EU (European Union), mainly between the parent institution in a developed country and its subsidiary in a developing country. It can be concluded that the developing European region has its financial sector eminently insured. On the other hand, BRICs (Brazil, Russia, India, and China) countries have the infrastructure sector primarily insured. We also found that poorer host country regions have a greater propensity to have all the types of insurance offered by MIGA contracted as a package.

The logit model indicates that an increase in the breach of contract and civil unrest risks is fully correlated with the permanence in the insurance contracts. An escalation of country risk also influences the option to remain insured. Analyzing insurance combinations, we can notice that contracting four insurances at once is directly influenced by civil and external war risks. The engagement in a combination of three contracts is mainly influenced by civil and external war risks and the sector of economy being insured (regulated or not). Finally, when insurances are analyzed individually, what calls attention is that they are directly correlated with the risk they insure. The remaining of findings is presented in section 5 (Results) and interpreted in Section 6 (Conclusion).

The paper proceeds as follows: section 2 presents a literature review focusing on papers that do not follow the traditional FDI determinants, section 3 focuses on the data (and their sources) utilized in the models, section 4 describes the empirical models utilized, section 5 presents the results obtained and section 6 concludes the work.

2. LITERATURE REVIEW

Because the main focus of this paper is on PRI determinants and not FDI determinants, although they are related, we are going to focus this literature review on studies centered on the FDI risk factors determinants that influence PRI.

The few studies found that focus on FDI risk factors that ultimately affect PRI present four common classes of risk: convertibility and transfer risks, expropriation risk, war and civil disturbance risks and breach of contract risk. Insurance for any of these risks probably involves litigation.

Before exploiting studies related to each of the four types of risks that we are studying, we can conclude that country risks that stem from government actions such as breach of contractual agreements, changes in law and regulations or the outright nationalization of foreign-owned property have an adverse affect on FDI (Asiedeu et al., 2008). In addition, these types of risk have a more profound effect on FDI than other types of investments (e.g., portfolio investment). One reason is that FDI is partially irreversible – many of the costs associated with FDI are sunk and therefore cannot be recovered if disinvestment occurs. Asiedu at al. (2008) derive three main results: (i) the threat of expropriation leads to underinvestment; (ii) the optimal level of FDI decreases as the risk of expropriation rises; (iii) under certain conditions, aid mitigates the adverse effect of expropriation risk on FDI.

2.1 Convertibility and transfer risks

In accordance with our findings, convertibility and transfer risks are closely related to capital mobility, capital controls and globalization. Rogoff (1999) and Henry (2007) ratify

these findings. Rogoff (1999) states that countries that have fewer restrictions on capital mobility will, with other things given, tend to outperform countries that isolate themselves from global markets. Henry (2007) argues that papers that allege the contrary tell us nothing about the increasing economic growth and have no empirical validity because they were not tested properly. However, Edwards (2002) mentions that trade –both in goods and financial claims – have increased income inequality and poverty around the world. As opposed to our findings, Edwards (2002) mentions that trade – both in goods and in financial claims – has increased income inequality and poverty around the world.   In line with our findings, Harvard's Rogoff (1999) states that countries that have fewer restrictions on capital mobility will, with other things given, tend to outperform countries that isolate themselves from global markets, and Henry (2007) argues that papers that allege the contrary, tell us nothing about the increase in economic growth and have no empirical validity because they are not tested properly.

2.2 Expropriation risk

Eaton and Gersovitz (1984) present a model of foreign investment with potential expropriation. Labor is supplied domestically and is not internationally mobile. Two other factors – capital and management – are internationally mobile. These two factors differ in that capital can be expropriated and management cannot be. For their equilibrium model, capital represents the tangible aspects of foreign investments, and managerial services are the intangible assets that a foreign investor brings to the production process. Essential to their analyses is the assumption that if expropriation occurs, the managerial services of the foreign investor are no longer available and cannot be replaced. They also examine the associated consequences of the threat of expropriation for project evaluation and optimal investment

decisions in the host countries. The consequences of expropriation for technical choice are analyzed as when a parameter of the production function is a choice variable for the investors, the investors may distort the technology to reduce the threat of expropriation.

Our findings about the correlation of expropriation risk and FDI are also presented by Keefer and Knack (2002) who utilize expert opinion surveys that vary negatively with investment rates across countries. Brunetti and Weder (1998) present results from a large-scale survey among entrepreneurs showing that perceived government instability, corruption and the reliability of the judiciary all influence cross-country differences in aggregate investment.

2.3 War and civil disturbance risks

Our results show that the most influential risks in the explanation for different arrangements of PRI are war and civil disturbance risks. Intuitively this seems to make sense because war and civil disturbance events even at more politically stable regions. This phenomenon can be represented by the Gulf war (190-1991), that transformed Iraq from one of the major powers of the Middle East to a country under economic embargo, or the case of Yugoslavia's split into 6 countries after the Balkans war (1991-1995), that in spite of the fact that it is close to the European Union, make it clear that humanitarian disasters caused by armed conflicts and civil unrest are more troublesome than the risks analyzed in this article.

Academic literature about war and civil unrest has been developed since Keynes (1920). Keynes (1920) analyzed the possible impacts of the *Versailess* Treaty, that imposed to Germany all the onus of the 1st World War and he considered that this would be a problem, not a solution to Europe, therefore he concluded that Europe would suffer with the consequences of this treaty in the following years. During the 1920s, the world faced several marking events such as Germany's hyperinflation and the 1929 crisis – that were directly

associated with the 1st word war and the treaty. Keynes articles and some literature that followed it indicated a state of tension that had been felt before the war and these risks have not been analyzed in this paper.

A literature review conducted by Brunettiand and Weder(1998) presents an analysis with a standardized data set to draw comparative conclusions on the magnitude of the effect of civil disturbance on investments. This review arrives at the same results of our studies, showing that investors are concerned with the effect of political uncertainty their investments. These studies focus on the role of government instability, rapid government turnover, unstable incentive frameworks, social unrest and fundamental uncertainties about property rights. The study by Barro (1998), for instance, finds that measures of government instability (the number of revolutions) and political violence (the number of assassinations) are significantly related to cross-country differences in investment. In an attempt to improve the specification, he experiments with a number of other control variables. However, neither the variance of the growth rate of GDP, nor the enrolment in primary school, nor the growth rate of domestic credit nor the average rate of inflation have a significant impact on investment.

