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## Doctoral Thesis

# FIRM'S MANAGEMENT OF SYSTEMATIC RISK: ONE SOURCE AND TWO STRATEGIES

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# TABLE OF CONTENTS

Page

**FIGURES AND TABLES**

Page

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# INTRODUCCIÓN GENERAL

## INTRODUCCIÓN GENERAL

### *El riesgo asociado a la acción de una empresa desde la óptica del mánager*

El riesgo asociado a la acción de una empresa está formado por dos componentes: el riesgo no sistemático (o riesgo específico, o riesgo diversificable), que está relacionado con eventos particulares de la empresa y que constituye la mayor parte del riesgo total, y el riesgo sistemático[1] (o riesgo de mercado, o riesgo no diversificable), que representa entre el 20 y el 30% del riesgo total y que está relacionado con las tendencias del mercado general (Crouhy, Galai y Mark, 2000; Montgomery y Singh, 1984).

En los tres capítulos de la presente tesis nos centramos en este segundo componente que muestra en qué medida un movimiento de los precios del mercado afecta los precios de las acciones y depende, entre otros factores, de las políticas monetarias y fiscales, los costes de la energía y las características demográficas del mercado particular. El riesgo sistemático será nuestra variable común debido a la capacidad que tiene su aproximación empírica beta (β) para reflejar las percepciones del riesgo en el mercado. Además, las medidas del mercado accionario no son afectadas por el sesgo asociado a las medidas contables y reflejan directamente el punto de vista del accionista común (Lubatkin y Rogers, 1989).

Como el mercado general es inobservable, se requiere una aproximación empírica del riesgo sistemático de la empresa que, en este caso, será el coeficiente β del modelo de mercado CAPM. La β, calculada como la covarianza entre el precio de una acción y un índice de mercado de referencia, muestra qué tan sensibles son los retornos de dicha acción ante las variaciones del mercado (Elgers y Murray, 1982) y, por ende, da una idea de las percepciones del mercado con respecto al riesgo de la empresa y del valor generado para los accionistas que es, en resumen, lo que nos interesa medir en todos los casos.

La perspectiva financiera, que hace énfasis en la maximización de beneficios en el largo plazo, evalúa estrategias alternativas (entre ellas la de diversificación), desde el punto de

[1] Con el fin de evitar una posible confusión entre los términos "sistemático" y sistémico", insistimos en que este último tipo de riesgo es generalmente utilizado en referencia a un evento que puede desencadenar un colapso en una determinada industria o economía. El riesgo sistémico se refiere a la posibilidad de que el sistema financiero en su conjunto pueda volverse inestable (no se refiere a los participantes individuales del mercado) y puede ser causado por un evento a nivel de empresa que sea suficientemente severo como para traer inestabilidad al sistema financiero (Murphy, 2012). Por su parte, el riesgo sistemático, que es el riesgo de nuestro interés, no tiene ni el alcance ni las implicaciones del riesgo sistémico.

vista del accionista común (Montgomery y Singh, 1984). Es importante aclarar que cuando hablamos de diversificación como estrategia para disminuir el riesgo sistemático, no nos referimos a la teoría de portafolios desde el punto de vista del accionista común. Si lo hiciéramos habría una evidente contradicción. El riesgo sistemático, también llamado riesgo de mercado o riesgo no diversificable, no se puede diversificar o, al menos, tras recomponer óptimamente su portafolio, el accionista común sólo podría aspirar a la eliminación del riesgo no sistemático o diversificable.

Cuando hablamos de diversificación como estrategia para disminuir el riesgo sistemático nos ponemos en el lugar del mánager y de su misión en la empresa, que consiste en implementar ciertas estrategias corporativas para maximizar el valor de la acción de la misma, ya sea brindándole al accionista la mayor rentabilidad para un determinado nivel de riesgo, o el menor riesgo para un determinado nivel de rentabilidad (Lubatkin y Rogers, 1989).

El mánager juega un papel fundamental en la gestión del riesgo de la empresa. Debe identificar claramente, medir, administrar y asegurar su control de forma consistente con las políticas de capital y de gestión de riesgos generales aprobadas por las directivas. Debe, además, definir las oportunidades de negocio desde una perspectiva de riesgo-retorno, actuando siempre con la intención de generar valor para los accionistas (Seth, Song y Pettit, 2002).

El rol de administrador de riesgo, que se compara con el de un escudo corporativo, está evolucionando a medida que las organizaciones enfrentan un futuro cada vez más complejo e incierto (Crouhy et al., 2000).

***¿Por qué es importante la gestión del riesgo sistemático en la empresa?***

La gestión del riesgo sistemático a nivel empresarial cobra especial relevancia en una era altamente globalizada, competitiva e incierta. En el siglo XXI, caracterizado por un fuerte desarrollo en tecnologías, comunicaciones y transporte, la continua y acelerada integración entre los mercados ha contribuido a incrementar la competencia, así como la eficiencia en el flujo de información. Somos testigos de un escenario donde la economía real y el mercado especulativo divergen creando burbujas financieras, donde importantes escándalos financieros están a la orden del día, produciendo pánicos que se contagian

rápidamente con efectos generales devastadores y donde, además, los capitales pueden fluir con mucha facilidad a través de la economía.

En consecuencia, este escenario demanda urgentemente la necesidad de entender e identificar las fuentes del riesgo sistemático (o los factores que incrementan la desconfianza del mercado), así como de ampliar el abanico de estrategias para controlarlo. Luego, a lo largo de esta tesis doctoral, centramos la atención en una fuente (manipulación del resultado) promotora de este riesgo que refleja las percepciones del riesgo o el grado de desconfianza del mercado, y en dos estrategias (internacionalización y adquisiciones) que, bajo ciertas circunstancias, ayudan a mitigarlo.

Dada la creciente competencia para la obtención de recursos provenientes de entidades financieras e inversionistas, con el fin de incursionar en los mercados globales, todas estas empresas deben mantener su buena reputación y la confianza del mercado, dos objetivos fundamentales que se pueden alcanzar a través de una adecuada gestión del riesgo (Faulkner, Teerikangas y Joseph, 2012). Por eso las corporaciones se toman muy en serio la gestión del riesgo (Froot, Scharfstein y Stein, 1993) y aquellas que tengan la habilidad de disminuirlo sin afectar su rentabilidad, tendrán una ventaja competitiva sobre las demás.

El interés en el control del riesgo sistemático se remonta a 1929, luego de la Gran Depresión de *Wall Street*, cuando los reguladores se concentran en la prevención de futuros colapsos del sector financiero a nivel regional, nacional o internacional, con el fin de evitar pánicos que, por el "efecto dominó", contagien a todo el mercado (Crouhy et al., 2000). El control del riesgo sistemático se vuelve indispensable cuando el grado de integración entre los mercados favorece y promueve este "efecto dominó", desatado cuando una mala noticia puntual se expande rápidamente afectando a todo el sistema.

Aunque, en un comienzo, la preocupación por controlar este riesgo era casi exclusiva de las empresas del sector financiero, en los últimos años, gracias al acelerado proceso de integración económica y a la globalización, su relevancia se extiende a las empresas de los demás sectores de la economía.

Entre las razones que llevan a la empresa a controlar su riesgo sistemático está la disminución del coste del capital, ya que las fuentes de financiación, al estar más seguras del pago futuro de la deuda, pueden confiar en la empresa relajando las condiciones de sus

créditos. Además, el mánager tiene un buen incentivo para reducir la volatilidad del precio de las acciones, ya que la incertidumbre dificulta la planeación y hace más complicada la optimización de las operaciones y los procesos.

*Ceteris paribus*, a menor riesgo sistemático, menor tasa de retorno requerida para una inversión y mayor el valor de la empresa (Van Horne, 2002). Un menor riesgo sistemático también agrega valor al accionista (cambiando incertidumbre por confianza), que es finalmente la razón de ser de la empresa.

***Globalización y pertinencia de los supuestos de los modelos teóricos***

De acuerdo con la teoría de los mercados de capitales, en los modelos financieros y en la concepción actual que se tiene del mercado, hay implícitas dos hipótesis: la de equilibrio y la de eficiencia (Rock, Rock y Sikora, 1994). Las actividades de inversión y especulación están fundadas en la explotación de un activo con la intención de obtener un beneficio, ya sea debido al aprovechamiento de alguna imperfección[2], lo cual contradice la primera hipótesis (equilibrio), o a la diferencia de precios (ineficiencia en la formación de precios o malformación de precios), lo que iría en contra de la noción de eficiencia informativa. En un mundo tendiente a los mercados de capitales perfectos y completos, el éxito o fracaso de una iniciativa de diversificación son juzgados por su impacto en el bienestar de los accionistas (Langetieg, Haugen y Wichern, 1980).

Aunque los modelos neoclásicos estándares de inversión asumen que los mercados de capitales son perfectos, en años recientes gran parte del desarrollo teórico ha cuestionado los supuestos básicos de tal perfección (Carpenter y Petersen, 2002). Sin embargo, bajo una estricta interpretación del modelo CAPM, en un ambiente de mercados integrados por la globalización, hay menos imperfecciones para explotar debido a que la información del mercado es completamente competitiva (Crouhy et al., 2000).

Si el mercado fuera perfecto, el impacto de las estrategias de diversificación en la distribución de probabilidad de generación de retornos para el inversionista (en nuestro

[2] Las imperfecciones del mercado afectan a cada transacción de algún modo, generando costes que interfieren en los negocios realizados por individuos racionales. Estas imperfecciones también generan oportunidades de beneficio para aquellos individuos que puedan reducirlas o eliminarlas. Las imperfecciones del mercado se pueden clasificar en las siguientes cinco categorías básicas: costes de transacción, impuestos y regulaciones, indivisibilidad de activos, activos no negociables y problemas de agencia y de información (DeGennaro, 2005).

caso, la empresa) sería irrelevante, pues el supuesto de los mercados perfectos garantizaría que un inversionista insatisfecho con el retorno de una inversión particular, pueda venderla y reorganizar su portafolio sin ningún coste. En cualquier caso, si se reconoce la existencia de comisiones, impuestos u otras fricciones, o si los mercados no son perfectos, el impacto de la operación en la distribución de retornos para la empresa se vuelve relevante.

Aunque el marco teórico del riesgo se ha resumido bajo el supuesto de que todos los activos se negocian en mercados de capitales perfectos, si se revisa la lista de condiciones del mercado perfecto, se puede encontrar buenos ejemplos que ponen en duda dicha perfección.

Para efectos de este trabajo asumimos, entonces, que la perfección de los mercados es relativa, es decir, que los mercados se mueven en un medio continuo tendiente a la perfección a medida que aumenta su integración, a medida que se hacen tratados de libre comercio que bajan los costes de transacción, y a medida que se construye una aldea global. Sin embargo, todavía persisten diferencias entre los países, hay unos de más fácil acceso y/o permanencia que otros, hay impuestos, aranceles, costes de transporte y otras imperfecciones que, aunque no se comparan con las de épocas de menor integración entre mercados, siguen ofreciendo un potencial de aprovechamiento a través de la diversificación (Crouhy et al., 2000).

La integración imperfecta del mercado de capitales, como de hecho es, implica que las inversiones en empresas de países más pobres sean menos costosas para la firma adquiriente en relación con otras potenciales inversiones y, dado que los mercados de los diferentes países no están perfectamente integrados, las diferencias en la valoración entre los mismos pueden ser un buen incentivo para emprender una estrategia corporativa con una empresa extranjera (Erel, Liao y Weisbach, 2012).

***Panorama empírico***

Un denominador común a los tres capítulos, que actúa como aliciente para nuestra investigación, es la heterogeneidad de los resultados empíricos encontrados en la literatura. Sin embargo, lejos de señalar las aparentes contradicciones, lo que buscamos con este estudio es intentar una reconciliación de dichos resultados gracias a la consideración de nuevas variables y contextos más amplios y complejos.

En el primer capítulo sobre manipulación del resultado, percepción del mercado y opinión del auditor, para el mercado español, partimos de un análisis de mediación (validez de constructo), que permite verificar la pertinencia de las causalidades entre estas tres variables. Luego, al igual que en los capítulos dos y tres, corremos un conjunto de regresiones que permiten abordar diversos problemas recurrentes en la estadística y aseguran unos resultados robustos y consistentes.

Las investigaciones empíricas previas sobre el efecto de la internacionalización y las estrategias corporativas (adquisiciones) en el riesgo sistemático se basan en muestras reducidas para contextos muy particulares y, además, proveen resultados mixtos que, si no se miran y se relacionan en un contexto más amplio, pueden parecer contradictorios. Luego, una de las contribuciones de esta tesis consiste en situar el problema en un escenario más rico, tanto a nivel temporal como en diversidad de países.

En los capítulos dos y tres brindamos una visión más global que permite conciliar resultados mixtos. Justificamos y medimos relaciones complejas entre las variables contables que gozan, hasta cierto punto, de objetividad, y la información de mercado basada en expectativas, que es más subjetiva, emocional y difícil de predecir.

Existe acuerdo en la literatura sobre la expectativa de una reducción del riesgo sistemático para la empresa, gracias al efecto de diversificación (geográfica o de producto) que supondrían la internacionalización y las estrategias corporativas (Lubatkin y Rogers, 1989). Sin embargo, no hay acuerdo sobre hasta qué punto los mercados son perfectos y eficientes, como para que se pueda gozar de dicho efecto. También son consideradas las diferencias e imperfecciones entre los mercados, que se traducen en una menor correlación entre el precio de una acción y un índice general de mercado de referencia, con su correspondiente efecto reductor sobre el riesgo sistemático, medido generalmente por el coeficiente beta (β) del modelo CAPM (Crouhy, Galai y Mark, 2006).

En los dos capítulos sobre estrategias para controlar el riesgo sistemático asumimos, en primera instancia, que el nivel de integración de los mercados como fruto de la globalización, pese a todo, conserva imperfecciones y diferencias aprovechables que hacen difícil suponer mercados perfectos. Así mismo, diferenciamos dos contextos de la economía

global: un período de bonanza seguido por el de la última crisis financiera desatada en el 2006 por las hipotecas *subprime* (Demyanyk y Van Hemert, 2011).

***Nuestros objetivos***

Para gestionar el riesgo de forma adecuada las empresas (y todos aquellos actores que se vean afectados por éste) necesitan información relevante y oportuna que permita tomar las mejores decisiones de inversión. Información referente al origen de los riesgos asumidos, a las variables que los pongan de manifiesto, a su frecuencia e impacto económico y a los mecanismos para evitarlos, cubrirlos o mitigarlos. Mientras más y mejor informados estén los gestores de riesgo, mejores decisiones de inversión tomarán (Lambert, Leuz y Verrecchia, 2007). En consecuencia, nuestro objetivo último es tratar de proveer información que pueda ayudar a los inversores, sean estos empresas o accionistas, a tomar mejores decisiones de inversión.

La presente investigación tiene como punto común, o hilo conductor, la gestión del riesgo sistemático. Bajo esta óptica se desarrollan varios temas de gran interés para la dinámica empresarial como lo son las auditorías, elemento limitador de la manipulación del resultado, y la internacionalización y las adquisiciones, como posibles estrategias para ayudar a mejorar la confianza del mercado.

Particularmente se intenta dar respuesta a tres grandes preguntas: ¿Es la manipulación del resultado detectada por el mercado y adecuadamente reflejada en los informes de auditoría?, ¿Brinda la internacionalización efectos benéficos a la gestión del riesgo sistemático?, ¿Agregan las adquisiciones valor los accionistas?

Inicialmente abordamos la manipulación del resultado que ejercen los directivos de la empresa, midiendo su efecto en la percepción del riesgo por parte del mercado y en las opiniones desfavorables de auditoría. Este primer capítulo es motivado por famosos escándalos financieros como los de Enron y Lehman Brothers (Sieczka, Sornette y Holyst, 2011) que, además de ocasionar efectos devastadores en la economía, han minado la confianza de los inversionistas y puesto en entredicho el papel de los auditores. Grandes empresas que divulgaron información financiera sin reflejar fielmente su realidad, engañaron a muchos inversionistas confiados, ocasionándoles significativas pérdidas.

Partimos del análisis de una muestra de empresas españolas cotizadas en bolsa durante el período 2004-2008, calculando la percepción de riesgo del mercado (riesgo sistemático o beta) con respecto a un índice general de referencia que refleja el comportamiento del mercado español (IBEX 35)[3].

La creciente importancia de la internacionalización empresarial en un contexto de continua integración entre mercados y globalización, da pie para escribir el segundo capítulo, en el que revisamos las habilidades de esta actividad para diversificar el riesgo sistemático de la empresa.

Utilizamos esta vez una muestra más grande y diversa, durante un período más prolongado que refleja el paso de la bonanza a la última crisis financiera mundial. La muestra tiene información de empresas cotizadas en bolsa, pertenecientes a diez países desarrollados, clasificados como más o menos estables (de acuerdo con su capacidad para soportar los efectos de esta crisis), durante los períodos de bonanza 2000-2005 y de crisis 2006-2010. Calculamos el riesgo sistemático con respecto a un índice general del mercado de referencia (STOXX EURO 600) que refleja el comportamiento global de nueve de las diez economías de la muestra.

Finalmente medimos el impacto de las adquisiciones sobre la percepción del riesgo por parte del mercado, motivados por la creciente ola de fusiones y adquisiciones que se ha venido presentando en Europa, pues sólo en el 2007 en todo el mundo fueron anunciadas 35.982 operaciones, entre fusiones y adquisiciones, por un valor de USD 1,34 billones en EEUU y de USD 3,05 billones en Europa (Huyghebaert y Luypaert, 2010). Tales estadísticas han despertado el interés de los analistas sobre los motivos por los cuales las empresas recurren a estas figuras y sobre las dinámicas que se tejen a su alrededor.

En nuestro caso, el interés se centra en las adquisiciones, ya que constituyen la forma de desarrollo corporativo predominante durante esta última ola. Por una parte, el interés es alentado por la cantidad de resultados heterogéneos encontrados en la literatura que, a su vez, incentivan a los investigadores a buscar elementos unificadores que den sentido a la

[3] A diferencia de los capítulos dos y tres, cuyas muestras contienen información para diez países y once años, nuestro primer capítulo se basa en una muestra más reducida de empresas españolas para un período de tiempo más corto. Esto es debido a limitaciones en la disponibilidad de datos, ya que una de las variables más importantes de este capítulo ("salvedades de auditoría") tuvo que ser recogida manualmente a partir de los reportes de auditoría de cada una de las empresas y para cada año.

aparente confusión y, por otra parte, las numerosos mejoramientos empíricos, sugeridos así mismo en la literatura, brindan una gran oportunidad para seguir investigando en el reino de las estrategias corporativas.

A continuación, en el primer capítulo titulado "Manipulación del resultado, opinión del auditor y percepción del riesgo en el mercado", desarrollamos lo que inicialmente identificamos como una fuente del riesgo sistemático de la empresa. Luego, en el segundo capítulo "Internacionalización y riesgo sistemático en tiempos de globalización y crisis financiera", nos centramos en la primera de las estrategias para controlar este riesgo. Finalmente, en el tercer capítulo, "Creación de valor a partir de las adquisiciones en tiempos de globalización y crisis financiera", damos cuenta de la segunda estrategia.

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# INTRODUCTION

## INTRODUCTION

### *The risk of a firm security from the manager's perspective*

Risk associated to any security can be broken down in two components: the non-systematic (specific or diversifiable) risk which is related to firm's unique events and accounts for the greatest part of the total risk, and the systematic[4] (market or non-diversifiable) risk, accounting for 20 to 30 per cent of the total risk, that is related to general market trends (Crouhy, Galai and Mark, 2000; Montgomery and Singh, 1984).

Throughout the three chapters of this thesis we focus on the later component that shows to what extent a movement in market prices affects the shares and depends, among other factors, on fiscal and monetary policies, costs of energy and demographic characteristics of a particular market. The systematic risk will be, then, our common variable of interest due to the ability of its empirical beta (β) proxy to reflect the market risk perceptions. Besides, security market measures are not affected by the bias associated to accounting based measures, and also reflect directly the common shareholders' point of view (Lubatkin and Rogers, 1989).

As the general market is unobservable, it is required a suitable empirical proxy to measure the firm's systematic risk which, in our case, will be the β coefficient from the CAPM model. The β, calculated as the covariance between a security price and a benchmark market index, shows how sensitive are the returns of that security to the market variations (Elgers and Murray, 1982), therefore, providing an idea of both the market perceptions regarding the firm's risk and the value added to shareholders, the two features of our interest along the length of this document.

Financial perspective underscores profit maximization in the long run and evaluates alternative strategies (among them, diversification) from the point of view of common shareholders (Montgomery and Singh, 1984). It is important to clarify that when we talk about diversification as a strategy to lessen systematic risk we are not referring to the

[4] In order to avoid possible confusion between the terms "systematic" and "systemic", we emphasize that this later type of risk is generally used in reference to an event that can trigger a collapse in a certain industry or economy. "Systemic risk refers to the possibility that the financial system as a whole might become unstable, rather than the health of individual market participants" (Murphy, 2012). This risk can be caused by an event at the firm level that is severe enough to bring instability in the financial system. The systematic risk, which is the risk of our interest, does not have the scope or the implications of the systemic one.

portfolio theory taking the place of the common shareholder. Because if we do, there would be an evident contradiction, since the systematic risk, also called market or non-diversifiable risk, cannot be diversified or, at least, after optimally combining their portfolios, common shareholders can only aspire to lessen or eliminate the non-systematic or diversifiable risk.

Therefore, when we talk about diversification as a strategy for systematic risk diminishing we put ourselves in the place of the manager, whose mission is to develop corporate strategies to maximize the firm's share value, be it providing the shareholders with greater returns for a determined level of risk or, as in our case, a lower risk for a given return level (Lubatkin and Rogers, 1989).

Accordingly, the manager plays an important role in risk management within the firm. He/she should clearly identify, measure, manage and assure the control of risk in a way consistent with the capital and general risk management policies approved by the board of directors. Among his/her functions it is defining business opportunities from a risk-return perspective, always acting with the aim of generating value for shareholders (Seth, Song and Pettit, 2002).

The risk manager's role, which is compared to that of a corporate shield, is evolving while the organizations face an increasingly more complex and uncertain future (Crouhy et al., 2000).

***Why is managing systematic risk within the firm relevant?***

The management of systematic risk within the firm becomes especially relevant in a highly globalized, competitive and uncertain era such as the current one. During the XXI century characterized by strong technological developments in communications and transport, continuous and accelerated integration among markets has encouraged competition and increased information flow. Moreover, we are witnessing a scenario where speculative markets diverge from the real economy creating financial bubbles, where financial scandals are frequent news producing market panics that quickly spread through the system bringing devastating effects, and also where capital can easily flow through the economy.

Therefore, this scenario urgently demands us to understand and identify the systematic risk sources which increase market mistrust, as well as to broaden the pool of strategies for

controlling this risk. So, in this doctoral thesis we focus on a source (earnings manipulation) that fosters systematic risk, increasing in turn market risk aversion or market mistrust, as well as on two strategies (internationalization and acquisitions) which, under certain circumstances, can help to reduce it.

Given the growing competition to obtain resources from financial institutions and investors in order to enter global markets, firms have to preserve their good reputation as well as the stakeholders' trust; two fundamental objectives achievable through risk management (Faulkner, Teerikangas and Joseph, 2012). For these reasons corporations take risk management very seriously (Froot, Scharfstein and Stein, 1993), and also because those with the ability to reduce their systematic risk without affecting profitability will achieve a competitive advantage.

The interest in controlling systematic risk goes back to 1929 after the Wall Street Great Depression, when the regulators focused on the prevention of future collapses within the financial industry on a regional, national and international basis. The aim was to avoid panics which, due to the "domino effect", could infect the entire market (Crouhy et al., 2000). Systematic risk control turns out to be indispensable when such a strong degree of market integration facilitates this "domino effect", produced when bad news quickly spread affecting the whole system.

Initially, controlling this risk was a concern almost exclusive for financial industry. Nevertheless, in recent years, thanks to globalization and the accelerated process of integration among economies, the relevance of systematic risk management has migrated to other sectors of industry.

Among a firm's motivations for controlling systematic risk is the decrease of capital cost. Financial sources, when they are more confident about future debt payments can more easily trust the firm, so relaxing their terms of credit. Besides, the manager has a good incentive to reduce the volatility of stock prices because uncertainty makes planning and processes/operations-optimizing more difficult. All the things equal, the lesser the systematic risk, the lesser the required investment rate of return and the greater the firm value (Van Horne, 2002). A lesser systematic risk also adds value to shareholders (changing uncertainty for confidence), who are the most important reason for a firm's existence.

***Globalization and suitability of the theoretical model's assumptions***

According to the theory of capital markets in the financial models and the current understanding of markets are implied two hypotheses; that of equilibrium and that of efficiency (Rock, Rock and Sikora, 1994). Investment and speculation activities are based on asset exploitation with the aim of obtaining a benefit; say due to taking advantage of any imperfection[5], which contradicts the first hypothesis (equilibrium), or by using the price differences (inefficiency in price formation or mispricing) which goes against the notion of informative efficiency.

In a world tending towards perfect and complete capital markets the success or failure of a diversification undertaking is judged by its impact on shareholders' wealth (Langetieg, Haugen and Wichern, 1980).

Nevertheless, under a strict interpretation of the CAPM model, in a globalized and, therefore, integrated environment there are fewer imperfections to be exploited given that the market information is completely competitive (Crouhy et al., 2000).

"Standard neoclassical models of investment typically assume that capital markets are perfect. In recent years, however, a body of theoretical work has challenged the key assumptions required for perfect capital markets" (Carpenter and Petersen, 2002, F54).

If the market is perfect, the impact of diversification on the distribution of probability for investor's return generation is irrelevant, since the assumption of perfect markets guarantees for any investor unsatisfied with the returns of a particular investment the costless possibility of selling it and reorganizing his/her portfolio. In any case if we recognize the existence of commissions, taxes or other frictions, or if the markets are not complete, the diversification impact on the investor's (in our case the investor is the firm) distribution of returns becomes relevant.

[5] Market imperfections affect virtually every transaction, generating costs that interfere with trades that rational individuals make. They also generate profit opportunities for individuals who can reduce or eliminate them. The universe of market imperfections can be partitioned in these five primary categories: transactions costs, taxes and regulations, asset indivisibility, non-traded assets, and agency and information problems (DeGennaro, 2005).

Although the risk framework has been summarized under the assumption that all the assets are traded in perfect capital markets, if we review the list of conditions that make a market perfect, we can find good examples that cast doubt about that perfection.

Accordingly, we assume market perfection to be relative. Markets move in a continuum tending to perfection as they keep integrating, or when they sign free trade agreements reducing transaction costs, or while building the global village. But differences among countries remain. Entering, and staying in, while adapting to, some countries is easier than others. There are also differences in taxes, tariffs, transportation costs and other imperfections that, even though not as strong as in former times of weaker market integration, still offer a potential use through diversification (Crouhy et al., 2000).

The imperfect integration, therefore, of capital markets, implies that investments in firms from poorer countries are less costly for the acquirer compared to other potential investments. In addition, given that the markets are not perfectly integrated, the differences in their assessments can be a good incentive to engage in corporate strategies with a foreign firm (Erel, Liao and Weisbach, 2012).

***Empirical landscape***

The heterogeneity of results from previous empirical literature, which is a common denominator to all three chapters, encourages our research. Notwithstanding, far from pointing out the apparent contradictions, what we pursue is trying to reconcile those results using new variables and taking into account a wider and more complex context.

In the first chapter about earnings manipulation, market risk perception and auditor's opinion in the Spanish market, we provide a mediation analysis for construct validity purposes that allows verifying the suitability of the causalities among those variables. Then, for each of the three chapters, we run a set of regressions that help to address several recurrent statistical problems and to ensure robustness and consistency in our results.

Previous empirical research about internationalization and M&As' effects on market risk perception (systematic risk) used small samples for very particular contexts, and provided mixed results which, if not reviewed within a broader context, could seem contradictory.

Accordingly, one of the contributions of this thesis consists of placing the problem in a richer scenario in terms of country diversity and time length.

Chapters two and three provide a more global view that allows the reconciliation of previous heterogeneous results. We also justify and measure the relationships among accounting and market variables, where the former are objective to some extent, and the latter are more subjective, emotional, based on expectations, and difficult to forecast.

The literature agrees about the expectation of reducing systematic risk due to the portfolio (geographical or product) diversification effect brought about by internationalization or corporate strategies (Lubatkin and Rogers, 1989). Nevertheless, there is no consensus about to what extent markets are perfect and efficient in allowing the enjoyment of that effect. Imperfections and differences among markets are also considered, which may produce a lesser correlation between the stock price and the benchmark general market index that, in turn, reduces the systematic risk generally measured by the beta (β) coefficient of the CAPM model (Crouhy, Galai and Mark, 2006).

In these two chapters about strategies for controlling systematic risk we consider, in the first place, the degree of market integration due to globalization that, nevertheless, preserves useful imperfections and differences that make it difficult to assume perfect markets. Likewise, we distinguish between two contexts of the global economy: a prosperity period followed by the recent financial crisis originated in 2006 due to the subprime mortgages (Demyanyk and Van Hemert, 2011).

