

UNIVERSIA BusinessReview

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La persona adecuada en el momento adecuado: Los miembros del comité de auditoría y la calidad de la información financiera

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Second Quarter

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A question of degree? Why some of the best companies to work for in Spain are better than others
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SUMARIO / SUMMARY N° 58



The right person at the right time: Audit committee members and the quality of financial information

18-35

La persona adecuada en el momento adecuado: Los miembros del comité de auditoría y la calidad de la información financiera

César Zarza Herranz, Félix J. López Iturriaga & Nuria Reguera-Alvarado



Job satisfaction. The case of information technology (IT) professionals in Spain

36-51

Satisfacción laboral. El caso de los empleados del sector de las tecnologías de la información en España

Montserrat Crespi-Vallbona & Oscar Mascarilla-Miró



A question of degree? Why some of the best companies to work for in Spain are better than others

52-91

¿Cuestión de grado? Por qué algunas de las mejores empresas para trabajar en España son mejores que otras

Francisco-Jesús Ferreiro-Seoane & Celestino García-Arias



International diversification and global credit risk: a methodology for portfolio building

92-136

Diversificación internacional y riesgo de crédito global: una metodología para construir carteras

Karin Martín-Bujack, M. Teresa Corzo & Isabel Figuerola-Ferretti

CARTA DEL DIRECTOR NÚMERO 58 UNIVERSIA BUSINESS REVIEW

A través de esta carta queremos informarles que este número de Universia Business Review es el último que edita Universia. Pero esto no significa, ni mucho menos, que la revista deje de publicarse. A partir del siguiente número la Universidad Camilo José Cela se hará cargo de la edición de la revista. Sabemos que afronta este nuevo reto con mucha ilusión y que hará todo lo posible para mejorar y posicionar la revista en el lugar que se merece.

Queremos agradecer la oportunidad que Universia brindó a la comunidad académica con la creación de Universia Business Review. Desde que se publicó el primer número, en febrero del año 2004, se han editado 58 números y un especial (150 aniversario del Banco Santander) cumpliendo fielmente la periodicidad y garantizando los principios de calidad editorial internacionalmente reconocidos. Logrando que UBR se convirtiera en la primera publicación española de dirección de empresas en ser indexada en los principales repositorios y bases de datos internacionales (Web of Science y Scopus) y en un referente para la comunidad académica española y latinoamericana. Desde el 2009 UBR tiene el sello de revista excelente otorgado por la Fundación Española para la Ciencia y la Tecnología (FECYT) como revista científica de calidad contrastada.

Desde que Universia comunicó al Comité Dirección que entre sus nuevas líneas estratégicas no estaba la edición de las revistas, hemos tratado de manera conjunta la forma de al menos continuar con el legado ya reconocido. Pero sobre todo, que una nueva empresa editorial garantizase que la revista no sólo continúe editándose con el nivel de calidad y exigencia requerido, si no que garantice el futuro de la misma. Desde hace unos meses Universia y la Universidad Camilo José Cela vienen trabajando estrechamente para garantizar que el traspaso se realice de la forma más amigable y causando el menor trastorno posible al día a día. Este traspaso no hubiera sido posible sin el buen hacer del Director General de la Fundación Universia, el Rector de la UCJC, así como el Director de Marketing Digital, Canales y Contenidos de Universia y al Vicerrector de Innovación de la UCJC.

Por esta razón, queremos transmitir un mensaje de tranquilidad y continuidad, seguimos recibiendo, revisando y aceptando artículos como hemos venido haciéndolo hasta ahora. Durante un periodo de tiempo el Comité de Dirección actual continuará funcionando para facilitar la integración de la nueva empresa editora hasta que se nombre un nuevo Comité. Aunque cambie la empresa editora, la revista continuará indexada en los principales repositorios y bases de datos internacionales en los que actualmente se encuentra. Todos los artículos serán traspasados y como hemos comentado no se producirá ningún parón en nuestro trabajo editorial.

En el primer artículo los profesores César Zarza Herranz, Félix J. López Iturriaga, de la Universidad de Valladolid, y Nuria Reguera-Alvarado (Universidad de Sevilla) analizan la relación entre algunas características personales de los miembros del comité de auditoría de las empresas cotizadas españolas y la gestión del resultado. Para los autores, los resultados muestran una relación no lineal con la antigüedad en el consejo: mientras que

en los primeros estadios una mayor duración puede comprometer la independencia de los consejeros, llega un punto en el que la mayor antigüedad en el comité incrementa su experiencia. Formar parte de un número excesivo de consejos redundaría en una menor capacidad de los consejeros para detectar la gestión del resultado. Una formación académica más elevada y una experiencia profesional más diversa contribuyen a mejorar la calidad de la información financiera.

La insatisfacción de los trabajadores tiene un gran impacto en las organizaciones pudiendo tener un efecto directo sobre la rentabilidad y la calidad del bien o servicios suministrado. Las profesoras Montserrat Crespi-Vallbona y Oscar Mascarilla-Miró (Universitat de Barcelona) analizan diferentes variables que determinan el bienestar laboral. Basándonos en una encuesta con 4207 profesionales del sector de las tecnologías de la información, este artículo analiza la importancia del contenido del puesto de trabajo, el clima del equipo de trabajo, el liderazgo, el reconocimiento y compensación, las condiciones laborales físicas y las condiciones laborales personales en cuanto a aspectos clave de la satisfacción de los empleados. Los resultados concluyen que el contenido del puesto de trabajo es el primer aspecto que valoran los empleados en su rango de satisfacción. Las condiciones laborales físicas y el liderazgo son las variables menos significativas.

Múltiples rankings nacionales e internacionales seleccionan a un subconjunto de empresas de un país o del mundo como las mejores para trabajar. A pesar de esta homogeneización, las puntuaciones que obtienen en los índices en los que se basan los rankings no son iguales. Los profesores Francisco Ferreiro Seoane y Celestino García-Arias (Universidad de Santiago de Compostela) tratan de averiguar si las diferencias entre las puntuaciones obtenidas por las empresas consideradas como las mejores para trabajar en España se pueden explicar por medio de factores contextuales. Para los autores los resultados del análisis muestran que las puntuaciones de las empresas tienden a aumentar con su tamaño y con la cotización; difieren entre comunidades autónomas; y no se diferencian entre naciones/áreas económico-culturales de origen ni entre sectores de actividad.

Recientemente se ha señalado el riesgo de crédito como una causa del descenso en la capacidad de diversificación internacional; en el siguiente artículo las profesoras Karin Martín-Bujack, M. Teresa Corzo e Isabel Figuerola-Ferretti (Universidad Pontificia Comillas) ofrecen una metodología para formar una cartera de inversión en renta variable con exposición al riesgo de crédito global y con riesgo de mercado controlado. Siguiendo la metodología de descomposición factorial, las autoras reducen la muestra de las mayores empresas internacionales a una cartera con tan solo 11 acciones, representantes de diferentes factores de riesgo, que muestran una elevada diversificación en términos de riesgo sistemático y un binomio riesgo-rentabilidad equiparable a los principales índices de renta variable internacionales.

Les animo a leer todos los artículos. Esperamos seguir contando con la confianza de todos: Editores Asociados, miembros del Comité Científico, Consejo Editorial, evaluadores, autores-colaboradores, empresas y sobre todo de los lectores, tanto de la Universidad como del mundo empresarial. Damos la bienvenida a la Universidad Camilo José Cela como nueva empresa editora y afrontamos este nuevo reto con ilusión y dispuestos a mejorar el legado recibido.

José Ignacio López-Sánchez
Director de Universia Business Review

LETTER FROM THE EDITOR IN CHIEF NUMBER 58 UNIVERSIA BUSINESS REVIEW

Through this letter we would like to inform you that this issue of Universia Business Review will be the last one published by Universia. But this does not mean that the journal will cease to be published. From the next issue onwards, the University Camilo José Cela will be in charge of the journal's publication. We know you are looking forward to this new challenge and will do your best to improve and position the journal where it deserves to be.

We would like to thank Universia for the opportunity it provided to the academic community with the creation of Universia Business Review. Since the first issue was published in February 2004, 58 issues and one special issue (Banco Santander 150th anniversary) have been published, faithfully observing the frequency and guaranteeing the internationally recognised principles of editorial quality. UBR became the first Spanish business management publication to be indexed in the main international repositories and databases (Web of Science and Scopus) and be a reference for the Spanish and Latin American academic community. Since 2009, UBR has had the journal excellence seal awarded by the Spanish Foundation for Science and Technology (FECYT) as a scientific journal of proven quality. Since Universia informed the Management Committee that the publication of the journals did not feature among its new strategic direction, we have tried together to find a way to at least carry on with the long-established legacy. But above all, a new publishing company should ensure that the journal not only continues to be published to the required level of quality and standards, but that it also guarantees the journal's future. For a few months now, Universia and the University Camilo José Cela (UCJC) have been working closely together to ensure that the transfer is carried out in the friendliest manner, causing the least possible disruption to day-to-day operations. This transfer would not have been possible without the good work of the General Director of the Universia Foundation, the Rector of the UCJC, as well as the Director of Digital Marketing, Channels and Content of Universia and the UCJC's Vice Rector of Innovation.