A different methodology and empirical studies also confirm our results about civil unrest uncertainties, such as the study conducted by Pindyck and Dixit (1994) who raises the issue utilizing a number of empirical studies. The analytical basis for these studies is provided by the real option theories that show that irreversibility and timing considerations can significantly magnify uncertainties' effects on investment decisions. Most studies focus on macroeconomic volatility measures such as standard deviation of inflation rate and others on measures of political volatility

Linkages between FDI and PRI are presented by Busse and Hefeker (2005) when exploring political risks as FDI determinants. Using different econometric techniques for a

data sample of 83 developing countries in the period from 1984 to 2003, they identify the indicators that affect FDI most. Overall, 12 different indicators of political risk are employed in the empirical analysis. The results show that government stability, the absence of internal conflict and ethnic tensions are highly significant determinants of FDI, in line with our conclusions.

2.4 Breach of contract risks

The literature below evidences our findings that an increase of breach of contract risk is a very important determinant for an investor to renew an insurance contract. Most of literature present that international law is not enforceable and also may be influenced by host countries' political interests.

The topic of remedies is one of the most underdeveloped areas of international law (Janis, 1987). No treaty regime governs remedies. The topic receives no more than a few pages in the standard treatises and texts. Very few international judicial or arbitration opinions outside trade and investment law address remedies, and other authoritative sources are equally scarce. Members of the International Law Commission (ILC) have drafted a handful of articles addressing remedies – part of a larger project describing the customary international law of state responsibility – but states have never formally accepted them. The dearth of attention to remedies reflects in large measure the fact that international law is largely self-enforcing (Posner and Sykes, 2011), so that the typical remedy historically has been a unilateral retaliatory action that was not subject to legal oversight. They also state that international law per se has no moral force. It is simply the product of negotiation among bureaucrats and politicians (treaties), or a description of empirical regularities in the behavior of nations (customary international law).

Limited work has been done to date on international breach of contracts. Trachtman (2008) suggests that this is due to two principal ways in which international law may promote welfare. First, and most commonly, international law can orchestrate cooperation to ameliorate various international external problems that arise when nations act unilaterally. Second, international law may serve to tie the hands of governments in their relations with domestic interest groups. Second, international law may serve to tie the hands of governments in their relations with domestic interest groups. Bringing a more optimistic view of the non-cooperative policy equilibrium, Scotchmer (2004), raises the matter that international law allows nations to move toward an efficient cooperative equilibrium in which nations behave as if they are internalizing the externality imposed on other nations. This line of analysis affords a compelling explanation for many aspects of international law. Consider, for example, agreements to liberalize international trade, such as the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO). WTO indeed contains mechanisms for the retraction of individual commitments by individual trading nations in the face of political shocks (Sykes, 1991). For example, GATT article XIX (sometimes termed GATT's "escape clause") as elaborated by the WTO Agreement on Safeguards permits nations to revoke their tariff commitments temporarily in industries that are seriously injured by import competition – a maker for circumstances in which the political pressure for trade protection is likely to be intense. The theme of Bilateral Trade Agreements (BITs) is brought by Salacuse and Sulivan (2005) who bring up the issue that BITs were signed by developing nations and, similar to the U.S. Fifth Amendment, permit governments to take property for public purposes as long as they compensate investors; these treaties also provide for international arbitration.

Countries' interests in attracting foreign direct investments are addressed by Maggi (1998). To create the desired investment incentives, such a government may wish to make a credible commitment to acting against its short-term political interests in the event of a shock that would ordinarily beget protectionist measures. Conceivably, an international agreement might achieve this objective – if the government agrees to eschew trade protection under the penalty of a substantial international sanction should it behave otherwise, its commitment may become credible.

A definition of a country's domestic legal system is presented by Shavell (2005); third-party enforcers exist to compel the performance of legal obligations. If a party to a contract refuses to perform, for example, the other party may bring an action for damages or specific performance depending on the circumstances. If that party is successful, the state can seize the assets of the breaching party to satisfy a damages judgment, or issue an injunction requiring performance backed by a threat of imprisonment should the breaching party ignore the injunction. The economic theory of contracts suggests that contracting parties participate rationally in this system because it makes their contractual promises credible and facilitates greater mutual gains. In contrast, third-party enforcement rarely exists for international law. Although numerous aspects of international law are subject to international adjudication (such as in WTO tribunals and the International Court of Justice), those adjudicators have no powers beyond the capacity to issue a ruling. They cannot seize assets or order the use of force against non-compliant parties.

3. DATA

In order to obtain all the necessary information to analyze MIGA's Political Risk Insurance contracts and their details, we utilized MIGA's website (http://www.miga.org/) and a spreadsheet together with a description of the contracts in Word® format (provided by

MIGA's staff). We constructed our first database, containing 693 insurance contracts closed by MIGA from 1990 to 2010 (although MIGA was created in 1998, it only started issuing insurance contracts in 1990). MIGA's database was chosen because of its presence in the majority of countries in the world, its neutrality because it is a multilateral agency and the richness of content in the data they provided to us.

With the intention of analyzing a model to understand why a certain contract on a determined political risk was insured, we utilized two other databases to provide a measure of a country's specific type of political risk in a determined year. For expropriation risk, a database provided in a spreadsheet format was sent to us by ONDD, the Belgium public insurer to which MIGA referred us as one of the best country risk evaluators by type of political risk in the world. Because the ONDD does not classify political risks exactly as MIGA does, we utilized a different database for convertibility, war/civil unrest and breach of contract risks, which are exactly the same as MIGA's political risk classifications. This database was obtained from the Political Risk Services (PRS), a service company widely utilized in academic literature.

Two control variables for our analysis were FDI per country per year and total MIGA insurance per country per year. The first variable was obtained from the World Bank's database and the second from MIGA's database. Finally, we obtained country risks from the OECD database.

The variables utilized are divided into four distinct groups: political risk insurances, political risk insurances combinations, political risks and control variables. Their characteristics are described on Tables one to three as presented below.

The following tables present firstly the variables and their expected signs in the econometric models utilized and descriptive statistics, secondly the numeric significance of the variables, thirdly a description of these variables and fourthly the descriptive statistics.

Several findings were obtained with joint distributions of the described variables and together with the results of the econometric models, they will be presented in the results section (Section 5)

Table 1: Variables

Variables and their expected signs in the econometric models utilized and in the descriptive statistics