***Our objectives***

To suitably manage their risk, firms, as well as the affected stakeholders, need relevant and timely information in order to make the best investment decisions. They also require information about the origin of the assumed risks, about the variables that reveal them, their frequency, economic impact, and the mechanisms to avoid or mitigate them. The more and better informed the risk managers are, the better investment decisions they make (Lambert, Leuz and Verrecchia, 2007). Consequently, our ultimate objective is try to provide information that could help investors, be they firms or shareholders, to make better investment decisions.

The common thread of this research is the management of systematic risk within the firm. Under this lens we develop several subjects of great interest for the corporate dynamics as are the audits, which can limit the earnings manipulation, and the internationalization and acquisitions, as strategies to improve the market's risk perceptions.

We try to answer the following three main questions: Is the manipulation of earnings detected by the market and properly reflected in the audit reports? Has the internationalization a beneficial effect on systematic risk management? Do the acquisitions add value to shareholders?

In the first place, we address the problem of the earnings manipulation exerted by the managers, measuring its effect on the market risk perception and on the auditor's unfavorable opinions. This first chapter is motivated by well-known financial scandals such as the Enron and Lehman Brothers' (Sieczka, Sornette and Holyst, 2011) that, besides causing devastating effects on the economy, have undermined investors' confidence and casted doubt on the auditor's role. Big firms disclosed financial information without honestly reflecting their economic and financial reality, misleading investors and leading them to endure great losses.

This first analysis departs from a sample of Spanish listed companies, during the period 2004-2008, for which we calculate market risk perceptions (systematic risk or β) with respect to a general market benchmark index (IBEX 35) which proxies the Spanish market behavior[6].

Encouraged by the increasing importance of firm internationalization within a continuous process of market integration and globalization, we address internationalization as a possible mechanism for a firm's systematic risk diversification.

For the second part of this thesis we use a bigger and more diverse sample, for a longer time period that witnessed a change from prosperity times to the last global financial crisis. The sample contains information of listed firms from ten developed countries, classified in two groups as more or less stable (according to their ability to endure the effects of the crisis),

[6] Unlike chapters two and three, which samples have information for ten countries and eleven years, the first one uses a more reduced sample which only contains information for Spanish companies for a shorter time period. This is due to data availability constraints, since one of this chapter's most important variables ("qualified reports") had to be hand collected from the audit reports for each firm and year.

during prosperity 2000-2005 and crisis 2006-2010 periods. We calculate systematic risk regarding the market general benchmark index STOXX EURO 600 that reflects the global behavior of nine out of the ten countries of our sample.

Finally, the recent European wave of M&As (with a strong predominance of acquisitions) fostered our interest in measuring the impact of acquisitions on market risk perception. In 2007, for example, 35,982 M&As were announced worldwide, with costs of these in the USA reaching $1,345 billion and $3,053 billion in Europe (Huyghebaert and Luypaert, 2010). These statistics have also awakened the analysts' interest in both the firms' incentives to use these operations, and the dynamics surrounding the phenomena.

Our particular interest focuses on acquisitions since they are the predominant form of corporate development along the last M&A wave. On one hand, this interest is also fostered by the fact that the literature provides mixed and inconclusive results which, in turn, encourage searching for new variables to give sense to the apparent confusion. On the other hand, the frequent empirical improvements also suggested in the literature, bring great opportunities to continue research within the realm of M&As.

Accordingly, in the first chapter entitled "Earnings manipulation, auditor's opinion and market risk perception" we develop what we called the source of systematic risk within a firm. Later, in the second chapter "Internationalization and systematic risk in times of globalization and financial crisis" we focus on the first of the two strategies for controlling this risk and, finally, in the third chapter "Acquisitions and shareholder value in times of globalization and financial crisis" we address the second strategy.

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# CHAPTER 1

# EARNINGS MANIPULATION, AUDITOR'S OPINION AND MARKET RISK PERCEPTION

**EARNINGS MANIPULATION, AUDITOR'S OPINION AND MARKET RISK PERCEPTION**


## Abstract

We measure, whether and how the managers' earnings manipulation (that is an extreme stage of earnings management) affects the firm´s auditor opinion and consequently the market perceived risk about the firm. We assume that, when a firm manipulates its earnings reports, the auditors detect it and disclose this information in their audit reports, and the market reacts increasing its risk aversion. The mediation and the regression analyses signal time stable and robust causal relationships among the variables, and show that earnings manipulation affects the market risk perception both, directly and indirectly through the auditor's opinion.



**Key words:** accounting information, auditing, discretional accruals, earnings management, earnings manipulation, systematic risk, qualified reports.

## 1. INTRODUCTION

"More information always leads to less uncertainty… and people pay more for certainty" (Lambert, Leuz and Verrecchia, 2007).

The reliability and transparency of accounting information have generated considerable interest in globalized markets primarily because of two circumstances. Firstly, recent financial scandals that have cast doubt on the accounting profession and, secondly, the commitment and implications of adopting the International Financial Reporting Standards (IFRS).

In particular, accounting information, besides being an essential tool for the investment decision making process, plays a fundamental role in the design of the contracts that allow control of managers' performance. Agency theory suggests that the separation of property and control encourages managers' opportunistic behavior, leading some to manipulate earnings reports in order to reap individual benefits (Eisenhardt, 1989).

It is important to note that managers have some flexibility in their reporting job, which is known as earnings management, but when the earnings management goes beyond the allowable, it turns into earnings manipulation. Aware of this, owners contract auditors to guarantee that the managers' accounting records disclose the firms' economic position in a proper way. In turn, the market is eager to obtain useful and reliable information that helps to make informed investment decisions.

Assuming that high quality accounting standards reduce capital costs, in the literature a significant impact of earnings management on the cost of capital has been found, but it is still unclear to what extent accounting information, or firms´ disclosures, reduce systematic risk (Lambert et al., 2007).

In view of the above, our main objective is to measure both, the relationship between two indicators that reveal earnings manipulation (henceforth EM), and their influence on the systematic (or non-diversifiable) risk. Initially, we study to what extent information revealed by the auditor's qualified reports (or EM disclosed by an accounting professional) properly reflects the information contained in the so-called "discretional accruals" (or EM measured

with data from the annual reports). Then, we determine the way the market receives, interprets and reacts to these two sources of information.

The article is divided into five sections. In section 2 we discuss the research motivation, the introduction to the main variables and the state of the literature. The hypotheses development and the validation of the constructs are included in section 3. In sections 4 and 5 we explain the variables and the results of the mediation and regression analyses. The conclusions, implications and limitations are detailed in section 6.

## 2. MOTIVATION, MAIN CONCEPTS AND PREVIOUS RESEARCH

In this section we describe the EM problem, including the managers' EM motivations and methods, also introduce the principal variables of this research (discretional accruals, auditor's qualified reports and betas (market risk indicator)[7], and discuss the previous literature that studies the relationships among those variables.

### 2.1 Motivation

#### *Earnings management/manipulation*

EM occurs when managers use their judgment to manipulate reporting financial information and structuring transactions (Healy and Wahlen, 1999). When the earnings management exceeds the permitted, this information misleads people interested in the firm's real economic performance. The manager's motivation for earnings manipulation is derived from the agency problem, which affects modern firms, and which is caused by the separation of property and control within the firm (Eisenhardt, 1989).

Earnings manipulation is one of the biggest problems of interest in Agency Theory. This theory states that the owners (or "principals") of the firm should align their managers' (or "agents") interests with their own (Eisenhardt, 1989). The owners are aware of the existence of many powerful incentives for EM. These incentives cause the owners and managers' interests to diverge. As a result, owners contract auditor's services which offer supervision and control mechanisms intended to diminish the agency costs as far as possible.

[7] In this section we introduce the main variables assuming that these concepts are familiar to the readers. More detailed definitions can be found in section 4.

There are incentives for upward as well as downward EM. On the one hand, EM is encouraged upwards, for example, when positive reporting is needed, or also for achieving the results that were previously agreed in a contract, or meeting the annual financial analysts' forecasts (Roychowdhury, 2006). On the other hand, EM is encouraged downward to obtain benefits derived from the State subsidies, to reduce tax payments, to affect the duties regulation, or to restrict the importations (Jones, 1991).

There are basically two accounting mechanisms for EM: Firstly, changes in the procedures for asset valuation or recognition and, second, accruals (Jones, 1991). However, the possibility of manipulating earnings through operational decisions[8] has also been widely discussed (Fudenberg and Tirole, 1995; Healy and Wahlen, 1999; Dechow and Skinner, 2000; Roychowdhury, 2006).

In this research we consider accruals as the records that affect the accounting results but do not change the cash flows (Roychowdhury, 2006). Particularly, we take into account the discretional component of the total accruals, or the discretional accruals (henceforth DAs) which represent the measure that captures EM (Jones, 1991).

***The auditor and the auditor's qualified reports***

"Auditors give qualifications when there is uncertainty about material events that management cannot (or will not) explicitly provide for in the income statement and/or balance sheet" (Dodd, Dopuch, Holthausen and Leftwich, 1984).

To reduce the information asymmetries between the management and external users of accounting information, and thus reduce agency costs, the external audit and, particularly, the auditor, have an important role in limiting EM practices (Jensen and Meckling, 1976; Eisenhardt, 1989).

When the auditor concludes that there are circumstances that could affect the firm's financial situation or its operational results, he communicates his disagreement with the firm's accounting information by issuing qualified reports (henceforth QRs). These types of

[8] The main strategies for EM through firm's real activities are: 1) price discounting for increasing the sales temporarily, 2) overproduction in order to report lower costs for the sold goods and 3) lowering the expenses of R&D for improving the profits.

reports, which can be motivated by diverse circumstances, are based on the auditor's ability, responsibility and ethics (Goldberg, 1970).

***Systematic risk***

Although there is skepticism about including market variables in the earnings management forecast models (Mutchler, 1985), some authors recognize that market variables can improve the models ability to predict EM (Beaver, 1968; Kaplan and Urwitz, 1979; Ohlson, 1980).

Up to date, in the literature we have not found studies where the systematic risk was explained as a function of EM, in this case as a function of the auditor's opinion or the DAs. Nevertheless, there are many studies that consider the systematic risk among the control variables, expecting the managers' decisions of manipulating earnings or not, and the auditor's of issuing QRs or not, being affected by market information.

**2.2 Relating DAs, QRs and Systematic Risk**

***Previous studies of DAs versus QRs***

Although there is evidence that firms with high DAs are related to a lower probability of receiving QRs (Bradshaw, Richardson and Sloan, 1999), there are more studies that have found the opposite relationship. For example, Hirst (1994) demonstrates that auditors are sensitive to upward, as well as to downward earnings management, and also shows that they can detect the factors that cause EM. In a related study, Francis and Krishnan (1999) point out that auditor have more probability of issuing a QR for the firms for which the DAs absolute value is higher.

When studying the relationship among these variables the most commonly used model has been that of Jones's (1991), which can detect EM (measured through DAs), when it has been disclosed through a QR (Azofra, Castrillo and Delgado, 2006). Gill and Alcarria (2003) used the same model for detecting the EM in Spanish listed companies.

When examining the Spanish auditory features, Navarro and Martínez (2004) check for EM (measured through DAs) and compare it to an auditors' quality indicator. The authors sought to find to what extent auditors' quality restricts EM. In this case, the quality is

determined by belonging or not to one of the biggest auditing companies. It is expected that the firms that hire the best auditors have less EM practices. However, the results of this study could not conclude that auditors' quality lowers EM.

***Previous studies of QRs versus systematic risk***

Previous researches recognize the effect of the QRs on the investors' and market opinion. For example, Pucheta and Vico (2008) show that the perception derived from a favorable report is different than the one derived from a qualified report. In addition, according to Sánchez and Sierra (2001), a QR implies a cost for the firm because it affects its image, changes its risk profile and generates uncertainty and market distrust.

Dopuch, Holthausen and Leftwich (1987), show that the auditors' decisions on issuing a QR are systematically related to financial and market variables. Those authors developed a model for determining the firm's probability of receiving a QR as a function of accounting-financial and market variables. They find a positive relation between the systematic risk and the probability of obtaining QRs.

Nevertheless, considering that a QR has an informative content which could cause a reaction by investors and the market (Pucheta and Vico, 2008), it can be hypothesized that the causal relation between the betas and the QR might also be inverse. Thus, it is logical to assume that the QRs affect the betas.

The empirical evidence on the relationship between the market variables and the QRs is mixed. On one hand, regarding the role of accounting information over the stocks market, it has been shown that investors do not react systematically before the QRs (Del Brío, 1998). On the other hand, it has been found that the firms which receive QRs have lower betas than the firms that receive clean reports (Krishnan, Krishnan and Stephens, 1996).

Finally, since stock prices are the main variable for assessing the beta coefficients which provide a measure of systematic risk, and since a change the stock prices necessarily has an impact on the betas, it is important to note the literature that has found significant relationships among these variables (Dodd et al., 1984; Dopuch, Holthausen and Leftwich, 1986; Choi and Jeter, 1992; Del Brío, 1998). Conversely to Dodd *et al* (1984), other authors

found a negative reaction of share price to QRs. Overall; there are sufficient reasons to expect the effect of the QRs over the stock prices to extend to the systematic risk.

In Table 1 a summary of the relations between the DAs and the QRs and between the QRs and the systematic risk (measured with the beta coefficient) found by the authors abovementioned is presented. It is important to note, especially for this last relationship, that there is a considerable diversity of findings referred to the causalities and to their corresponding signs.

## 3. HYPOTHESES FORMULATION AND CONSTRUCT VALIDITY

### 3.1 Hypotheses Formulation

Taking into account the initial assumption, that is to say, *that when a firm manipulates its earnings, the auditor should detect and disclose this behavior, and the market should react consequently, increasing its risk aversion*, the following hypotheses are proposed.

***Relation between DAs and QRs***

Considering the QRs as a mechanism for reducing the information asymmetry (García and Gill, 2005) and taking into account the agency argument presented in sub section 2.1, we expect that:

**$H_1$:** The greater the DAs, the higher the probability of receiving a QR.

Then, according to the arguments of Hirst (1994) and Francis and Krishnan (1999), if an auditor correctly detects the EM through the DAs, he will alert the market issuing a qualified report, in order to disclose his client's fraudulent practices.

***Relation between QRs and systematic risk***

Since QRs have an informative content that is absorbed by the market (Francis and Krishnan, 1999) and considering that they are perceived as bad news, in turn, modifying the investors' behavior, we expect that:

**$H_2$:** The existence of QRs increases the value of the betas (or systematic risk).

In this way, when the investors are aware of the existence of QRs, they demand from the firms' stocks a higher profitability in order to compensate their assumed risk.

## Table 1. Relations between DAs, QRs and betas found on previous literature

| Authors | Observations | Country | Timeframe | Idependent variable | Dependent variable | Sign* | Other (control) variables |
|---|---|---|---|---|---|---|---|
| Bradshaw et al (1999) | 22,000 firm-years | USA | 1988-1997 | portfolio accruals | clean/dirty auditor reports | (-) | size, leverage, Δ cash flows from operations, operating earnings/interest expenses |
| Hirst (1994) | 84 auditors | USA | 1985-1988 | manipulated financial statements | auditors' judgment of earnings-management probability | (+) | management-buyout-induced incentives, bonus-induced incentives |
| Francis and Krishnan (1999) | 2,608 firm-years | USA | 1986-1987 | accruals | audit report (opinion) | (+) | inventory, receivables, liabilities, size, negative current net income, beta, residual standard deviation of returns, firm's stock returns minus average market returns, time listed on an exchange, industry sector |
| Azofra et al (2006) | 892 firm years | Spain | 1991-1999 | different models of discretional accruals | QRs due to GAAP unfulfillment | (+) | market to book ratio, size, leverage, Δ results |
| Dopuch et al (1987) | 564 firm-years | USA | 1973-1980 | Δ beta | QRs | (-) | Δ leverage, Δ receivables, Δinventory, size, time listed, insudtry, Δ residual standard deviation of teturns, loss in the year of qualification |
| Pucheta and Vico (2008) | 74 risk analysts | Spain | ≈2004-2006** | audit opinion | firm's risk valuation | (+) | different types of audit opinions, industry |
| Del Brío (1998) | 200 QRs | Spain | 1992-1995 | QRs | returns of stock prices | (?) | clean reports |
| Krishnan et al (1996) | 1,878 firm-years | USA | 1986-1988 | beta | QRs | (-) | auditor switch, receivables, inventories, leverage, size, operating loses, residual standard deviation of returns, firm's stock returns minus average market returns, industry sector |
| Dopuch et al (1986) | 114 QRs | USA | 1970-1982 | media disclosures of 'subject to' qualified audit opinions | abnormal stock returns | (-) | leverage, sales, time listed, standard deviation of returns, average daily returns minus market, probability score from probit model classifying qualified and clean opinions using financial statement data |
| Choi and Jeter (1992) | 328 firm-years | USA | 1983-1986 | QRs | earnings response coefficients - unexpected returns | (-) | absolute value of earnings forecast errors, systematic risk, market to book value, size, variability of earnings, persistence of earnings, industry |

* This is the sign of the relationships between the independent variables of our interest and the dependent variable. All these relationships are more than 90% significant.
** assumed period

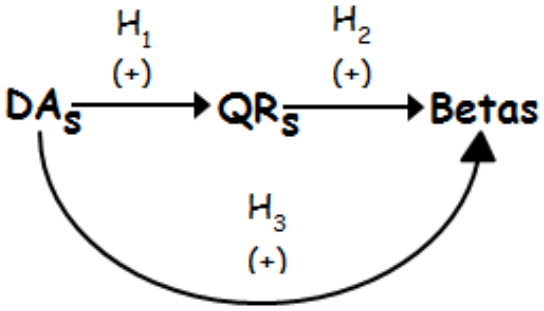
***Relation between DAs and systematic risk***

Invoking the transitive law, that is to say, when the DAs impact positively on the QRs and the QRs impact positively on the betas, the following can be expected:

**$H_3$:** The higher the DAs, the higher the value of the betas (or systematic risk).

Then, besides considering the auditor's QR, the market also can react after assessing the DAs from the available public accountant information, or after finding from other sources of information news that suggest the EM exerted by the firm.

**Figure 1. Expected relations between DAs, QRs and betas**




In Figure 1 the causal relationships proposed in the three hypotheses are summarized. It is proposed that the DAs would affect the betas (or systematic risk) directly, but also indirectly through its impact on the auditors' QRs.

### 3.2 Construct Validity

From the literature summary (see Table 1) it can be seen that previous empirical research does not establish unequivocal relationships between the variables DAs, QRs and betas. Moreover, the studies developed within the Agency Theory framework only support some of the causal relationships proposed in Figure 1. Thus, there exists a reasonable doubt about their appropriateness.

To determine to what extent this set of relationships is valid, a mediation analysis is used before testing the hypotheses. This analysis is a prior procedure that is useful for confirming

or rejecting the appropriateness of the relationships between the variables, and helps a better interpretation of the results[9].

***Analysis of mediation effects among variables***

When studying social science phenomena, in order to facilitate the interpretation of results, it is helpful to consider mediator variables. Although the importance of mediator variables has been recognized for a long time within the psychology field (Baron and Kenny, 1986), their use has also been extended to the business sphere. For example Piercy, Harris and Lane (2002) studied the role of the "employees' attitudes" as a mediator variable over the relationship between market orientation and organizational performance.

The mediation analysis helps discover the underlying process that determines one given variable (Baron and Kenny, 1986). The mediation function answers the questions how and why, since it represents the generative mechanisms through which an independent variable impacts on a dependent one. In our case the mediator variable is the QR, while the independent variable is the DAs and the dependent variable is the beta.

In Figure 2 the model appears without mediation in which the path *c* represents DAs total effect over betas.

**Figure 2. Model without mediation**

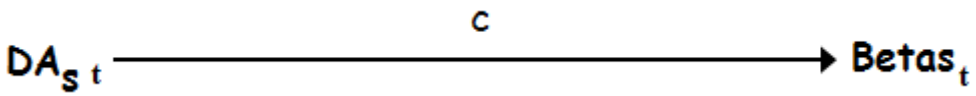
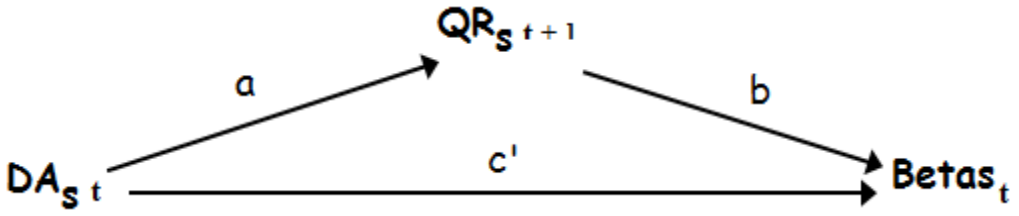



Figure 3 shows the mediation function between DAs and betas. Path *a* represents the DAs effect over QRs, path *b* QRs effect over betas, and path *c* DAs mediator effect over betas.

[9] Besides mediation analysis, moderation analysis has been often used. This latter analysis is suitable for determining if a "moderator" variable has effects over the direction and the strength of a relationship between other two variables. Normally one variable plays only one of these two roles: mediation or moderation (Baron and Kenny, 1986). In our research we developed both analyses. The moderation role of the variable QR over the relationship between the DAs and the betas was non-significant. Conversely, the mediation role, which in our case is significant, is detailed in this and the 5th sections.

**Figure 3. Mediation model**




## 4. VARIABLES DEFINITION

### 4.1 Discretional Accruals (DAs)

The DAs are the abnormal total accruals' component and measure the EM that is practiced by managers in order to achieve several objectives (Dopuch et al., 1987). In the literature two approaches for the study of accruals can be found: individual analysis of specific accruals and aggregated accruals' analysis (García and Gill, 2005).

For heterogeneous samples, where it is not possible to identify in advance an item that reflects all the EM, it is recommended to use the aggregated approach. We use this approach in our research to estimate the DAs, because it provides a unique measure of the effects of several accounting practices over the results (Watts and Zimmerman, 1990).

As in Prior, Surroca and Tribó (2008), we use Kothari, Leone and Wasley's (2005) model for DAs estimation. This model modifies Jone's model with a constant term and an additional independent variable, the ROA (return on assets), that captures firm's performance (see equation 1).

$$\frac{TA_{it}}{A_{i,t-1}} = \alpha_{0t} + \alpha_{1t}\left(\frac{1}{A_{i,t-1}}\right) + \alpha_{2t}\left(\frac{\Delta(S-R)_{it}}{A_{i,t-1}}\right) + \alpha_{3t}\left(\frac{PPE_{it}}{A_{i,t-1}}\right) + \alpha_{4t}ROA_{it} + \varepsilon_t \qquad [1]$$

Where, TA = total accruals, A = total assets, S = sales, R = accounts receivables, PPE = property, plant and equipment, ROA = return on assets and ε = discretional accruals or DAs.

### 4.2 Auditor's Qualified Reports (QRs)

The QRs have been analyzed as a whole and broken down into several types (Dopuch et al., 1987; Gwilliam, 1987; Del Brío, 1998; Sánchez and Sierra, 2001; Azofra et al., 2006; Pucheta and Vico, 2008).

Although, Pucheta and Vico (2008) find significant differences between QRs types when determining their impact over the analysts' perception of commercial risk, in the Del Brío's (1998) study for the Spanish market, significant differences among the kinds of QRs affecting the stocks prices have not been found. So, considering this argument and also the fact that our sample is made up of companies from the Spanish market, we take the QRs as composite category without distinguishing among types.

Then, the variable QRs is binary, equal to 1 if the auditor issues a report with qualifications (regardless of the QR nature) or 0 if the issued report is unqualified.

### 4.3 Betas and Systematic Risk

The systematic risk, also called non-diversifiable risk, incorporates the uncertainty that affects all the investments and that cannot be eliminated through diversification (Miller and Bromiley, 1990). This risk is measured by the coefficient "beta". For betas assessment (see equation 2) it is necessary to know firm´s historic stock prices as well as historic values of a benchmark market index. The idea is to evaluate stock's price behavior in relation to the index price. This benchmark market index measures the behavior, as a whole, for the companies listed in that market (Damodaran, 2002).

$$Beta = \frac{Covariance\ between\ the\ stocks'\ prices\ and\ the\ reference\ market's\ index}{Variance\ of\ the\ reference\ market's\ index} \quad [2]$$

For this research betas were taken from secondary information sources provided by OSIRIS database, *Bolsas y Mercados Españoles* (BME, 2010), and other researchers that calculated the betas over several years. In spite of the information sources heterogeneity, we can assure that all the betas were calculated in relation to the same market benchmark index: the IBEX 35[10].

[10] Nevertheless, there remains the doubt about the homogeneity of the methodologies used for the beta calculation in those sources of information. To overcome this drawback we ran again the set of regressions using a beta calculated with a single formula from the DATASTREAM database, and a different more global market index (EURO STOXX 600). The results obtained in these regressions are consistent with the previously obtained. For further information and analysis see the APPENDIX.

### 4.4 Control Variables

***Size***

Size is a very important and often used control variable in the earnings management literature. This variable controls for the firm dimension effects over the accounting choice. Generally, research shows a negative relation between the firm size and the EM, since the bigger firms are expected to have more sophisticated control systems, more qualified advisors, and to be more controlled by the investors and the analysts, thus expecting to lower the chances of manipulating the earnings.

Sánchez and Sierra (2001), and Navarro and Martínez (2004) measure firm size as the logarithm of total assets. García and Gill (2005) and Prior *et al* (2008) use sales as a size indicator. In this research we measure the size using the relative sales, that is to say the sales of each firm as a percentage of the highest value of sales from the sample of companies.

***Industry***

Authors such as Gosman (1973), Warren (1980) and Sánchez and Sierra (2001) have considered the industry as a control variable when forecasting the earnings management. Nevertheless, because of the existence of different industry classifications, a great diversity of results has been found. Taking into account the reduced sample size of this research industry is classified only in three categories: manufacturing, services and others[11].

***Leverage***

A high leverage is associated with excessive leverage risk (Press and Weintrop, 1990). This motivates EM to hide inconvenient information, increasing consequently the DAs and, in turn, the probability of receiving an auditor's QR (DeFond and Jiambalvo, 1994). Prior *et al* (2008) also consider leverage as a control variable within their model for relating earnings management with corporate social responsibility.

[11] It is important to note that the distinction among industries was made only in the previous yearly regressions' phase, and no significant industry effect was found. So, this control variable was dismissed for the pooled and panel data regressions.

Keasey, Watson and Wynarczyk (1988) and Krishnan *et al* (1996), find a positive relationship between the firm's QRs and debt level. Conversely, Sánchez and Sierra (2001) do not find evidence of this relation.

We include in our analysis leverage measured as the ratio of total debt to total assets.

## 5. EMPIRICAL RESULTS

In this section we present the results of the analysis, showing the appropriateness of the proposed causalities and testing the hypotheses. On one hand, the mediation analysis results are explained and, on the other hand, the pooled and panel data regressions are also discussed. The joint analysis of both methodologies, mediation analysis and regressions, allows more time stable and robust results.

Our sample is made up of non-financial[12] firms that were listed continuously in the Spanish market during the period 2004 – 2008. The numbers were extracted from the data base OSIRIS that provides worldwide financial and accountant information for firms. There are 121 sample firms, but for 23 of them some of the information for the DA assessment could not be found. The data consists of 392 observations coming from 98 firms for four years. In Table 2 we show the main descriptive statistics for our variables.

**Table 2. Descriptive statistics**

| **Variables** | N | Mean | Median | Min | Max | SD |
|---|---|---|---|---|---|---|
| **DAs*** | 392 | 0.03% | -0.81% | -108.79% | 165.70% | 19.34% |
| **ABS DAs** | 392 | 11.34% | 6.49% | 0.02% | 165.70% | 15.66% |
| **Beta** | 259 | 0.61 | 0.59 | -0.10 | 2.79 | 0.40 |

| **QRs** (cases) | | |
|---|---|---|
| = 0 | = 1 | Total |
| 330 | 62 | 392 |
| 84% | 16% | 100% |

* Although we use the absolute value of the DAs when running the regressions, we also show the DAs descriptive statistics to illustrate how the both, downward and upward manipulations can counteract the average earnings management effect.

[12] The financial firms were excluded from the sample because the variables used to calculate these firms' DAs are specific to this industry. Dopuch *et al* (1987) and Ohlson (1980) argue that the variables used for determining the DAs of any firm can be inappropriate for the financial services industry.

### 5.1 Construct Validity

***QRs as a mediator variable in the relationship between DAs and systematic risk***

In order to test the mediation hypothesis, we run the three regressions showed in Table 3. Taking into account the binary nature of the QRs, a logistic regression was used to calculate the coefficient *a,* and its corresponding standard deviation (henceforth SD). It was necessary to transform this coefficient, as well as its SD, in order to put them on the same level as the rest of the coefficients and their standard deviations ($b$, $SD_b$, $c$, $SD_c$, $c'$ and $SD_{c'}$). These other variables were estimated using linear regressions considering the continuous nature of DAs and betas.