For this reason, we want to convey a message of tranquillity and continuity and we will continue to receive, review and accept articles as we have been doing up to now. For a period of time the current Management Committee will continue to function to facilitate the integration of the new publishing company until a new Committee is appointed. Even if the publishing company changes, the journal will continue to be indexed in the main international repositories and databases where it is currently located. All the articles will be transferred and as we have mentioned, there will be no interruption to our editorial work.

In the first article, professors César Zarza Herranz, Félix J. López Iturriaga, from the University of Valladolid, and Nuria Reguera-Alvarado (University of Seville) analyse the relationship between some of the personal characteristics of the members of the audit committee of Spanish listed companies and results-based management. For the authors, the results show a non-linear relationship with seniority on the board: while in the early stages a longer duration can compromise the independence of the directors, there comes a point when seniority on the committee increases their experience. Being part of an overly high number of boards results in less ability of the directors to detect results-based manage-

ment. Higher educational qualifications and more diverse professional experience contribute to improving the quality of financial information.

The dissatisfaction of workers has a great impact on organisations and can have a direct effect on profitability and quality of the goods or services provided. Professors Montserrat Crespi-Vallbona and Oscar Mascarilla-Miró (University of Barcelona) analyse different variables that determine well-being at work. Based on a survey of 4207 IT professionals, this article examines the importance of job content, team climate, leadership, recognition and compensation, physical working conditions and personal working conditions as key aspects of employee satisfaction. The results conclude that the job description is the first aspect that employees value in their satisfaction rate. Physical working conditions and leadership are the least significant variables.

Multiple national and international rankings select a subset of companies in a country or the world as the best to work for. Despite this uniformity, the scores they obtain in the indexes on which the rankings are based are not the same. Professors Francisco Ferreiro Seoane and Celestino García-Arias (University of Santiago de Compostela) try to find out if the differences between the scores obtained by the companies considered the best to work for in Spain can be explained through contextual factors. For the authors, the results of the analysis show that the scores of the companies tend to increase with their size and with value; they differ between autonomous communities and they do not differentiate between nations/economic-cultural areas of origin nor between sectors of activity.

In the following article, Professors Karin Martín-Bujack, M. Teresa Corzo and Isabel Figuerola-Ferretti (Pontificia Comillas University) offer a methodology to form a portfolio of equity investments with exposure to global credit risk and controlled market risk. Following a methodology of factor breakdown, the authors reduce the sample of the largest international companies to a portfolio with only 11 shares, representing different risk factors, which show a high diversification in terms of systematic risk and a risk-return binomial that is comparable to the main international equity indices.

I encourage you to read all the articles. We hope to continue to have everyone's trust: Associate Editors, members of the Scientific Committee, Editorial Board, evaluators, author-collaborators, companies and above all the readers from both the University and the business world. We welcome the Camilo José Cela University as the new publishing company and we are looking forward to this new challenge and are ready to improve the inherited legacy.

José Ignacio López-Sánchez
Editor in Chief
Universia Business Review

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Los Editores de Área se nombran para un periodo de dos años

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MISIÓN DE UBR

Universia Business Review no es una publicación exclusiva del mundo académico en sentido estricto, sino que su misión principal **es trasladar a quienes tienen la responsabilidad de dirigir empresas y negocios las ideas y desarrollos más innovadores que el ámbito científico y académico sea capaz de generar.**

Por otro lado, *Universia Business Review* no renuncia a dar servicio a la comunidad universitaria y científica como la publicación de referencia, en la que los especialistas puedan efectuar un seguimiento sistemático de las aportaciones novedosas de los colegas de su misma especialidad. En particular, esta revista pretende ser un vehículo de unión y comunicación de las comunidades universitarias de habla latinoamericana dedicadas al estudio de la Empresa.

PROCEDIMIENTO EDITORIAL

Los originales recibidos y admitidos por el Comité de Dirección, serán enviados al Editor del área correspondiente para que analice si el trabajo debe continuar el proceso editorial y ser remitido a dos evaluadores anónimos (expertos ajenos a la entidad editora), de reconocido prestigio en el campo de estudio. Para desarrollar su labor se le envía el listado de evaluadores de los últimos años, pudiendo seleccionar e incluir aquellos nuevos revisores que el Editor de Área considere más acorde con el trabajo para su evaluación.

Una vez recibidas las dos evaluaciones el Editor de Área elevará al Comité de Dirección su propuesta de aceptar o rechazar el artículo para su publicación en UBR. Se pretende que, mediante la implantación de sucesivos "filtros" de calidad, el lector obtenga garantías de que la revista publica sólo aportaciones de nivel y de actualidad.

NORMAS PARA LOS ARTÍCULOS

UBR está abierta a la recepción para su publicación de originales preparados por miembros del mundo universitario, escuelas de negocios de todo el mundo, directivos y empresarios. Para que los trabajos puedan ser publicados los autores deberán atenerse a las siguientes normas:

- **Los artículos, que serán inéditos**, tendrán una extensión alrededor de 5.000 palabras, incluyendo notas a pie de página y bibliografía. **No deberá utilizarse un número excesivo de referencias bibliográficas.** Se considera que no deben superar las veinticinco.

- El artículo debe estar redactado de forma que facilite la lectura y comprensión de los contenidos a un público no académico. Se **debe evitar utilizar un lenguaje de corte excesivamente especializado**, en beneficio de una más fácil comprensión de las ideas expuestas y en la medida de lo posible, el abuso de términos muy académicos (metodología, hipótesis, etc.) y funciones matemáticas, aunque esto haya podido servir para que los evaluadores analicen el alcance de su investigación. Las **conclusiones no deben ser un resumen del trabajo**, sino una aplicación, una lección que se está trasladando a los responsables de las empresas para que estos la puedan considerar como un "buen consejo", y lo que es más importante, que lo puedan entender y aplicar.

Si es necesario, o el evaluador lo requiere, se puede adjuntar como un fichero complementario (o anexo) todos los datos, técnicas econométricas, etc..., que hayan podido utilizar los autores para alcanzar las conclusiones de su investigación.

Una vez dado el visto bueno al trabajo, dicho fichero (o anexo) no se incorporaría en el artículo editado. Los autores deben hacer un esfuerzo para adaptar su trabajo a nuestros lectores, a los empresarios y directivos, no sólo al mundo académico.

• Los autores deberán subir un **fichero adicional “Archivo complementario”** respondiendo a las siguientes preguntas:

1. ¿cuál es el mensaje o idea principal del artículo? ¿pueden aplicarla los empresarios y directivos?
2. ¿por qué cree que los directivos deben conocer su artículo? ¿para qué tipo de empresas serviría y para qué tipo no?
3. ¿qué investigación se ha llevado a cabo para argumentar su propuesta? ¿sobre qué trabajos (artículos, teorías, etc...) fundamenta su propuesta?
4. ¿cuál es su experiencia personal, académica y/o profesional que avale sus conocimientos sobre el tema?

• Cada artículo deberá ir precedido del título, de un pequeño resumen, en castellano e inglés, de unas ochenta palabras en cada caso y de cinco palabras clave en ambos idiomas. Además se incorporará la clasificación del trabajo conforme a los descriptores utilizados por el *Journal Economic Literature*.

• Los **artículos se publicarán en inglés y castellano**. Los autores pueden enviar el artículo en castellano, pero una vez finalizado el proceso editorial y antes de su aceptación definitiva, los autores se comprometen a enviar la versión íntegra en inglés para publicarse en los dos idiomas.

• **No deberá aparecer el nombre del autor/es en ninguna hoja**, con el fin de facilitar el proceso de evaluación, ya que los datos se incorporarán en el formulario digital.

• Los originales, que deberán incorporar el título del trabajo, estarán editados electrónicamente en formato requerido en la aplicación, y se **enviarán por vía electrónica mediante acceso a la siguiente dirección: ubr.universia.net**. Los autores deberán rellenar sus datos en la ficha electrónica.

• Las **referencias bibliográficas** se incluirán en el texto indicando el nombre del autor, fecha de publicación, letra y página. La letra, a continuación del año, sólo se utilizará en caso de que se citen obras de un autor pertenecientes a un mismo año. Se incluirán, al final del trabajo, las obras citadas en el texto según lo previsto en las normas **APA style guide**:

- o Takeuchi, H. (2013). “Knowledge-Based View of Strategy”. *Universia Business Review*, 40, 68-79.
o Guillén, M., García-Canal, E. (2012). “*Emerging markets rule*”. New York: McGraw-Hill.

• Una vez recibido el artículo, **UBR acusará recibo**, por correo electrónico, e iniciará el proceso de selección anteriormente mencionado. Finalizado el mismo se comunicará al autor de contacto la decisión sobre su aceptación o rechazo por parte del Comité de Dirección.