Class of variables	Variable	Econometric feature	Expected sign
Political risk insurances	convertibility insurance	Dummy variable	Dependent variable
	expropriation insurance	Dummy variable	Dependent variable
	unrest insurance	Dummy variable	Dependent variable
	breach of contract insurance	Dummy variable	Dependent variable
Political risk insurance combinations	convertibility_expropriation_unrest_breach	Dummy variable	Dependent variable
	convertibility_expropriation_breach	Dummy variable	Dependent variable
	convertibility_expropriation_unrest	Dummy variable	Dependent variable
	convertibility_unrest_breach	Dummy variable	Dependent variable
	expropriation_unrest_breach	Dummy variable	Dependent variable
	convertibility_expropriation	Dummy variable	Dependent variable
	convertibility_unrest	Dummy variable	Dependent variable
	convertibility_breach	Dummy variable	Dependent variable
	expropriation_breach	Dummy variable	Dependent variable
	expropriation_unrest	Dummy variable	Dependent variable
	unrest_breach	Dummy variable	Dependent variable
Political risks	repatriation risk	Continuous variable	+
	breach of contract risk	Continuous variable	+
	legislative risk	Continuous variable	+
	expropriation risk	Continuous variable	+
	payment delays risk	Continuous variable	+
	civil war risk	Continuous variable	+
	external war risk	Continuous variable	+
	increase in civil war risk	Continuous variable	indifferent
	interation repatriation	Continuous variable	+
	interation unrest	Continuous variable	+
	interation breach of contract	Continuous variable	+
	interation civil war_expropriation	Continuous variable	+
Control variables	year	Continuous variable	indifferent
	guarantee holder	Dummy variable	+
	instrument	Dummy variable	+
	exposure	Continuous variable	+
	effective tenor	Continuous variable	–
	active contract	Dummy variable	Dependent variable
	host country region	Index variable	–
	investor country region	Index variable	+
	oecd country risk	Index variable	+
	sector	Dummy variable	+

Font: own elaborateness

Table 2: Numeric features

Variables numeric significance

Class of variables	Variable	Numeric features
Political risk insurances	convertibility insurance	0=not insured; 1=insured
	expropriation insurance	0=not insured; 1=insured
	unrest insurance	0=not insured; 1=insured
	breach of contract insurance	0=not insured; 1=insured
Political risk insurance combinations	convertibility_expropriation_unrest_breach	0=at least one political risk not insured; 1=all political risks insured
	convertibility_expropriation_breach	0=at least one political risk not insured; 1=the three political risks insured
	convertibility_expropriation_unrest	0=at least one political risk not insured; 1=the three political risks insured
	convertibility_unrest_breach	0=at least one political risk not insured; 1=the three political risks insured
	expropriation_unrest_breach	0=at least one political risk not insured; 1=the three political risks insured
	convertibility_expropriation	0=at least one political risk not insured; 1=the two political risks insured
	convertibility_unrest	0=at least one political risk not insured; 1=the two political risks insured
	convertibility_breach	0=at least one political risk not insured; 1=the two political risks insured
	expropriation_breach	0=at least one political risk not insured; 1=the two political risks insured
	expropriation_unrest	0=at least one political risk not insured; 1=the two political risks insured
	unrest_breach	0=at least one political risk not insured; 1=the two political risks insured
Political risks	repatriation risk	risk increases from 0 (lower) to 1 (higher)
	breach of contract risk	risk increases from 0 (lower) to 1 (higher)
	legislative risk	risk increases from 0 (lower) to 1 (higher)
	expropriation risk	risk increases from 0 (lower) to 1 (higher)
	payment delays risk	risk increases from 0 (lower) to 1 (higher)
	civil war risk	risk increases from 0 (lower) to 1 (higher)
	external war risk	risk increases from 0 (lower) to 1 (higher)
	increase in civil war risk	risk increases from -2 (lower) to 2 (higher)
	interation repatriation	risk increases from 0 (lower) to 1 (higher)
	interation unrest	risk increases from 0 (lower) to 1 (higher)
	interation breach of contract	risk increases from 0 (lower) to 1 (higher)
	interation civil war_expropriation	risk increases from 0 (lower) to 1 (higher)
Control variables	year	year increases from 2001 (lower) to 2010 (higher)
	guarantee holder	0=financial institutions; 1=corporation
	instrument	0=equity; 1=shareholder loan; 2=loan
	exposure	starts from zero
	effective tenor	permanence in insurance contract varies from 0 (lower) to 20 (higher)
	active contract	0=not actived; 1=actived
	host country region	0=Sub-Saharan Africa; 1=North Africa; 2=Developing Asia; 3=Latin America; 4=Middle East; 5= Developing Europe; 6=BRICS
	investor country region	0=Austria/Germany/Netherlands/Switzerland/UK; 1=European Union; 2=USA/Canada; 3=Developed Asia; 4=Other
	oecd country risk	risk increases from 0 (best) to 7 (worst)
	sector	0=not regulated; 1=regulated

Font:own elaborateness

Table 3: Variables' rationale

Description of the variables utilized in the econometric models and in the descriptive statistics

Class of variables	Variable	Rationale
Political risk insurances	convertibility insurance	Insurance to cover restrictions on capital moves
	expropriation insurance	Insurance to cover governmental take over
	unrest insurance	Insurance to cover unrest disturbance
	breach of contract insurance	Insurance to cover contract execution
Political risk insurance combinations	convertibility_expropriation_unrest_breach	Combination of convertibility, expropriation, unrest and breach of contract insurances
	convertibility_expropriation_breach	Combination of convertibility, expropriation and breach of contract insurances
	convertibility_expropriation_unrest	Combination of convertibility, expropriation and unrest insurances
	convertibility_unrest_breach	Combination of convertibility, unrest and breach of contract insurances
	expropriation_unrest_breach	Combination of expropriation, unrest and breach of contract insurances
	convertibility_expropriation	Combination of convertibility and expropriation insurances
	convertibility_unrest	Combination of convertibility and unrest insurances
	convertibility_breach	Combination of convertibility and breach of contract insurances
	expropriation_breach	Combination of expropriation and breach of contract insurances
	expropriation_unrest	Combination of expropriation and unrest insurances
	unrest_breach	Combination of unrest and breach of contract insurances
Political risks	repatriation risk	Risk of investment repatriation
	breach of contract risk	Risk of contract non-execution
	legislative risk	Risk of change in host country legislation
	expropriation risk	Risk of governmental takeover
	payment delays risk	Risk of extensive delays of payments
	civil war risk	Risk of civil unrest
	external war risk	Risk of external conflict
	increase in civil war risk	Civil war risk annual variation
	interation repatriation	Interation between repatriation and payment delays risks
	interation unrest	Interation between civil war and external war risks
	interation breach of contract	Interation between breach of contract and legislative risks
	interation civil war_expropriation	Interation between civil war and expropriation risks
Control variables	year	Year of investment
	guarantee holder	Guarantor
	instrument	Form of investment
	exposure	Size of investment
	effective tenor	Time permanence in the insurance contract
	active contract	Whether contract stays active or not
	host country region	Host country region
	investor country region	Investor country region
	oecd country risk	Overall sovereign risk
	sector	Whether a sector is regulated or not

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Table 4: Descriptive statistics