Note that the four conditions for mediation existence are fullfiled, that is to say, that the paths (or coefficients) $a$, $a'$, $b$ and $c$ are significant, while the $c'$ is not (see Figures 2 and 3).

**Table 3. Mediation analysis**

| **1. Lineal regression** $\beta_t = cDAs_t + \varepsilon_1$ | | **2. Logistic regression** $QRs_{t+1} = aDAs_t + \varepsilon_2$ | | **3. Lineal regression** $\beta_t = bQRs_{t+1} + c'DAs_t + \varepsilon_3$ | | | |
|---|---|---|---|---|---|---|---|
| ***c*** | 0,518 | *a* | 5,534 | ***b*** | 0,169 | ***c'*** | 0,314 |
| **SD*c*** | 0,291 | SD*a* | 1,428 | **SD*b*** | 0,083 | **SD*c'*** | 0,305 |
| **Signif.** | 0,076 | Signif. | 0 | **Signif.** | 0,042 | **Signif.** | 0,304 |
| **N** | 184 | **N** | 284 | **N** | 184 | | |
| **$R^2$** | 0,012 | **$R^2$** | 0,074 | **$R^2$** | 0,029 | | |
| | | ***a* - transformed** | | | | | |
| | | ***a'*** | 0,975 | | | | |
| | | **SD*a'*** | 0,252 | | | | |

**Verification: *a'b + c'* ≈ *c***

0,975 x 0,169 + 0,314 = 0,478 ≈ 0,518

**Mediation % = 1 - *a'b/c***

1 - [(0,975 x 0,169)/0,518] = 0,682 = 68.2%

Mediation hypothesis total fulfillment would imply that QRs completely mediate DAs-betas relationship. Nevertheless, a partial mediation is a more realistic conclusion.

The amount of mediation, or indirect effect, is defined as the reduction of DAs effect on betas due to QRs. One mediation measure is the proportion of the effect that is mediated[13], that is to say, [1 – (*a'b)/c*]. Although, in our case mediation is not complete, the proportion of DAs effect on betas that is mediated by QRs is high, equal to 68.2% (see Table 3). To show the significance of mediation effects, we use Sobel, Aroian and Goodman's tests (Preacher and Leonardelli, 2013). The three tests resulted in significance at 90%.

It is important to clarify that even when the QRs variable is a potent mediator, it is not a unique and dominant mediator, and that in the relationship between DAs and systematic risk, multiple factors probably operate.

Then, it can be argued that the systematic risk perceived by investors (that is to say, the systematic risk) increases when there are high levels of earnings management (or EM). Nevertheless, according to our analysis, that increase seems to be small, because the greatest part of the DAs effect over the betas seems to show up through the QRs.

**5.2 Regression Analysis Results**

We tested the hypotheses using lineal, pooled[14], and panel data regressions[15] with random and fixed effects, as well as a Prais-Winsten regression for controlling the heteroskedasticity. The idea of running different types of regressions was to check the consistency of the signs of the relationships among the variables, and also to check if the significant relationships remain.

[13] To know more about this measure use conditions and limitations see Kenny (2009).

[14] In this type of regression, for each of the variables the corresponding four year data are grouped in one vector. Then, taking into account that the model has variables that are lagged one period, each firm can bring to the sample up to three observations per variable. With this approach, the space and time dimensions are omitted and the usual regression of ordinary least squares is calculated.

[15] Since the pooled regression assumes that for all the observations the intercept is the same, we tested whether it was necessary to control their individual nature using the panel data model with random effects (RE). Then the two models were compared using the Breusch and Pagan's test. The model with fixed effects was also used and compared to the previous two (the F restrictive test was applied to compare it to the pooled regressions and the Hausman's test to compare it to the RE model). In all cases the superiority of the panel data model with FE was shown. For more information about these techniques see Wooldridge (2005).

***Pooled regression – relation between DAs and QRs***

Considering that the auditor issues a QR based on the accounting information from the previous period, we use a binary *logit* pooled regression (see Table 4), to calculate the probability of the firm receiving a QR in (t+1) as a function of the QRs, the DAs, the leverage and the size in (t). The following significant relationships were found:

**a.** A positive relationship between the QRs in (t+1) and the DAs in (t). This relationship, previously proposed in the literature (DeFond and Jiambalvo, 1994; Hirst, 1994; Francis and Krishnan, 1999; Bartov, Gul and Tsui, 2001; Azofra et al., 2006), indicates, on one hand, that earnings are being manipulated inside the firms and, on the other hand, provides evidence that the auditors are effective as evaluators of the transparency and reliability of the relevant accounting-financial information. The results show that when the auditors of our sample detect higher DAs absolute values, they issue QRs as evidence of EM.

**b.** A positive relationship between the QRs in (t+1) and the QRs in (t). This relationship can suggests that a firm that has manipulated its earnings in the past has great probabilities on keep on doing so, or that the unfavorable auditor's opinion is highly influenced by EM detected in the past. Note that the inclusion of the QRs in (t) in the model increases considerably its explanatory power (a change of the pseudo $R^2$ from 0.1547 to 0.3809).

**c.** A negative relationship between a QR in (t+1) and size in (t). This is consistent with Ohlson's (1980) results that prove an inverse relationship between the firms' size and insolvency probability. This relationship is also consistent with the idea that a bigger firm is more exposed to public scrutiny, and consequently, it should have better auditors, better control systems, and more pressure to maintain its reputation intact (Sánchez and Sierra, 2001). These pressures would lead the firm to lowering its EM, and thus receiving less QRs.

***Panel data regressions***

After running the panel data regressions with random and fixed effects, and controlling for heteroskedasticity, the validity of the pooled regressions was confirmed, more robust results were achieved and the estimation was improved (see Table 4). It was confirmed that the QR in (t+1) and the DA in (t) are positively and significantly (in the most of the cases) related to the betas in (t) as follows:

## Table 4. Regressions results

| Independent Variables | Dependent Variable | | | |
|---|---|---|---|---|
| | $QRs_{t+1}$ [1] | | $QRs_{t+1}$ [1] | |
| | Coeff. | Sig. | Coeff. | Sig. |
| $QRs_t$ | | | 3,00 | *** |
| $DAs_t$ | 4,29 | *** | 4,15 | *** |
| $Leverage_t$ | 2E-05 | | 2E-05 | |
| $Size_t$ | -26,36 | ** | -26,4 | ** |
| Constant | -2,21 | *** | -3,34 | *** |
| # observations | 294 | | 294 | |
| $R^2$ | 0,1547 | | 0,3809 | |

| Independent Variables | Dependent Variable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ $IBEX35_t$ [2] | | $\beta$ $IBEX35_t$ [3] | | $\beta$ $IBEX35_t$ [4] | | $\beta$ $IBEX35_t$ [5] | | $\beta$ $IBEX35_t$ [6] | |
| | Coeff. | Sig. | Coeff. | Sig. | Coeff. | Sig. | Coeff. | Sig. | Coeff. | Sig. |
| $QRs_{t+1}$ | 0,22 | *** | 0,22 | *** | 0,22 | *** | 0,19 | *** | 0,23 | *** |
| $DAs_t$ | 0,56 | *** | 0,55 | *** | 0,32 | | 0,25 | | 0,40 | ** |
| $Leverage_t$ | 1E-08 | | 1E-07 | | 3E-07 | | 4E-08 | ** | 2E-08 | |
| $Size_t$ | -0,42 | *** | -0,42 | *** | -0,42 | *** | -0,01 | | -0,40 | *** |
| Constant | 0,58 | *** | 0,61 | *** | 0,67 | *** | 0,48 | *** | 0,47 | *** |
| Y-2005 | | | -0,17 | *** | 0,16 | *** | omm | | omm | |
| Y-2006 | | | omm | | 0,11 | | 0,16 | *** | 0,18 | *** |
| Y-2007 | | | 0,043 | | omm | | 0,13 | *** | 0,2 | *** |
| # observations | 188 | | 188 | | 188 (70groups) | | 188 (70groups) | | 188 (70groups) | |
| $R^2$ | 0,0860 | | 0,1291 | | | | | | 0,1765 | |
| $R^{2\ within}$ | | | | | 0,2142 | | 0,2204 | | | |
| $R^{2between}$ | | | | | 0,0953 | | 0,0495 | | | |
| $R^{2overall}$ | | | | | 0,1425 | | 0,0927 | | | |

[1] Binary *logit* regression
[2] Lineal regression
[3] Pooled regression
[4] Panel data regression with random effects
[5] Panel data regression with fixed effects
[6] Prais-Winsten regression, heteroskedastic panels corrected standards errors

*** Significant at 95%
** Significant at 90%

**a.** A positive relationship between QRs in (t+1) and betas in (t). It is important to note that at time (t+1) the auditors undertake their evaluations of DAs using information from the immediately previous period (t). This means that the auditor's QR is an event posterior to market reaction before public disclosure of accounting information that is reflected on betas. In other words, this seems to indicate that instead of conditioning market risk perception (the betas), QRs role is limited to confirming or corroborating what market has already perceived about EM through other information sources. In other words, the fact that a QR is issued after betas disclosure could be interpreted as a sign that market has an ability to anticipate the auditor's opinion about firm's accounting reports (Dodd et al., 1984).

**b.** A positive relation between DAs in (t) and betas in (t). This can be interpreted that the market, in some way, realizes that there is EM inside the firms and immediately incorporates this information in its decision making process. The positive sign of this relationship supports the proposition that when EM is known, investors demand a higher profitability to compensate their assumed risk.

**c.** A negative relationship between betas in (t) and size in (t). According with the literature arguments described in the section 4.4 of control variables, a consistent negative and significant relationship between these two variables was found, suggesting that the biggest firms tend to refrain from manipulating their earnings, possibly due to the higher controls to which they are exposed.

## 6. CONCLUSIONS, IMPLICATIONS AND LIMITATIONS

This research shows the consistency between two indicators that measure the firm's EM: the QRs and the DAs. The former, which suggest EM according to the knowledge and judgment of the accounting professionals, reflect the existence of high DAs, which provide a measure of EM based on accounting techniques.

The fact that the DAs and the QRs both have a significant positive association with the EM has an important implication for firms that, for some reason, do not have auditory services. Following that the DAs calculation could provide an idea of the firm's level of EM, which help to predict the probability of receiving a QR in case of a potential future account auditing.

The mediation analysis presents an evidence of the QRs role as a mediator variable in the DAs–betas relationship and, at the same time, suggests the validity of the proposed causal relationships: a positive impact of DAs on the betas, of DAs on QRs and of the QRs on the betas.

The QRs role as a mediator variable between DAs and the betas (systematic risk) could be useful for explaining, more accurately, the possible dynamics between these three variables. Suppose that during the year (t) there is EM within a firm. This can be identified by assessing the DAs using the annual report accounting information from the end of that year. Then, the market recognizes that EM (reflected also in the high DAs), and expects or predicts the future auditor's opinion regarding this year's EM and, consequently, takes its investment decisions affecting the betas. Finally, in the year (t+1) the auditors disclose the previous year's EM issuing QRs, being consequent with the DAs and the higher betas from the year (t).

The mediation analysis results gained more robustness after running the pooled and the panel data regressions. Using a data base for 98 firms listed in the Spanish market during the period 2004 – 2008 it was corroborated that DAs, as well as the QRs, have a positive impact on the investors' market risk perception or systematic risk. The betas in (t) are influenced by a future event that is the issuance of a QR in (t+1). This seems to indicate that when recognizing the firms' EM through other informative sources (for example, quarterly financial reports or news reports) the market anticipates a potential financial problem stemming from an auditor's unfavorable opinion, and consequently the market increases its risk aversion as a way of precaution. The market is afraid of financial scandals that could affect stocks prices and consequently it makes its financial decisions today considering a possible QR in the future.

As for QRs, instead of being a warning to the market, they are a "threat" and a source of information that confirms or corroborates, subsequently, the past perceptions about the market risk.

The DAs in (t) have a significant impact on the betas in (t). This suggests that the market reacts before EM. That is to say, that when investors realize (through any information

source, different from a QR) that there are high DAs, they demand of their investments a higher profitability to compensate the risk they are assuming.

For the market, the auditor's QR could be a reliable *ex post* indicator of firms' EM. This result vindicates the auditor's role as an agent that reduces the information asymmetry between the firms and investors. In this context, it is important to note that the auditor's role has previously been questioned due to recent high profile financial scandals.

The results from this research have implications for the firms' owners, managers, auditors and market analysts. The owners can know more about their managers and auditors' quality. The auditors and managers should be aware of the existence of accounting methods, which can help the former to identify unscrupulous behavior (EM) and can dissuade the later of manipulating the earnings due to the evident chance of being caught, while the market analysts can check the consistency of the investment information that comes from two different sources, and also can gain trust in those sources of information.

Considering the difficulty in finding factors to explain the market behavior it is important that we have found two significant variables for explaining betas (systematic risk): on one hand, the DAs that stem inside the firm and, on the other hand, the QRs generated outside.

Another contribution of this study is the consideration of the QRs inside the model as an auditor's quality indicator. The auditor's QRs can suggest how effective the auditor is, as opposed to other auditor's quality indicators that do not seem to measure what is claimed. For example, in a previous study a proposed auditor's quality measure was based on belonging or not to the group of the most prestigious auditing firms, but the accuracy of this indicator in explaining EM was poor.

Empirical studies have shortcomings that often become challenges that motivate future research. Basically we recognize two aspects that could be delved. On one hand, the regarded to the different types of QRs, since not all of them are related to EM. In order to improve the model specifications, and if the information is available, in a further empirical work would be interesting to improve the model explanatory power by isolating the QRs motivated by EM and measure their effect over the systematic risk. On the other hand, despite the encouraging results obtained with the mediation analysis and the amount of theory that supports the causalities we suggest for the relationships among our variables,

the doubt about endogeneity presence within the model remains, so a further statistical analysis in this respect would help to provide sounder conclusions.

**APPENDIX**

Since the IBEX 35 Spanish index based beta used in the previous empirical section (see section 5) was obtained from different information sources, and we cannot assure that the methodology used to its assessment was homogeneous, which can add noise to our model, we replicate our regressions using a beta based on the index EURO STOXX 600[16]. The beta was obtained from the DATASTREAM database that provides an homogeneous measure for the systematic risk that uses firm's monthly data (stock prices) from the previous five years as well as the corresponding value of the abovementioned index, which is one of the most global available indexes suitable for the beta assessment.

Table 5 presents the coefficients and their significance for the variables that predict the probability of obtaining a QR and also for the variables that predict the systematic risk (beta). The provided results are consistent with the ones from the section 5 (see Table 4). We can observe that DAs and Leverage in t sill have a significant positive impact in the auditor's opinion (QRs in t+1).

Note also that the auditor's opinion is significantly influenced by the QRs from the previous period, and the beta still reflects the DAs of the period, also tends to be higher for the most leveraged firms and still has the ability to anticipate the next period auditor's opinion which in turn considers the information from the present period.

[16] The EURO STOXX 600 index, which has a fixed quantity of 600 components, represents the large, medium and small capitalization firms of 18 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Greece, Holland, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden and Switzerland.

## Table 5. APPENDIX – Regressions results

| Independent Variables | Dependent Variables | | | |
|---|---|---|---|---|
| | $QRs_{t+1}$ [1] | | $QRs_{t+1}$ [1] | |
| | Coeff. | Sig. | Coeff. | Sig. |
| $QRs_t$ | | | 2,51 | *** |
| $DAs_t$ | 4,32 | ** | 2,50 | |
| $Leverage_t$ | 4,13 | ** | 3,23 | |
| $Size_t$ | -22,85 | | -22,2 | |
| Constant | -5,46 | *** | -5,51 | |
| # observations | 183 | | 183 | |
| $R^2$ | 0,1052 | | 0,2575 | |

| Independent Variables | Dependent Variable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ $ES600_t$ [2] | | $\beta$ $ES600_t$ [3] | | $\beta$ $ES600_t$ [4] | | $\beta$ $ES600_t$ [5] | | $\beta$ $ES600_t$ [6] | |
| | Coeff. | Sig. | Coeff. | Sig. | Coeff. | Sig. | Coeff. | Sig. | Coeff. | Sig. |
| $QRs_{t+1}$ | 0,24 | ** | 0,27 | *** | 0,13 | *** | 0,12 | ** | 0,11 | |
| $DAs_t$ | 0,79 | *** | 0,79 | *** | 0,47 | *** | 0,41 | *** | 0,36 | |
| $Leverage_t$ | 0,72 | *** | 0,72 | *** | 0,29 | ** | 0,04 | | 0,51 | *** |
| $Size_t$ | -0,08 | | -0,10 | | -0,26 | | -0,78 | ** | -0,15 | |
| Constant | 0,25 | *** | 0,36 | *** | 0,66 | *** | 0,77 | *** | omm | |
| Y-2005 | | | 0,20 | *** | -0,20 | *** | -0,13 | *** | 0,33 | *** |
| Y-2006 | | | 0,09 | | -0,90 | *** | omm | | 0,44 | *** |
| Y-2007 | | | omm | | omm | | 0,08 | *** | 0,52 | *** |
| # observations | 183 | | 183 | | 183 (61groups) | | 183 (61groups) | | 183 (61groups) | |
| $R^2$ | 0,1293 | | 0,1581 | | | | | | 0,1834 | |
| $R^{2\ within}$ | | | | | 0,3589 | | 0,3685 | | | |
| $R^{2between}$ | | | | | 0,1744 | | 0,0636 | | | |
| $R^{2overall}$ | | | | | 0,1556 | | 0,0818 | | | |

[1] Binary *logit* regression
[2] Lineal regression
[3] Pooled regression
[4] Panel data regression with random effects
[5] Panel data regression with fixed effects
[6] Prais-Winsten regression, heteroskedastic panels corrected standards errors

*** Significant at 95%
** Significant at 90%

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# CHAPTER 2

# INTERNATIONALIZATION AND SYSTEMATIC RISK IN TIMES OF GLOBALIZATION AND FINANCIAL CRISIS

**INTERNATIONALIZATION AND SYSTEMATIC RISK IN TIMES OF GLOBALIZATION AND FINANCIAL CRISIS**

**Abstract**

This article presents insight into the evolution of the relationship between firm's international diversification and systematic risk. We draw on the literature of the last four decades, covering a transition from low interdependence to high integration among countries and markets, as a result of globalization. We also provide robust and consistent measures of the impact of internationalization on systematic risk. This empirical study uses a sample of ten developed countries, for an eleven-year period characterized by strong and increasing market integration as well as the recent global financial crisis. Previous literature suggests that multinational companies should decrease their systematic risk when diversifying internationally. The earliest empirical research provides evidence supporting this hypothesis. Nevertheless, since the second half of the 1980's the tendency changes. In accordance with the most recent studies we find, on a global level, a positive significant relationship between internationalization and systematic risk. But, on a more detailed level, the results suggest that even during times of strong international integration, coming from a less stable country can allow companies to enjoy beneficial effects from international diversification, thereby lowering their systematic risk.

**Key words:** Internationalization, international diversification, diversification, systematic risk, beta, risk management

## 1. INTRODUCTION

Risk management has always been a fundamental concern for the financial industry. Lately, it has also increased its importance among non-financial companies. This has occurred in an era of highly integrated markets and global financial crisis. Particularly, listed companies implement risk management strategies, since they are obliged to disclose their financial information periodically in order to satisfy the needs of information for several users (shareholders, government, providers, clients, society, etc.).

One of the ways to manage/diversify risk is for firms to become active in international markets. That is like putting one's eggs in different baskets, where the firm activities are the eggs and the international markets the baskets. In this way, one reason why firms go international is the diversification of risk. Diversification theory suggests that internationalization allows the firm to obtain advantages when diversifying its risks in different foreign markets. Nevertheless, the empirical literature over the last four decades has provided mixed results regarding this suggestion.

According to corporate international diversification theory, multinational firms should bear less risk than domestic ones (Kwok and Reeb, 2000). However, at least for systematic risk diversification purposes, it is necessary to assume the hypothesis of imperfect markets, since using market imperfections is what can turn into an advantage for the firm that decides to enter the international market, instead of staying local (Goldberg and Heflin, 1995).

The advantage of systematic risk reduction can be due to diversification of sales in several economies whose fluctuations are not perfectly and positively correlated (Rugman, 1976). If financial, productive, and other-factor international markets were perfect and complete, and there was no segmentation, then multinational companies could not offer anything to investors that they could not find themselves by investing directly (Hughes, Logue and Sweeney, 1975).

Accordingly, to consider internationalization as a strategy to diversify systematic risk it is necessary to assume the existence of market imperfections, which could be exploited, allowing the firm to expect a decrease in systematic risk after international diversification.

At this point it is important to consider two elements. On one hand, the extent to which markets are perfect and efficient[17] depends on their integration. The more (less) the integration, the less (more) the imperfections, and the less (more) the potential to take advantage of them. On the other hand, the fact that systematic risk, when depending on market's perceptions of uncertainty, is also affected by other costs and risks associated with internationalization.

It is important to note that the world's continuous globalization process has increased integration among markets over the last 40 years (Tung, 1999) minimizing, in turn, the differences between markets. Accordingly, it is necessary to find if there remain any imperfections that justify internationalization as a strategy for diversifying systematic risk. It is also important to note that systematic risk can be affected by additional costs and risks associated with internationalization (Lee and Kwok, 1988; Burgman, 1996) like, for example, agency costs derived from monitoring and auditing (Lee and Kwok, 1988), labour and political risks associated with foreign countries (Mahajan, 1990; Burgman, 1996), exchange rate risk (Solnik, 1974; Black, 1990; Madura, 2008) and differences in language and legal system (Goldberg and Heflin, 1995; Kwok and Reeb, 2000), which when perceived by the market have the capability of lessening the international diversification benefits on systematic risk. "It cannot be assumed that diversification benefit dominates any potential increases in earnings volatility resulting from internationalization" (Reeb, Kwok and Baek, 1998, p. 264). Therefore, it is essential to study the net effect of internationalization on systematic risk.

Focusing on this two-variable relationship in a global economic context which changes from prosperity to crisis, our main objective is to explain and show empirically under what circumstances an increase in a firm's internationalization can reduce its systematic risk. Accordingly, we provide an analysis based on a sample of firms that is more recent, larger and geographically diverse than the previous ones. Furthermore, we take into account additional aspects associated with systematic risk that improve the model's explanatory power.

[17] In a hypothetical efficient (perfect) market: "(i) there are no transaction costs in trading securities, (ii) all the information is costlessly available to all market participants, and (iii) all of them agree on the implications of current information for the current price and distributions of future prices of each security" (Malkiel and Fama, 1970, p. 387).

In particular, we analyse aggregately the systematic risk behaviour for a set of firms that have different levels and dimensions of internationalization, and belong to ten different developed countries over an eleven-year period that is partly characterized by the global financial crisis. Furthermore, we classify the countries into two sub-samples according to their economic stability[18] and repeat the analysis to find under what conditions internationalization diminishes firm's systematic risk. Our main contribution is to reconcile the apparently contradictory results found in the previous literature.

This article is divided into six additional sections. In the second one, we review previous empirical research on the relationship between internationalization and systematic risk. The third section explains the possible effects of globalization on previous and current results. In the fourth section are described the variables which measure systematic risk and internationalization, as well as the control variables also considered in our quantitative analysis. The fifth section describes the sample and statistical methods used. Analysis of the results is provided in the sixth section and the conclusions, implications and directions for future research are presented in the seventh.

## 2. LITERATURE REVIEW

The relationship between internationalization and risk management has been a subject of interest in academic literature over the last four decades and, particularly, the study of internationalization as a way to control risk has provided mixed results. The following set of studies, which use US firms and exclude from the sample the financial and Government regulated industries, present empirical evidence about international diversification benefits on systematic risk.

Hughes, et al (1975) compare 46 multinationals to 50 domestic firms for the period 1970-1973, and find a lower systematic risk for the first group. Then, using information of the year 1972 for a sample of 217 firms Agmon and Lessard (1977) conclude that the market recognizes and values the benefits from geographical diversification and from the degree of firm's international commitment, while Fatemi (1984) compares two portfolios, one formed by 84 multinationals and the other by 52 domestic firms, during 1976-1980, and finds that

[18] Economic stability in this case refers to the countries' ability to pay their public debt during the crisis (2006-2010). Greece, Ireland, Italy, Portugal and Spain were considered the five weaker Eurozone nations following the financial crisis.

the betas from the multinational portfolio are significantly lower and more stable than domestic ones.

Likewise, Michel and Shaked (1986) analyse the differences between 58 large international manufacturing and 43 domestic firms[19], for the period 1980-1982, concluding that the average systematic risk for the most internationalized firms is significantly lower than for domestic ones, while Goldberg and Heflin (1995) evaluate 1,982 enterprises during 11 years (1977-1987) and find that, even after controlling other variables associated to systematic risk, the negative relationship between internationalization and this risk persists. Note that up to now the entire data set of the different studies belongs to a time range between 1970 and 1987, in which international diversification benefits over systematic risk are clearly observed.

The most recent studies consistently show a change in the tendency of results, since systematic risk is higher for those firms with a higher degree of international diversification. These studies consider listed manufacturing and services firms and exclude the financial and Government regulated industries.

Reeb, et al (1998) analyse the information of two samples of 880 and 884 multinational firms during the period 1987-1996, and find a significant positive relationship between internationalization and systematic risk, suggesting that the costs and risks associated to internationalization surpass the benefits of international diversification over systematic risk. Later, Kwok and Reeb (2000) extend the analysis geographically including data from 32 countries from 1992 to 1996 (with approximately 7% of the observations provided by 12 emerging countries, 40% by the US and the rest by the other 18 developed countries) and find a direct relationship between internationalization and systematic risk for the set of US companies, but an inverse relationship between these two variables if the internationalizing firms are from emerging countries. Finally, using a sample of 347 American firms, using data between 2000 and 2004, Olibe et al (2008) forecast systematic risk as a function of four different internationalization variables, and in all the cases find positive associations.

[19] These authors consider a firm as international if at least 20% of its sales are made abroad, and if it is present in at least six foreign countries.

Nevertheless, Madura (2008) notes that international activities tend to have higher uncertainty, while Reeb et al (1998) argue that internationalization increases systematic risk due to an increase of the standard deviation of a firm's international cash flow, compensating for a possible low correlation between the firm and its market performance. Likewise, those authors have observed that firms consistently use higher discount rates to value international projects but, supporting Lessard's (1983) suggestion, do not disregard the possibility that in order to lessen their systematic risk, some of them use intentionally lower discount rates.

Figure 1 shows that approximately since 1987 the tendency of results changes. After this year the globalization process accelerates (Kim, 2003) increasing the degree of integration among markets and decreasing the potentially useful market imperfections, leading internationalization to add systematic risk to the firm. Then the market stops perceiving internationalization as an element that encourages a company's safety and stability.

## 3. GLOBALIZATION AND DIVERSIFICATION BENEFITS

In order to obtain international diversification benefits over systematic risk, the assumption of imperfect markets must apply in such a way that advantages from the differences between the home and host countries could be exploited. The world tends towards globalization, which is the process of increasing integration among civilizations… and unavoidably integration appears motivated by profits obtained after eliminating institutional imperfections in the movement of goods, services and capital (Tung, 1999)[20].

Since the 1970's, markets have witnessed a growing interdependence, achieving a considerable degree of integration in our days, due to several factors such as technological progress in communications and transportation, the ease to perform transactions, and to political and social changes within countries. Then, after this 40-year transition from low interdependence to strong integration, differences among markets have been vanishing. Reeb, et al (1998) suggest the degree of world market integration as a possible variable to explain the relationship between internationalization and systematic risk. Nevertheless, when splitting their initial sample in two sub periods, 1987-1992 (period of assumed lower

[20] Free trade agreements are such an example of the mechanisms for institutional imperfections elimination that facilitate the movement of goods, services and capital, encouraging, in turn, the process of internationalization.

integration) and 1992-1996 (period of assumed higher integration), they find in both cases positive associations. Maybe, at the end of the 1980's the degree of market integration due to globalization has crossed the threshold where benefits from diversification were higher than the costs and risks associated to internationalization.

In spite of the aforementioned results, it is still reasonable to expect diversification benefits over systematic risk (previously achieved in a context of imperfect markets) to be more difficult to achieve in a scenario of highly integrated markets. This argument could explain the differences between the former empirical studies[21], in which international diversification lowers systematic risk, and the recent ones in which the opposite occurs.

However, our idea is try to find other differences among markets of which advantage could be taken when diversifying internationally[22]. For instance, during times of prosperity (as will be seen later in the results), a firm from a less economically and politically stable country could obtain benefits from a more stable country, improving in turn the perception the market has about it. "Worldwide, workers from areas of political instability and economic hardship continue to emigrate to countries that offer them greater opportunities" (Tung, 1999, p. 204)… and one may assume that this argument also applies for firms.

## 4. VARIABLES DESCRIPTION AND HYPOTHESES DEVELOPMENT

### 4.1 Systematic Risk

Since the true market portfolio is not observable, it is required to use an adequate market proxy for estimating the beta empirically (Elgers and Murray, 1982).