• La revista se reserva la **posibilidad de editar y corregir los artículos**, incluso de separar y recuadrar determinadas porciones del texto particularmente relevantes o llamativas, respetando siempre el espíritu del original.

• Los autores deberán estar en disposición de ceder a Universia Business Review los **derechos de publicación de los artículos**.

MISSION

As stated in our mission, *Universia Business Review (UBR)* is not a publication dedicated strictly and exclusively to the academic world; its primary mission is **to transmit the most innovative ideas and developments generated by the scientific and academic communities to business leaders.**

Nevertheless, UBR does not neglect to provide a service to the university and scientific community, as a publication of reference through which specialists can systematically follow the latest contributions made by colleagues in their field. In particular, the journal seeks to be a vehicle of communication and union among university communities that speak Latin American languages and are dedicated to the study of Business.

EDITORIAL PROCEDURE

The originals received and accepted by the Management Board will be sent to the Associate Editor for the relevant area who will determine whether the work should proceed through the editorial process and be forwarded to two anonymous evaluators (experts external to the publishing entity), renowned for their work in the field. The list of evaluators from the last few years is provided to support their work by enabling them to select and include new reviewers that the Associate Editor considers most appropriate for evaluation of the work.

Once the Associate Editor receives the two evaluations, they will submit a proposal to the Management Board to accept or reject the article for publication in UBR. It is intended that, through the implementation of successive quality "filters", the reader will be assured that the magazine only publishes contributions that are high quality and current.

STANDARDS FOR ARTICLES

UBR is open to receiving original documents for publication prepared by members of universities, business schools from around the world, and business owners and executives. To ensure that the work is suitable for publication authors must abide by the following rules:

- Check that **the articles, which must be unpublished**, are limited to around 5,000 words, including footnotes and bibliography. **There should not be an excessive number of bibliographical references**, which must not exceed twenty-five.

- Particular attention should be paid to the fact that the article must be worded in a way that enables the content to be read and understood by a non-academic audience. **The use of very specialised language should be avoided** in order to make the ideas presented more easily understood, as should the overuse of very academic terms (methodology, hypothesis, etc.) and mathematical functions as far as possible, even if that may have helped evaluators to analyse the scope of the research. **Conclusions should not be a summary of the work**, but an application: learning that is transferred to business leaders so that they will consider it "good advice" and, more importantly, something they can understand and apply.

If necessary or required by the evaluator, all of the data, econometric techniques, etc. that may have been used by the authors to reach the conclusions of their research may be attached as a supplementary file (or annex).

Once the work has been approved, the file (or annex) will not be incorporated as part of the edited article. The authors must make an effort to adapt their work to our readers –business owners and executives– not just the academic world.

- The authors must upload an **additional “Supplementary file”, responding to the following questions:**

1. What is the primary message or idea in your article? Can business owners and executives apply it?
2. Why do you think executives should see your article? Which kinds of companies would it be of use to, and which not?
3. What research have you undertaken in order to argue your proposal? What pieces of work (articles, theories, etc.) is your proposal based on?
4. What personal, academic and/or professional experience do you have to endorse your knowledge on the subject?

- Each article must be preceded by the title, a short summary in Spanish and English of approximately 80 words in each case, and five key words in both languages. It should also incorporate a classification of the work according to the descriptors used by the Journal of Economic Literature.

- **Articles will be published in English and Spanish.** Authors can send the article in Spanish, but once the editorial process is completed and before it is finally accepted, the authors must undertake to send the full version in English for publication in both languages.

- **The author's name should not appear on any page** in order to simplify the process of evaluation, since the data will be incorporated into the digital form.

- The originals, which must include the title of the work, will be published electronically in the format required by the application, and **will be sent electronically by accessing the following address: ubr.universia.net.** Authors must fill in their details in the electronic file.

- **Bibliographical references** will be included in the text, indicating the name of the author, date of publication, letter and page. The letter, over the course of the year, will only be used when citing the works of an author published in the same year. The works cited in the text will be included at the end of the work, as set out in the **APA Style Guide:**

- o Takeuchi, H. (2013). “Knowledge-based view of Strategy”. *Universia Business Review*, 40, 68-79.
- o Guillén, M., García-channel, E. (2012). “Emerging markets rule: Growth Strategies of the New Global Giants”. New York: McGraw-Hill.

- Once the article has been received, **UBR will acknowledge receipt** by email and begin the abovementioned selection process. Once completed, the decision on acceptance or rejection by the Management Board will be communicated to the author.

- The journal reserves the right **to edit and correct articles**, including separating and cropping certain portions of the text that are particularly relevant or striking, always respecting the spirit of the original.

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- Directorio, Catálogo e Índice **LATINDEX** (cumpliendo el 100% de los 33 criterios de calidad).
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- **RESH** (Revistas Españolas de Ciencias Sociales y Humanidades).
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- **IBSS** (International Bibliography of Social Sciences)
- **DIALNET**
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The right person at the right time: Audit committee members and the quality of financial information¹

La persona adecuada en el momento adecuado:
Los miembros del comité de auditoría y la calidad de la información financiera



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I. INTRODUCTION

Recent high profile corporate scandals such as *Parmalat*, *Société Générale*, *Lehman Brother* or *Bankia* have eroded the public trust in corporate financial information, and called for legal improvements in the audit process (Palazuelos Cobo, Herrero Crespo, & Montoya del Corte, 2017). The role of the audit committee is particularly debated as an enhancer of more reliable financial statements. Most of the new legal rules have in common two basic characteristics of the audit committee: the members' independence and professional competence. But, whereas the literature has provided abundant evidence on the positive effect of the audit committee independence, the qualification calls for further analyses (Monterrey & Sánchez, 2008; Tepalagul & Lin, 2015).

The European Union regulatory framework on statutory audit (mainly Recommendation 2005/162/EC and Directive 2014/56/EU) is an example of this new framework. The Directive 2014/56/EU of the European Parliament on statutory audits acknowledges that audit committees play a decisive role in contributing to high-quality statutory audits, and stresses the technical competence of the members as one of the most important requirements for the committee membership. The European Commission has not issued an explicit definition of audit committee member competence, but the legal framework mandates that directors on the audit committee



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EXECUTIVE SUMMARY

We analyze some personal characteristics of the members of the audit committee of the Spanish listed firms and the relation between these characteristics and earnings management. We find a non-linear relation with tenure, so that long tenures can initially compromise the directors' independence but, after a given threshold, longer tenures improve the expertise of the members. Serving in too many boards has a negative influence on the ability of directors to detect earnings management, and higher academic background and more diverse professional background improve the directors' abilities.

RESUMEN DEL ARTÍCULO

En el presente trabajo analizamos la relación entre algunas características personales de los miembros del comité de auditoría de las empresas cotizadas españolas y la gestión del resultado. Nuestros resultados muestran una relación no lineal con la antigüedad en el consejo: mientras que en los primeros estadios una mayor duración puede comprometer la independencia de los consejeros, llega un punto en el que la mayor antigüedad en el comité incrementa su experiencia. Formar parte de un número excesivo de consejos redundante en una menor capacidad de los consejeros para detectar la gestión del resultado. Una formación académica más elevada y una experiencia profesional más diversa contribuyen a mejorar la calidad de la información financiera.

should possess expertise, and their dedication to the committee must be sufficient to develop their functions. In turn, the qualification of audit committee members seems to be related to two traits: their dedication and expertise.

Regarding their dedication, the members of the audit committee are required to dedicate the time and attention necessary to fulfill their function. Recommendation 2005/162/CE states that members should limit the number of their other professional commitments, particularly directorships held in other companies, to assure the proper performance of their duties. This approach runs parallel to the concern of the European policy makers about the corporate governance framework (European Commission, 2011).

Indeed, following the issuance of the Green Paper on corporate governance, in April 2011 the European Commission launched a public consultation and one of the questions dealt with a possible measure at EU level limiting the number of mandates a non-executive director may hold. As a proof of this concern, the European financial sector has been the first to incorporate some measures on the limitation of mandates (European Banking Authority & European Securities and Markets Authority, 2017; European Central Bank, 2017).

As far as the expertise of the audit committee is concerned, both the EU laws and the Spanish national regulation have paid special attention to this issue. First, the Directive 2014/56/EU of the European Parliament attempts to reinforce the technical competence of audit committees by requiring that at least one member of the committee is competent in auditing and/or accounting. Similarly, EU Recommendation 2005/162/EC mandates that the members of the audit committee should, collectively, have a recent and relevant background and experience in finance and accounting for listed companies appropriate to the company's activities.

The final disposition of the Law 22/2015 of Auditing has transposed these mandates into the Spanish regulation. In the same vein, the 25th Recommendation of the Good Governance Code of Listed Companies (CNMV, 2015) and subsequently the Technical Guide on audit committees at public-interest entities (CNMV, 2017) demands that all members of the audit committee should be appointed with regard to their knowledge and experience in accounting or auditing.