Means, standard deviations and extreme values of the variables in the sample

Class of variables	Variable	Observations	Mean	Std Dev.	Min.	Max.
Political risk insurances	convertibility insurance	351	0.803	0.397	0	1
	expropriation insurance	351	0.814	0.389	0	1
	unrest insurance	351	0.569	0.495	0	1
	breach of contract insurance	351	0.230	0.421	0	1
Political risk insurance combinations	convertibility_expropriation_unrest_breach	351	0.099	0.300	0	1
	convertibility_expropriation_breach	351	0.122	0.328	0	1
	convertibility_expropriation_unrest	351	0.458	0.499	0	1
	convertibility_unrest_breach	351	0.119	0.325	0	1
	expropriation_unrest_breach	351	0.116	0.321	0	1
	convertibility_expropriation	351	0.695	0.460	0	1
	convertibility_unrest	351	0.507	0.500	0	1
	convertibility_breach	351	0.173	0.379	0	1
	expropriation_breach	351	0.156	0.364	0	1
	expropriation_unrest	351	0.504	0.500	0	1
	unrest_breach	351	0.142	0.350	0	1
Political risks	repatriation risk	351	0.413	0.158	0.25	1
	breach of contract risk	351	0.374	0.123	0.25	1
	legislative risk	351	0.348	0.101	0.14	0.66
	expropriation risk	351	0.196	0.09	0.10	1
	payment delays risk	351	0.220	0.163	0.07	1
	civil war risk	351	0.342	0.070	0.26	0.66
	external war risk	351	0.306	0.046	0.25	0.5
	increase in civil war risk	351	1.018	0.202	0.42	1
	interation repatriation	351	0.108	0.158	0.01	2
	interation unrest	351	0.105	0.030	0.06	0.21
	interation breach of contract	351	0.129	0.061	0.04	0.80
	interation civil war_expropriation	351	0.070	0.048	0.26	0.45
Control variables	year	351	2005	2.882	2001	2010
	guarantee holder	351	0.474	0.500	0	1
	instrument	351	0.706	0.768	0	1
	exposure	351	36.404	54.658	0	380
	effective tenor	351	7.908	2.519	2	20
	active contract	351	0.529	0.499	0	1
	host country region	351	3.270	2.352	0	6
	investor country region	351	1.447	1.562	0	4
	oecd country risk	351	5	1.533	0	7
	sector	351	0.364	0.482	0	1

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4. METHODOLOGY

Besides descriptive statistics, we utilized two more quantitative analysis: joint-distribution statistical analysis and the econometric approach based on a non-linear binary response variable model (logit). The results obtained from these two methodologies were superior in terms of significance, expected signs and relevance of variables than other quantitative analysis tested. Moreover, they are the most adequate models for binary and discrete characteristic of most variables in our analysis.

The binary and discrete characteristic of most variables allowed us to use joint-distribution analysis because we could observe the joint behavior of two variables for all their values. Each binary variable value can represent a region, whether a sector is regulated or not, etc. Therefore we were able to illustrate some of these relations on Section 5. However, given the large number of binary variables, we only tested the ones that appeared to be relevant.

As to our dependent variables, they all have a binary characteristic. Among the non-linear binary models tested, the most adherent to reality (in terms of expected signs, significance and relevance of variables) was the logit, therefore it was utilized in all regressions. It is relevant to emphasize that the multicollinearity issue is not a problem in our analyses even with the large number of econometric interactions conducted because the logit model is non-linear and the linear multicollinearity does not represent a problem. Moreover, the software utilized (Stata®) drops variables with multicollinearity.

With the adequate econometric approach, we performed two distinct, although related studies: understanding the reasoning behind exercising the option to terminate the insurance contract early and the determinants of entering into project political risk insurance. For the

first study one logit regression was sufficient. However, for the second study we executed fourteen logit regressions utilizing just one category of insurance or combinations among the four categories offered by MIGA. The regressions results with the adaptations demanded by the logit model and its respective formulas are presented in Section 5.

5. RESULTS

5.1 Joint distributions

Given the complexity of the data and several meaningful relationships among them, this section explores the other relations among the variables.

Table 5: guarantee holder and instrument

The results are shown on a percentual basis.

		instrument		
		equity	shareholder loan	loan
guarantee	**financial institutions**	18,57	21,14	12,86
holder	corporation	30	11,14	6,29

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Financial institutions as guarantee holders utilize debt proportionally more than equity as investment instruments, contrary to non-financial institutions.

Table 6: host country region and guarantee holder

The results are shown on a percentual basis.

		guarantee holder	
		financial institutions	corporation
host country region	Sub Saharan Africa	10,86	16,29
	North Africa	0	0,86
	Developing Asia	5,71	2,29
	Latin America	7,43	6,86
	Middle East	0,29	2,29
	Developing Europe	18,29	6,57
	BRICS	10	12,29

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Financial institutions are largely insured within the EU, mainly between the parent institution in a developed country and its subsidiary in a developing country. Taking to consideration that South Africa is not part of Sub Saharan Africa in our definitions (South Africa is part of BRICS) it is interesting that North Africa has less PRI contracts than the Sub Saharan Africa.

Table 7: investor country region and guarantee holder

The results are shown on a percentual basis.

		guarantee holder	
		financial institutions	corporation
investor country region	Austria/Germany/Netherlands/Switzerland/UK	27,71	10,86
	European Union	10,29	17,09
	USA/Canada	4	3,13
	Developed Asia	1,71	3,42
	Other	8,86	12,82

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Table 8: investor country region and instrument

The results are shown on a percentual basis.

		instrument		
		equity	shareholder loan	loan
investor country region	Austria/Germany/Netherlands/Switzerland/UK	15,38	17,09	5,98
	European Union	13,96	7,41	5,98
	USA/Canada	4,56	1,14	1,42
	Developed Asia	2,56	1,71	0,85
	Other	11,97	5,13	4,84

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The investor country region containing Austria, Germany, Netherlands, Switzerland and UK essentially utilizes financial institutions as guarantee holders, as shown in Table 7, and debt as the investment instrument, as presented in Table 8.

Table 9: host country region and sector

The results are shown on a percentual basis.

		sector	
		not regulated	regulated
host country region	Sub Saharan Africa	16,81	10,54
	North Africa	0,28	0,57
	Developing Asia	5,13	2,85
	Latin America	8,26	5,98
	Middle East	1,99	0,57
	Developing Europe	20,80	3,99
	BRICS	10,26	11,97

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Table 10: investor country region and sector

The results are shown on a percentual basis.

		sector	
		not regulated	regulated
investor country region	Austria/Germany/Netherlands/Switzerland/UK	31,34	7,12
	European Union	13,39	13,96
	USA/Canada	4,56	2,56
	Developed Asia	1,99	3,13
	Other	12,25	9,69

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The developing European region has its financial sector eminently insured. On the other hand, BRICS countries have their infrastructure sector primarily insured, as shown in Table 9. Most insurance contracted by investor country region containing Austria, Germany, Netherlands, Switzerland and UK insures the financial sector of developing countries, as indicated in Table 10.