Our dependent variable is systematic risk, measured through the coefficient beta (β), which indicates the degree of covariance between a firm and the economy's performance[23]. In

[21] The former empirical studies are the ones in which samples have information from the 1970's and 80's, while the ones with data since the 1990's are the more recent ones.

[22] Though the mechanisms which tend to eliminate the barriers for entering a new market promote integration and diminish the potential imperfections that can be used when diversifying, there still remains the consideration concerning the effort and corresponding merit. It is assumed that a firm that has exerted a greater effort to be accepted in a tough and demanding foreign market can expect the shareholders to perceive a higher merit, which is rewarded by and reflected in a reduction of systematic risk. Therefore, going from a less stable to a more stable economy requires more effort and, consequently, has more merit than going in the inverse direction.

[23] In this case, a firm's performance refers to its stock prices behaviour with regard to that of the market.

other words, β tells how sensible the firm's returns before the market variations are. Systematic risk (β) is derived from the market model expressed as follows:

$$R_j = \alpha_j + \beta_j R_m + \varepsilon_j \quad [1]$$

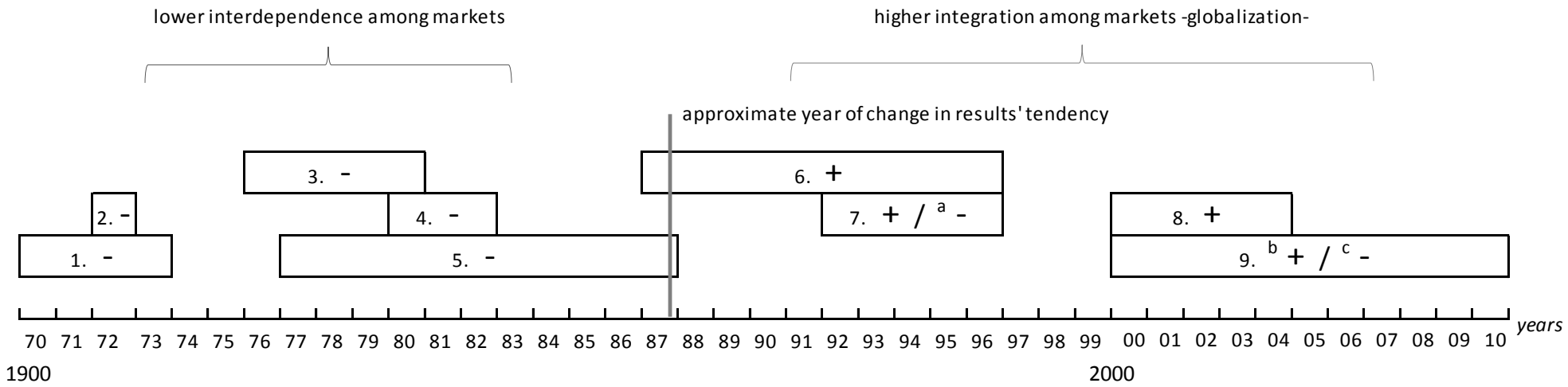
Where firm's return $R_j$ is a linear function of the market's return $R_m$ and the error $\varepsilon_j$ which is market independent. We also can rewrite the $\beta_j$ as a function of the firm-market correlation coefficient and their respective standard deviations, as shown in equation [2]:

$$\beta_j = \rho_{jm}\sigma_j/\sigma_m \quad [2]$$

Note that equation [2] clearly shows the compensatory effect on systematic risk due to internationalization. On one hand, it can reduce $\beta_j$ if there is a low correlation between the stock price of the firm j and the market m ($\rho_{jm}$), which occurs mostly in a context of imperfect markets (low degree of integration). On the other hand, simultaneously, internationalization can increase the $\beta_j$ if the standard deviation of the firm j stock price ($\sigma_j$) is high, that is to say, if price volatility increases due to other dominant generalized economic factors (Reeb, Kwok and Baek, 1998). Then, benefits of a low correlation between firm and market can be overshadowed by an increase in the firm's stock price volatility.

It should be noted that β has constraints as a systematic risk estimator. On one hand, there are limitations related to the choice of market's benchmark index, which in behalf of efficiency, and for offering a better representation of the true market portfolio, should comprehend the higher possible amount of financial assets and markets that, in turn, include the analysed markets (Hwang and Satchell, 2002) and, on the other hand, there are also limitations related to the choice of data time horizon, since the high volatility of a stock price during a single day makes it necessary to evaluate price evolution during a longer time period in order to improve the β's forecast (Elgers and Murray, 1982).

**Figure 1. Sign's evolution of the relation between internationalization and systematic risk**




All the samples have US information except:

[a] Emerging markets

[b] More stable developed countries

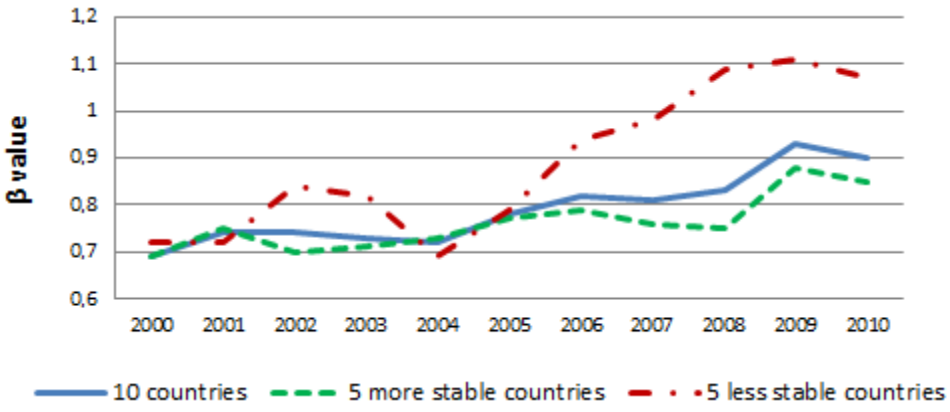
[c] Less stable developed countries

1. Hughes, Logue and Sweeney (1975)
2. Agmon and Lessard (1977)
3. Fatemi (1984)
4. Michel and Shaked (1986)
5. Goldberg and Heflin (1995)
6. Reeb, Kwok and Baek (1998)
7. Kwok and Reeb (2000)
8. Olibe, Michello and Thorne (2008)
9. This study

To minimize the abovementioned drawbacks the $\beta_j$ is assessed using the DATASTREAM data base beta formula, which considers the monthly stock price for each of the firms during the five years prior to the date of the assessment. It also uses the market benchmark index EURO STOXX 600[24], the most global of the indexes available in this data base, that includes information of all the nine European markets considered in this study.

Figure 2 shows systematic risk (or average beta) evolution from 2000 to 2010, for the entire sample formed by listed firms from ten developed countries (Finland, France, Germany, Greece, Ireland, Italy, New Zealand, Portugal, Spain and United Kingdom), as for two derived sub-samples; one with the five economically and politically more stable countries (Finland, France, Germany, New Zealand and United Kingdom) and the other with the five less stable (Greece, Ireland, Italy, Portugal and Spain). Approximately since 2006 (considered as the start of the crisis due to the US subprime mortgages) the differences between the two sub samples (more and less stable countries) are more visible; having lower (higher) betas, the more stable (less stable) the countries. Maybe, during crisis times in the less stable countries some deep structural problems, that in good times went unnoticed, came to the surface.

**Figure 2. Beta (β) evolution from 2000 to 2010**




Five more stable countries: Finland, France, Germany, New Zealand and United Kingdom.
Five less stable countries: Greece, Ireland, Italy, Portugal and Spain.

[24] The EURO STOXX 600 index, which has a fixed quantity of 600 components, represents the large, medium and small capitalization firms of 18 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Greece, Holland, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden and Switzerland. We also calculated the betas using the MSCI all country world index which provided similar robust results and regressions with lower $R^2$.

Our time range (2000-2010) was chosen because it reflects, in a balanced way, both a period of global stability (bull markets) and a period of global crisis (bear markets) and, additionally, because it corresponds to an updated and sufficiently wide sample as to apply certain quantitative techniques that help to mitigate recurrent statistical problems.

### 4.2 Internationalization and Systematic Risk

International diversification can be addressed from various perspectives. For example, from the dimensions of structure, performance or behavior (Nguyen and Cosset, 1995). Then, different measures of internationalization generate different results. Consequently, authors recommend caution when comparing and making inferences about studies that have used different approaches.

The rate of foreign sales to total sales is one of the most commonly used internationalization measures in the literature (Hughes et al., 1975; Agmon and Lessard, 1977; Goldberg and Heflin, 1995; Reeb et al., 1998; Olibe, Michello and Thorne, 2008), which reflects the firm's performance during the period. This ratio shows the portion and significance of the firm's transactions abroad with respect to the total number of transactions. Besides, foreign sales better reflect current business activity, since other items for measuring international activity, like assets and results, also contain historical information (Goldberg and Heflin, 1995). However, this rate's numerator can bring a bias problem when mixing exports and foreign subsidiaries' sales (Lee and Kwok, 1988; Burgman, 1996; Olibe et al., 2008).

The ratio of foreign assets to total assets, which indicates to which extent are the firm's assets internationally committed while captures information from its geographical structure (Reeb et al., 1998)[25], is used to mitigate the aforementioned bias problem (Hughes et al., 1975; Reeb et al., 1998; Kwok and Reeb, 2000; Olibe et al., 2008). However, after refining the model with this ratio, previous studies have not achieved results significantly different from those provided by the foreign sales.

Other less frequent, but no less important, indicators of internationalization are the percentage of operating results obtained abroad (Goldberg and Heflin, 1995), the number of

[25] Although the OSIRIS database provides a field referred to a firm's distribution of assets by geographical area, the information is not available for most firms, so the use of this variable was dismissed.

countries or foreign sectors in which the firm operates and the number of subsidiaries owned by the firm in other countries (Olibe et al., 2008). All these indicators are expected to capture a firm's geographic diversity and, particularly, the indicator referred to subsidiaries shows the firm's direct control over its assets and resources that are located in different markets (Andersen, 2011).

Consistently with the previous studies suggestions, the degree of internationalization is measured from three different dimensions: performance (using foreign sales), international commitment (considering the number of subsidiaries the firm has abroad), and international presence (taking into account the number of continents in which the firm operates)[26].

Following Rugman (1976), performance dimension is measured by foreign sales, which are the sum of a firm's exports and the sales of subsidiaries located abroad[27]. A new element is added, when dividing these foreign sales by the total assets (fsale_ta), in order to reflect the international turnover of the assets or assets' productivity (international sales generated by each monetary unit of invested assets[28]). International commitment dimension is measured by the ratio of a firm's subsidiaries abroad to its total of subsidiaries (perforsu), and the dimension referred to the degree of international presence, is measured as the ratio of the number of continents in which the firm operates to the total of five continents (presen5c).

These three internationalization variables and the global results provided in the Figure 1 for the years after 1987 give rise to our three hypotheses:

**$H_1$:** the higher the ratio of foreign sales to total assets the higher the systematic risk β.

**$H_2$:** the higher the percentage of subsidiaries abroad the higher the systematic risk β.

**$H_3$:** the greater the firm's international presence the higher the systematic risk β.

[26] Following the previous literature we also calculated two additional measures of internationalization which had no significant results for all the different regressions: the number of foreign countries (Olibe et al., 2008) and the number of cultural zones (Ronen and Shenkar, 1985) in which the firm operates. Our cultural zones where defined based on Hofstede and GLOBE national culture dimensions, which where proven for not being valid or reliable measures for the culture dimensions at the level of individuals or organizations (Venaik and Brewer, 2013).

[27] Although we are aware of the problem when mixing a firm's exports and sales from its foreign subsidiaries, we could not find the properly disaggregated information in the OSIRIS database in order to make the distinction.

[28] The traditional measure of foreign sales to total sales was also tested, but the measure of international assets' turnover provided the model with higher explanatory power.

### 4.3 Control Variables

From accounting and financial perspectives there have been found several factors associated to systematic risk. For example, the control variables traditionally referred to in the literature are size, leverage and growth (Olibe et al., 2008). We also consider performance and macroeconomic variables.

***Size (lnassets):*** A larger company would generate more information, which is associated with a lower cost of equity, as with lower transaction costs and estimation risks (Olibe et al., 2008), in addition, size could reflect a greater potential for risk diversification (Andersen, 2011) and give information about insolvency or about payment default risks, since larger firms are more stable and less prone to payment delays (Harris and Raviv, 1991). However, it should also be considered that a larger firm has higher agency costs and easier access to credit, which can increase the firm's leverage affecting adversely its risk.

Regarding the relationship between size and systematic risk, results are mixed. Considering the argument that economies of scale can be achieved through size, a negative relationship between these two variables is suggested, that is, the higher the size of the firm the lower its risk (Beaver, Kettler and Scholes, 1970; Reeb et al., 1998; Kwok and Reeb, 2000; Olibe et al., 2008), finding in some cases the opposite to the expected outcome (Kwok and Reeb, 2000), or a non-significant relationship (Goldberg and Heflin, 1995). Although it has also been argued that previous literature does not provide any expected outcome for this relationship (Goldberg and Heflin, 1995), according with much of the empirical evidence and keeping in mind the current globalization and crisis context, we expect a positive relationship between size and systematic risk.

As in most of the literature, we used the natural logarithm of total assets to control for the effects of size and a firm's information environment (Goldberg and Heflin, 1995; Kwok and Reeb, 2000; Olibe et al., 2008; Andersen, 2011).

***Experience (explev):*** Literature on internationalization has argued that firms go through a learning period when entering a foreign market. During this entry phase, a firm underperforms within the new market, because establishing economies of scale and scope requires time. The financial performance at the beginning is weak and unstable, mainly because the firm needs time to adjust to the new market and new organizational processes,

or simply because it has entered into the market in an inappropriate way and has to correct it (Woodcock, Beamish and Makino, 1994). The lack of knowledge of the foreign market is the biggest obstacle faced by the firm in its international expansion process (Johanson and Vahlne, 2009). Although there are benefits associated with investments abroad, it is reasonable to think that international expansion comes with ignorance of the new place, or territorial unfamiliarity, and a consequent increase in systematic risk (Olibe et al., 2008).

However, one would believe that the role of time could reverse this trend. After a learning process, familiarity would be gained and systematic risk reduced. The more knowledge the firm acquires, the greater the reduction of uncertainty, which implies that more learning leads to more ability to develop contingency plans or alternatives. Uncertainty can be reduced through knowledge and experience (Figueira-de-Lemos, Johanson and Vahlne, 2011) - two elements whose importance has been underestimated (Johanson and Vahlne, 1977). Due to the barriers[29] a firm has to face when deciding on internationalizing, it might be difficult to obtain immediate benefits at the beginning of this process and one would believe that, before observing the benefits of diversification, it would be necessary to go through a learning process.

Therefore, a firm's experience is measured according to its longevity in the internationalization process, hoping the firm that has been operating internationally over a longer period, thereby reducing systematic risk.

Considering the difficulties in establishing the year of entry into international markets for a firm, we created a binary variable which takes the value 1 for the most experienced firms that are the ones whose information for the whole period (2000-2010) is available or 0 otherwise. It should be noted that all the firms from the sample have had some degree of international activity.

***Leverage (ncurrl_ta):*** Another variable often controlled is firm leverage (Goldberg and Heflin, 1995; Reeb et al., 1998; Kwok and Reeb, 2000; Olibe et al., 2008) that describes the firm's financial structure and measures firm's assumed financial risk. Firms with higher leverage should have a higher systematic risk (Modigliani and Miller, 1958; Hamada, 1972).

[29] For instance, controls to international cash flows, transaction differential costs, different taxation structures, different cultures and languages.

Nevertheless, although most of the authors have expected a positive relation between these two variables, results have been mixed possibly due to debt measures (total debt, short-term debt or long-term debt), since short-term debt is considered to be riskier for the firm than that of long-term. Consistently with Lee and Kwok (2008), Burgman (1996) and Chen, Cheng, He and Jawon (1997) the leverage indicator is built as the ratio of the long-term debt to total assets, since long-term debt is a better financial strategy because, besides diminishing a firm's risks of illiquidity and insolvency, it reflects the banks' trust in the firm. Then a negative association can be expected between the ratio of long-term debt to total assets and systematic risk.

***Market power (markpow):*** This variable is built based on the idea of Herfindahl's index (Buchholz, 2008), which measures concentration within a particular industry and shows the degree of competition that exists within. This index is defined as the percentage of total sales of the industry that is contributed by industry's largest firms. However, as the objective of this variable is to measure the market power for each of the firms by industry, country and year, then "markpow" is calculated as the square of the ratio of the firm's sales in the year 't' to the total sales of the corresponding industry and country for each of the years.

The idea that the market perceives more favourably firms that contribute more to industry sales, is consistent with previous economic studies which suggest that an increase in market power reduces systematic risk (Moyer and Chatfield, 1983). Then we expect a negative relationship between these two variables.

***Productivity/profitability variables - assets turnover (sales_ta), profit margin (profitma) and return on equity (roe) - :*** One may argue that a higher risk is compensated by a higher profitability. That is why, unlike previous empirical works, the model is also controlled for three additional variables that explain different facets of firm productivity/profitability. Firstly, assets turnover that shows the sales generated by each monetary unit of assets invested. Secondly, profit margin that indicates profit as a percentage of sales (excluding interests and taxes), and, lastly, return on equity which gives an idea of the profit generated per monetary unit of capital provided by shareholders. We expect that each of these three variables will have a negative association with systematic risk, since it is considered reasonable for a productive/profitable firm to generate trust within the market.

***Macroeconomic growth (gdpdelt):*** The effect that change in gross domestic product (GDP) could have on systematic risk is also controlled. We would expect the market to have a better perception of a firm from a country with a growing GDP, as well as this perception to be reflected beneficially in the firm's systematic risk.

***Crisis (crisis):*** As our sample's broad time horizon (eleven years) represents in a balanced way both a period of prosperity (2000-2005) and that of crisis (2006-2010), it is interesting to measure if in a crisis context the internationalization and systematic risk relationship is different. As during the crisis the differences between countries are exacerbated, it would be possible that some exploitable imperfections arise due to international diversification.

***Country stability:*** Internationalization effects over systematic risk are a function of domestic and foreign relative risks (Kwok and Reeb, 2000). Then, a more (less) developed market is expected to be less (more) risky. These authors state that when a firm from a more developed market goes international its risk increases, while the firm from an emerging market, when internationalizing diminishes its risk. In this study, as our ten countries can be considered as developed, we classify them in two groups of more and less stable countries[30], where the more stable play the role of "developed" while the less stable play the role of "emerging". Then, following the logic of Kwok and Reeb (2000) applied to our sample, we expect the internationalized firms from less stable countries to have lesser systematic risk than the ones from more stable countries.

Table 1 shows the list of explanatory variables, table 2 the corresponding descriptive statistics from all the aforementioned variables (dependent, internationalization and control ones) and table 3 the hypotheses proposed.

[30] The criteria for classifying a country as more or less stable are based on observed media reports regarding its financial problems with the European Union. Spain, Greece, Italy, Ireland and Portugal are the European Union countries that have been more struck by the crisis, and whose public debt payment capacity has turned out to be more affected. The remaining countries (Germany, Finland, France, Great Britain and New Zealand) were classified as stable, having more solid economies or for providing assistance to the most affected countries during crisis times.

**Table 1. List of internationalization and control variables**

| INTERNATIONALIZATION | CONTROL |
|---|---|
| **1** Assets international turnover (fsale_ta) | **1** Size (lnassets) |
| **2** Subsidiaries abroad (perforsu) | **2** Experience (explev) |
| **3** International presence (presen5c) | **3** Debt/leverage (ncurrl_ta) |
| | **4** Market power (markpow) |
| | **4** Assets turnover (sales_ta) |
| | **5** Profit margin (profitma) |
| | **6** Return on equity (roe) |
| | **7** GDP variation (gdpdelt) |
| | **8** Crisis (crisis) |
| | **9** Country stability |

**Table 2. Descriptive statistics**

| Variable | Nº Obs. | Mean | S.D. | Min. | Max. |
|---|---|---|---|---|---|
| beta | 17,367 | 0.79 | 0.68 | -4.03 | 4.08 |
| fsale_ta | 16,825 | 0.38 | 0.63 | 0.00 | 25.33 |
| perforsu | 18,039 | 0.40 | 0.32 | 0.00 | 1.00 |
| presen5c | 18,039 | 0.44 | 0.26 | 0.20 | 1.00 |
| lnassets | 16,825 | 12.15 | 2.23 | 2.16 | 19.44 |
| explev | 18,039 | 0.75 | 0.44 | 0.00 | 1.00 |
| ncurrl_ta | 18,038 | 0.21 | 0.37 | 0.00 | 32.25 |
| markpow | 18,039 | 0.05 | 0.18 | 0.00 | 1.00 |
| sales_ta | 16,627 | 1.07 | 0.73 | 0.00 | 13.86 |
| profitma | 15,925 | 0.04 | 0.17 | -1.00 | 1.00 |
| roe | 16,284 | -0.01 | 0.65 | -9.96 | 8.59 |
| gdpdelt | 18,039 | 0.06 | 0.10 | -0.18 | 0.33 |

**Table 3. Hypotheses**

| Hypothesis | Internationalization variables | Expected relationship | Dependent variable |
|---|---|---|---|
| **H1** | fsale_ta | **+** | β |
| **H2** | perforsu | **+** | β |
| **H3** | presen5c | **+** | β |
| | **Control variables** | | |
| | lnassets | **+** | β |
| | explev | **-** | β |
| | ncurrl_ta | **-** | β |
| | markpow | **-** | β |
| | sales_ta, profitma, roe | **-** | β |
| | gdpdelt | **-** | β |
| | crisis | **-** | β |
| | country in-stability | **-** | β |

## 5. SAMPLE AND METHODOLOGY

Previous empirical literature provides comparisons between multinational and domestic firms, but this methodology typically involves small samples due to problems finding size comparable firms. The problem of information unavailability has also been recurrent (Reeb et al., 1998).

For robustness and consistency purposes we analyse the relationship between internationalization and systematic risk using six different samples (see the samples description in table 4).

These samples were built using the OSIRIS data base which contains accounting and financial information of international listed companies. The first and biggest sample S1 is composed of 15,194 observations that belong to 1,640 companies of the ten countries considered in this study (Finland, France, Germany, Great Britain, Greece, Ireland, Italy, New Zealand, Portugal and Spain), over a period of 11 years (2000-2010). 1,260 companies are from the group of more stable countries (Finland, France, Germany, Great Britain and New Zealand) while 380 belong to the group of the less stable ones (Greece, Ireland, Italy, Portugal and Spain).

Samples S2 to S6, which are sub samples of S1, contain information concerning the groups of more or less stable countries and the periods of prosperity or crisis. The particular features for each of the six samples can also be found in table 4.

For each of the six samples we applied systematically five different types of regressions (see table 5) that control for the following statistical problems: collinearity (when two or more variables provide similar information to the model), autocorrelation (when a variable is correlated with itself in previous periods), heteroskedasticity (when the standard deviation of a variable is not constant along the observations) and endogeneity (when there is correlation between the variables and the error term).[31] For each of the first three types of regressions the VIF[32] (variance inflation factor) was verified in order to assure the absence of collinearity problems among the variables.

[31] We also run two more types of regressions using the panel data technique with random and fixed effects, respectively, obtaining results similar to those provided by the five regressions previously presented.
[32] Following a conservative criteria, we consider VIF values equal or lower than 3.5.

## Table 4. Number of observations by industry, year and country for each sample

| | | Industries | Samples | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | S1 | S2 | S3 | S4 | S5 | S6 |
| ↑ | 1 | Administrative and Support and Waste Management and Remediation Services | 389 | 189 | 362 | 28 | 13 | 14 |
| ↑ | 2 | Education Services | 19 | 9 | 19 | 0 | 0 | 0 |
| ↑ | 3 | Health Care and Social Assistance | 259 | 126 | 214 | 46 | 22 | 24 |
| | 4 | ***Agriculture, Forestry, Fishing and Hunting** | **222** | **108** | **177** | **46** | **22** | **24** |
| | 5 | Manufacturing | 7.533 | 3.668 | 5.779 | 1.753 | 851 | 902 |
| | 6 | Information | 1.696 | 826 | 1.319 | 376 | 183 | 194 |
| | 7 | Profesional, Scientific, and Technical Services | 1.296 | 631 | 1.040 | 257 | 125 | 132 |
| | 8 | Arts, Entertainment, and Recreation | 287 | 140 | 214 | 73 | 36 | 38 |
| | 9 | Accomodation and Food Services | 278 | 135 | 204 | 73 | 36 | 38 |
| ↓ | 10 | Retail Trade | 695 | 338 | 613 | 83 | 40 | 42 |
| ↓ | 11 | Mining, Quarrying, and Oil and Gas Extraction | 593 | 289 | 465 | 129 | 62 | 66 |
| ↓ | 12 | Construction | 547 | 266 | 307 | 239 | 116 | 123 |
| ↓ | 13 | Wholesale Trade | 704 | 343 | 511 | 193 | 94 | 99 |
| ↓ | 14 | Transportation and Warehousing | 621 | 302 | 437 | 184 | 89 | 94 |
| ↓ | 15 | Other Services (except Public Administration) | 56 | 27 | 46 | 9 | 4 | 5 |
| | | **Total** | **15.194** | **7.398** | **11.706** | **3.488** | **1.694** | **1.794** |

| | Years | Samples | | | | | |
|---|---|---|---|---|---|---|---|
| | | S1 | S2 | S3 | S4 | S5 | S6 |
| ↓ | 2000 | 1.381 | | 1.064 | 317 | 282 | |
| ↓ | 2001 | 1.381 | | 1.064 | 317 | 282 | |
| ↓ | 2002 | 1.381 | | 1.064 | 317 | 282 | |
| ↓ | 2003 | 1.381 | | 1.064 | 317 | 282 | |
| ↓ | 2004 | 1.381 | | 1.064 | 317 | 282 | |
| ↓ | *2005 | 1.381 | | 1.064 | 317 | 282 | |
| ↓ | 2006 | 1.381 | 1.479 | 1.063 | 317 | | 359 |
| ↓ | 2007 | 1.381 | 1.480 | 1.064 | 317 | | 359 |
| ↓ | 2008 | 1.381 | 1.480 | 1.064 | 317 | | 359 |
| | 2009 | 1.381 | 1.480 | 1.064 | 317 | | 359 |
| | ***2010** | **1.381** | **1.480** | **1.064** | **317** | | **359** |
| | **Total** | **15.194** | **7.398** | **11.706** | **3.488** | **1.694** | **1.794** |

| | Countries | Samples | | | | | |
|---|---|---|---|---|---|---|---|
| | | S1 | S2 | S3 | S4 | S5 | S6 |
| ↑ | Greece (gr) | 1.204 | 586 | | 1.193 | 580 | 614 |
| ↑ | Italy (it) | 1.103 | 537 | | 1.092 | 530 | 562 |
| | *Germany (de) | 3.002 | 1.462 | 3.010 | | | |
| | ***Spain (sp)** | **649** | **316** | | **643** | **312** | **330** |
| | Portugal (pt) | 306 | 149 | | 303 | 147 | 156 |
| | Ireland (ie) | 259 | 126 | | 257 | 125 | 132 |
| | France (fr) | 3.131 | 1.524 | 3.140 | | | |
| ↓ | Great Britain (gb) | 4.179 | 2.035 | 4.190 | | | |
| ↓ | Finland (fi) | 788 | 383 | 790 | | | |
| ↓ | New Zealand (nz) | 574 | 280 | 576 | | | |
| | **Total** | **15.194** | **7.398** | **11.706** | **3.488** | **1.694** | **1.794** |

**S1** 10 countries, 11 years

**S2** 10 countries, 5 years (06-10)

**S3** 5 more stable countries sample, 11 years

**S4** 5 less stable countries sample, 11 years

**S5** 5 less stable countries sample, 6 years (00-05), bull markets - prosperity

**S6** 5 less stable countries sample, 5 years (06-10), bear markets - crisis

10 countries = Finland, France, Germany, Great Britain, Greece, Italy, Ireland, New Zealand and Portugal

5 more stable countries = Finland, France, Germany, Great Britain and New Zealand

5 less stable countries = Spain, Greece, Italy, Ireland and Portugal

(*) Benchmark industry, year or country

↑ riskier than the benchmark industry, year or country

↓ less risky than the benchmark industry, year or country

The variables "crisis" (0 for the bull market period 2000-2005 and 1 for the bear market period 2006-2010) and "deltgdp" (variation of the GDP among consecutive years) are added to the regressions where the years, countries and industries are not specified (R1, R2 and R5). Both variables are significant and increase the model's adjusted $R^2$. Nevertheless, in the regressions where years, countries and industries are included, the variables "crisis" and "deltgdp" are dismissed because they add collinearity, since the years provide information similar to "crisis" and the countries that similar to "deltgdp".