In this paper we use public sources of information to analyze the

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qualification and competence of the audit committee members of the Spanish listed firms. Our sample consists of 102 non-financial firms (293 firm-year-observations and 1,228 director-year observations) listed in the *Mercado Continuo* of the Spanish Stock Exchange between 2009 and 2013. Our research has two complementary aims. First, we report a descriptive analysis about the evolution of the committees' qualification between 2009 and 2013 in Spain. We consider four dimensions of directors' personal characteristics: tenure, directorships, academic studies, and, professional profile. Second, we study the relevance of these features to improve the quality of financial information. Thus, we examine whether there is an association between earnings management and some specific characteristics of audit committee members.

The remainder of this study is structured as follows. Section 2 discusses the theoretical arguments and develops our research questions. Section 3 sets out the empirical design and introduces the data and the empirical method. Section 4 presents the results. Finally, Section 5 concludes by summarizing the most important implications and suggesting some implications for managers and future research.

KEY WORDS

Audit committee, auditing, corporate governance, earnings management, expertise.

PALABRAS CLAVE

Auditoría, comité de auditoría, gobierno corporativo, gestión del resultado, expertise.

2. FINANCIAL INFORMATION QUALITY AND AUDIT COMMITTEE MEMBERS' CHARACTERISTICS

To carry out their duties, the audit committee members are supposed to act independently and to have technical competence on accounting and auditing. Whereas directors' independence can be quite clearly defined, the competence or qualification on accounting issues is not easily measured. Following the above mentioned European new framework on statutory audit and the recent Spanish legal reforms to adopt this framework, we posit that the qualification of audit committee members depends on three characteristics: their experience, dedication and expertise.

2.1. Committee members experience and earnings management

Tenure within a firm enables directors to acquire a greater expertise, and develop important knowledge about the firm and its business environment. Effective monitoring is potentially an acquired skill, which suggests audit committees with long tenure can provide good moni-

toring. Furthermore, seniority makes the directors more independent and less susceptible to top management pressures. Thus, committee members with longer tenure are likely to be more able to perform their tasks, which include the review of financial statements³.

Nevertheless, audit is an activity especially sensitive to the tenure, and too long tenures could be detrimental for audit quality (Ruiz Barbadillo, Gómez Aguilar, & Carrera Pena, 2009a, 2009b). In fact, both the European law (Regulation EU 537/2014 art. 17) and the Spanish Law 22/2015 of Auditing (art. 40) have placed a time limit for the external audit firm. Similarly, directors serving on the audit committee for too long periods could lose some independence. Vafeas (2003) proves this management-friendliness hypothesis and suggests that extended board service time makes committee members too close to managers at the expense of shareholders. Extended tenure can also reduce intragroup communications and thus lower the quality of monitoring decisions (Ben-Amar, Francoeur, Hafsi, & Labelle, 2013). Furthermore, committee members with very long tenures could be influenced by their own beliefs and schemes; in turn, their knowledge could eventually become a less valuable resource in the monitoring process. Consequently, the independent directors' monitoring role is especially valuable when they have served long enough to learn about the firm but not too long to compromise their ability to monitor.

According to these theoretical arguments we raise the question about the relation between audit committee members' tenure and the quality of financial statements. Furthermore, we wonder our first research question: Can there be a non-linear relation between members' tenure and earnings management?

2.2. Dedication and earnings management

As previously stated, the number of directorships that a given director can hold is a matter of debate both from the policy-makers, the practitioners, and the academia point of view (Habbash, Sindezingue, & Salama, 2013). Nevertheless, the answers have focused on the members of the board, and we still lack of enough evidence for the audit committee. On the one hand, directors with multiple appointments may have richer experiences and connections, and provide access to more valuable resources (Sharma & Kuang, 2014). Moreover, an increase in the number of directorships enhances the reputation of directors. Nevertheless, the quality of directors with multiple appointments can be compromised when the number of their directorships is too high.



Serving on many boards can diminish the directors' dedication as it can limit directors' time, attention and preparation for board meetings, thus narrowing these directors' ability to monitor (Baccouche, Hadri-che, & Omri, 2013; Tanyi & Smith, 2015).

In line with previous arguments, we consider a non-linear relation between the qualification of audit committee members and multiple directorships. Consequently, in a first stage the reputation effect has a high influence but there is a threshold after which committee members can be over-committed, so that the dedication effect prevails at too high level of directorships. In this sense, we propose the following research question: Is there any relation between multiple directorships and financial information quality?

2.3. Expertise and financial information quality

The abilities of the members of the audit committee to perform their duties can be a determinant of the quality of the audit process and, in turn, of the quality of the financial information (Badolato, Donelson, & Ege, 2014; Lee & Fargher, 2017). In this sense, the directors' expertise and knowledge are two key issues (Sultana & Mitchell Van der Zahn, 2015).

Most of the definitions of a financial expert in the literature have in common the assumption that financial expertise can be gained through education or experience. Consequently, we focus on these two traits of the directors' professional career, and analyze whether the members of the audit committee with wider professional experience or higher academic education can improve the quality of the financial information (Wang, Su, Wang, & Chen, 2017). Some authors have underlined the convenience of combining several sources of expertise (Dhaliwal, Naiker, & Navissi, 2010; Kusnadi, Leong, Suwardy, & Wang, 2016). From this point of view, our research question would be: Is there any relationship between directors' professional or educational background and the quality of the financial information?



3. EMPIRICAL DESIGN

3.1. Sample

Our sample is made up of all the non-financial firms listed in the Spanish Stock Exchange (*Mercado Continuo*) between 2009 and 2013. Then, we identify the audit committee members of these companies

and we look for information about their personal characteristics such as tenure as director, number of other directorships, age, etc. We drop out the firms that do not report enough information about the audit committee, which reduces the sample to 357 firm-year observations. The information about directors was mainly hand-collected from the Report of Corporate Governance that each firm must post on the firm's website and submit to the Spanish Securities Exchange Commission (*Comisión Nacional del Mercado de Valores*). If necessary, this information was complemented by looking at other public sources such as *Bloomberg Business Week* and the official websites of other companies where these directors served. We complete the director-level information with firm-level financial information from Thomson ONE database. At the end of this process our sample consists of 102 firms, 293 firm-year-observations and 1,228 director-year observations.

3.2. Method

The dependent variable of our study is the financial reporting quality. Since all of the proxies for earnings quality have at their core the reported accrual-based earnings number, it makes sense to focus on earnings management (Parte Esteban & Gonzalo Angulo, 2008; Parte Esteban & Gonzalo Angulo, 2009).

The literature has developed a number of accruals models with the aim of detecting the discretionary component of earnings management. To determine which model has the smallest margin of error, we calculate discretionary accruals based on four different models: the Jones model, the Jones modified model, the Jones model adjusted to ROA, and the cash-flow model. The choice of the most suitable model is based on the tests of specification and power of each model. These tests inform about the ability of each model to avoid the so-called type I and type II errors. The specification test refers to the type I error, i.e., to consider as discretionary accruals some accruals which are not actually discretionary. On the contrary, the power test has to do with the ability of the models to avoid type II errors, namely not to detect some abnormal accruals⁴. According to these results, the Jones model adjusted to ROA performs better than the Jones model, and this latter better than the other models.

Accordingly, we based on the Jones model adjusted to ROA to calculate the variable DACC, which is the discretionary accruals. The abnormal or discretionary accruals have been calculated by estimating



cross-section regressions by year and sector, requiring at least six observations by year and industry⁵.

3.3. Variables

To answer the research questions we consider three sets of directors' characteristics: experience, dedication and expertise. Regarding the experience, directors' tenure (TENURE) is calculated as the average number of years that members spend on a particular audit committee. To operationalize the dedication, in line with other studies, we consider busy members those who hold three or more board appointments. Thus, multiple directorships (BUSY) is calculated as the average number of busy members (Andres, van den Bongard, & Lehmann, 2013). As far as the expertise is concerned, we define four variables: first, the educational level of committee members (STUDIES) is measured as the proportion of members with postgraduate (either master or PhD) studies. Second, we compute the proportion of members with studies abroad (ABROAD). Third, after analyzing the professional experience of each director, we define four main profiles: politics, economics/business, public administration, and university. Then, we define a dummy variable (PROFILE) which equals one when a director has simultaneously more than one category, and zero otherwise. This variable is a qualitative metric of the professional background, and complements the quantitative approach of the years of experience (TENURE). Finally, we also consider the proportion of foreign members (FOREIGN).

We introduce a set of variables due to their potential influence on financial reporting quality. First, two committee-related variables are included: audit committee size and audit committee independence. Audit committee size (ACSIZE) is measured by the total number of members on the committee. Audit committee independence (INDEP) is measured as the proportion of independent directors on the committee. In addition, two financial variables were added: firm size and leverage. Firm size (ASSET) is calculated as the log of total assets; and leverage (LEV) is measured by the ratio of total debt to total equity. Finally, we also use year and industry dummies to control both for time and industry effects.