Table 11: investor country region and host country region

The results are shown on a percentual basis.

		host country region				
		Sub Saharan Africa	North Africa	Developing Asia	Latin America	Middle East
investor country region	Austria/Germany/Netherlands/Switzerland/UK	8,21	0,28	4,27	2,56	0
	European Union	4,84	0,57	1,14	4,84	1,42
	USA/Canada	1,14	0	0,28	2,56	0,28
	Developed Asia	0,28	0	1,71	0,57	0
	Other	13,11	0	0,57	3,7	0,85

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Table 11 shows that Europe as a whole insures project political risks within its own region and BRICS.

Table 12: host country region and convertibility_expropriation_unrest_breach insurance

The results are shown on a percentual basis.

		convertibility_expropriation_unrest_breach	
		at least one political risk not insured	all political risks insured
host country region	Sub Saharan Africa	8,12	5,41
	North Africa	0,28	0,57
	Developing Asia	7,12	0,85
	Latin America	13,39	0,85
	Middle East	2,28	0,28
	Developing Europe	23,08	1,71
	BRICS	21,94	0,28

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Table 12 exhibits that poorer host country regions have a greater propensity to contract all the types of insurance offered by MIGA. On the other hand, the richest host country regions have a lower propensity to contract all the types of insurance together.

Table 13: investor country region and convertibility_expropriation_unrest_breach

insurance

The results are shown on a percentual basis.

		convertibility_expropriation_unrest_breach	
		at least one political risk not insured	all political risks insured
investor country region	Austria/Germany/Netherlands/Switzerland/UK	36,47	1,99
	European Union	23,36	0,40
	USA/Canada	5,98	1,14
	Developed Asia	5,13	0,00
	Other	19,09	2,85

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The propensity of contracting all insurances is low regardless of the investor country regions.

Table 14: expropriation insurance and convertibility insurance

The results are shown on a percentual basis.

		convertibility insurance	
		not insured	insured
expropriation insurance	not insured	7,69	10,83
	insured	11,97	69,52

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Table 14 exposes great propensity to contract the expropriation and convertibility insurances together.

Table 15: OECD country risk vs. breach of contract insurance

The results are shown on a percentual basis. The variable OECD country risk ranges from 0 to 7, where 0 is the best country risk and 7 is the worst country risk.

		breach of contract insurance	
		not insured	insured
	0	0,28	0,28
	1	2,8	2,0
oecd	**2**	3,1	1,7
country	**3**	14,2	2,0
risk	**4**	11,1	2,0
	5	18,8	5,1
	7	26,5	10,0

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Table 15 shows a unique finding about breach of contract political risk insurance. The higher the country risk, the greater the propensity to contract this particular insurance.

5.2 Econometric results

The econometric results represent the findings obtained with logit regressions. Table 16 presents the motivations for exiting before the original contracted tenor. Tables 17, 18, 19 and 20 exhibit the determinants of contracting one type of insurance or a combination of types of insurance.

Table 16: Active contract logit regression

The dependent variable for an active contract is 0 and it is 1 for an inactive contract. The explanatory variables are grouped as risks and control variables. The risk variable breach of contract ranges from 0 (lower risk) to 1 (higher risk), the risk variable repatriation risk ranges from 0 (lower risk) to 1 (higher risk) and the risk variable interaction unrest (interaction between civil unrest and external war risk) ranges from 0 (lower risk) to 1 (higher risk). The control variable OECD country risk ranges from 0 to 7, where 0 is the best country risk and 7 is the worst country risk. The indexes *, **,** and *** represent the significance levels of 10%, 5% and 1%, respectively, and the t-statistics are reported in parentheses. The likelihood ratio and pseudo R2 indicate the model's adherence.

	active contract
risks	
breach of contract risk	2.439**
	(-1.309)
interation repatriation	-4.021***
	(-1.194)
interation unrest	12.751***
	(-4.274)
control variables	
oecd country risk	0.170**
	(0.074)
constant	-2.658***
	(0.725)
Likelihood ratio	**31.91**
Pseudo R2	**0.06**
Observations	**351**

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Table 17: Active contract logit regression: predicted probability of an event for classification

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	130	73	203
-	56	92	148
Total	186	165	351
Sensitivity		0.70	
Specificity		0.56	
Correctly classified		0.63	

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(1) *active contract = -2.658 + breach of contract risk + interaction unrest +*

0.17 oecd country risk

An increase in the breach of contract and unrest risks is fully correlated with the permanence in the insurance contracts. An escalation of the OECD country risk also influences the option to remain insured. Regarding the predicted probability, Table 17 shows that there is equilibrium between sensitivity and specificity, reflecting the equilibrium in the quantity of 0 and 1. This result generates accuracy greater than 60%.

Table 18: Combination of convertibility_expropriation_unrest_breach insurance logit regression

The dependent variable convertibility_expropriation_unrest_breach assumes the value of 1 when all these types of insurance are contracted and 0 when at least one of them is not contracted. The explanatory variables are grouped as risks and control variables. The risk variable civil war ranges from 0 (lower risk) to 1 (higher risk), the risk variable external war risk ranges from 0 (lower risk) to 1 (higher risk) and the risk variable interaction unrest (interaction between civil unrest and external war) ranges from 0 (lower risk) to 1 (higher risk). The control variable exposure starts from 0 and the control variable effective tenor varies from 0 (lower) to 20 (highest). Indexes The indexes *, **,*** ** and *** represent the significance levels of 10%, 5% and 1% %, respectively, and the t-statistics are reported in parentheses. The likelihood ratio and pseudo R2 indicate the model's adherence.

	convertibility_expropriation_unrest_breach
risks	
civil war risk	72.280***
	(23.857)
external war risk	93.503***
	(29.971)
interation unrest	-261.928***
	(85.351)
control variables	
exposure	0.007***
	(0.003)
effective tenor	-0.153*
	(0.093)
constant	-26.947***
	(8.397)
Likelihood ratio	54.19
Pseudo R2	0.24
Observations	351

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Table 19: Combination of convertibility_expropriation_unrest_breach insurance logit regression: predicted probability of an event for classification

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	4	8	12
-	31	308	339
Total	35	316	351
Sensitivity		0.11	
Specificity		0.97	
Correctly classified		0.89	

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(2) *convertibility_expropriation_unrest_breach = -26.947 + civil war risk + external war risk + 0.007 exposure – 0.153 effective tenor*

Contracting all the types of insurance is directly influenced by civil and external war risks. Exposure size and effective tenor have a small effect. Less than 10% of the sample is composed by events (contracting all PRIs) with reflect a lower sensitivity and a higher specificity, although the correct classification achieves almost 90%.