**Table 5. List of regressions**

| | |
|---|---|
| **R1** | β = f(control variables) |
| **R2** | β = f(internationalization and control variables) |
| **R3** | β pooled regression adding countries (Spain omitted), years (2010 omitted) and industries (agriculture omitted) |
| **R3*** | β pooled regression adding countries (Germany omitted), years (2010 omitted) and industries (agriculture omitted) |
| **R3**** | β pooled regression adding countries (Spain omitted), years (2005 omitted) and industries (agriculture omitted) |
| **R4** | β regression controlling for autocorrelation and heteroskedasticity |
| **R5** | β regression - GMM[33] controlling for endogeneity |

## 6. RESULTS AND DISCUSSION

Tables 6, 7 and 8 show the signs of the significant coefficients that belong to the internationalization and control variables which forecast β. The model's explanatory power in terms of adjusted $R^2$ is also provided. The first two samples S1 and S2 (see table 6) contain aggregated information, since the ten countries are analysed jointly for the whole eleven-year period and for the crisis years (2006-2010).

The relationships between each of the explanatory variables and the dependent variable β remain constant with the diverse types of regressions, which suggest the model is robust and consistent. It seems foreign sales and the percentage of foreign subsidiaries are perceived by the market as risk increasing factors (Reeb et al., 1998;

[33] The Generalized Moment Method (GMM) is a powerful tool for statistical parameter estimation. Nowadays it is known that the estimations obtained through this method have asymptotic properties, which make them consistent under not very restrictive assumptions and also make their distribution easily assessable. These GMM properties are generally fulfilled for large samples (Chumacero, 1997).

Kwok and Reeb, 2000; Olibe et al., 2008), while geographical dispersion (international presence) improves market perception about the firm.

It is also seen that β is a positive function of size and experience. The positive relationship between size and systematic risk is fulfilled according to expectations. However, although we expected experience to reduce systematic risk, the results show consistently and meaningfully a positive relationship between them. This leads us to think of the paradox traditionally recognized between epistemological philosophers such as Socrates and Plato: the more knowledge firms acquire, the greater will be their perception of their lack of knowledge (Figueira-de-Lemos et al., 2011). Perhaps, in this context of knowledge lack perception, managers make decisions consciously based on incomplete information, generating in turn uncertainty that is reflected by an increase in systematic risk.

As expected, long-term debt proportion, assets turnover, profit margin, return on equity, market power, and GDP growth are all perceived by the market as reducing risk factors that add safety to the firm, since the relationship between each of these variables and the β is consistently negative.

In addition, in S1 the positive relationship between crisis and β seems to suggest that during crisis times the market perceives higher risk than during prosperity times.

With respect to the countries, years and industries, these first results indicate that Finland, France, Great Britain, Ireland, New Zealand and Portugal are, generally, significantly less risky than Spain, while Greece and Italy show higher systematic risk. The years between 2000 and 2008, both included, are less risky than 2009 and 2010, which are not significantly different.

The industries 8 (Arts, Entertainment, and Recreation), 11 (Mining, Quarrying, and Oil and Gas Extraction), 14 (Transportation and Warehousing) and 15 (Other Services, except Public Administration) seem to be less risky than the 4 (*Agriculture, Forestry, Fishing and Hunting), while 1 (Administrative and Support and Waste Management and Remediation Services), 2 (Education Services), 3 (Health Care and Social Assistance) and 12 (Construction) have higher systematic risk.

Table 7 shows the results of the two samples (S3 and S4) derived from the initial sample S1. S3 contains the information of the five more stable countries and S4 contains that of the five less stable. In the first disaggregation of the sample among more and less stable countries several important differences regarding the impact of internationalization on systematic risk show up.

Although the ratio of foreign sales to total sales is still increasing systematic risk in both samples, the percentage of subsidiaries abroad only increases it in the stable countries, while the degree of international presence, that aggregately diminishes systematic risk, still diminishes it for the group of less stable countries, while increasing it for the more stable ones. These results suggest that the firms from stable countries do not see any decrease in systematic risk due to international diversification, but conversely increase systematic risk when internationalizing. For their part, less stable countries can obtain systematic risk reduction benefits if instead of concentrating their sales on a few foreign countries, have a presence in more continents.

In both groups of countries the positive relationship between size and experience with systematic risk remain, as well as the negative association of systematic risk with each of the following variables: assets turnover, profit margin, market power and GDP growth. The long term debt proportion, as the return on equity, maintains its negative relationship with the systematic risk but only for the group of stable countries, S3, while for the group of less stable, S4, these two variables do not affect market risk perception significantly. In both cases, S3 and S4, the market perceives a greater risk during times of crisis.

The results of the sample S3 show that Finland, France, Great Britain and New Zealand are significantly less risky than Germany, and that the years between 2000 and 2008, both included, are less risky than 2010. It also shows that the industries 10, 11, 12, 13, 14 and 15 seem less risky, while the 1, 2 and 3 are riskier than the reference industry 4 (see the industries description in table 4). From sample S4, unlike Greece and Italy, Ireland and Portugal present a lesser systematic risk than Spain, the years between 2000 and 2007, both included, show lower risk than 2010, and industries 1, 8, 11 and 14 (10 and 13) have lower (higher) systematic risk than the 4.

**Table 6. Summary of results for S1 and S2**

| Sample S1 | | | | | | Sample S2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Observations | | Countries | | Years | | Observations | | Countries | | Years |
| | 15,194 | | 10 | | 00-10 | | 7,398 | | 10 | | 06-10 |
| **Regression** | **R1** | **R2** | **R3** | **R4** | **R5** | **Regression** | **R1** | **R2** | **R3** | **R4** | **R5** |
| $R^2$ adj. | 7.02% | 7.95% | 12.11% | 10.25% | 8.02% | $R^2$ adj. | 7.83% | 8.64% | 17.65% | 17.45% | 8.30% |
| Constant | + | + | + | + | + | Constant | + | + | + | + | + |
| ***Internationalization variables*** | | | | | | ***Internationalization variables*** | | | | | |
| fsale_ta | | + | + | + | + | fsale_ta | | + | + | + | + |
| perforsu | | + | + | + | + | perforsu | | + | + | + | + |
| presen5c | | - | | | - | presen5c | | - | | | - |
| ***Control variables*** | | | | | | ***Control variables*** | | | | | |
| lnassets | + | + | + | + | + | lnassets | + | + | + | + | + |
| explev | + | + | + | + | + | explev | + | + | + | + | + |
| ncurrl_t | - | - | - | - | - | ncurrl_t | - | - | - | - | - |
| sales_ta | - | - | - | - | - | sales_ta | - | - | - | - | - |
| profitma | - | - | - | - | - | profitma | - | - | - | - | - |
| roe | - | - | - | | | roe | -' | -' | -' | | |
| markpow | - | - | | | - | markpow | - | - | - | - | - |
| crisis | + | + | | | + | gdpdelt | - | - | | | - |
| gdpdelt | - | - | | | - | | | | | | |
| ***Country, year and industry*** | | | | | | ***Country, year and industry*** | | | | | |
| fi,nz,gb | | | - | - | | fi,nz,fr,pt | | | - | - | |
| fr,ie,pt | | | - | | | gb | | | - | - | |
| gr,it | | | + | + | | gr,it | | | + | + | |
| 00 - 08 | | | - | - | | 06 - 08 | | | - | - | |
| 09 | | | | + | | 09 | | | | + | |
| 11,12,10 | | | - | - * * | | 8,11,14 | | | - | * - * | |
| 13 | | | | - | | 15 | | | | - | |
| 8,14,15 | | | - | - | | 1,2,12 | | | + | * + * | |
| 1,2,3 | | | + | + * * | | 3 | | | | + | |

All the reported signs belong to coefficients significant at 95% or more, except the ones with (') which coeffficient's significance ranges between 90 and 95%

(*) signals the not significant industries

Due to the results showing that the only countries that can achieve any internationalization benefit over β, given the actual degree of global integration, are the less stable ones, we delve a little more into in the analysis by dividing the less-stable-country sample S4 into two sub samples: S5, which contains the data for the prosperity or bull market period (2000-2005) and S6 that has them for the crisis or bear market times (2006-2010).

Table 8 shows that during the crisis period (see S6 results), as seen in S4, the significant and positive relationship between foreign sales and β remains, as does the negative relationship between the degree of international presence and β. Likewise, during

crisis times (2006-2010), having higher geographical coverage represents an advantage for less-stable-country firms since systematic risk diminishes, while the concentration of their foreign sales in a few host countries augments this risk. Nevertheless, for the prosperity period (2000-2005) both foreign sales and degree of international presence allow firms from these countries to reduce their systematic risk.

**Table 7. Summary of results for S3 and S4**

| **Sample S3** | | | | | | **Sample S4** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Finland, France, Germany, Great Britain and New Zealand | | | | | | Ireland, Italy, Greece, Portugal and Spain | | | | | |
| Observations | | Countries | | Years | | Observations | | Countries | | Years | |
| 11,706 | | 5 | | 00-10 | | 3,488 | | 5 | | 00-10 | |
| **Regression** | **R1** | **R2** | **R3*** | **R4** | **R5** | **Regression** | **R1** | **R2** | **R3** | **R4** | **R5** |
| $R^2$ adj. | 7.11% | 8.91% | 11.98% | 10.64% | 9,00% | $R^2$ adj. | 9.43% | 10.19% | 15.66% | 12.09% | 10.50% |
| Constant | + | + | + | + | + | Constant | + | + | + | + | + |
| ***Internationalization variables*** | | | | | | ***Internationalization variables*** | | | | | |
| fsale_ta | | | | + | | fsale_ta | | + | + | | + |
| perforsu | | + | + | + | + | perforsu | | | | | |
| presen5c | | + ' | + ' | | + ' | presen5c | | - | - | | - |
| ***Control variables*** | | | | | | ***Control variables*** | | | | | |
| lnassets | + | + | + | + | + | lnassets | + | + | + | + | + |
| explev | + | + | + | + | + | explev | + | + | + | + | + |
| ncurrl_t | - | - | - | - | - | ncurrl_t | | | | | |
| sales_ta | - | - | - | - | - | sales_ta | - | - | - | | - |
| profitma | - | - | - | - | - | profitma | - | - | - | - | - |
| roe | - | - ' | - ' | | | roe | | | | | |
| markpow | - | - | | | - | markpow | - | - | | | - |
| Crisis | + | + | | | + | Crisis | + | + | | | + |
| gdpdelt | - | - | | | - | gdpdelt | - ' | - ' | | | - ' |
| ***Country, year and industry*** | | | | | | ***Country, year and industry*** | | | | | |
| fi,fr,gb,nz | | | - | - | | ie,pt | | | - | * - | |
| 00 - 08 | | | - | - | | gr,it | | | + | + | |
| 09 | | | | + | | 00 - 05 | | | - | | |
| 11,12,13 | | | - | - * - | | 00 - 07 | | | | - | |
| 10,14,15 | | | - | - | | 11,14 | | | - | - | |
| 1,2,3 | | | + | + * * | | 1,8 | | | - | * - | |
| | | | | | | 10,13 | | | + | | |

All the reported signs belong to coefficients significant at 95% or more, except the ones with (') which coeffficient's significance ranges between 90 and 95%

(*) signals the not significant countries or industries

## Table 8. Summary of results – Forecasting beta (β)

**Sample S5**

Ireland, Italy, Greece, Portugal and Spain 00-05 (Prosperity times)

| Observations | Countries | Years |
|---|---|---|
| 1,694 | 5 | 00-05 |

| **Regression** | **R1** | **R2** | **R3**** | **R4** | **R5** |
|---|---|---|---|---|---|
| $R^2$ adj. | 8.44% | 8.89% | 14.01% | 15.04% | 9.48% |
| Constant | + | + | + | + | + |
| ***Internationalization variables*** | | | | | |
| fsale_ta | | - | | | - |
| perforsu | | | | | |
| presen5c | | - | | | - |
| ***Control variables*** | | | | | |
| lnassets | + | + | + | | + |
| explev | + | + | + | + | + |
| ncurrl_t | | | | | |
| sales_ta | - | - | - | - ' | - |
| profitma | - | - | - | - | - |
| roe | | | | | |
| markpow | | | | | |
| gdpdelt | - ' | | | | |
| ***Country, year and industry*** | | | | | |
| ie,it | | | - + | | |
| 04 | | | - | - | |
| 11,12,14 | | | - - * | - - - | |

**Sample S6**

Ireland, Italy, Greece, Portugal and Spain 06-10 (Crisis times)

| Observations | Countries | Years |
|---|---|---|
| 1,794 | 5 | 06-10 |

| **Regression** | **R1** | **R2** | **R3** | **R4** | **R5** |
|---|---|---|---|---|---|
| $R^2$ adj. | 5.64% | 7.06% | 24.25% | 22.70% | 7.63% |
| Constant | + | + | + | + | + |
| ***Internationalization variables*** | | | | | |
| fsale_ta | | + | + | | + |
| perforsu | | | | | |
| presen5c | | - | | | - |
| ***Control variables*** | | | | | |
| lnassets | + | + | + | + | + |
| explev | | | + | + | |
| ncurrl_t | | - ' | | | - ' |
| sales_ta | | - | - | - ' | - |
| profitma | - | - | - | - | - |
| roe | | | | | |
| markpow | - | - | | | - |
| ***Country, year and industry*** | | | | | |
| pt,gr,it | | | - + + | - + + | |
| 06,07,09 | | | - * * | - - +' | |
| 1,11 | | | - | | |
| 8,14 | | | - | - | |

All the reported signs belong to coefficients significant at 95% or more, except the ones with (') which coeffficient's significance ranges between 90 and 95%

(*) signals the not significant years or industries

While expectations regarding the effect of the crisis on the relationship between internationalization and systematic risk suggested increased differences between markets that could be exploited by diversification (diminishing in turn the systematic risk), just the opposite occurred. The internationalization strategy of concentrating sales in several host countries, which works for unstable countries during prosperity times, becomes a risk factor during crisis times perhaps due to the global character of the crisis that affects the whole system, adding uncertainty.

The relationships between size/experience and systematic risk remain positive and significant, while assets turnover and benefit margins are still factors that improve market perception of risk. For its part, long term debt proportion and market power are valued favourably by the market, but only during crisis times, and in none of the

scenarios are the effects of the return on equity and the percentage of foreign sales significant.

With respect to countries, years and industries, during the prosperity period (2000-2005), unlike Italy, Ireland is significantly less risky than Spain. Only the year 2004 is significantly less risky than 2005 and the industries 11, 12 and 14 less risky than 4. During the crisis period Greece and Italy were significantly more (and Portugal less) risky than Spain, the years 2006 and 2007 less risky than 2010 and the industries 1, 8, 11 and 14 less risky than 4 (see the industries description in table 4).

## 7. CONCLUSIONS AND IMPLICATIONS

We analyse the relationship between internationalization and systematic risk in a context of highly integrated markets marked by a change from prosperity to crisis. This study uses a more recent, broad and geographically diverse sample of firms (more than 15,000 observations from ten countries over eleven years) than the samples available in previous empirical works, and also considers additional control variables adding explanatory power to the model.

We also explain the evolution of the relationship between international diversification and systematic risk over the last four decades of empirical literature, to explore and clarify results that were previously seen as contradictory. We propose that the degree of integration among markets plays an important role on determining the possible beneficial effects of internationalization on systematic risk. Thus, our literature review shows that during the 1970's and 1980's, a period of less market integration, the relationship between internationalization and systematic risk is negative. This tendency changes for the studies that use samples with data from the second half of the 1980's onwards, a period which is more globalized and, in turn, more integrated.

Consistently with the most recent literature, our global results corroborate the positive association between internationalization and systematic risk. However, after splitting the main sample into two subsamples of more and less stable countries, some differences appear. In the first group the three internationalization measures increase firms' systematic risk, which makes one think that a firm from a stable country that, in

the best of cases, ventures into another stable country, does not see any diversification/reduction effect on systematic risk.

For their part, the firms from less stable countries which, in the worst of cases, go into other unstable countries, can always do better going to more stable ones. Particularly, during times of global prosperity these firms can improve market risk perception by concentrating their sales in a few foreign countries as well as by diversifying geographically. However, in times of crisis, concentration of sales in several host countries does not represent any more of an advantage for a firm from a less stable country, since the crisis affects the whole system bringing uncertainty, even to stable countries. Nevertheless geographic diversification (or degree of international presence) is still representing an advantage for the group of less stable countries.

Our methodological contribution consists basically of the use of the above mentioned sample and the elaboration of a robust research design, in order to minimize the inconsistencies and overcome the limitations mentioned in previous literature, such as small sample sizes, lack of data for the assessment of the beta and other variables, short sample time length, non-equilibrated samples when comparing different countries, collinearity among variables, autocorrelation, heteroskedasticity and endogeneity.

In previous studies the criteria for considering a firm as domestic or multinational can be strict, leading to disregard from the sample companies that do not meet that criteria, which can be reflected in the reduced size of samples and the comparison of groups of firms with extremely opposite characteristics. That is, comparing a group of domestic firms versus a group of highly internationalized ones. In this study, instead of working with a binary criterion of black or white it is considered a wide range of greys. This way, many more companies have the possibility to contribute with a certain degree of internationalization, increasing the size of the sample and allowing conclusions based on more information.

For future research, the model could be refined by specifying the host country degree of stability, in order to verify if making this distinction provides more precise

information about the most convenient destinations for internationalizing when the incentive is to reduce the systematic risk.

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# CHAPTER 3

# ACQUISITIONS AND SHAREHOLDER VALUE IN TIMES OF GLOBALIZATION AND FINANCIAL CRISIS

**ACQUISITIONS AND SHAREHOLDER VALUE IN TIMES OF GLOBALIZATION AND FINANCIAL CRISIS**

**Abstract**

Based on a sample of ten developed countries we measure the impact of acquisitions on systematic risk. This eleven-year study is comprised of the six last years from the 5th wave of M&A (2000-2005) characterized by globalization, and five years also marked by the global financial crisis (2006-2010). Taking into account recommended literature, we point out some of the weaknesses of existing empirical research, and put forward possible solutions which take into consideration the complex, multidimensional and context-dependent phenomenon of acquisitions. Accordingly, we evaluate acquisition effects on market perceptions of risk (systematic risk), not only in the year of operation -which would not allow an objective measurement of performance - but also one and two years after the acquisition. We control for the effects of a company's size, growth rate, the degree of ownership concentration, sales and leverage, and obtain robust results that highlight the relevance of both the global context (periods of prosperity versus times of crisis) and the acquirer's country's particularities (strong versus vulnerable countries) to explain under which circumstances is it possible for acquisitions to create value for shareholders, via a decrease in systematic risk.

**Key words:** systematic risk, risk management, mergers and acquisitions

## 1. INTRODUCTION

"The economic and financial collapse of 2008 and 2009 due to the credit crisis in the US with global ramifications impacted dramatically the landscape for mergers and acquisitions (M&As)"(Liu and Nagurney, 2011).

Two circumstances that converge during the first decade of XXI century are the peak of the 5th wave of M&As (Craninckx and Huyghebaert, 2011), and the imminent necessity to control systematic risk within a company. This period, characterized by an increasing risk aversion and an accelerated integration among markets due to globalization, also witnessed a global financial crisis. Accordingly, keeping financial markets calm has become one of the most urgent and relevant objectives. Pursuing this objective has, in turn, fostered the development of a more strategic modality of M&A (Faulkner, Teerikangas and Joseph, 2012).

**Table 1. Number of corporate development forms (CDF) by year, and systematic risk variation one and two years forward**

| Years | N | N of CDF which lessened β, 1 and 2 years forward | | % of CDF which lessened β, 1 and 2 years forward | | Average β change 1 and 2 years forward | |
|---|---|---|---|---|---|---|---|
| 2000 | 116 | 66 | 72 | 56.90% | 62.07% | -16.62% | -23.76% |
| 2001 | 206 | 128 | 137 | 62.14% | 66.50% | -44.90% | -52.81% |
| 2002 | 150 | 86 | 86 | 57.33% | 57.33% | -5.28% | -32.78% |
| 2003 | 479 | 238 | 214 | 49.69% | 44.68% | -6.81% | 7.12% |
| 2004 | 576 | 249 | 266 | 43.23% | 46.18% | 19.89% | 30.92% |
| 2005 | 659 | 278 | 292 | 42.19% | 44.31% | 7.87% | 32.42% |
| 2006 | 659 | 336 | 336 | 50.99% | 50.99% | 1.38% | -13.18% |
| 2007 | 618 | 281 | 279 | 45.47% | 45.15% | 2.19% | 4.55% |
| 2008 | 534 | 267 | 267 | 50.00% | 50.00% | -2.51% | -5.61% |
| 2000-2008 | 3,997 | 1,929 | 1,949 | 48.26% | 48.76% | 0.58% | 3.79% |

Company's acquiring activity has been expanding through the last years and, particularly, through the last (5th) wave of M&As during the XXI century's first decade. Nevertheless, as a crisis consequence, this boom was followed by a slight decrease in the number of operations (see Table 1)[34], making it interesting to assess M&As ability

[34] This table, just for illustrative purposes, shows the corporate integrations that have reached 100% of the integration between the two firms. Are considered the firms from the ten countries for which we

to improve shareholder value, via systematic risk controlling. Or, to put it in other way, it is interesting to see how the market perceives the risk of a firm that has engaged in integrations at a corporate level.

Among a firm's incentives for systematic risk controlling is the reduction of capital cost (Crouhy, Galai and Mark, 2000). Financial backers are more assured that clients will meet future payment requirements, and so relax the terms of credit. A lesser systematic risk can also add value to shareholders, allowing them to invest their resources in a more attractive alternative, in terms of profitability and risk. Furthermore, the manager has a strong incentive to reduce the stock price volatility, since uncertainty makes the planning and optimization of operations and processes more difficult.

The financial and strategic incentives that lead to the consolidation decision are related to the reduction of uncertainty from the external environment (Amihud and Lev, 1981; Crouhy et al., 2000). Therefore, following Seth et al (2000), we expect that in a complex and uncertain context as that of this study, the majority of corporate transactions are motivated by value creation opportunities and the ultimate objective of acquisitions to be the creation of shareholder value, which can be achieved by increasing the level of cash flows, as well as by diminishing the systematic risk of the consolidated firm.

Given that an integration between two firms will significantly affect the scope of the acquiring firm, to get integrated with another firm or not is then one of the most important decisions a firm has to make, conferring to this issue special relevance and academic interest (Hackbarth and Morellec, 2008).

The research on corporate development forms (mainly M&As) which emerged during the 1950's has been criticized for its inability to provide robust theories to explain underlying dynamics and value creation mechanisms (Schweiger and Goulet, 2001;

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previously calculated the proxy of systematic risk β regarding the index EURO STOXX 600. Note that although the changes in β, one and two years after the operation, do not present a unequivocal pattern across the period, it can be shyly seen that, conversely to the last years of crisis, during the first years the most of the consolidated firms decreased their β and that the average absolute value of that decrease was the greater.

King, Dalton, Daily and Covin, 2004; Haleblian, Devers, McNamara, Carpenter and Davison, 2009). This inability, to some extent, is due to the multiple motivations, disciplines, contexts, levels, phases and actors involved in M&As, which make them more difficult to categorize, measure and evaluate. These operations, which take place in a wide economic-socio-cultural realm, entail a complex and multifaceted process where a great amount of success/failure-determining variables interact (Faulkner et al., 2012).

The performance of M&As has been a popular research topic; notwithstanding, there still remain some widely discussed limitations that complicate the approach to more homogeneous conclusions than those provided by the literature. It is admitted there is a need for identifying moderating variables which help to determine the success or failure of the corporate transaction. On the other hand, the empirical research has consistently failed to identify the antecedents for an adequate forecast of post-consolidation result (King et al., 2004). The problem of short term when evaluating results has also been continuously mentioned, as well as the fact that empirical studies recurrently analyze samples covering very extended periods, mixing different global economic contexts which, due to their lack of differentiation, can bias the results (Hackbarth and Morellec, 2008).

M&As, although complex in terms of approaches, study methods, form, substance, historical evolution, nature, incentives and basic definitions, can be understood intuitively, and conceptually simplified (Faulkner et al., 2012). Nevertheless, these operations are not isolated events occurring in a vacuum. They are, instead, events that occur in a global and social landscape which continuously evolves. Accordingly, the most recent literature reiterates the necessity of building models that capture in a deeper way the multidimensional nature of these phenomena (Papadakis and Thanos, 2010).

Table 2, based on information from the M&As' ZEPHYR database, shows that the predominant corporate development form during the period 2000-2010 is acquisition. There is approximately one merger per every 337 acquisitions and a joint venture every 13. Therefore, we consider only the acquisitions, in which case it is openly

admitted that there is a dominant part or parent company (the acquiring firm), and a dominated part or subsidiary (the acquired or target firm). The acquiring firm defines the terms of the operation and the target accepts them (Faulkner et al., 2012).

**Table 2. Corporate development forms by country, location and average change of systematic risk**

| Countries | N | ACQ | MER | JV | DOM | CB | Average β change 1 and 2 years after the operation | |
|---|---|---|---|---|---|---|---|---|
| Finland | 448 | 418 | 4 | 26 | 198 | 250 | 9.51% | 9.30% |
| France | 940 | 868 | 1 | 71 | 447 | 493 | -5.75% | -1.30% |
| Germany | 444 | 384 | 2 | 58 | 178 | 266 | 7.63% | 12.30% |
| Great Britain | 1,326 | 1,271 | 0 | 55 | 749 | 577 | -2.67% | 9.54% |
| Greece | 116 | 98 | 3 | 15 | 71 | 45 | 19.55% | -8.09% |
| Ireland | 162 | 159 | 0 | 3 | 15 | 147 | 7.04% | 9.87% |
| Italy | 224 | 199 | 1 | 24 | 131 | 93 | -4.44% | -15.71% |
| New Zealand | 86 | 84 | 0 | 2 | 43 | 43 | -9.71% | -2.01% |
| Portugal | 49 | 44 | 0 | 5 | 32 | 17 | -61.90% | -54.42% |
| Spain | 202 | 178 | 0 | 24 | 112 | 90 | 25.20% | -1.02% |
| **Total** | 3,997 | 3,703 | 11 | 283 | 1,976 | 2,021 | 0.58% | 3.79% |

N number of operations by country
ACQ acquisitions
MER mergers
JV joint ventures
DOM domestic acquisitions
CB cross border acquisitions

Despite of being broad and well known, the landscape of research on M&As, as their shareholder value generation ability, is still demanding decisive answers. Accordingly, our aim is try to highlight and improve on some of the weaknesses identified in the previous empirical literature.

The main objective of this study is to determine under which circumstances acquisitions can increase shareholder value via systematic risk reduction. We calculate this risk using stock prices and a global benchmark market index, given that the most reliable measures of the relationship between M&As and shareholder value creation use market information (Andrade, Mitchell and Stafford, 2001).

The results of this study are supported by a large sample of non-financial firms from ten developed countries, within a period of eleven years (2000-2010) marked by a transition from prosperity to financial crisis. A global context is also considered,

characterized by integration among different economies that move toward a continuum tending to market perfection.

Previous research results, obtained under very particular conditions and contexts, when analyzed individually may suggest contradiction. Our research helps to reconcile this by taking into account, over a longer period, country diversity, larger samples and the consideration of the global economic scenario (prosperity and crisis in a period of accelerated integration).

The second section contains the literature review about the relationship between M&As and systematic risk. In section three, related to methodology, we define the variables, develop hypotheses, and describe observations, as well as samples and the quantitative methods used in this empirical study. The fourth section discusses the results and the fifth concludes.

## 2. LITERATURE REVIEW

### 2.1 Mergers and Acquisitions

Technological developments and globalization have contributed considerably to the popularity of M&As (Shimizu, Hitt, Vaidyanath and Pisano, 2004), which are among the principal strategic alternatives for the firms that want to assure their position in a market that is every day more competitive and globalized.

Emerging in the 1950's, the research about M&As has been criticized for its inability to provide robust theories to explain their underlying dynamics and value creation mechanisms (Schweiger and Goulet, 2001; King et al., 2004; Haleblian et al., 2009). This inability may be due to the multiple motivations, disciplines, contexts, levels, phases and actors involved in M&As' activity, which make it difficult to categorize, measure and evaluate.

The decision of allying with other firms can have financial, strategic and/or managerial incentives. Among the financial ones are the firm's value maximization, the growth through assets or sales increases, or a decrease of fiscal burden. Minimizing risk through diversification, generating synergies when joining complementary forces -economies of scale and scope-, or reducing the competition in order to increase prices

-monopoly- (Mandelker, 1974), are examples of strategic incentives, while in the group of managerial are, among others, the prevention of obsolescence, the participation in a motivating and exciting game within the market, or the managers and firm's increase of prestige and power (Chatterjee and Lubatkin, 1990).

Managers use M&As as a vehicle to grow, to diversify in new sectors, acquire knowledge of new technologies (know how) or to expand geographically covering more markets. M&As can also be used for strategic cooperation purposes in order to buy a competitor (Faulkner et al., 2012), or to satisfy managerial personal motivations[35] (Amihud and Lev, 1981).