4. RESULTS

4.1. Descriptive analysis

Table 1 displays the definition of the variables and some descriptive statistics for the main variables. On average, the directors' tenure in a given committee is close to seven years (6.84) and the average proportion of busy members is around 33%. It means that one out of three members of the audit committees sits, on average, at two additional boards. The average of members with postgraduate education (master or PhD) is 44%, and the mean of committee members with more the one profile is 11%.

26

Table 1. Definition and descriptive statistics of the main variables

	DESCRIPTION OF THE VARIABLES	NO. OBS.	MEAN	STD. DEV.	MEDIAN
DACC	Discretionary accruals using the model of Jones adjusted to ROA	293	0.011	0.014	0.008
TENURE	Average number of years on the board	293	6.848	4.217	6.200
BUSY	Proportion of members with more than two outside directorships	293	0.332	0.279	0.333
STUDIES	Proportion of members with postgraduate studies	293	0.437	0.273	0.400
ABROAD	Proportion of directors with studies abroad	293	0.075	0.163	0.000
PROFILE	Proportion of members with more than one professional profile	293	0.111	0.097	0.123
FOREIGN	Proportion of foreign members	293	0.180	0.209	0.166
ACSIZE	Total number of members on the audit committee	293	3.734	1.039	3
INDEP	Proportion of independent members on the audit committee	293	0.959	0.106	1
ASSET	Logarithm of total sales	293	21.188	1.927	21.200
LEV	Ratio of total debt to total equity	293	3.228	3.249	2.143

Figure 1 displays the evolution of the members' characteristics between 2009 and 2013 in order to provide a view of the recent evolution. Whereas in 2009 the average tenure was 5.76 years, it has increased steadily until 7.76 year in 2013. Thus, the members of the audit committee have longer and longer experience within the board. Whether it can have a positive or a negative influence on earnings management is an empirical issue that we will address.

Figure 1. **Tenure**

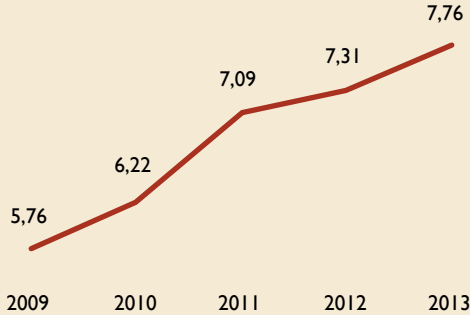
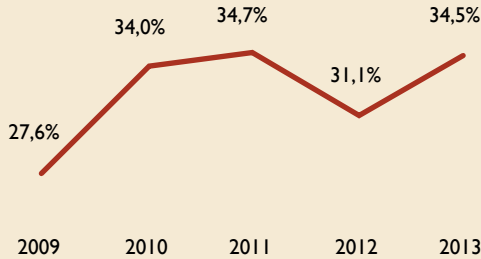


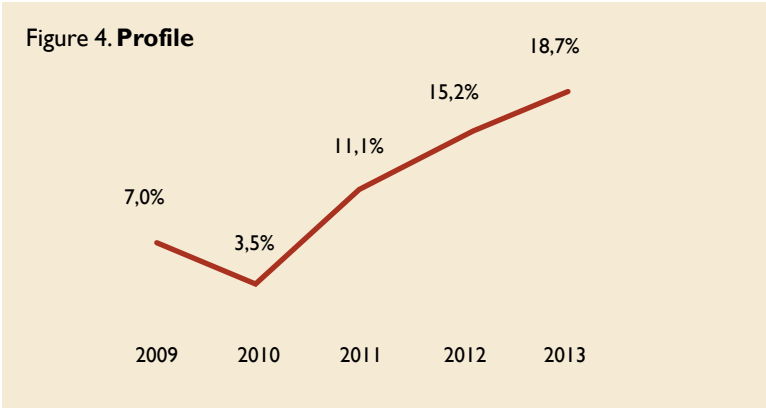
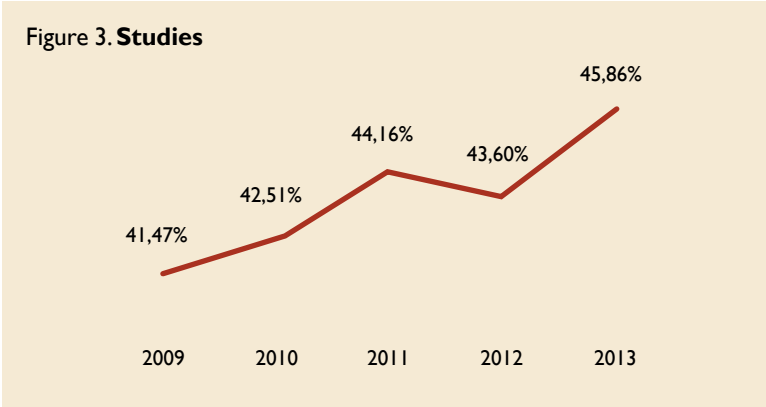
Figure 2. **% Busy**



The proportion of busy members (i.e., the ones with three or more directorships), displayed in **Figure 2**, has also followed an upwards trend. This trend can be partially explained by the recent prominence of the financial experts, so that directors with this expertise are more solicited whereas the availability of such directors is not unlimited. This result is coherent with Jaafar, Wan-Hussin, and Bamahros (2016), who find that financial experts in the audit committee have more directorships than non-experts.

Figure 3 reports the proportion of members with postgraduate education. According to this graph, the proportion of committee members with master or PhD degrees has increased significantly between 2009 and 2013. A similar evolution can be found in **Figure 4**, concerning the proportion of members with more than one professional profile.

In **figures 5 and 6** we report the proportion of foreign members and the proportion of Spanish members who have obtained an academic



degree abroad. It can be seen an upwards trend towards more internationalization of the audit committees.

Taken together, the picture that emerges from illustrations 1 to 6 is that the audit committees of the Spanish listed firms have become more qualified in the recent years. Their members are credited as more experienced, with longer tenure in the board, more diverse professional background, and have higher academic education. In addition, an unneglectable proportion of them serve in several boards and there is an increasing internationalization trend, both in terms of foreign members and of Spaniards who have obtained their degrees abroad. The extent to which these characteristics can influence the tasks of the committee, i.e., the quality of the financial information will be analyzed in the next paragraphs.

4.2. Explanatory analysis

In **Table 2** we report the panel data estimates of the regression between earnings management (DACC) and the characteristics of

Figure 5. **Foreign members**

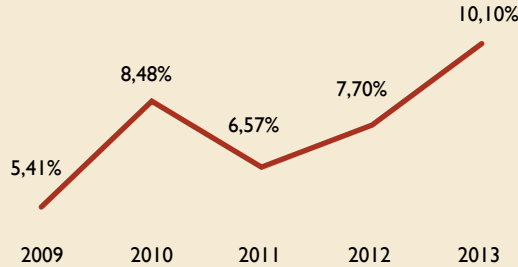
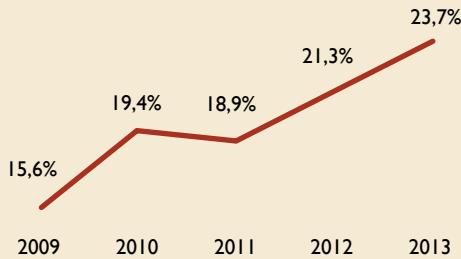


Figure 6.: **Studies abroad**



the members of audit committees. We run four different models, and a joint model including all the independent variables. Model 1 concerns the impact of committee members' tenure on earnings management. Our results suggest a curvilinear inverted U-shaped relationship, according to which, for low levels of members' tenure, discretionary accruals increase with tenure. On the contrary, after a given threshold, the relation turns into negative, so that longer-tenured members reduce earnings management. As such, these results confirm both the friendliness and the experience hypotheses suggested by Vafeas (2003). Initially, members of the audit committee may become close to the managers and, thus, less independent and worse supervisors. This happens until a given point, after which seniority and long experience prevail over the acquaintance. In model 2 we study the effect of multiple directorships, i.e., whether busy members in the audit committee affect the earnings management. It can be seen that busy members have a positive effect on the discretionary accruals. In other words, our results

suggest that committee members holding too many mandates can have a negative influence on the quality of firm financial information. Consequently, these results support the dedication approach and refute the reputation approach. It means that members of the audit committee must have enough time to prepare for the task in order to give the governance the attention it deserves. This result is in line with the Recommendation 25 of the Spanish Good Governance Code of Listed Companies and the paragraph 24 of the Technical Guide on Audit Committees. Although the code recognizes that it is very difficult to specify directors' dedication standards which can be recommended on a general basis, the firm should ensure that