Table 20: Combinations of three types of insurance logit regressions

The dependent variables convertibility_expropriation_unrest, convertibility_unrest_breach, convertibility_expropiation_breach and expropriation_unrest_breach assume the value of 1 when all these types of insurance are contracted and 0 when at least one of them is not contracted. The explanatory variables are grouped as risks and control variables. The risk variable civil war ranges from 0 (lower risk) to 1 (higher risk), the risk variable external war ranges from 0 (lower risk) to 1 (higher risk), the risk variable interaction breach of contract (interaction between breach of contract and legislative risk) ranges from 0 (lower risk) to 1 (higher risk) and the risk variable interaction unrest (interaction between civil unrest and external war risk) ranges from 0 (lower risk) to 1 (higher risk). The control variable OECD country risk ranges from 0 to 7, where 0 is the best country risk and 7 is the worst country risk, the control variable guarantee holder is 0 for financial institutions and 1 for corporations, the control variable sector assumes the value of 0 for not-regulated sectors and 1 for regulated sectors, the control variable host country region assumes the following values: 0 for Sub-Saharan Africa (except South Africa), 1 for North Africa, 2 for Developing Asia (except China and India), 3 for Latin America (except Brazil), 4 for the Middle East (except Israel), 5 for Developing Europe (except Russia) and 6 for BRICS, the control variable investor country region assumes the following values: 0 for Austria, Germany, the Netherlands, Switzerland and the UK; 1 for the European Union (except countries defined as 0), 2 for the USA and Canada, 3 for Developed Asia and 4 for Other, the control variable exposure starts from 0 and the control variable effective tenor varies from 0 (lower) to

20 (highest). Indexes The indexes *, **,*** ** and *** represent the significance levels of 10%, 5% and 1%, respectively, and the t-statistics are reported in parentheses. The likelihood ratio and pseudo R2 indicate the model's adherence.

	convertibility_expropriation_unrest	convertibility_unrest_breach	convertibility_expropriation_breach	expropriation_unrest_breach
risks				
civil war risk		40.209** (17.172)	49.915** (21.264)	90.621*** (24.481)
external war risk		52.788** (22.264)	62.185** (26.962)	120.207*** (30.413)
interation breach of contract				
interation unrest		-138.784** (59.863)	-184.008** (75.579)	-332.215*** (87.741)
control variables				
oecd country risk	0.107 (0.074)			
guarantee holder	0.743*** (0.246)			
sector	-0.561** (0.257)	1.956*** (0.411)	1.713*** (0.395)	2.186*** (0.460)
host country region	0.216*** (0.051)	-0.463*** (0.095)	-0.404*** (0.089)	-0.581*** (0.107)
investor country region				
exposure		0.007** (0.003)	0.005* (0.003)	0.009*** (0.003)
effective tenor			-0.158*	-0.178**
constant	-0.373 (0.484)	-17.422*** (6.431)	-17.493** (7.580)	-33.633*** (8.500)
Likelihood ratio	42.03	61.43	48.24	71.86
Pseudo R2	0.09	0.24	0.18	0.28
Observations	351	351	351	351

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Table 21: *convertibility_expropriation_unrest***logitregession:predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	90	44	134
-	70	147	217
Total	160	191	351
Sensitivity		0.56	
Specificity		0.77	
Correctly classified		0.68	

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Table 22: *convertibility_unrest_breach***logitregession:predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	6	8	14
-	36	301	337
Total	42	309	351
Sensitivity		0.14	
Specificity		0.97	
Correctly classified		0.87	

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Table 23: *convertibility_expropriation_breach* **logitregession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	3	4	7
-	40	304	344
Total	43	308	351
Sensitivity		0.07	
Specificity		0.99	
Correctly classified		0.87	

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Table 24: *expropriation_unrest_breach* **logitregession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	13	8	21
-	28	302	330
Total	41	310	351
Sensitivity		0.32	
Specificity		0.97	
Correctly classified		0.90	

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(3) *convertibility_expropriation_unrest = 0.743 guarantee holder – 0.561 sector +*

    0.216 host country region

(4) *convertibility_unrest_breach = -17.422 + civil war risk + external war risk + sector –*

    0.463 host country region + 0.007 exposure

(5) *convertibility_expropriation_breach = -17.493 + civil war risk + external war risk +*

sector – 0.404 host country region + 0.005 exposure – 0.159 effective tenor

(6) *expropriation_unrest_breach = -33.633 + civil war risk + external war risk +*

sector -0.581 host country region + 0.009 exposure – 0.178 effective tenor

The engagement in a combination of three insurance contracts is mainly influenced by the civil and external war risks and the sector of economy. As the host country region becomes wealthier, the likelihood of contracting a combination of three types of insurance diminishes. Exposure and effective tenor bring a negligible effect, as concluded for the combination of four contracts. Taking notice the predicted probabality of the models, we always observe a higher specificity than sensitivity due to the difficulty of contracting 3 PRIs at the same time. The accuracy is high for all models.

Table 25: Combinations of two types of insurance logit regressions

The dependent variables convertibility_expropriation, convertibility_unrest, convertibility_breach, expropriation_unrest, expropriation_breach and unrest_breach assume the value of 1 when both types of insurance are contracted and 0 when at least one of them is not contracted. The explanatory variables are grouped as risks and control variables. The risk variable repatriation ranges from 0 (lower risk) to 1 (higher risk), the risk variable expropriation ranges from 0 (lower risk) to 1 (higher risk), the risk variable breach of contract ranges from 0 (lower risk) to 1 (higher risk), the risk variable civil war risk ranges from 0 (lower risk) to 1 (higher risk), the risk variable external war ranges from 0 (lower risk) to 1 (higher risk), the risk variable interaction breach of contract (interaction between breach of contract and legislative risks) ranges from 0 (lower risk) to 1 (higher risk) and the risk variable interaction unrest (interaction between civil unrest and external war risk) ranges from 0 (lower risk) to 1 (higher risk). The control variable OECD country risk ranges from 0 to 7, where 0 is the best country risk and 7 is the worst country risk, the control variable instrument is 0 for equity, 1 for shareholder loan and 2 for loan, the control variable guarantee holder is 0 for financial institutions and 1 for corporations, the control variable sector assumes the value of 0 for not-regulated sectors and 1 for regulated sectors, the control variable host country region assumes the following values: 0 for Sub-Saharan Africa (except South Africa), 1 for North Africa, 2 for Developing Asia (except China and India), 3 for Latin America (except Brazil), 4 for the Middle East (except Israel), 5 for Developing Europe (except Russia) and 6 for BRICS, the control variable investor country region assumes the following values: 0 for Austria, Germany, the Netherlands, Switzerland and the UK; 1 for the European Union (except

countries defined as 0), 2 for the USA and Canada, 3 for Developed Asia and 4 for Other, the control variable exposure starts from 0 and the control variable effective tenor varies from 0 (lower) to 20 (highest). Indexes The indexes *,**,*** *, ** and *** represent the significance levels of 10%, 5% and 1% %, respectively, and the t-statistics are reported in parentheses. The likelihood ratio and pseudo R2 indicate the model's adherence.