M&As' economic and financial potential benefits have been widely discussed in the literature (Liu and Nagurney, 2011). Principally, these are reported risk reductions, diversification effects (Boyd, Graham and Hewitt, 1993; Hughes, Lang, Mester and Moon, 1999; Estrella, 2001; Amihud, DeLong and Saunders, 2002; Wang and Reuer, 2006) and efficiency increments (Thijssen, 2008). Nevertheless, a more conclusive empirical verification is still required related to activity that evolves in a broad economic-socio-cultural realm, a phenomenon which entails a complex and multifaceted process with many interacting variables that determine its success or failure. Faulkner et al (2012) highlight the importance of approaching M&As' study jointly through three different lenses: strategic, financial and human resources. These authors also underline that the available research generally has focused on each of these aspects individually, rather than taking a more global approach.

The results of the traditional research do not corroborate the success expectations for these initiatives (Faulkner et al., 2012). A meta-analysis (King et al., 2004), as well as other recent studies (Schoenberg, 2006; Zollo and Meier, 2008; Papadakis and Thanos, 2010), reconfirm that most of the firms involved in corporate integrations do not improve their performance in the short term, nor in the years following the operation. Therefore, there is a need to understand managers' motivations or incentives to make a decision of such magnitude, as well as for building models which capture in a deeper

[35] For example, in order to diversify their own unemployment risk, managers can make acquisitions fostering the firms' ownership dilution among more shareholders, complicating the control and vigilance labor, which would be easier in case of a higher ownership concentration.

way the multidimensional character of consolidation results (Papadakis and Thanos, 2010).

Other frequently mentioned drawbacks refer to the short terming when it comes to evaluating the results of M&As (Faulkner et al., 2012), and to the empirical studies' recurrent tendency to analyze samples that cover long time periods, in which different world economy contexts are mixed, biasing the models results (Hackbarth and Morellec, 2008).

The literature has identified five waves of M&As: the 1st wave (1898-1902), characterized by an increase of horizontal mergers, mainly in the US industry, the 2nd wave (1926-1939), in which vertical mergers are predominant, the 3rd wave (1969-1973), where diversification is the driving force, the 4th wave (1983-1986), with the search for efficiency as the main finality and the 5th wave (1997-2005), unfolded in a context of globalization and international consolidations (Kusstatscher and Cooper, 2005). The following period, starting 2006 with the credit problems caused by the US sub-prime interest rates and ending in 2010, for this study's purposes, can be characterized by both a crisis context and much more strategic M&As' activity paying special attention to an environment of increasing risk aversion (Liu and Nagurney, 2011).

**2.2 Theories**

The theoretical-conceptual framework predicting changes in systematic risk as a consequence of corporate integrations, incorporates arguments from strategic management and a set of CPAM model's assumptions.

According to ***strategic management theory***, focused directly on the systematic component of risk, the consolidation between firms of related sectors should be more synergic, having the joint ability of exploiting market imperfections and buffering market movements, which implies that an operation with these characteristics lowers systematic risk. Accordingly, the best way to diminish cash flow sensitivity before market fluctuations is by diversifying in a related manner, within the same industry, putting the eggs in different but similar baskets (Crouhy et al., 2000).

“Diversification reached its zenith of popularity during the “conglomerate” movement of the 1960s” (Fridson and Alvarez, 2002).

The ***portfolio effect theory*** posits that consolidated firms should exhibit a risk equal or lesser than the average market value of the risks belonging to the individual firms that take part in the portfolio (Langetieg, Haugen and Wichern, 1980). This theory concentrated on the cash flow total and operating variability, suggesting that the impacts of market fluctuations are best minimized through non-related diversification, or putting the eggs in different baskets (in different industries or countries). Besides, as it has been demonstrated that the operating risk is positively correlated with the systematic risk, the portfolio theory should have an indirect effect on systematic risk (Amit and Livnat, 1988).

M&As, like other investment and speculation activities, are based on the exploitation of an asset in order to obtain a benefit. This may be due to taking advantage of an imperfection or to the difference of prices (inefficiency in prices formation). Nevertheless, under a strict interpretation of the CAPM model, in a scenario of integrated markets as an effect of globalization, there are fewer imperfections to be exploited since the market information is completely competitive (Crouhy et al., 2000).

The theoretical framework of risk has assumed that the assets are traded in perfect capital markets. Nevertheless, after reviewing the list of conditions for a perfect market several examples that cast doubt about such perfection can be found. There remain considerable differences among countries. The access to some countries is easier than others, as is the potential for permanence. There are also different tax policies, duties, transportation costs and other imperfections that, although not comparable with the ones of times of lesser market integration, still offer a potential use through diversification (Crouhy et al., 2000).

In this study we assume that market perfection is relative, since the markets are moving in a continuum that tends to perfection, in which it is still possible to obtain benefits due to the use of the advantages brought by other industries or countries.

A third argument that supports the hypothesis of risk reduction due to consolidations is the ***risk reduction effect*** (Lewellen, 1971), that suggests that these operations provide additional leverage capacity that if not used can diminish the firm's financial risk and, consequently, improve the market's risk perception. The risk reducing effect is not necessarily inconsistent with the portfolio effect, considering that, in fact, the former can be entirely due to the later (Langetieg et al., 1980).

### 2.3 Corporate Strategies and Systematic Risk

Given that 30 or 40 years ago operations at a corporate level were relatively unique events during a firm's life (Langetieg et al., 1980), empirical studies were supported by reduced samples, limited by the firms and consolidation sizes (generally, big firms making big consolidations have been considered), and by the condition of having done only one operation of this type during a determined time window.

Based on a sample of 233 UK acquisitions performed between 1948 and 1947, Meeks (1977) finds that the consolidated firms increment their profits in the year of the transaction, but 60% of them decrease their profits each of the five following years. King et al (2004) analyze the changes of beta and other risk measures, 12 and 72 months after the transaction, for a sample of 149 big mergers performed by NYSE listed firms between 1929 and 1969 and, despite not finding empirical support for the diversification arguments of the portfolio theory, suggest the presence of a risk reducing effect that is diminished by the leverage.

Chatterjee and Lubatkin (1990) hypothesize that the related mergers are more value creating than that of unrelated industries, since related mergers can obtain advantages from common activities and abilities. To test this hypothesis the authors study the daily and monthly changes in systematic risk for 120 large mergers, between 1962 and 1967, performed by US NYSE listed firms inactive in consolidating activity 6 years around the date of the consolidation of interest. They control the systematic risk of the target firm, as well as the leverage for both firms before and after the merger, and conclude that the risk reducing ability is inferior for unrelated mergers.

Dickerson, Gibson and Tsakalotos (1997) analyze 2,941 British acquisitions between 1948 and 1977 and find that non acquiring firms perform better than acquiring ones during the 18 years following the transaction. In another study, based on a sample of the 50 largest industrial acquisitions in the USA between 1979 and 1984, the authors find that, conversely to hostile acquisitions, friendly ones can improve the ROA and the cash flow of the consolidated firm (Healy, Palepu and Ruback, 1992, 1997).

Departing from the real option framework, Hackbarth and Morellec (2008) look at the behavior of the stock returns from firms consolidated via acquisitions during the days following the operation. These authors argue that this type of transaction generally creates value due to synergy exploitation, or due to efficiency improvement stemming from consolidation and disinvestment processes, and suggest that beta changes depend on the type of real option exerted: call option for expanding the operation, or put option for assets disinvestment. The sample of this study is formed by 1,086 takeovers performed by US listed companies between 1985 and 2002.

Liu and Nagurney (2011) provide the literature with an analytical framework about potential risk reduction, and cost synergy created through the integration of the value chains typical of M&As. Erel et al (2011) characterize the profile of the firms that decide to perform an acquisition in a foreign country, and find that firms from countries with growing stock markets, or that had recently experienced an appreciation in their currency, or which have a relatively high market to book ratio, tend to be the acquiring firms, while the ones from weaker countries tend to be the targets.

Other studies do not find significant changes in systematic risk as a result of M&As, or conclude that the direction of those changes is unpredictable. For instance, the results of Mandelker (1974) are consistent with the hypothesis that the acquisitions market is perfectly competitive, implying the impossibility of risk diversifying. As for Dodd (1980), he measures the market daily reaction before the merger announcement and obtains mixed findings.

## 3. METHODOLOGY

### 3.1 Dependent Variable

***Systematic risk:*** The firm's systematic risk, which accounts for between 20 and 30% of its stock total risk (Crouhy et al., 2000), reflects market perceptions regarding the firm's risk, as well as the volatility of its stock price in relation to general market prices. This risk shows to what extent movement in market prices affects stock prices and depends, among other factors, on fiscal and monetary policies, energy costs and the demographic characteristics of a particular market.

Our dependent variable is the market's model beta -β- coefficient (see equation [1]) calculated as the ratio of $Cov_{jm}$ (covariance between the returns of stock j and that of the market m) to $\sigma_m$ (standard deviation of the market m prices). Decomposing the numerator $Cov_{jm}$ as the product of $\rho_{jm}$ (correlation between the returns of stock j and that of the market m) and $\sigma_j$ (standard deviation of the returns of stock j) (see the equation [2]), it can be observed that the more perfect (more integrated) the capital markets the higher the correlation between the stock and the market and, consequently, the higher the beta:

$$\beta_j = Cov_{jm}/\sigma_m \quad [1]$$

$$\beta_j = \rho_{jm}\sigma_j/\sigma_m \quad [2]$$

Notwithstanding, acquisitions in determined sectors or countries can provide a potential for reduction in the correlation between the stock prices of the new consolidated firm and market prices ($\rho_{jm}$), which can be achieved when diversifying by industry or country. Likewise, there is a potential for stock price volatility (standard deviation) decreasing ($\sigma_j$) if the new consolidated firm improves its operations and cash flows.

In order to assure the coherence and robustness of results, we calculate four different betas using two different market benchmark indexes (STOXX EURO 600 and MSCI AC WORLD) and two different formulas: the first, based on monthly data during five years (this formula provides a beta affected by long term information, that is, the events occurring in five years, which can bias our results) and the second formula with daily

data during one year (that can be more appropriated to reflect the effects of a particular event such as the acquisition).

The firm's stocks should be evaluated only in the context of the investment portfolio to which they belong, taking into account their contribution to the portfolio's mean and variance. Particularly, the risk of individual security has to be measured in terms of its returns rate variability with respect to the portfolio return rate. Since the portfolio is not observable, the use of a proxy is required, which can be a market index - hopefully, as global as possible (Crouhy et al., 2000).

The market indexes used in this study (STOXX EURO 600 and MSCI AC WORLD) are among the most global indexes available, and have been built using stock-market information of firms from several developed countries, which make them suitable for evaluating the performance of our sample firms, which, in turn, contribute to those indexes calculation.

### 3.2 Explanatory Variables Measuring Acquisition Aspects

***GW (Goodwill):*** An acquisition is based on the premise that the estimated direct or indirect gains of the transaction will exceed the premium (or bonus, or goodwill) paid by the acquiring firm to buy the target (Rock, Rock and Sikora, 1994). Accordingly, a firm paying a higher goodwill would be assumed to have higher expectations of obtaining higher gains from the consolidation to compensate the previous payment. Then, a higher goodwill is expected to improve market perceptions, diminishing, in turn, the systematic risk.

Nevertheless, as a higher goodwill increases the firm's assets and consequently its size, managers have good incentives to inflate stock prices by means of this intangible (Gu and Lev, 2011). Then, a doubt emerges about the real motivation for goodwill payment: is it due to an acquirer's real belief that the target's underlying value is greater than the value of its accounts? Or, is it due to the acquirer's need to gain market share which is reached through external growth provided by the increase in intangible assets?

We measure this premium as the ratio of the goodwill from the consolidated firm to its total assets and, given the market's strong competition and the managers' eagerness for obtaining market share, our hypothesis $H_1$ is that a higher goodwill increases the firm's systematic risk (see Table 4):

**$H_1$:** The higher the goodwill the higher the systematic risk β.

***Acq (Acquiring active versus inactive firms):*** This is a binary variable that takes the value 1 if the firm performed at least one acquisition during the year and 0 otherwise. Considering the M&As' relative success widely mentioned in the literature, and the context of high competition and crisis in which this study develops, our hypothesis $H_2$ is for an acquisition to be perceived by the market as a risky event (see Table 4):

**$H_2$:** The acquiring active firms have a greater systematic risk β than the acquiring inactive.

***#Rel-A (Intensity of related acquiring activity, or number of firm's annual acquisitions in related sectors):*** If the industry of the acquirer is different from that of the target, the acquirer would have an additional diversification effect by industry, leading to an expectation of a systematic risk reduction if the portfolio effect dominates. A consolidation of unrelated firms can reduce the systematic risk due to the diversification effect (Amihud and Lev, 1981). As an example, Amit and Livnat (1988) concluded that the diversification in unrelated sectors tend to reduce the operating risk which, in turn, has a negative effect on systematic risk.

But there remains the doubt of whether related or unrelated consolidations create more value for shareholders, via systematic risk diminishing, since the strategic management theory posits that related consolidations are more synergic, and this synergy contributes to the process of value creation (Crouhy et al., 2000).

Considering the strategic focus of the last wave of M&As ($5^{th}$ wave), we assume that the strategic management arguments surpass that of the portfolio theory, and hypothesize ($H_3$) that related acquisitions have a higher ability to lessen the systematic risk than the unrelated (see Table 4):

**$H_3$:** The related acquisitions have a lesser systematic risk β than the unrelated.

If the four first digits of the industry classification NAICS 2007 coincide for both the acquiring and the target firms, we consider the acquisition as related. Then we count the number of annual related acquisitions per firm, so a zero (0) value can indicate that the firm only performed unrelated acquisitions, or did not perform acquisitions at all during the year.

***#CB-A (Intensity of cross border acquiring activity, or number of annual cross border acquisitions performed by a firm):*** M&As have been accompanied by the internationalization process. Nearly one third of consolidation operations involve firms from different countries (Erel, Liao and Weisbach, 2012). Technological developments and globalization have contributed considerably to the popularity of M&As (Shimizu et al., 2004), which, when performed with foreign firms foster and accelerate, in turn, the process of globalization and integration among markets.

In a turbulent and continuously changing environment, international corporate integrations have been motivated by the will to search for new opportunities in other markets and geographical zones, providing the firm with access to important resources, as well as the opportunity to share the costs and risks of entering a new foreign market (Shimizu et al., 2004).

Without disregarding the relevance of the origin and destination countries within the acquisition process, but considering the potential benefits of international diversification, we expect cross border acquisitions to have a superior ability to diminish the systematic risk than domestic ones (see hypothesis $H_4$ in Table 4):

**$H_4$:** Cross border acquisitions have a lesser systematic risk β than domestic ones.

Therefore, in order to check if the benefits from cross border diversification surpass internationalization costs due to geographic and cultural differences, we count the number of cross border acquisitions performed by each firm on a yearly basis. A zero (0) value for this variable can mean that the particular firm only performed domestic acquisitions during the year or did not perform any acquisition at all.

***Synergy (Measure of the scale economies generated after the acquisition):*** The most common intuition regarding objectives of conglomerate activity is the search for

synergy (King et al., 2004). Then, when deciding whether to acquire or not, it is important to know if developing a meaningful synergy between the acquirer and the target firms is possible (Rock et al., 1994). In the mid and long runs it is expected that consolidated firms that have generated some kind of synergy (a real and tangible benefit) will be better perceived by the market, this improvement in perception being reflected in a lesser systematic risk (see hypothesis $H_5$ in Table 4):

**$H_5$:** The higher the synergy the lesser the systematic risk β.

Our synergy measure is the ratio between a proxy of variable costs (cost of goods sold) and a proxy of fixed costs (other operating expenses + amortization and depreciation).

***#totA (Acquiring activity intensity, or total number of acquisitions performed by a firm during the eleven year period):*** To overcome the difficulties when calculating a firm's previous experience according to the definitions provided in the literature[36], we propose an alternative measure of acquisition activity intensity calculated as the total number of acquisitions performed by a firm during the whole eleven year period of this study (2000-2010).

This variable shows the firm's acquiring propensity and also provides information about its experience within the acquiring activity. The total number of acquisitions performed by the firm during the whole study period can also bring an idea of how recurrent the decision of growing through acquisitions is for a firm. Given that in our context of globalization and uncertainty we expect an acquisition to be perceived as a risky event, we expect, even more, a higher intensity in this activity to increase the systematic risk (see hypothesis $H_6$ in Table 4):

**$H_6$:** The higher the acquisition activity intensity the higher the systematic risk β.

The most reliable evidence of value creation for shareholders via M&As uses market information (stock prices) and is based on short term event studies (Andrade et al., 2001). The time window of three days is frequently used around the date of the

[36] The definitions from the literature of previous experience require identifying the year in which the firm engaged in strategies of corporate integration. Given the size of our sample and the database reporting structure, obtaining this variable was not a feasible task.

operation announcement (Hackbarth and Morellec, 2008), which is different from the date of the concrete transaction. The main limitation of this kind of empirical study is the use of a result *ex-ante* measure that only reflects the market's expectations of future benefits (Papadakis and Thanos, 2010).

***Lagged variables:*** In order to verify whether time has an important role or not for determining the effects of these variables on the systematic risk, we consider them in the present moment *t*, and also use them lagged by one and two years (see Table 3).

**3.3 Control Variables**

***Indep (Independence degree):*** The degree of independence, which shows the firm's ownership dispersion, determines the manager's freedom when making decisions, allowing acquiring incentives to move broadly between personal and strategic territories (Amihud and Lev, 1981). The more concentrated the ownership, the greater the control and vigilance the shareholders exert upon the manager, limiting his decision range. If the ownership is dispersed among more shareholders, their incentive to exert control and vigilance are expected to be lesser than on the contrary, providing the manager with more flexibility, which could be reflected in an increase of systematic risk in case his acquiring incentives are more personal than strategic.

We measure the degree of independence in terms of ownership concentration. If none of the shareholders owns more than 50% of the firm's shares, the variable takes the value 'one' (1) classifying the firm as independent, in which case the ownership is more dispersed and the manager has more flexibility. If at least one of the shareholders owns 50% or more of the firm, the variable takes the zero (0) value, in which case the ownership is more concentrated and the manager is more controlled and invigilated by the shareholders.

***Size and growth:*** The firm's relative size, measured as the ratio between the target and acquiring firms' sales, is frequently used to proxy the economies of scale and scope (Seth, Song and Pettit, 2002). Nevertheless, as the most of the target firms in our sample are not listed, their accounting information is not available in our databases, making the calculation of this ratio not feasible.

Accordingly, we propose two alternative measures to reflect, on one hand, the dimension of the acquiring firm (size) and, on the other hand, the synergy generated by the acquisition (growth rate). Size is measured as the natural logarithm of the acquirer's total assets (Kwok and Reeb, 2000; Olibe, Michello and Thorne, 2008; Andersen, 2011) and the growth rate, as the natural logarithm of the ratio of the acquirer's total assets in a specific year to that of the previous year.

**Table 3. List of variables**

| | |
|---|---|
| **Dependent variable** | |
| **β2** | Systematic risk calculated in terms of stock prices and the index STOXX EURO 600, using the formula of daily data during one year |
| **Explanatory variables measuring acquisition aspects** | |
| **GW** | Goodwill to total assets in the year t |
| **GW_1** | Goodwill to total assets in the year t - 1 |
| **GW_2** | Goodwill to total assets in the year t - 2 |
| **Acq** | 1 if at least one acquisition was performed during the year t or 0 otherwise |
| **Acq_1** | 1 if at least one acquisition was performed during the year t - 1 or 0 otherwise |
| **Acq_2** | 1 if at least one acquisition was performed during the year t - 2 or 0 otherwise |
| **#Rel-A** | Number of related acquisitions performed during the year t |
| **#Rel-A_1** | Number of related acquisitions performed during the year t - 1 |
| **#Rel-A_2** | Number of related acquisitions performed during the year t - 2 |
| **#CB-A** | Number of cross border acquisitions performed during the year t |
| **#CB-A_1** | Number of cross border acquisitions performed during the year t - 1 |
| **#CB-A_2** | Number of cross border acquisitions performed during the year t - 2 |
| **Sinergy** | Variable costs to fixed costs in the year t |
| **Sinergy_1** | Variable costs to fixed costs in the year t - 1 |
| **Sinergy_2** | Variable costs to fixed costs in the year t - 2 |
| **#totA** | Total number of acquisitions performed by the firm during the period 2000 - 2010 |
| **Control variables** | |
| **Indep** | Manager's independence degree or ownership dispersion |
| **Size** | Natural logarithm of the total assets |
| **Growth** | Natural logarithm of the ratio of total assets in year t to that of the year t - 1 |
| **Leverage** | Total liabilities to total assets |
| **Sales** | Sales to total assets |

Taking into account that bigger firms have greater agency costs, a better access to credit and, in turn, a higher leverage, and considering our context of globalization and crisis, we expect bigger firms to have a higher systematic risk. Notwithstanding, we

expect an acquiring firm that grows after the acquisition to gain market share, probably due to scope and scale economies, and this to be perceived as good news by the market, having a negative effect on systematic risk.

***Leverage:*** As acquisitions are associated with an increase in debt for the acquiring firm, it is necessary to control the model for leverage (Crouhy et al., 2000). In addition, the firm's leverage provides an idea of its financial risk which also affects market perceptions. We measure the leverage as the ratio of total liabilities to total assets.

***Sales:*** Empirical M&As literature that evaluates a firm's performance has to deal with two main problems (performance definition and measurement) which help to explain the heterogeneity of the conclusions. On one hand, there is the accounting information that is generated inside the firm which, in spite of the flexibility provided by accounting standards, is assumed to be objective and to reflect a loyal image of the firm. On the other hand, there is market information, based on prices that investors are willing to pay in the stock exchange, affected by subjective factors such as market perceptions and expectations.

**Table 4. Hypotheses**

| Hypothesis | Acq. Var. | Expected Relationship | Dep. Var. |
|---|---|---|---|
| **H1** | GW | **+** | β |
| **H2** | Acq | **+** | β |
| **H3** | #Rel-A | **-** | β |
| **H4** | #CB-A | **-** | β |
| **H5** | Synergy | **-** | β |
| **H6** | #TotA | **+** | β |
| | **Ctrl. Var.** | **Expected Relationship** | **Dep. Var.** |
| | Indep | **+** | β |
| | Size | **+** | β |
| | Growth | **-** | β |
| | Leverage | **+** | β |
| | Sales | **-** | β |

**Acq. Var.** acquisition variables
**Ctrl. Var.** control variables
**Dep. Var.** dependent variable

In accordance with this argument, when evaluating the M&A results in the stock market some studies have also considered control variables based on accounting information, in order to check how objective the market assessments are (Papadakis and Thanos, 2010).

Since it is possible to reject apparently risky investment opportunities that indeed offer an excellent return, controlling the model for performance variables based on accounting information gains even more relevance. Productivity measures can show if the risk the firm is assuming is compensated for by the returns generated, allowing the verification of the well-known adage "the higher the risk, the higher the return".

Our accounting performance measure is the ratio of sales to total assets for the acquiring firm, and we expect it to be negatively correlated with the systematic risk which is, in this case, a measure of stock market result. Then, higher sales will improve market perceptions, thus diminishing systematic risk.

### 3.4 Observations

This study is based on yearly observations from 2000 to 2010 for listed firms in ten developed countries, nine from Europe and one from Oceania. The firms studied have different degrees of involvement in the acquiring activity, or they are acquiring inactive. Only complete acquisitions are considered, since some of them do not go beyond a stage of rumored activity or are abandoned in an intermediate stage of the process. From the ZEPHYR database we obtained the M&As information for those firms whose beta coefficient was previously calculated using the DATASTREAM database. Given that from the total operations mergers represent less than 1%, we dismiss them and only consider the acquisitions of 51% or more of the target value[37].

### 3.5 Samples

In order to avoid bias that could be added by other events different from the M&As themselves, previous empirical literature considered the operations forming the sample to be unique events in a certain time window. Nevertheless, given the high

[37] An acquisition is generally known as the purchase of more than 50% of the target firm's shares (Kusstatscher and Cooper, 2005).

acquiring activity context of our study, this consideration loses its appropriateness. In an era of constant and accelerated market integration the amount of these operations has increased considerably compared to other historical periods reviewed in previous studies. Therefore, as firms performing only one operation of this kind in their lifetime would be scarcely found in our samples, we consider all the available firms and define an indicator of acquiring intensity during the whole period studied. Thus, there are some firms that have not been involved in the M&A realm, while others have performed between one and sixty acquisitions in eleven years (2000-2010).

Given that 30 or 40 years ago an integration between two firms was a relatively unique event in a firm's lifetime (Langetieg et al., 1980), empirical studies were based on reduced samples, constrained by the firm and operation size (generally large firms and operations have been considered) and by the condition of doing only one operation in a certain time window in order to isolate this event and prevent being biased by other events.

As we have more recent data from a context in which the acquisitions are not anymore unique events in a firm's lifetime, we can dismiss the constraints necessary in previous studies and consequently count on a larger sample.

In order to bring more robust and consistent results in our study of the relationship between acquisitions and systematic risk, we use seven different samples. These samples were built with information from the DATASTREAM database which provided the betas (market information based on stock prices), OSIRIS, which contains financial and accounting information of listed firms and ZEPHYR, that provides M&A information.

Following previous studies (Hackbarth and Morellec, 2008; Erel et al., 2012), which circumvented the effects of government policies, we exclude from our sample state owned companies and firms in the financial sector.

The first and biggest sample S1 is made by 12,574 observations of 2,062 firms from the ten countries considered in this study (Finland, France, Germany, Greece, Ireland, Italy,

New Zealand, Portugal, Spain and United Kingdom) over a nine year period (2002-2010).

The sample S2 has 9,654 observations of 1,579 firms from the five more stable countries (Finland, France, Germany, New Zealand and United Kingdom) for the whole period (2002-2010). For this group of countries, samples S3 and S4 have 3,963 and 5,691 observations for times of prosperity (2002-2005) and crisis (2006-2010) respectively.

The Sample S5 is made up of 2,920 observations of 483 firms from our five less stable countries (Greece, Ireland, Italy, Portugal and Spain) during the whole period (2002-2010). For this group of countries, samples S6 and S7 have 997 and 1,923 observations for times of prosperity (2002-2005) and crisis (2006-2010) respectively. See Table 5.

**3.6 Quantitative Methods**

For each of the seven samples described above we systematically apply a set of quantitative techniques (see Table 5) in order to address various recurrent statistical problems; collinearity (when two or more variables provide the model with similar or redundant information), autocorrelation (if a variable is correlated with its own lagged values), heteroskedasticity (when the error variance is not constant along the observations) and endogeneity (if the variables and the error term are correlated).

In the first place we run a regression of systematic risk β as a function of all the control variables (*), then, another regression adding to the model the variables that measure acquiring activity (**), improving $R^2$. We also run a pooled regression taking into account particular years and countries, omitting the years 2010 (when studying the periods 2002-2010 or 2006-2010), or 2005 (for the period 2002-2005), and the countries Spain (as a benchmark for the less stable group of countries) and Germany (for the more stable group). After each of these three types of regressions we verify the VIF (variance inflation factor) to avoid collinearity problems among variables[38]. Finally, we run two more regressions: one for controlling autocorrelation and

[38] Departing from the common rule which posits that VIF values higher than 5 suggest high multicollinearity (Studenmund, 2010), we adopt our own prudence criteria which allows us to accept VIF values equal or lesser than 3.5.

heteroskedasticity (Prais-Winsten model), and the other to control for endogeneity (Genealized Moment Method – GMM) (Baum, Schaffer and Stillman, 2003).

**Table 5. Samples, benchmark market indexes and regressions**

| | | |
|---|---|---|
| **Samples** | | |
| **S1** | All the countries, all the years | |
| **S2** | Five more stable countries, period 2002-2010 | |
| **S3** | Five more stable countries, period 2002-2005 | |
| **S4** | Five more stable countries, period 2006-2010 | |
| **S5** | Five less stable countries, period 2002-2010 | |
| **S6** | Five less stable countries, period 2002-2005 | |
| **S7** | Five less stable countries, period 2006-2010 | |
| **Benchmark market indexes** | | |
| **β1** | MSCI AC WORLD | (formula with daily data during one year) |
| **β2** | STOXX EURO 600 | (formula with daily data during one year) |
| **β3** | MSCI AC WORLD | (formula with monthly data during five years) |
| **β4** | STOXX EURO 600 | (formula with monthly data during five years) |
| **β regressions** | | |
| * | β regression in terms of the control variables | |
| ** | β regression in terms of control and acquiring activity variables | |
| **R1** | β pooled regression considering also years and countries | |
| **R2** | β panel data regression controlling for heteroskedasticity and autocorrelation (Prais-Winsten model) | |
| **R3** | β panel data regression controlling for endogeneity (Generalized Method of Moments - GMM) | |

In Table 6 to 12 we report the results of these three regressions (pooled regression, Prais-Winsten model and GMM) [39].