Table 2. Regression of directors' expertise and financial reporting quality

VARIABLES	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
TENURE	0.0021*** (2.7524)				0.0017** (2.3970)
TENURE ²	-0.0001** (-2.4339)				-0.0001* (-1.8627)
BUSY		0.0036* (1.7149)			0.0035* (1.6583)
PROFILE			-0.0366* (-1.8347)		0.0055 (0.7724)
FOREIGN			-0.0075 (-1.0682)		0.0032 (0.4612)
STUDIES				-0.0098** (-2.2736)	-0.0074* (-1.7385)
ABROAD				0.0053 (1.0670)	0.0024 (0.4776)
ACSIZE	-0.0011 (-1.0579)	0.0010 (1.0464)	0.0006 (0.5677)	0.0001 (0.0982)	0.0005 (0.5203)
INDEP	-0.0005 (-0.0437)	-0.0175* (-1.6527)	-0.0095 (-0.7992)	-0.0028 (-0.2523)	-0.0102 (-0.9878)
LEVERAGE	0.0008** (2.5570)	0.0001 (0.1739)	0.0010*** (2.8563)	-0.0000 (-0.0238)	-0.0000 (-0.0985)
ASSET	-0.0008 (-0.9828)	-0.0003 (-0.3172)	-0.0004 (-0.3233)	-0.0004 (-0.4722)	-0.0005 (-0.6303)
Sector dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
No. observations	258	272	241	262	260
Adj.-R ²	0.042	0.047	0.021	0.028	0.081

Estimated coefficients and (t-statistics). The dependent variable is the discretionary accruals (DACC) from the Jones model adjusted to ROA. * p<0.10, ** p<0.05, *** p<0.01

non-executive directors have sufficient time available to discharge their responsibilities effectively. In turn, the boards of directors are required to lay down the maximum number of company boards on which directors can serve.

In Model 3 we study the influence of the professional background. More specifically, we analyze whether having more than one professional profile (politics, economics/business, public administration, or university) or being a foreigner can be helpful skills in the audit committee. Although the foreign citizenship is not relevant, the coefficient of the PROFILE variable is statistically significant and negative, which means that members with a diversified professional experience can improve the quality of the financial information. This result is coherent with the Recommendation 14 of the above cited Spanish Good Governance Code of Listed Companies and paragraph 14 of the Technical Guide on Audit Committees, which mandate that the director selection policy should favor the diversity of knowledge and experience. The result is also consistent with Dhaliwal et al. (2010) and Kusnadi et al. (2016) who show the importance of board members having mixed expertise in several areas.

Finally, we test the effect of the members' academic background (STUDIES and ABROAD) in Model 4. Although ABROAD is not significant, we find a negative effect of the level of studies on earnings management, so that directors with higher educational level (either master or PhD degrees) in the audit committee have a significant influence in decreasing discretionary accruals. Consequently, the educational level of directors seems to be a relevant means to gain supervisory skills and to improve their role in the boardroom.

As far as the control variables are concerned, the most significant result is the positive relation between financial leverage and earnings management. This result corroborates previous research and can be due to the relevance of financial information in the debt contracts covenants. In Model 5 we check the joint effect of all the variables. Results are coherent with the above explained ones.

As a robustness test, in **Table 3** we report the results of similar analyses when abnormal accruals are calculated using the Jones model. Broadly speaking the results are in the same line than those previously explained.



Table 3. Regression of directors' expertise and financial reporting quality

VARIABLES	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
TENURE	0.0020** (2.0115)				0.0018** (2.1310)
TENURE ²	-0.0001* (-1.7935)				-0.0001* (-1.9178)
BUSY		0.0065* (1.9042)			0.0056** (2.1964)
PROFILE			0.0171* (1.6880)		0.0048 (0.5442)
FOREIGN			0.0070 (0.9313)		-0.0031 (-0.3677)
STUDIES				-0.0054* (-1.7199)	-0.0081* (-1.6936)
ABROAD				0.0097* (2.4953)	-0.0035 (0.5750)
ACSIZE	0.0013 (1.0127)	0.0019* (1.7435)	0.0026** (2.2058)	0.0010 (1.1356)	-0.0002 (-0.1447)
INDEP	-0.0082 (-0.6510)	-0.0052 (-0.5636)	-0.0119 (-1.1956)	0.0023 (0.2896)	-0.0129 (-1.0200)
LEVERAGE	0.0000 (0.2411)	0.0000 (0.2311)	0.0000 (0.1138)	0.0000 (0.5569)	0.0000 (0.7674)
ASSET	-0.0005 (-0.6397)	0.0004 (0.8689)	0.0002 (0.3040)	-0.0004 (-0.8146)	-0.0007 (-0.7270)
Sector dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
No. observations	300	266	254	253	255
Adj.-R ²	0.062	0.062	0.079	0.112	0.057

Estimated coefficients and (t-statistics). The dependent variable is the discretionary accruals (DACC) from the Jones model.

5. CONCLUSIONS

The recent legal impulse of the audit committee both in Spain and at the European Union level highlights the prominence that the members of this committee have for business and economic stability. Whereas the effect of the independence of the audit committee has been largely analyzed, the influence of the members' qualification is a still relatively unexplored topic. In this paper we analyze the members' experience measured by their tenure as director, their dedication measured by the number of other directorships held, and their professional and academic background measured by the professional profile and formal academic studies.

We manually collect the curriculum vitae of the audit committee members of 102 listed Spanish firms between 2009 and 2013, which means an analysis of 1,228 director-year observations. We find that some of these characteristics are significantly related to the earnings management. Our estimates suggest a non-linear relation with tenure, so that long tenures can initially compromise the directors' independence but, after a given threshold, longer tenures improve the expertise of the members of the committee. We also find that serving in too many boards has a negative influence on the ability of directors to detect earnings management. Finally, higher academic and more diverse professional background improve the directors' abilities, reinforcing the recommendation of the Spanish regulator in this sense.

Our research can be interesting for a number of incumbents. First, for firms and practitioners, we provide some clues on the optimal design of the audit committee in order to reduce earnings management. Our results underline the relevance of the audit committee and confirms that the professional and academic characteristics of its members can affect the quality of the firm's financial information. We show that firms must trade-off the advantages and disadvantages of long tenure in the committee, so that an optimal policy would be combining new members with long tenured ones. This policy of diversity also applies to the professional background since we find that combining members with different professional profiles improves the performance of the committee. Another implication of our study is that counting on committee members with too many outside directorships can impact negatively on the quality of the financial statements.

For policy makers, our research joins the ongoing debate on the new regulatory framework of the corporate governance and the audit function. We show that the focus on the members' competence is a step in the right direction, but new measures could be taken. We also shed some light on the debate about harmonizing across industries the limitation of multiple directorships given the recent recommendation of the European authorities for banks. We also contribute to the academia and other researchers by proposing some metrics of the directors' expertise and extending our knowledge about the importance of committee members' personal qualification. Our study suggests some avenues for future research. It would be



interesting to check the validity of our results in other countries, especially the EU members that are under the same European legal framework. In addition, more specific components of the directors' expertise (for instance, accounting, audit, financial, or industry expertise) call for further attention. Finally, not all the directors play the same role within the committee (chairman, secretary, etc.). Forthcoming research could take into account these different roles.



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NOTES

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3. The Spanish Law of Auditing corroborates this learning curve for auditing and mandates that external audit contract should be longer than three years.
4. The results of the specification and power tests are not tabulated but are available from the authors upon request.
5. We use the first-level (six sectors) industrial classification of the Bolsa de Madrid.





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Job satisfaction. The case of information technology (IT) professionals in Spain

Satisfacción laboral. El caso de los empleados del sector de las tecnologías de la información en España



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I. INTRODUCTION

Employee dissatisfaction has a lot of impact on organizations: turnover, absenteeism, job stress, sick leave, humiliation, burnout, unproductiveness, and lack of commitment. Furthermore, the dissatisfaction of individuals has a direct effect on the profitability and quality of the product or service provided. The presence of unfair treatment among workers, the absence of training plans, the lack of recognition and incentives, the mismatch of tasks and functions among staff, different wages within the same employee categories, the disinterest in employees' health benefits, etc. yield labor environments without personal and organizational well-being. Therefore, there is no doubt that companies have to pay attention to employee satisfaction.

Employee satisfaction is determined by subjective perceptions related to the treatment received by the organization, for instance, policies of rewards, hiring and firing policies, performance and retribution. Satisfied employees are more likely to continue feeling motivated. Dissatisfied employees exert less effort, which results in declining performance and a general downward spiral to ineffectiveness (Clark and Oswald, 1996; Benjamin *et al.*, 2014). Therefore, any organization must identify the actual dimensions that affect employee satisfaction in order to manage successful and profitable businesses. Moreover, corporate values have to be



EXECUTIVE SUMMARY

Different variables are involved in job satisfaction. Based on a survey of 4207 IT professionals, this paper pays attention to the importance of job position, teamwork atmosphere, leadership, recognition and compensation, physical labor conditions and personal labor conditions as key aspects of employees' well-being. The results show that *job position content* is the first aspect that employees base their satisfaction rank on. *Physical labor conditions* and *leadership* are the least significant variables.