	convertibility_expropriation	convertibility_unrest	convertibility_breach	expropriation_unrest	expropriation_breach	unrest_breach
risks						
repatriation risk	2.331* (1.018)					
expropriation risk				2.825 (1.720)		
breach of contract risk			-6.962*** (2.605)			
civil war risk	-22.291* (13.011)	18.421 (11.788)		19.445 (12.178)	65.222*** (21.264)	66.746*** (17.946)
external war risk	-33.409** (15.485)	20.299 (14.273)		26.532* (15.123)	80.803*** (25.562	94.311*** (22.801)
interation breach of contract			10.414** (4.275)			
interation unrest	77.069* (42.544)			-76.559* (39.939)	-229.754*** (72.484)	-283.452*** (62.842)
control variables						
oecd country risk	0.112 (0.083)			0.117 (0.077)		
instrument	0.569*** (0.182)					
guarantee holder				0.867*** (0.264)		
sector	-1.521*** (0.279)		2.185*** (0.344)	-0.496* (0.270)	2.167*** (0.385)	2.202*** (0.422)
host country region		-0.274*** (0.057)	-0.218*** (0.067)	-0.329*** (0.059)	-0.371*** (0.080)	-0.580*** (0.100)
investor country region	0.132 (0.086)	0.168** (0.078)				
exposure	0.008** (0.003)			0.003* (0.002)	0.006** (0.002)	0.008*** (0.003)
effective tenor	0.118** (0.052)		-0.182** (0.072)	0.080* (0.048)	-0.168** (0.075)	-0.139* (0.079)
constant	7.875* (4.647)	-5.951 (4.287)	0.586 (0.942)	-7.790* (4.499)	-22.621*** (7.419)	-27.359*** (6.511)
Likelihood ratio	**61.24**	**50.12**	**53.73**	**65.80**	**65.64**	**85.61**
Pseudo R2	**0.14**	**0.10**	**0.17**	**0.13**	**0.21**	**0.30**
Observations	**351**	**351**	**351**	**351**	**351**	**351**

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Table 26: *convertibility_expropriation* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	220	62	282
-	24	45	69
Total	244	107	351
Sensitivity		0.90	
Specificity		0.42	
Correctly classified		0.75	

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Table 27: *convertibility_unrest* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	108	48	156
-	70	125	195
Total	178	173	351
Sensitivity		0.61	
Specificity		0.72	
Correctly classified		0.66	

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Table 28: *convertibility_breach* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	8	10	18
-	53	280	333
Total	61	290	351
Sensitivity		0.13	
Specificity		0.96	
Correctly classified		0.82	

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Table 29: *expropriation_unrest* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	114	46	160
-	62	129	191
Total	176	175	351
Sensitivity		0.65	
Specificity		0.74	
Correctly classified		0.69	

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Table 30: *expropriation_breach logit regression*: **predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	11	9	20
-	44	287	331
Total	55	296	351
Sensitivity		0.20	
Specificity		0.97	
Correctly classified		0.85	

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Table 31: *unrest_breach* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	18	11	29
-	32	290	322
Total	50	301	351
Sensitivity		0.36	
Specificity		0.96	
Correctly classified		0.88	

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(7) *convertibility_expropriation = 7.875 + repatriation risk + interaction unrest + 0.569 instrument + 0.008 exposure + 0.118 effective tenor*

(8) *convertibility_unrest = − 0.274 host country region +0.168 investor country region*

(9) *convertibility_breach = interaction breach of contract + sector − 0.218 host country region − 0.182 effective tenor*

(10) *expropriation_unrest= -7.790 + external war + 0.867 guarantee holder − 0.496 sector − 0.329 218 host country region + 0.003 exposure +0.08 effective tenor*

(11) *expropriation_breach =-22.621 + civil war risk + external war risk + sector − 0.371 host country region + 0.006 exposure − 0.168 effective tenor*

(12) *unrest_breach = −27.359 + civil war risk + external war risk + sector − 0.580 host country region + 0.008 exposure − 0.139 effective tenor*

The arrangements of two different types of insurance have different influences. The convertibility and expropriation insurance arrangement is utterly influenced by the repatriation and unrest risks; the instrument of investment also plays a significant role. The convertibility and unrest insurance combination is influenced only by the location of the host and investor country regions. The set-up of convertibility and breach of contract insurance is directly influenced by the breach of contract risk and the sector. The combination of expropriation and breach of contract and the combination of unrest and breach of contract insurance are mainly influenced by the civil and external war risks and the sector. For most of the above combinations of two types of insurance, effective tenor and exposure have a small influence. The differences between sensistivity and secificty for the combination of two PRIs

are lower than the combinations of three and four PRIs. However as in cases of combination of three and four PRIs, the accurancy for the combiantion of two PRIs is also high.

Table 32: Insurance logit regressions

The dependent variables convertibility insurance, expropriation insurance, unrest insurance and breach of contract insurance assume the value of 1 when they are contracted and 0 when they are not contracted. The explanatory variables are grouped as risks, insurance and control variables. The risk variable repatriation ranges from 0 (lower risk) to 1 (higher risk), the risk variable expropriation ranges from 0 (lower risk) to 1 (higher risk), the risk variable civil war ranges from 0 (lower risk) to 1 (higher risk), the risk variable external war ranges from 0 (lower risk) to 1 (higher risk) and the risk variable interaction unrest (interaction between civil unrest and external war) ranges from 0 (lower risk) to 1 (higher risk). The insurance variable convertibility insurance assumes the value 0 (not contracted) or 1 (contracted), the insurance variable expropriation insurance assumes the value 0 (not contracted) or 1 (contracted) and the insurance variable unrest insurance assumes the value 0 (not contracted) or 1 (contracted). The control variable year ranges from 2001 to 2010, the control variable instrument is 0 for equity, 1 for shareholder loan and 2 for loan, the control variable guarantee holder is 0 for financial institutions and 1 for corporations, the control variable sector assumes the value of 0 for not-regulated sectors and 1 for regulated sectors, the control variable host country region assumes the following values: 0 for Sub-Saharan Africa (except South Africa), 1 for North Africa, 2 for Developing Asia

(except China and India), 3 for Latin America (except Brazil), 4 for the Middle East (except Israel), 5 for Developing Europe (except Russia) and 6 for BRICS, the control variable investor country region assumes the following values: 0 for Austria, Germany, the Netherlands, Switzerland and the UK; 1 for the European Union (except countries defined as 0), 2 for the USA and Canada, 3 for Developed Asia and 4 for Other, the control variable exposure starts from 0 and the control variable effective tenor varies from 0 (lower) to 20 (highest). Indexes The indexes *, **,*** ** and *** represent the significance levels of 10%, 5% and 1%, respectively, and the t-statistics are reported in parentheses. The likelihood ratio and pseudo R2 indicate the model's adherence.