## 4. DISCUSSION OF RESULTS

Although the signs and significance of the relationship between the dependent variable and the rest of the variables remained the same along the different regressions, the betas that brought a higher $R^2$ were those calculated with the formula of daily stock prices over a year and the benchmark index STOXX EURO 600 (β2). These

[39] We run all the five regressions to forecast each of the four measures of beta proposed (β1, β2, β3 and β4), finding coherent and significant results for all of them. Nevertheless, in the tables we only present the results obtained for the dependent variable β2, which provide a greater explanatory power or $R^2$.

betas reflect better the short term events and information that affect the firm. As for the formula smoothed by monthly data over five years, it can be said that long term information affects the beta, incorporating the effects of the events from the whole period and making it more difficult to isolate the effect of the acquisition, which is the event we are interested in.

Tables 6 to 12 show for each of the seven samples the results of the regression R1 (β pooled regression taking into account years and countries), R2 (β panel data regression corrected for autocorrelation and heteroskedasticity) and R3 (β panel data regression corrected for endogeneity). The dependent variable that proxies the systematic risk is the beta calculated with respect to the benchmark market index STOXX EURO 600 using the formula of daily data over a period of one year. These results are consistent with the ones obtained using the index MSCI AC WORLD and the β formula with monthly data over a five year period.

Table 6 results for the sample S1 suggest that, on a global basis, acquisitions are perceived by the market as risky events. The Acq_1 and Acq_2 positive and significant coefficients indicate that acquiring firms increase their systematic risk one and two years after the acquisition. Likewise, higher payments for intangible assets, as goodwill, and also international acquisitions increase the beta significantly two years after the operation (GW_2 and #CB-A_2). The intensity of acquiring activity (#totA) is perceived as a risk factor as well.

The firm's ownership independence indicator (Indep) also determines market risk perception. We find a positive, significant and persistent relationship between this variable and the beta. For the firms with greater independence, that is the ones whose ownership is dispersed among more shareholders, it is more difficult for the shareholders to exert control over the manager who, in turn, can exert his discretion more freely and get involved in acquisitions guided by personal incentives. Market perceives more risk under these circumstances.

**Table 6. Results of sample S1 for all the countries and years**

| Sample | Regressions | | | | | |
|---|---|---|---|---|---|---|
| S1 | R1 | | R2 | | R3 | |
| N = 12,574 | $R^2$ Adjust. | 0.30 | $R^2$ | 0.22 | $R^2$ | 0.23 |
| Variables | Prob > F | 0.00 | Prob > $chi^2$ | 0.00 | Prob > F | 0.00 |
| β (b2) | Coef. | P>t | Coef. | P>z | Coef. | P>t |
| **Constant** | **-0.537** | **0.000** | **-0.561** | **0.000** | **-0.591** | **0.000** |
| GW | 0.018 | 0.670 | 0.053 | 0.261 | -0.034 | 0.468 |
| **GW_2** | **0.133** | **0.002** | 0.067 | 0.149 | **0.081** | **0.084** |
| Acq | 0.015 | 0.152 | 0.004 | 0.630 | 0.015 | 0.148 |
| **Acq_1** | **0.018** | **0.090** | **0.015** | **0.089** | **0.029** | **0.007** |
| **Acq_2** | **0.035** | **0.001** | **0.020** | **0.019** | **0.049** | **0.000** |
| #Rel-A | -0.009 | 0.294 | -0.009 | 0.166 | -0.010 | 0.243 |
| **#Rel-A_1** | **-0.016** | **0.083** | **-0.012** | **0.089** | -0.012 | 0.158 |
| **#Rel-A_2** | **-0.023** | **0.010** | -0.011 | 0.128 | **-0.019** | **0.026** |
| #CB-A | -0.004 | 0.556 | -0.001 | 0.799 | -0.003 | 0.671 |
| #CB-A_1 | 0.004 | 0.577 | 0.003 | 0.572 | 0.006 | 0.356 |
| **#CB-A_2** | **0.013** | **0.059** | 0.003 | 0.569 | **0.014** | **0.038** |
| Synergy | 0.000 | 0.495 | 0.000 | 0.880 | 0.001 | 0.215 |
| Synergy_1 | 0.000 | 0.859 | 0.000 | 0.801 | 0.000 | 0.994 |
| Synergy_2 | 0.000 | 0.755 | 0.000 | 0.749 | 0.000 | 0.879 |
| **#totA** | **0.006** | **0.000** | **0.007** | **0.000** | **0.003** | **0.003** |
| **Indep** | **0.148** | **0.000** | **0.150** | **0.000** | **0.117** | **0.000** |
| **Size** | **0.076** | **0.000** | **0.078** | **0.000** | **0.080** | **0.000** |
| **Growth** | **-0.079** | **0.000** | **-0.074** | **0.000** | **-0.066** | **0.000** |
| Leverage | 0.001 | 0.643 | 0.002 | 0.525 | 0.001 | 0.368 |
| **Sales** | **-0.016** | **0.001** | -0.009 | 0.106 | **-0.032** | **0.000** |
| **2002** | **-0.037** | **0.013** | **-0.037** | **0.008** | | |
| **2003** | **-0.157** | **0.000** | **-0.158** | **0.000** | | |
| **2004** | **-0.039** | **0.006** | **-0.042** | **0.002** | | |
| **2005** | **-0.055** | **0.000** | **-0.055** | **0.000** | | |
| **2006** | **0.160** | **0.000** | **0.160** | **0.000** | | |
| 2007 | 0.017 | 0.213 | 0.020 | 0.104 | | |
| **2008** | **0.034** | **0.013** | **0.037** | **0.001** | | |
| **2009** | **-0.049** | **0.000** | **-0.048** | **0.000** | | |
| **Finland** | **-0.044** | **0.004** | **-0.045** | **0.030** | | |
| **France** | **-0.050** | **0.000** | **-0.045** | **0.002** | | |
| **Great Britain** | **-0.141** | **0.000** | **-0.139** | **0.000** | | |
| **New Zealand** | **-0.384** | **0.000** | **-0.378** | **0.000** | | |
| **Portugal** | **-0.170** | **0.000** | **-0.151** | **0.000** | | |
| **Ireland** | **-0.248** | **0.000** | **-0.246** | **0.000** | | |
| **Italy** | **0.068** | **0.000** | **0.084** | **0.000** | | |
| **Greece** | **0.139** | **0.000** | **0.142** | **0.000** | | |

Firm size is consistently associated to higher beta values as well. The years 2006 and 2008 are consistently riskier than the benchmark year (2010), while Greece and Italy are also riskier with respect to the benchmark country (Spain). Also in Table 6 are shown the variables that improve market risk perception lessening systematic risk. On

the one hand, acquisitions between related industries bring beneficial effects on systematic risk one and two years after the acquisition (#Rel-A_1 and #Rel-A_2), corroborating the theory of synergy created when joining efforts and similar capabilities. On the other hand, the growth rate (Growth) reflects scale and scope economies, as an increase in market share for the new consolidated firm.

Note that the negative effect of growth rate on the beta seems to contradict the positive effects of goodwill. Nevertheless, growth rate implies an increase of all the acquiring firm's assets, while the goodwill only refers to this particular intangible asset. Thus we can conclude that the market values positively a firm's growth if it is supported by tangible assets.

Firms with greater sales are associated with lower betas, suggesting that the market approves of and prefers firms that sell more. The years 2002 to 2005 and 2009 are consistently less risky than the benchmark year (2010), while Finland, France, Great Britain, New Zealand, Portugal and Ireland are safer with respect to the benchmark country (Spain).

Table 7, corresponding to sample S2 of the five more stable countries over the period 2001-2010, presents similar results to that of the global sample S1, and reveals that Finland, France, Great Britain and New Zealand exhibit a lesser systematic risk than the benchmark country (Germany).

Besides, the positive and significant sign of the coefficients for #CB-A_1 and #CB-A_2 indicates that, particularly for this group of countries, international acquisitions are riskier, highlighting the importance of the acquisition origin and destination countries.

After splitting S2 in the periods of prosperity (2002-2005) and crisis (2006-2010), we obtain the results for the samples S3 (see Table 8) and S4 (see Table 9). Conversely to the prosperity period, during the crisis the acquisitions for this group of countries seem to be perceived by the market as risky events. Notwithstanding, although between 2002 and 2005 unrelated acquisitions are not especially beneficial, during crisis they help to consistently diminish systematic risk one and two years after the acquisition. Likewise, international acquisitions seem to increase the systematic risk mainly during

crisis times. As for the ownership Independence indicator and firm's size, they both are still perceived as risk factors.

**Table 7. Results of sample S2 for the more stable countries during the period 2002-2010**

| Sample | Regressions | | | | | |
|---|---|---|---|---|---|---|
| S2 | R1 | | R2 | | R3 | |
| N = 9,654 | $R^2$ Adjust. | 0.30 | $R^2$ | 0.21 | $R^2$ | 0.26 |
| Variables | Prob > F | 0.00 | Prob > $chi^2$ | 0.00 | Prob > F | 0.00 |
| β (b2) | Coef. | P>t | Coef. | P>z | Coef. | P>t |
| **Constant** | **-0.590** | **0.000** | **-0.612** | **0.000** | **-0.673** | **0.000** |
| **GW_2** | **0.153** | **0.000** | **0.110** | **0.003** | **0.130** | **0.000** |
| Acq | 0.016 | 0.201 | 0.009 | 0.392 | 0.016 | 0.212 |
| Acq_1 | 0.014 | 0.274 | 0.014 | 0.200 | 0.021 | 0.116 |
| **Acq_2** | **0.026** | **0.040** | 0.012 | 0.238 | **0.032** | **0.013** |
| #Rel-A | -0.006 | 0.583 | -0.009 | 0.248 | -0.006 | 0.539 |
| #Rel-A_1 | -0.011 | 0.283 | -0.008 | 0.300 | -0.008 | 0.402 |
| **#Rel-A_2** | **-0.022** | **0.035** | -0.009 | 0.284 | **-0.020** | **0.042** |
| #CB-A | 0.000 | 0.961 | 0.000 | 0.952 | 0.006 | 0.441 |
| **#CB-A_1** | 0.008 | 0.361 | 0.007 | 0.320 | **0.015** | **0.085** |
| **#CB-A_2** | **0.018** | **0.045** | 0.006 | 0.360 | **0.024** | **0.006** |
| Synergy | 0.000 | 0.699 | 0.000 | 0.765 | -0.001 | 0.237 |
| Synergy_1 | 0.000 | 0.882 | 0.000 | 0.895 | 0.000 | 0.214 |
| Synergy_2 | 0.000 | 0.772 | 0.000 | 0.754 | 0.000 | 0.653 |
| **#totA** | **0.005** | **0.000** | **0.006** | **0.000** | **0.002** | **0.037** |
| **Indep** | **0.185** | **0.000** | **0.185** | **0.000** | **0.138** | **0.000** |
| **Size** | **0.079** | **0.000** | **0.080** | **0.000** | **0.083** | **0.000** |
| **Growth** | **-0.068** | **0.000** | **-0.069** | **0.000** | **-0.054** | **0.000** |
| Leverage | 0.001 | 0.629 | 0.002 | 0.468 | 0.001 | 0.383 |
| **Sales** | **-0.020** | **0.000** | **-0.012** | **0.055** | **-0.017** | **0.001** |
| 2002 | -0.016 | 0.348 | -0.017 | 0.287 | | |
| **2003** | **-0.126** | **0.000** | **-0.128** | **0.000** | | |
| 2004 | -0.005 | 0.775 | -0.007 | 0.628 | | |
| 2005 | -0.019 | 0.244 | -0.022 | 0.159 | | |
| **2006** | **0.168** | **0.000** | **0.168** | **0.000** | | |
| **2007** | 0.022 | 0.172 | **0.026** | **0.065** | | |
| **2008** | **0.038** | **0.017** | **0.041** | **0.002** | | |
| **2009** | **-0.026** | **0.098** | **-0.025** | **0.018** | | |
| **Finland** | **-0.061** | **0.000** | **-0.061** | **0.005** | | |
| **France** | **-0.058** | **0.000** | **-0.051** | **0.001** | | |
| **Great Britain** | **-0.161** | **0.000** | **-0.158** | **0.000** | | |
| **New Zealand** | **-0.391** | **0.000** | **-0.384** | **0.000** | | |

**Table 8. Results of sample S3 for the more stable countries during the period 2002-2005**

| Sample | Regressions | | | | | |
|---|---|---|---|---|---|---|
| S3 | R1 | | R2 | | R3 | |
| N = 3,963 | $R^2$ Adjust. | 0.22 | $R^2$ | 0.19 | $R^2$ | 0.19 |
| Variables | Prob > F | 0.00 | Prob > $chi^2$ | 0.00 | Prob > F | 0.00 |
| β (b2) | Coef. | P>t | Coef. | P>z | Coef. | P>t |
| **Const** | **-0.260** | **0.000** | **-0.286** | **0.000** | **-0.392** | **0.000** |
| **GW** | **0.165** | **0.027** | **0.221** | **0.006** | **0.157** | **0.056** |
| **GW_2** | **0.198** | **0.009** | 0.135 | 0.119 | **0.184** | **0.032** |
| Acq | -0.008 | 0.714 | -0.017 | 0.320 | -0.018 | 0.377 |
| Acq_1 | 0.018 | 0.431 | 0.024 | 0.215 | 0.006 | 0.798 |
| Acq_2 | 0.032 | 0.197 | 0.025 | 0.244 | 0.026 | 0.318 |
| #Rel-A | 0.011 | 0.509 | 0.004 | 0.755 | 0.009 | 0.545 |
| #Rel-A_1 | 0.018 | 0.333 | 0.014 | 0.310 | 0.017 | 0.320 |
| #Rel-A_2 | -0.011 | 0.636 | 0.002 | 0.929 | -0.006 | 0.791 |
| #CB-A | -0.007 | 0.609 | -0.003 | 0.757 | -0.004 | 0.793 |
| #CB-A_1 | -0.008 | 0.611 | 0.001 | 0.935 | 0.002 | 0.902 |
| #CB-A_2 | 0.029 | 0.114 | 0.016 | 0.294 | 0.042 | 0.034 |
| Synergy | 0.001 | 0.628 | 0.000 | 0.879 | -0.001 | 0.286 |
| Synergy_1 | 0.000 | 0.885 | 0.000 | 0.955 | 0.000 | 0.243 |
| Synergy_2 | 0.000 | 0.802 | 0.000 | 0.419 | 0.000 | 0.672 |
| **#totA** | **0.009** | **0.000** | **0.008** | **0.000** | **0.006** | **0.000** |
| **Indep** | **0.171** | **0.000** | **0.173** | **0.000** | **0.108** | **0.000** |
| **Size** | **0.053** | **0.000** | **0.054** | **0.000** | **0.057** | **0.000** |
| **Growth** | **-0.167** | **0.000** | **-0.114** | **0.000** | **-0.151** | **0.000** |
| Leverage | -0.001 | 0.726 | -0.001 | 0.784 | -0.001 | 0.670 |
| **Sales** | **-0.042** | **0.000** | **-0.031** | **0.000** | **-0.038** | **0.000** |
| 2002 | -0.012 | 0.531 | -0.001 | 0.943 | | |
| **2003** | **-0.118** | **0.000** | **-0.110** | **0.000** | | |
| 2004 | 0.013 | 0.486 | 0.014 | 0.316 | | |
| **Finland** | **-0.169** | **0.000** | **-0.172** | **0.000** | | |
| **France** | **-0.066** | **0.000** | **-0.074** | **0.001** | | |
| **Great Britain** | **-0.209** | **0.000** | **-0.213** | **0.000** | | |
| **New Zealand** | **-0.435** | **0.000** | **-0.441** | **0.000** | | |

**Table 9. Results of sample S4 for the more stable countries during the period 2006-2010**

| Sample | Regressions | | | | | |
|---|---|---|---|---|---|---|
| S4 | R1 | | R2 | | R3 | |
| N = 5,691 | $R^2$ Adjust. | 0.38 | $R^2$ | 0.35 | $R^2$ | 0.33 |
| Variables | Prob > F | 0.00 | Prob > $chi^2$ | 0.00 | Prob > F | 0.00 |
| β (b2) | Coef. | P>t | Coef. | P>z | Coef. | P>t |
| **Const** | **-0.824** | **0.000** | **-0.817** | **0.000** | **-0.853** | **0.000** |
| GW_2 | 0.054 | 0.105 | 0.041 | 0.301 | 0.004 | 0.905 |
| **Acq** | **0.031** | **0.040** | **0.025** | **0.040** | **0.040** | **0.011** |
| Acq_1 | 0.013 | 0.358 | 0.007 | 0.572 | 0.021 | 0.162 |
| Acq_2 | 0.022 | 0.128 | 0.006 | 0.576 | 0.014 | 0.314 |
| **#Rel-A** | -0.020 | 0.113 | **-0.020** | **0.033** | -0.017 | 0.150 |
| **#Rel-A_1** | **-0.025** | **0.037** | **-0.021** | **0.014** | **-0.019** | **0.080** |
| **#Rel-A_2** | **-0.020** | **0.066** | -0.010 | 0.228 | **-0.020** | **0.058** |
| #CB-A | 0.006 | 0.573 | 0.002 | 0.792 | 0.012 | 0.213 |
| **#CB-A_1** | 0.015 | 0.129 | 0.008 | 0.304 | **0.016** | **0.096** |
| #CB-A_2 | 0.010 | 0.293 | 0.003 | 0.641 | 0.009 | 0.338 |
| Synergy | 0.000 | 0.795 | 0.001 | 0.652 | 0.000 | 0.846 |
| Synergy_1 | 0.001 | 0.635 | 0.001 | 0.501 | 0.000 | 0.948 |
| Synergy_2 | 0.000 | 0.765 | -0.001 | 0.407 | 0.000 | 0.860 |
| #totA | 0.002 | 0.202 | 0.004 | 0.011 | 0.001 | 0.332 |
| **Indep** | **0.190** | **0.000** | **0.193** | **0.000** | **0.154** | **0.000** |
| **Size** | **0.096** | **0.000** | **0.095** | **0.000** | **0.099** | **0.000** |
| **Growth** | -0.010 | 0.537 | **-0.038** | **0.016** | 0.001 | 0.946 |
| Leverage | 0.007 | 0.181 | 0.005 | 0.383 | 0.006 | 0.123 |
| Sales | -0.006 | 0.366 | -0.003 | 0.649 | 0.000 | 0.990 |
| **2006** | **0.165** | **0.000** | **0.167** | **0.000** | | |
| 2007 | 0.020 | 0.189 | **0.025** | **0.053** | | |
| **2008** | **0.043** | **0.004** | **0.046** | **0.000** | | |
| **2009** | -0.018 | 0.210 | **-0.019** | **0.060** | | |
| Finland | 0.022 | 0.261 | 0.031 | 0.186 | | |
| **France** | **-0.048** | **0.000** | **-0.039** | **0.022** | | |
| **Great Britain** | **-0.125** | **0.000** | **-0.122** | **0.000** | | |
| **New Zealand** | **-0.366** | **0.000** | **-0.362** | **0.000** | | |

Table 10 for the sample S5, which is made up of our five less stable countries along the period 2002-2010, reveals that conversely to Greece and Italy, Portugal and Ireland are perceived by the market as less risky countries than Spain.

Results confirm that the market generally perceives acquisitions as risky operations, and that their effects are felt one and two years later. The intensity of acquiring activity, the ownership independence indicator and the size remain risk factors, while the positive and significant sign for the Leverage coefficient suggests that, especially for this group of countries, market perceives as riskier the firms with a greater debt component in their financial structure.

When splitting S5 in the periods of prosperity (2002-2005) and crisis (2006-2010) we obtain the results for the samples S6 (see Table 11) and S7 (see Table 12). Conversely to the crisis period in which uncertainty affects the whole system, cross border acquisitions gain relevance during prosperity times. In this case the market recognizes and rewards the efforts to acquire a firm from another country that is (in the best of the cases) in better conditions (or in the worst of the cases in equal conditions). During the period of prosperity (2002-2005) the market positively values synergy, defined as the rate of variable to fixed costs, one year after the acquisition. Nevertheless, in crisis times, the effort a firm from the group of less stable countries makes to pay a greater goodwill when acquiring a foreign firm is well perceived by the market two years after the acquisition (negative and significant coefficient for GW_2). Likewise, during this period, market tends to asses positively the integration between industry related firms.

Table 13 summarizes, for each of the seven samples, the variables that have a significant impact (positive or negative) on the beta. The consistency and ability of the variables Indep and Size to globally increase the systematic risk are highlighted, as well as for variable Growth to diminish it. The significance and direction of the remaining relationships depend on the particular characteristics of the group of countries (more or less stable) and the global economic context (prosperity or crisis).

**Table 10. Results of sample S5 for the less stable countries during the period 2002-2010**

| Sample | Regressions | | | | | |
|---|---|---|---|---|---|---|
| S5 | R1 | | R2 | | R3 | |
| N = 2,920 | $R^2$ Adjust. | 0.25 | $R^2$ | 0.23 | $R^2$ | 0.10 |
| Variables | Prob > F | 0.00 | Prob > $chi^2$ | 0.00 | Prob > F | 0.00 |
| β (b2) | Coef. | P>t | Coef. | P>z | Coef. | P>t |
| **Const** | **-0.314** | **0.000** | **-0.337** | **0.000** | **-0.171** | **0.005** |
| GW | 0.040 | 0.655 | -0.010 | 0.919 | 0.031 | 0.738 |
| GW_2 | -0.016 | 0.870 | -0.016 | 0.874 | -0.050 | 0.618 |
| Acq | 0.016 | 0.402 | 0.002 | 0.886 | -0.002 | 0.928 |
| **Acq_1** | **0.033** | **0.073** | **0.027** | **0.098** | **0.038** | **0.056** |
| **Acq_2** | **0.061** | **0.001** | **0.045** | **0.004** | **0.079** | **0.000** |
| #Rel-A | -0.019 | 0.279 | -0.009 | 0.526 | -0.028 | 0.106 |
| #Rel-A_1 | -0.025 | 0.176 | -0.019 | 0.215 | -0.027 | 0.142 |
| #Rel-A_2 | -0.025 | 0.164 | -0.016 | 0.285 | -0.017 | 0.300 |
| #CB-A | -0.018 | 0.105 | -0.008 | 0.353 | -0.013 | 0.443 |
| #CB-A_1 | -0.012 | 0.302 | -0.007 | 0.469 | -0.004 | 0.733 |
| #CB-A_2 | -0.001 | 0.964 | -0.002 | 0.845 | 0.000 | 0.973 |
| Synergy | 0.000 | 0.839 | 0.000 | 0.813 | 0.001 | 0.247 |
| Synergy_1 | 0.000 | 0.675 | 0.000 | 0.600 | 0.000 | 0.698 |
| Synergy_2 | 0.000 | 0.960 | 0.000 | 0.962 | 0.001 | 0.631 |
| **#totA** | **0.010** | **0.000** | **0.009** | **0.000** | **0.005** | **0.029** |
| **Indep** | **0.047** | **0.001** | **0.055** | **0.008** | **0.051** | **0.001** |
| **Size** | **0.061** | **0.000** | **0.065** | **0.000** | **0.051** | **0.000** |
| **Growth** | **-0.135** | **0.000** | **-0.092** | **0.001** | **-0.102** | **0.000** |
| **Leverage** | **0.095** | **0.003** | 0.043 | 0.335 | **0.095** | **0.008** |
| **Sales** | -0.002 | 0.823 | -0.001 | 0.961 | **-0.024** | **0.057** |
| **2002** | **-0.095** | **0.001** | **-0.099** | **0.000** | | |
| **2003** | **-0.257** | **0.000** | **-0.262** | **0.000** | | |
| **2004** | **-0.161** | **0.000** | **-0.167** | **0.000** | | |
| **2005** | **-0.178** | **0.000** | **-0.174** | **0.000** | | |
| **2006** | **0.143** | **0.000** | **0.135** | **0.000** | | |
| 2007 | 0.009 | 0.735 | 0.001 | 0.948 | | |
| 2008 | 0.026 | 0.287 | 0.024 | 0.269 | | |
| **2009** | **-0.112** | **0.000** | **-0.111** | **0.000** | | |
| **Portugal** | **-0.188** | **0.000** | **-0.159** | **0.000** | | |
| **Ireland** | **-0.184** | **0.000** | **-0.192** | **0.000** | | |
| **Italy** | **0.067** | **0.001** | **0.085** | **0.002** | | |
| **Greece** | **0.133** | **0.000** | **0.134** | **0.000** | | |

**Table 11. Results of sample S6 for the less stable countries during the period 2002-2005**

| Sample | Regressions | | | | | |
|---|---|---|---|---|---|---|
| S6 | R1 | | R2 | | R3 | |
| N = 997 | $R^2$ Adjust. | 0.25 | $R^2$ | 0.30 | $R^2$ | 0.14 |
| Variables | Prob > F | 0.00 | Prob > $chi^2$ | 0.00 | Prob > F | 0.00 |
| β (b2) | Coef. | P>t | Coef. | P>z | Coef. | P>t |
| **Const** | **-0.226** | **0.018** | **-0.220** | **0.099** | -0.095 | 0.403 |
| GW | -0.071 | 0.667 | -0.122 | 0.444 | -0.167 | 0.401 |
| **GW_1** | 0.251 | 0.230 | **0.342** | **0.050** | 0.340 | 0.221 |
| GW_2 | 0.158 | 0.368 | 0.094 | 0.595 | 0.021 | 0.916 |
| Acq | 0.035 | 0.183 | 0.014 | 0.538 | 0.039 | 0.175 |
| **Acq_1** | **0.052** | **0.074** | 0.037 | 0.143 | 0.049 | 0.107 |
| **Acq_2** | **0.071** | **0.017** | **0.075** | **0.003** | **0.082** | **0.009** |
| #Rel-A | -0.008 | 0.748 | -0.014 | 0.554 | -0.001 | 0.981 |
| #Rel-A_1 | -0.028 | 0.340 | -0.020 | 0.445 | -0.013 | 0.681 |
| #Rel-A_2 | 0.021 | 0.533 | 0.007 | 0.796 | 0.026 | 0.441 |
| **#CB-A** | -0.027 | 0.129 | -0.009 | 0.579 | **-0.042** | **0.021** |
| #CB-A_1 | -0.016 | 0.412 | -0.012 | 0.463 | -0.023 | 0.176 |
| #CB-A_2 | -0.004 | 0.840 | -0.002 | 0.911 | -0.001 | 0.956 |
| Synergy | 0.002 | 0.445 | 0.001 | 0.571 | 0.003 | 0.135 |
| **Synergy_1** | -0.004 | 0.188 | **-0.004** | **0.026** | -0.001 | 0.712 |
| Synergy_2 | -0.002 | 0.445 | -0.002 | 0.318 | -0.002 | 0.434 |
| **#totA** | **0.009** | **0.002** | **0.008** | **0.011** | 0.005 | 0.133 |
| **Indep** | **0.065** | **0.004** | **0.065** | **0.013** | 0.022 | 0.295 |
| **Size** | **0.036** | **0.000** | **0.038** | **0.000** | **0.038** | **0.000** |
| **Growth** | **-0.196** | **0.000** | **-0.120** | **0.016** | **-0.213** | **0.000** |
| Leverage | 0.085 | 0.107 | 0.038 | 0.583 | 0.073 | 0.219 |
| **Sales** | -0.016 | 0.273 | -0.021 | 0.325 | **-0.052** | **0.001** |
| **2002** | **0.091** | **0.003** | **0.093** | **0.001** | | |
| **2003** | **-0.074** | **0.012** | **-0.069** | **0.006** | | |
| 2004 | 0.022 | 0.431 | 0.020 | 0.334 | | |
| **Portugal** | **-0.080** | **0.049** | **-0.084** | **0.053** | | |
| **Ireland** | **-0.223** | **0.000** | **-0.266** | **0.003** | | |
| **Italy** | **0.195** | **0.000** | **0.207** | **0.000** | | |
| **Greece** | **0.159** | **0.000** | **0.137** | **0.000** | | |

The negative relationship between the variable #Rel-A and the beta, which is prevailing along the results and strengthens especially during crisis times (during crisis times it is better to join similar talents and efforts to create synergies… maybe in this context unrelated diversification adds more uncertainty), can be interpreted as the related

diversification ability to diminish systematic risk, in which case strategic management arguments prevail over portfolio theory.