RESUMEN DEL ARTÍCULO

Diferentes variables determinan el bienestar laboral. Así, basándonos en una encuesta con 4207 profesionales del sector de las tecnologías de la información, este artículo analiza la importancia del contenido del puesto de trabajo, el clima del equipo de trabajo, el liderazgo, el reconocimiento y compensación, las condiciones laborales físicas y las condiciones laborales personales en cuanto a aspectos clave de la satisfacción de los empleados. Los resultados concluyen que el *contenido del puesto de trabajo* es el primer aspecto que valoran los empleados en su rango de satisfacción. Las condiciones *laborales físicas* y el *liderazgo* son las variables menos significativas.

Satisfied employees are more likely to continue feeling motivated. Dissatisfied employees exert less effort, which results in declining performance and a general downward spiral to ineffectiveness.

absolutely aligned with these job satisfaction dimensions. Unethical, unfair, uncivilized organizational behavior and values can yield significant consequences: job losses, health risks, psychological damage to individuals, and social injustice. Consequently, determining how corporate values have an effect on job satisfaction has practical significance to organization management.

By doing so, this study aims to identify the factors that influence job satisfaction in three ways. The first part of the paper is theoretical with regard to job satisfaction. In it, the paper identifies the most pertinent employee satisfaction variables as follows: job position content, teamwork atmosphere, leadership, recognition and compensation, physical labor conditions and personal labor conditions.

Then, the study identifies corporate values as a mediating mechanism between employees and job satisfaction. The last part of this paper focuses on the empirical analysis. The study employs statistical methods in order to address the questions. A wide survey (4207) of IT professionals in Spain is the illustrative case to analyze the factors that influence IT professionals' perception of job satisfaction and whether this general satisfaction is affected by corporate values. Finally, the conclusions provide a range of information to IT organizations related to their behavior and organizational structures that will allow them to seek out and boost employee satisfaction.

In short, the purpose of this study is to quantify and classify the job satisfaction level of IT workers in Spain, paying particular attention to the most important six dimensions of general job satisfaction. It is also relevant to check the role of corporate values as a moderator.

2. MOTIVATIONAL ASPECTS OF JOB SATISFACTION

Many scholars have theorized about job satisfaction or happiness at work, and in general it is defined as the positive affect towards employment, as a collection of feelings or positive responses associated with the job situation. These academics have also analyzed the consequences. Job satisfaction leads individuals to be more productive and innovative, to perform their job adequately and effectively, to be more committed, engaged, and enthusiastic, and to be more involved with the organization. Alexander *et al.*

(1998) state that the absence of job satisfaction entails employees' relinquishment of organizational goals. Therefore, job satisfaction should be the strategic concern and main objective in any enterprise. If organizations focus on their human capital as their added and competitive value, they necessarily have to protect the employees' well-being. Job satisfaction of employees extensively contributes to the achievement of the organizational objectives, and therefore, stimulates positive attitudes such as engagement, enthusiasm or organizational commitment (Shaufeli and Bakker, 2004). Not for nothing is job satisfaction a recurrent topic analyzed in work and organizational literature. Ultimately, Greenhaus *et al.* (2002), Arnett *et al.* (2002) or Illies *et al.* (2009) conclude that job satisfaction is an attitude that relates to overall attitudes towards life due to its effects on general health, happiness and work/life balance.

Locke (1976) stated that job satisfaction is a positive emotional state resulting from the appraisal of one's job or job experiences, that is, as a result of the job characteristics.

The discussion of job satisfaction has usually focused on the following issues: the type of work itself, working conditions, working atmosphere, leadership and supervision, as well as recognition, opportunities, career progression and compensation (Moorman, 1993; Nemani and Diala, 2011; Limbu *et al.*, 2014; Meneghel *et al.*, 2016). The level of job satisfaction increases or diminishes depending on the aforementioned variables. And job satisfaction is the basis for work engagement. As different theorists argue, thrill and enthusiasm are measured by engagement or organizational commitment (Salas-Vallina *et al.*, 2017; Hakanen *et al.*, 2008). Engagement involves enthusiasm, energy, activation, dedication, efficacy, pride, alertness, commitment (Macey and Schneider, 2008). This commitment has three components –affective, continuance and normative– (Meyer and Allen, 1997) and refers to personal involvement, identification with the organization and value congruence. Engagement also refers to the degree to which the job becomes an essential part in an individual's life, that is, a result of meaningfulness at work (Salas-Vallina *et al.*, 2017). These last theorists conclude that happiness at work or job satisfaction has a unique effect on individual's feelings, attitudes and responses about working conditions, opportunities and outcomes.

Therefore, there are two main approaches to measuring job satisfaction: an overall measure of job satisfaction and one

KEY WORDS

job satisfaction, corporate values, organizational behavior, employees' well-being, IT.

PALABRAS CLAVE

satisfacción laboral, valores corporativos, comportamiento organizativo, bienestar del empleado, tecnologías de la información.

regarding several aspects of job satisfaction. Some of the most popular measures regarding several facets are the Job Descriptive Index (Smith *et al.*, 1969), the Minnesota Satisfaction Questionnaire (Weiss *et al.*, 1967) -one of the most well known and used over the time-, the Job Satisfaction Survey (Spector, 1985). These multidimensional measures contribute to a better and deeper understanding of the significance of job satisfaction.

2.1. Job position

Research shows that from the worker's perspective, the level of job satisfaction increases when employees find their work more interesting and rewarding (Hakanen *et al.*, 2008; Qasim *et al.*, 2012). The nature and content related to a job position defines a specific kind of employee satisfaction and well-being. It consists of: a variety of required skills to carry out the work; task identification, that is, knowing exactly what to do in the job position; the meaning of the task, that is, its impact to others inside and outside the organization; the degree of autonomy or independence to organize and monitor one's work; the responsibility to achieve particular results; and the received feedback related to job performance, effectiveness and results. In that sense, a higher and significant job level involves more prestige, status, pride, and power (Nicholson and de Waal-Andrews, 2005).

2.2. Teamwork atmosphere

The quality of coworkers' relationships is a crucial aspect of employee satisfaction. There are different aspects that contribute to generating favorable teamwork: cohesion, attractiveness, coordination and interaction, frequent and open communication, and psychological safety. Cohesion is the tendency of a set of individuals to stay harmoniously joined to achieve the group goals. Attractiveness has to do with the satisfaction due to the sense of belonging, the support of the rest of the employees, the feeling of being part of something more important, greater. The level of work coordination and interaction also has effects on teamwork behavior. As Yang (2016, 4) insists "teams can maximize members' cooperation with colleagues, volunteering for tasks that go beyond their formal work requirements, and exhibiting helping behaviors toward others". Porath and Pearson (2010) describe the importance of psychological safety that is created by a team, which



guarantees engagement in interactions with other individuals, help and feedback. Thus, a positive teamwork atmosphere provides meaningful insights into organizational sustainability and well-being. Given that individuals are subject to their work environment, their perceptions and interpretations of certain events are likely to be influenced by the perceptions of others who work closely with them.

2.3. Leadership

The leadership behavior theories consider that leaders' patterns of behaviors influence the followers' actions and team functioning (Demmy *et al.*, 2002; Fisher, 2010; Breevart *et al.*, 2014). From a functional perspective, team leaders or supervisors have to manage personnel resources and their progression toward task accomplishment. Despite functional hierarchy in organizational structures, accessibility and disposition of leaders have to be easy, clear and direct. Furthermore, support of subordinates' needs, personal values, adaptation and versatility skills are the essence of positive leadership, as well as the harmonization of employees' personal wishes with organizational needs (Ciulla, 2004; Avolio and Bass, 2004; Stone *et al.*, 2004; Warr, 2007; Zhu *et al.*, 2009; Tims *et al.*, 2011). Transformational leadership is one of the most inspiring leadership styles (Burns, 1978; Bass, 1985) due to leaders and followers raising one another to higher levels of morality and motivation. It generates positive attitudes at work (George and Jones, 1997) and higher levels of employee engagement with organizational objectives, even beyond their own self-interests. Accordingly, transformational leaders promote participative management practices by allowing their subordinates to be involved in the decision-making processes. They encourage them to take on personally challenging, demanding tasks, to solve problems and to produce innovative ideas and solutions (Dulewicz and Higgs, 2005). They regularly remind subordinates of the purpose of their work and stir the emotions of the employees.

2.4. Recognition and compensation

Recognition refers to the training and promotion opportunities that the organization offers its staff. These opportunities are linked to the performance assessment of each employee. The organizations use training and development practices to improve the ability of the workforce to implement the firm's business strategy.