	convertibility insurance	expropriation insurance	unrest insurance	breach of contract insurance
risks				
repatriation risk	2.168* (1.233)			
expropriation risk		10.718** (4.897)		
civil war risk			72.839*** (16.475)	36.410** (14.592)
external war risk		-6.753** (3.279)	100.488*** (19.963)	53.536*** (18.162)
interation unrest			-245.972*** (52.850)	-133.027*** (49.991)
interation civil war_expropriation		-14.552* (8.286)		
insurances				
convertibility insurance		1.418*** (0.321)	1.930*** (0.384)	
expropriation insurance	1.103*** (0.318)		1.620*** (0.406)	
unrest insurance	1.160*** (0.301)			
control variables				
year		0.118** (0.058)		
instrument	0.406* (0.206)			
guarantee holder		-0.515* (0.309)		
sector			0.898*** (0.330)	2.328*** (0.327)
host country region			-0.524*** (0.079)	-0.228*** (0.067)
investor country region			0.230** (0.102)	
exposure		0.101** (0.004)		0.004* (0.002)
effective tenor		0.141* (0.076)		-0.197*** (0.006)
constant	-1.098* (0.579)	-236.58** (118.225)	-31.038*** (6.187)	-15.104*** (5.297)
Likelihood ratio	42.70	43.42	142.42	77.52
Pseudo R2	0.12	0.13	0.30	0.20
Observations	351	351	351	351

Font: own   elaborateness

Table 33: *convertibility insurance* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	265	55	320
-	17	14	31
Total	282	69	351
Sensitivity	0.94		
Specificity	0.20		
Correctly classified	0.79		

Font: own elaborateness

Table 34: *expropriation insurance* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	274	58	332
-	12	7	19
Total	286	65	351
Sensitivity	0.96		
Specificity	0.11		
Correctly classified	0.80		

Font: own elaborateness

Table 35:*unrest logit regression***: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	159	50	209
-	41	101	142
Total	200	151	351
Sensitivity	0.79		
Specificity	0.67		
Correctly classified	0.74		

Font: own elaborateness

Table 36:*breach of contract insurance* **logit regession: predicted probability of an event for classification**

The predicted probability of an event for classification with a cut point at 50%.

Classified (P(1)>=50%)	1	0	Total
+	27	25	52
-	54	245	299
Total	81	270	351
Sensitivity	0.33		
Specificity	0.91		
Correctly classified	0.77		

Font: own elaborateness

(13)   *convertibility insurance = –1.098 + repatriation risk + expropriation insurance + unrest insurance + 0.405 instrument*

(14)   *expropriation insurance = –236.58 + expropriation risk + convertibility insurance + 0.118 year – 0.515 guarantee holder + 0.101 exposure + 0.141 effective tenor*

(15)   *unrest insurance = –31.038 + civil war risk + external war risk + convertibility insurance + expropriation insurance + 0.898 sector – 0.524 host country region*

(16)   *breach of contract insurance = –15.104 + civil war risk + external war risk + sector – 0.228 host country region + 0.004 exposure – 0.197 effective tenor*

Most insurance is directly related to its own risk and the engagement in a different type of insurance. Unrest and breach of contract insurance is also directly related to civil and external war risks and have a smaller relation with the host country region. Instrument, guarantee holder and effective tenor have a role in at least one of the types of insurance. The only regression that is influenced by the year in which it was contracted is the one in which expropriation insurance is the dependent variable. Due to the fact that the probability of occurrence an event is higher when only on PRI is contracted, sensitivity is higher than specificity, except for breach of contract risk insurance. The accuracy still is high.

6. CONCLUSION

The identification of the determinants of contracting project political risk insurance for direct investments in emerging markets and the motivations to exercise the option to exit insurance contracts were investigated.

It is important to emphasize that we were not looking for the determinants of FDI, which is the main differentiator from most academic works conducted so far. The main motivation for this study was the increasing growth and interest in this subject and the recent shift of a large volume of FDI from developed countries to emerging markets.

The utilization of data from MIGA, World Bank, ONDD, PRS and OECD in a logit econometric methodology achieved several findings.

The descriptive statistics reveal that convertibility and expropriation insurance is present in most of MIGA's contracts (around 80% of all contracts). The average effective tenor of the insurance contracts is approximately 8 years and the average exposure ranges from US$0 to 380 million with an average size of US$36.4 million. Contemplating all contracts, 47% do not remain active until the original tenor contracted. The host country OECD risk is high on average (5 on a scale of 0 to 7).

The joint distribution analysis explains several findings. Financial institutions as guarantee holders utilize debt proportionally more than equity as an investment instrument, contrary to non-financial institutions, and are largely insured within the EU, mainly between the parent institution in a developed country and its subsidiary in a developing country. It can be concluded that the developing European region has its financial sector eminently insured. On the other hand, BRICs countries have their infrastructure sector primarily insured.

Poorer host country regions have a greater propensity to have all the types of insurance offered by MIGA contracted as a package. On the other hand, the richest host country regions have a lower propensity to contract all the types of insurance together.

There is a high connection between expropriation insurance and transfer risk insurance. The higher the country risk, the greater the propensity for contracting breach of contract political risk insurance.

The logit model indicates that an increase in the breach of contract and unrest risks is fully correlated with the permanence in the insurance contracts. An escalation of the OECD country risk also influences the option to remain insured.

Contracting all four types of insurance is directly influenced by the civil and external war risks. The engagement in a combination of three insurance contracts is mainly influenced by the civil and external war risks and the sector of economy. As the host country region becomes wealthier, the likelihood of contracting a combination of three types of insurance diminishes.

The arrangements of two different types of insurance have different influences. The arrangement of convertibility and expropriation insurance is utterly influenced by the repatriation and unrest risks; the instrument also plays a significant role. The combination of convertibility and unrest insurance is influenced only by the location of the host and investor country regions. The set-up of convertibility and breach of contract insurance is directly influenced by the breach of contract risk and the sector. The combination of expropriation and breach of contract and the combination of unrest and breach of contract insurance are mainly influenced by the civil and external war risks and the sector.

Analyzing one category at a time, it can be noted that most types of insurance is directly related to the risks they insure. The unrest and breach of contract types of insurance is

directly related to civil and external war risk. Instrument, guarantee holder and effective tenor have a relatively important influence on at least one of the types of insurance.

As one of the first studies on political risk insurance, this paper brings new perspectives for future research, such as the relative importance of this instrument to increasing FDI in emerging markets, the relevance of PRI to the insurance industry and academic research on other insurance determinants.

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