**Table 12. Results of sample S7 for the less stable countries during the period 2006-2010**

| **Sample** | **Regressions** | | | | | |
|---|---|---|---|---|---|---|
| **S7** | **R1** | | **R2** | | **R3** | |
| **N = 1,923** | **$R^2$ Adjust.** | 0.22 | **$R^2$** | 0.28 | **$R^2$** | 0.13 |
| **Variables** | **Prob > F** | 0.00 | **Prob > $chi^2$** | 0.00 | **Prob > F** | 0.00 |
| **β (b2)** | **Coef.** | **P>t** | **Coef.** | **P>z** | **Coef.** | **P>t** |
| **Const** | **-0.457** | **0.000** | **-0.507** | **0.000** | **-0.250** | **0.000** |
| GW | 0.110 | 0.349 | 0.065 | 0.556 | -0.049 | 0.677 |
| **GW_2** | -0.129 | 0.316 | -0.091 | 0.438 | **-0.222** | **0.080** |
| Acq | 0.002 | 0.920 | -0.003 | 0.882 | 0.008 | 0.758 |
| Acq_1 | 0.018 | 0.454 | 0.021 | 0.287 | 0.027 | 0.274 |
| **Acq_2** | **0.043** | **0.066** | 0.025 | 0.183 | **0.049** | **0.034** |
| **#Rel-A** | -0.033 | 0.151 | -0.017 | 0.354 | **-0.039** | **0.041** |
| #Rel-A_1 | -0.026 | 0.265 | -0.022 | 0.209 | -0.036 | 0.113 |
| **#Rel-A_2** | -0.034 | 0.114 | **-0.030** | **0.081** | **-0.035** | **0.060** |
| #CB-A | -0.012 | 0.398 | -0.010 | 0.348 | -0.008 | 0.593 |
| #CB-A_1 | -0.014 | 0.320 | -0.010 | 0.333 | -0.008 | 0.477 |
| #CB-A_2 | -0.009 | 0.477 | -0.005 | 0.598 | -0.013 | 0.216 |
| Synergy | 0.000 | 0.853 | 0.000 | 0.945 | 0.000 | 0.742 |
| Synergy_1 | 0.000 | 0.912 | 0.000 | 0.955 | 0.000 | 0.781 |
| Synergy_2 | 0.000 | 0.747 | 0.000 | 0.736 | 0.001 | 0.479 |
| **#totA** | **0.011** | **0.000** | **0.010** | **0.000** | **0.010** | **0.000** |
| **Indep** | **0.035** | **0.059** | 0.038 | 0.122 | **0.062** | **0.001** |
| **Size** | **0.075** | **0.000** | **0.079** | **0.000** | **0.062** | **0.000** |
| **Growth** | **-0.087** | **0.014** | **-0.075** | **0.023** | -0.038 | 0.256 |
| **Leverage** | **0.116** | **0.003** | **0.102** | **0.058** | **0.078** | **0.065** |
| Sales | 0.014 | 0.295 | 0.011 | 0.571 | 0.008 | 0.529 |
| **2006** | **0.141** | **0.000** | **0.138** | **0.000** | | |
| 2007 | 0.006 | 0.818 | 0.004 | 0.880 | | |
| 2008 | 0.024 | 0.337 | 0.023 | 0.290 | | |
| **2009** | **-0.109** | **0.000** | **-0.109** | **0.000** | | |
| **Portugal** | **-0.263** | **0.000** | **-0.266** | **0.000** | | |
| **Ireland** | **-0.153** | **0.000** | **-0.159** | **0.004** | | |
| Italy | -0.019 | 0.480 | -0.015 | 0.658 | | |
| **Greece** | **0.118** | **0.000** | **0.127** | **0.000** | | |

**Table 13. Summary of results: variables with significant impact on the systematic risk**

| Variables | Samples | | | | | | |
|---|---|---|---|---|---|---|---|
| that ↑ β | S1 | S2 | S3 | S4 | S5 | S6 | S7 |
| GW | | | • | | | | |
| GW_1 | | | | | | • | |
| GW_2 | • | • | • | | | | |
| Acq | | | | • | | | |
| Acq_1 | • | | | | • | • | |
| Acq_2 | • | • | | | • | • | • |
| #CB-A_1 | | • | | • | | | |
| #CB-A_2 | • | • | | | | | |
| #totA | • | • | • | | • | • | • |
| Indep | • | • | • | • | • | • | • |
| Size | • | • | • | • | • | • | • |
| Leverage | | | | | • | | • |
| 2002 | | | | | | • | |
| 2006 | • | • | | • | • | | • |
| 2007 | | • | | | | | |
| 2008 | • | • | | • | | | |
| Italy | • | | | | • | • | |
| Greece | • | | | | • | • | • |

| Variables | Samples | | | | | | |
|---|---|---|---|---|---|---|---|
| that ↓ β | S1 | S2 | S3 | S4 | S5 | S6 | S7 |
| GW_2 | | | | | | | • |
| #Rel-A | | | | • | | | • |
| #Rel-A_1 | • | | | • | | | |
| #Rel-A_2 | • | • | | • | | | • |
| #CB-A | | | | | | • | |
| Synergy_1 | | | | | | • | |
| Growth | • | • | • | • | • | • | • |
| Sales | | • | • | | • | | |
| 2002 | • | | | | • | | |
| 2003 | • | • | • | | • | • | |
| 2004 | • | | | | • | | |
| 2005 | • | | | | • | | |
| 2009 | • | • | | • | • | | • |
| Finland | • | • | • | | | | |
| France | • | • | • | • | | | |
| Great Britain | • | • | • | • | | | |
| New Zealand | • | • | • | • | | | |
| Portugal | • | | | | • | • | • |
| Ireland | • | | | | • | • | • |

Geographical diversification seems to consistently produce (although not always significant) the desired effect of diminishing the systematic risk for the group of less stable countries especially during prosperity times. As expected, for this group of countries it is appealing to search for opportunities in stronger or more stable regions, entailing a greater effort to enter into a country that is in better conditions, and this effort to be well perceived and rewarded by the market. As for the firms of our most stable countries, cross border acquisitions do not provide them any advantage regarding systematic risk management.

According to the results, the firms that have performed more acquisitions along the period studied tend to have higher betas and, in turn, are perceived by the market as riskier firms.

In this particular context, acquisitions do not offer unequivocally their benefits to systematic risk management, and moreover they could defeat this objective if they are not done with prudence and moderation. Maybe a firm with frequent acquisition

activity wants to appear expansive by any means possible, while a firm that performs acquisitions less frequently seems to take this important managerial decision more carefully and bases this on other incentives apart from growth. Our results indicate that it is better to perform few well thought-out acquisitions rather than doing them indiscriminately every time the firm requires to gain market share.

Possibly our measurement of synergy (rate of variable to fixed costs) has its own limitations due to the unclear differentiation between fixed and variable costs financial accounts provide, but it still shows interesting results. Although globally the expected synergy is not reflected beneficially in the beta, for the group of less stable countries there is a shy but consistent negative relationship between the variable Synergy and the beta one year after the acquisition, that can be achieved in prosperity times.

The persistent negative relationship between the sales to assets ratio (which shows the accounting result) and the beta (which shows the stock market result) suggests that the market acts more objectively than expected, and that every time the acquisitions help to increase sales volume they will bring a reduction effect on systematic risk.

## 5. CONCLUSIONS

This empirical study shows the relationship between acquisitions and market risk perception. Particularly, we evaluate the effect that six different variables which reflect different aspects of acquisitions have on the coefficient beta that is a proxy of the systematic risk. These effects are measured in three moments - the year of acquisition and one and two years after it-, trying to avoid the results being biased by short term uncertainties caused, for example, by the acquisition announcement and the negotiations previous to the operation, or by the influence of several other effects that accumulate in the long run.

Our results are supported by a larger and more varied sample than provided by the previous empirical literature. We analyze more than 12,500 observations from ten countries classified in two groups of more and less stable ones, according to their

ability to face the recent financial crisis, contributing in this way to overcome the geographical bias frequently found in management studies.

In previous empirical literature the use of samples that cover very large periods is also common. This time frame amplitude has the drawback of mixing different world economic contexts which, when not properly differentiated, can affect the results. Besides, as the mergers and acquisitions results are context dependent, it is important to consider if these operations take place in a period of economic growth or recession, or if they occur during a period of intense M&A activity or a wave.

We differentiate then two periods with very particular contexts: the bull market or "prosperity" period, taking place between 2000 and 2005, which coincides partly with the 5$^{th}$ wave of M&A characterized by an accelerated globalization and the development of international corporate strategies, and the bear market "crisis" period, between 2006 and 2010. This classification allows us to highlight that the particular circumstances of the origin country as well as the global economic context are determining factors for the relationship between acquisitions and systematic risk.

Our results show under which circumstances it is possible to obtain benefits for systematic risk management due to acquisitions. Although, in general terms, market perceives them as risky operations, depending on the relative stability of the acquiring firms' origin country, and on the global economic context, it is still possible for acquisitions to improve market risk perception regarding those firms (see Figure 1).

In a context of less integrated markets, facing an external unknown market is something that differentiates the firm that does this from the ones that do not, or from the ones that do it in a more integrated market context. In the first scenario there are more obstacles to overcome, which leads to the expectation of a greater effort and, consequently, a higher merit which will be duly rewarded by the market. Nevertheless, in the current scenario of integrated markets it is still possible, via acquisitions, to improve market risk perception regarding the firm, and even more so if this firm comes from a less stable country and is accepted in a more stable one.

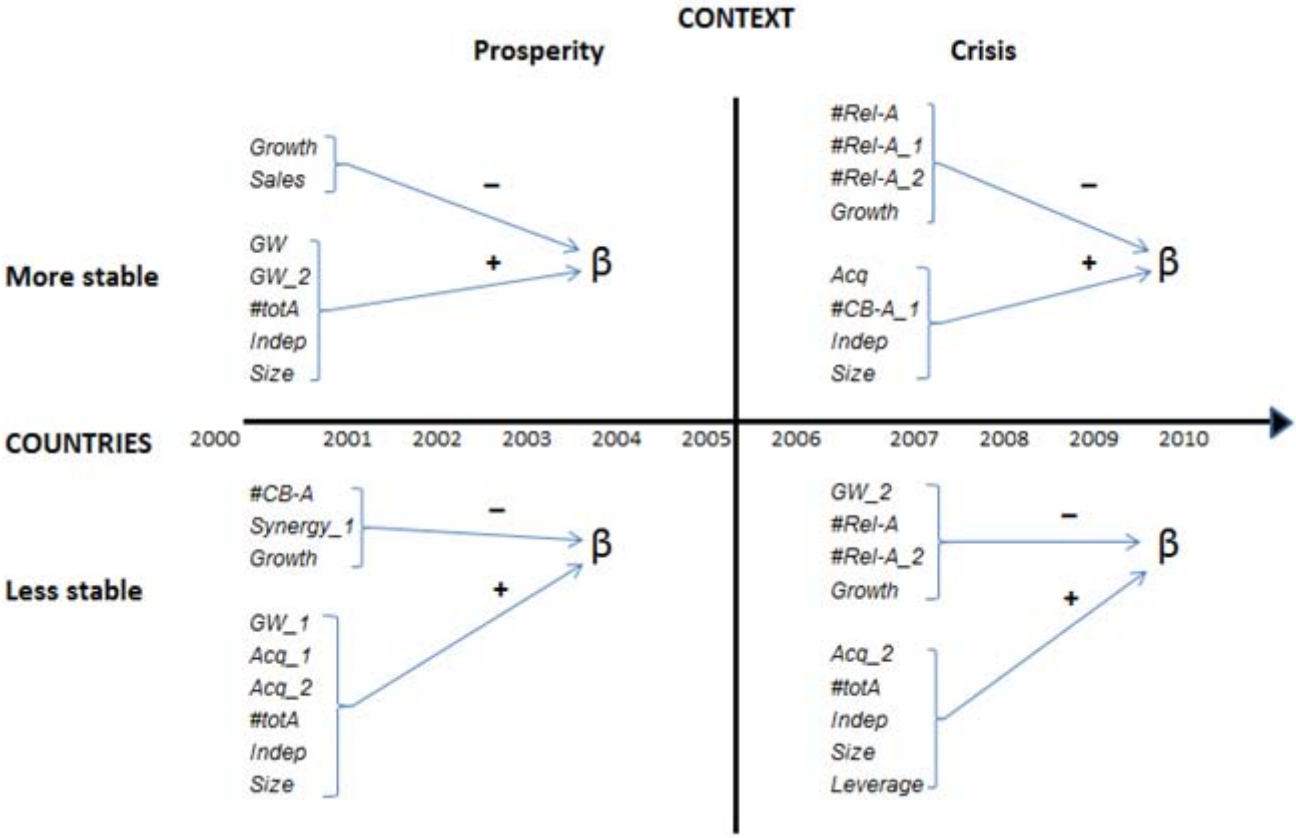
In a market that is becoming more integrated and closer to a “perfect” model, which quickly obtains and assimilates information (informative efficiency) and where, notwithstanding, some imperfections and barriers remain, firms from certain countries can still diversify their systematic risk via cross border acquisitions.

During crisis times related acquisitions seem to have the desired effect on systematic risk. Nevertheless, for firms from more stable countries, cross border acquisitions increase this risk possibly due to two reasons: on one hand, due to the crisis which brings uncertainty to the whole system and, on the other hand, because in the best of cases a firm from this group of countries acquires in a country of similar characteristics, but always can go to a country that has more disadvantageous conditions. As for this group of less stable countries, during prosperity times cross border acquisitions seem to be a good alternative to improve market risk perception, maybe because, in the worst of cases, a firm from this group will go to a country of similar characteristics, but always can enhance its situation by going to a more stable country, and this effort is expected to be well assessed by the market (see Figure 1).

We are aware of the advantages and the limitations of both the accounting and market information. Without disregarding the objectivity provided by the accountings, this type of information can be affected by the discretion of those who do the annual accounts, apart from only showing economic results and performance from the past. Although being a better reflection of the perceptions from the economic-system actors, the market indicators are based on stock prices, a direct measure of the shareholder value, which, when affected by perceptions and expectations, entail a certain degree of subjectivity.

Accounting and market information are of a different nature, since the former is the one registered in books while the later depends on psychological factors, perceptions and market expectations. Nevertheless there is a close correlation between both types of information, because good results registered in the accounts surely improve the perception the market has about the firm. Accordingly, we measure acquisition success at the level of market information in terms of accounting variables.

**Figure 1. Graphic summary of results: variables which significantly impact the systematic risk**




This study contributes the empirical literature with a joint analysis of accounting and market measures, where their advantages and limitations are reconciled. We find a correlation between the firm's results at an accounting level and the corresponding market valuation.

Empirical studies about the relationship between corporate actions and systematic risk have contributed to literature with a great diversity of findings and the potential of opening more paths for future research and analysis. Although we addressed several of the improvements suggested in previous M&As empirical literature, we are aware of the relevance of approaching this issue from a multidimensional point of view, as well as of the necessity of identifying and measuring managers' initial acquiring incentives, and other qualitative variables related to the human side of the phenomenon that nowadays are not available.

**APPENDIX**

Before splitting the initial sample S1 in different sub-samples, depending on the global economic context and the stability of acquirer's country, we made a global preliminary analysis to verify if these two circumstances determine the acquisition result.

Using the big sample S1, we regress the systematic risk β as a function of all the acquisition variables, with their corresponding lagged values, and two binary variables: Prosperity (which takes the value 1 for the period 2000-2005 and 0 for the crisis years 2006-2010) and Stable (which takes the value 1 for Finland, France, Germany, Great Britain and New Zealand, the countries considered as more stable, and 0 for Greece, Italy, Ireland, Portugal and Spain, the less stable).

Note in Table 14 that, generally speaking, acquisitions are perceived as risky events. Related acquisitions are less risky than unrelated ones, and cross border acquisitions can increase risk more than domestic ones. But, even more important is the significance of the variables Prosperity and Stable since they show that during prosperity times, and for more stable countries, the betas are significantly lesser than the ones during crisis times or for less stable countries. This gives a relevant role to the global economic context and to the stability of the acquirer's country in determining the results of acquisitions.

Likewise, we regress β in terms of the interactions between each of the 16 acquisition variables and each of the four binary variables which describe the global economic context (prosperity or crisis) as the stability of the acquirer's country (more stable or less stable). In Table 15, out of the total of 64 explanatory variables we show the ones with a significant (negative or positive) effect on beta.

See that practically, irrespective of the scenario, market perceives as riskier the firms with higher acquiring activity. Notwithstanding, the prosperity/crisis times and the degree of acquirer's country stability determine the impact of the different types of acquisitions (related, unrelated, cross border and domestic) on the beta, justifying then the necessity for a more detailed analysis, as provided in our methodological section.

**Table 14. APPENDIX - Results for sample S1 - regression of systematic risk β in terms of acquisition variables and the binary variables 'Prosperity' and 'Stable'**

| Sample S1 | Regression | |
|---|---|---|
| N = 12,662 | $R^2$ Adjust. | 0.13 |
| Variables | Prob > F | 0.00 |
| β (b2) | Coef. | P>t |
| **Const** | **0.515** | **0.000** |
| **GW** | **-0.117** | **0.057** |
| GW_1 | 0.089 | 0.257 |
| **GW_2** | **0.098** | **0.099** |
| **Acq** | **0.057** | **0.000** |
| **Acq_1** | **0.069** | **0.000** |
| **Acq_2** | **0.085** | **0.000** |
| **#Rel-A** | **-0.025** | **0.011** |
| **#Rel-A_1** | **-0.026** | **0.010** |
| **#Rel-A_2** | **-0.035** | **0.000** |
| #CB-A | 0.001 | 0.872 |
| #CB-A_1 | 0.007 | 0.330 |
| **#CB-A_2** | **0.018** | **0.017** |
| **Synergy** | **0.001** | **0.022** |
| Synergy_1 | 0.000 | 0.336 |
| Synergy_2 | 0.000 | 0.327 |
| **#totA** | **0.015** | **0.000** |
| **Prosperity** | **-0.103** | **0.000** |
| **Stable** | **-0.149** | **0.000** |

**Table 15. APPENDIX - Significant variables - preliminary analysis of the interactions between acquisition variables and the different scenarios prosperity/crisis/more stable/less stable**

| Global economic context | | | |
|---|---|---|---|
| Prosperity (Pro) | | Crisis (Cri) | |
| ↑β | ↓β | ↑β | ↓β |
| Acq_1*Pro | | Acq *Cri | #Rel-A*Cri |
| | | Acq_1*Cri | #Rel-A_1*Cri |
| | | Synergy*Cri | #Rel-A_2*Cri |
| | | Synergy_1*Cri | #CB-A_2*Cri |
| | | Synergy_2*Cri | |
| | | #totA*Cri | |

| Stability of the acquirer's country | | | |
|---|---|---|---|
| More stable (MSta) | | Less stable (LSta) | |
| ↑β | ↓β | ↑β | ↓β |
| GW_2*MSta | Acq_1*MSta | Acq_2*LSta | #CB-A*LSta |
| Acq_2*MSta | Synergy*MSta | #totA*LSta | #CB-A_1*LSta |
| #CB-A_2*MSta | | | |
| #totA*MSta | | | |

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# RESUMEN Y CONCLUSIONES

El objetivo de este apartado final es proporcionar una conclusión general que resuma y conecte los tres capítulos que componen la tesis "Gestión del riesgo sistemático en la empresa: una fuente y dos estrategias".

En un mundo caracterizado por un continuo y acelerado proceso de integración entre economías, por la libertad en el flujo de la información, de los productos y de los capitales, por la creciente competencia y por la reciente crisis financiera mundial, mantener la confianza del mercado se ha convertido para las empresas en una misión de vital importancia.

Luego, a las empresas les interesa mandar señales que sean bien recibidas por el mercado con el fin de incrementar su confianza y, en consecuencia, su lealtad. Una empresa bien percibida por sus clientes puede reducir sus costes de financiación, asegurar una cuota del mercado y, en general, moverse en terrenos menos inciertos. Sin embargo, como no siempre es posible dar buenas noticias genuinas, a veces la información es distorsionada con el fin de proporcionar una imagen más amable de la realidad.

Es aquí cuando un manager decide, por ejemplo, manipular las cuentas anuales y presentar una información más optimista que no refleja la imagen fiel de la realidad de la empresa.

Los resultados del primer capítulo "Manipulación del resultado, opinión del auditor y percepción del riesgo en el mercado" sugieren, por una parte, que el mercado incrementa su aversión al riesgo con respecto a las empresas que manipulan su resultado (o que hacen un mayor uso de la flexibilidad que brindan las normas contables para la elaboración de las cuentas anuales) y, por otra, que los auditores también detectan esta manipulación y la dan a conocer emitiendo un informe desfavorable de auditoría que, a su vez, corrobora y refuerza la reacción del mercado.

Las empresas también pueden afectar las percepciones del mercado a través de la internacionalización y las estrategias corporativas (adquisiciones). Sin embargo, los efectos benéficos de estas iniciativas sobre el riesgo sistemático ocurren bajo ciertas circunstancias.

De acuerdo con los resultados del segundo capítulo “Internacionalización y riesgo sistemático en tiempos de globalización y crisis financiera”, tanto la situación económica global, como la estabilidad relativa de los países de origen y destino de la inversión, son factores determinantes del éxito de esta estrategia para reducir el riesgo sistemático.

Así, por ejemplo, en tiempos de prosperidad mundial las empresas del grupo de países menos estables pueden encontrar ventajas internacionalizándose hacia economías más estables y gozar, en consecuencia, de una percepción favorable por parte del mercado. Lo opuesto ocurre para las empresas del grupo de países más estables que, en el mejor de los casos, se dirigen a economías similares que no ofrecen ventajas relativas, pero siempre pueden ir hacia economías menos estables.

El mercado también valora positivamente el grado de diversificación geográfica de las empresas provenientes de países menos estables. Así, dentro de este grupo, las empresas que tienen más cobertura internacional (presencia en un mayor número de continentes) son percibidas por el mercado como menos arriesgadas.

Los resultados del tercer capítulo “Creación de valor a partir de las adquisiciones en tiempos de globalización y crisis financiera” confirman la importancia de la situación económica global y de la estabilidad relativa de los países de origen y destino de la inversión a la hora de determinar los efectos de esta estrategia corporativa sobre el riesgo sistemático.

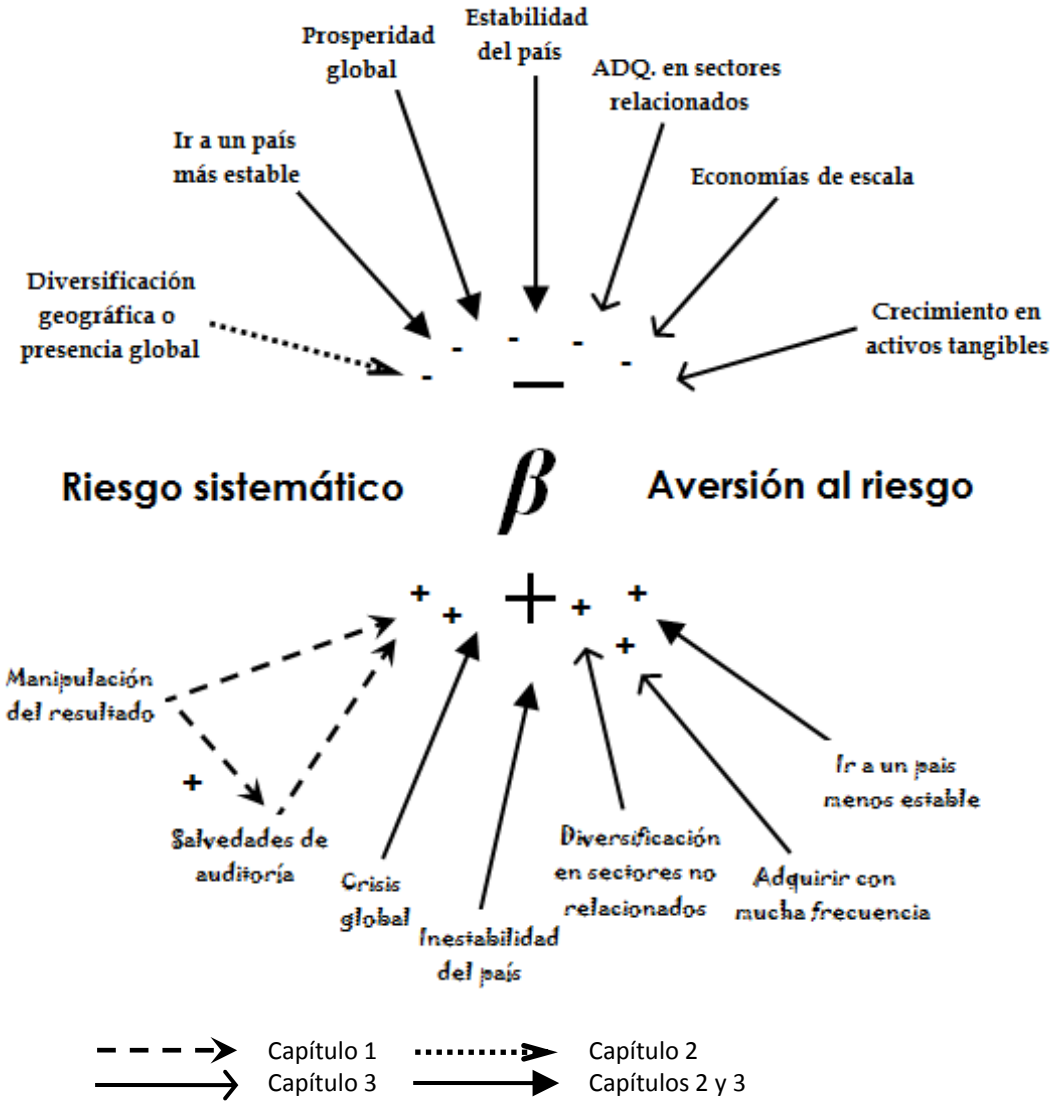
En tiempos de crisis, este riesgo puede ser disminuido gracias a las economías de escala que se logran tras adquirir empresas en sectores relacionados. De forma consecuente con los resultados del segundo capítulo, en tiempos de prosperidad las empresas de países menos estables que hacen adquisiciones internacionales tienen la oportunidad de disminuir su riesgo sistemático, dado que, en el peor de los casos, pueden adquirir en un país que está en condiciones similares, pero siempre pueden ir a uno más estable que brinde ventajas relativas.

Independientemente de la situación económica global o de la estabilidad relativa de los países, es posible mejorar la percepción del mercado cuando, luego de la

adquisición, la nueva empresa experimenta un crecimiento basado en activos tangibles.

En la siguiente figura presentamos un resumen gráfico de los resultados significativos de los tres capítulos de esta tesis. En ella se pueden encontrar los factores que, consistentemente, ayudan a mejorar la confianza del mercado o incrementan su aversión al riesgo.

**Figura 1. Factores que afectan el riesgo sistemático de la empresa… los que mejoran la confianza del mercado y los que incrementan la aversión al riesgo**



# SUMMARY AND CONCLUSIONS

The aim of this final section is to provide a summarizing conclusion which connects the three chapters of the thesis "Firm's management of systematic risk: one source and two strategies".

Maintaining market's trust and confidence is nowadays one of the most important missions for firms, moreover in our current complex and demanding context, characterized by the continuous and accelerated integration among economies, the freedom in the flow of information, products and capital, the increasing competition and the recent global financial crisis.

Consequently, firms are interested on sending good signals to the market in order to ensure its trust and loyalty. A firm well perceived by its clients can reduce its financial costs, also guarantee certain market share and move through less uncertain environments. Nevertheless, as it is not always possible to give genuine good news, sometimes information is distorted in order to provide a friendlier picture of reality. Here is when a manager can decide, for example, to manipulate the annual accounts in order to disclose a more optimistic result, which does not reflect the real situation of the firm.

The results from our first chapter "Earnings manipulation, auditor's opinion and market risk perception" suggest, on the one hand, that the market increases its risk aversion regarding the firms that manipulate their results (or the firms that use the more the flexibility provided by accounting standards) and, on the other hand, that auditors also detect this manipulation and disclose it in their qualified reports which, in turn, corroborate and reinforce the previous market reaction.

Firms can also affect market perceptions when internationalizing and/or developing corporate strategies (acquisitions). Notwithstanding, the beneficial effects of these undertakings on systematic risk occur under particular circumstances.

Following the results from the second chapter "Internationalization and systematic risk in times of globalization and financial crisis", the global economic scenario and the relative stability of origin and destination countries are factors which determine internationalization's systematic risk reduction ability.

Thus, for example, in times of global prosperity the firms from the group of less stable countries can obtain advantages from internationalizing to more stable economies, benefiting from a market favorable perception. The opposite occurs for the firms of the group of more stable countries which, in the best of cases, go to similar scenarios that do not offer relative advantages, but always can go to the less stable ones.

Market also positively values the geographical coverage (or the extent of geographical diversification) of the firms from less stable countries. The firms within this group that have presence in more continents are perceived by the market as less risky.

The results from the third chapter "Acquisitions and shareholder value in times of globalization and financial crisis" reinforce the relevance of the global economic context and the relative stability of origin and destination investment countries when determining the effects of these corporate undertakings on systematic risk.

During crisis times this risk can be diminished due to the scale economies achieved when acquiring in a related fashion. Consistently with the second chapter results, during the period of prosperity firms from less stable countries performing cross border acquisitions have the opportunity to lessen their systematic risk given that, in the worst of cases, they can acquire within a country in similar conditions, but always can go to a more stable one which provides relative advantages.

Regardless the global economic situation and the relative stability of countries, it is possible to improve market risk perception for a firm that after an acquisition experiences a growth based on tangible assets.

The following figure depicts a graphical summary of the significant results from the three chapters of this thesis. There are shown the factors that consistently help to improve market confidence or increase its risk aversion.

**Figure 1. Factors affecting the systematic risk of a firm… improving market confidence or increasing its risk aversion**