Improving the competence of the employees is one way to create competitive advantage, organizational cohesiveness and employee commitment. By offering training and development opportunities, employers help employees develop their own personal competitive advantage and ensure their long-term employability (Tannenbaum, 2002; Salas and Kozlowski, 2009). A common source of employee dissatisfaction is the lack of career advancement opportunities. When employees do not receive such opportunities, they are likely to not feel committed, loyal, enthusiastic to the organization, and they constantly think to leave. Training and development opportunities are a form of attractive recognition of talented workers. Competitive models often guide the design of career development activities. With an understanding of the competences that will be needed by future positions, companies can design the required development plans. Compensation has to do with the employees' perception of their rightful salaries and the rest of organizational incentives: if they are enough to satisfy their personal needs, satisfaction can be guaranteed. This compensation factor includes fair wages; the relation between the salary and the required skills, knowledge, abilities and professional competences; the link between the salary and the workplace outcomes; the level of internal fairness and equity among the employees' salaries and the level of external competitiveness (Clark and Oswald, 1996; Hamermesh, 2001; Card *et al.*, 2012).

Furthermore, recognition and compensation have to do with effective performance management. It can enhance and increase employee motivation and productivity, support achievement of the organization's strategic goals, and facilitate strategic planning and change.

2.5. Physical labor conditions

This variable refers to safety and well-being conditions in particular at the workplace and around the whole organization. It also refers to aesthetic conditions, that is, the level of cleanliness, internal order, light, furniture... It has also to do with the hygienic conditions, which means the perception of a healthy environment related to temperature, humidity, and noise... that in turn affects health, mental concentration and general labor activity. Finally, it has to do with the ergonomic conditions, that is, the level to which the work resources and their location fit the physical and psychological requirements



of the employees. These are working conditions that contribute positively to employees' satisfaction.

2.6. Personal labor conditions

Personal labor conditions refer to the work schedule and how it fits with the employees' necessities and expectations, as well as, whether there is a good balance between work and social, leisure and family time. Therefore, flexibility, comp days, leave of absence, maternity leave, paternity leave, the option of working from home or from a remote location, etc. are aspects to take into consideration, given their importance. Achieving a good work/life balance widely appeals to workers and determines their level of satisfaction.

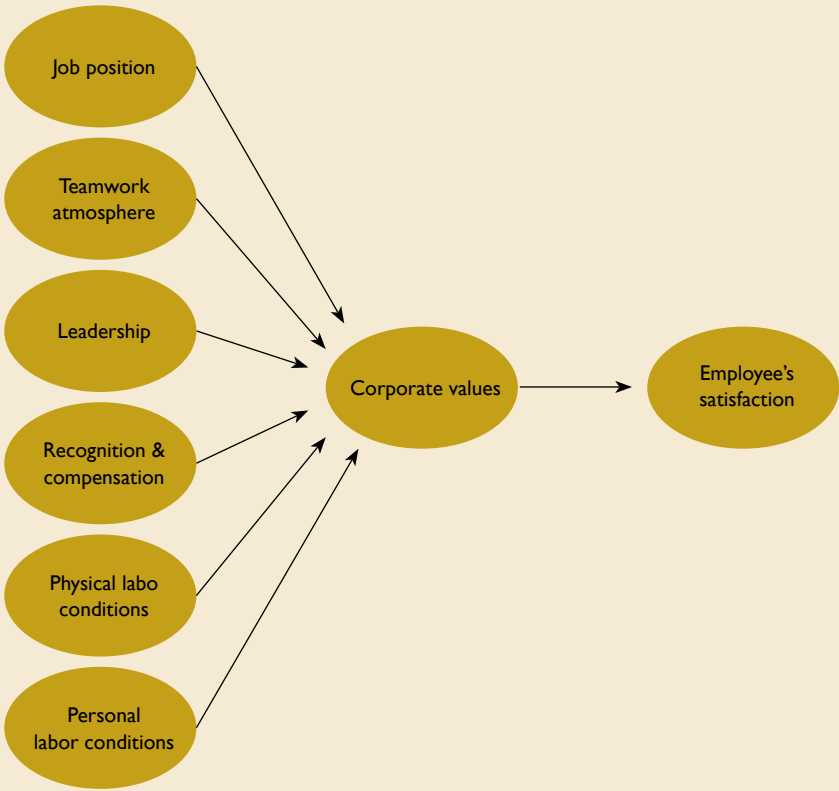
2.7. Corporate values

Eisenberger *et al* (1986) state the importance of the organizational values and their contribution to the care for employees' well being. Employees usually respond with support, engagement and commitment to the organizational tasks when the organization in turn shows them support, respect and recognition. The moral concepts and ethical behavior of leaders and managers have a wide effect on the moral concepts and ethical behavior of their subordinates (staff), and consequently on the organizational processes and results. Therefore, managers and leaders are key organizational figures to embody a caring attitude towards the rest of employees. The corporate values embody assumptions of goodness, integrity, honesty, civility and virtue. On the other hand, moral wrongdoing may undermine the morality of an organization and legitimize all kinds of (negative) behavior.

In accordance with all the questions formulated above, the proposed model is shown in **Figure 1**. This model contains 6 independent variables -job position, teamwork atmosphere, leadership, recognition and compensation, physical labor conditions and personal labor conditions-, corporate values as a moderator variable and satisfaction as the dependent variable. The model is designed to determine the statistically significant drivers of employees' satisfaction, but also to test the moderator role of corporate values between independent variables and satisfaction.



Figure 1. **Proposed model**



3. STATISTICAL-DESCRIPTIVE ANALYSIS

In order to be able to carry out an in-depth analysis of the employees' satisfaction, a survey was prepared. Data was collected in Spain with the cooperation of 10 different organizations, whose businesses include e-business, Internet technology, and telecommunications. All the companies have formal hierarchical organizational structures. The survey was done between November 2015 and March 2016. The aim of the research is to determine and classify the primary factors of IT professionals' satisfaction, and whether corporate values affect the strength of the motives towards satisfaction. For data collection, the survey was administered maintaining the confidentiality of the responses. 4557 employees answered

questions related to variables that lead to job satisfaction. However, the final sample includes 4207 respondents. The questionnaire is based on the 6 aforementioned dimensions. It consists of 38 items rated on a 5-point Likert scale (1 “almost always untrue”, 2 “often untrue”, 3 “sometimes true/sometimes untrue”, 4 “often true”, 5 “almost always true”). Prior to distribution, the questionnaire was preliminarily tested in order to formulate questions that would be clear and understandable to the respondents. Therefore, a preliminary survey was performed on a small group of 30 randomly selected respondents. By analyzing the suggestions obtained from the pilot sample, minor modifications were made to the initially formulated statements, shaping the final version of the questionnaire.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) (version 21.0) and the Analysis of a Moment Structures (AMOS-in) (version 18.0) in order to analyze the research model and to study the relationships between the aforementioned different variables and the weight that each of them places on the others. Moderated regression analysis was used to test the main and interaction effects. In addition, the independent variables were first centered and then multiplied by each other, in order to avoid a multicollinearity problem that may occur when calculating interaction effects.



4. JOB SATISFACTION IN THE IT PROFESSIONALS SECTOR

The structure of the sample consists of 4557 respondents. However, only 4207 questionnaires were well answered. 61% of respondents were male and 39% were female. With regard to the Mintzberg's organizational structures, 79.1% of respondents are operating core, 6.9% constitute middle lines and 14% belong to strategic apex (Table 1).

To determine the influence of the six dimensions (job position, teamwork atmosphere, leadership, recognition and compensation, physical labor conditions, personal labor conditions) on employee satisfaction, a multiple linear regression model was performed, adjusting by gender and hierarchical position. The weight and significance of any dimension positions on the employee satisfaction show the following order: the job position dimension is the best predictor of satisfaction; followed, at some distance, by teamwork atmosphere, recognition and compensation, personal labor conditions; and lastly physical labor conditions and

leadership. Furthermore, the variable corporate values did not show a moderating effect on the relation of the other variables to satisfaction.

According to the results of the study, there is a statistically significant relationship between all independent variables and employee satisfaction. Also, they show the rank of importance of all of them. Thus, the best employee satisfaction predictor is job position, that is IT employees consider that content, nature, meaning, goal significance linked to the organization's objectives, level of autonomy or the independence degree in the daily work are critical to achieving labor satisfaction. The second best predictor is teamwork atmosphere. That is, aspects such as cohesion, attractiveness, coordination, interaction with colleagues, and open communication are also decisive to guaranteeing employees' satisfaction.

Thus, job position and teamwork atmosphere are essential dimensions in technological firms' organizational structure. Their singular operational design explains these two dimensions since their way of working and expected results imply highly competent and professional human teams, with constant interaction among them to progress in technological innovation and creativity. Therefore, it is not surprising that autonomy, responsibility, significance and meaningfulness to the organization are very relevant aspects to IT employees, as well as the consolidation of a real environment of teamwork. The effort of the organizations must therefore focus on designing very attractive, autonomous and independent positions, constantly watching over the work team, so that the atmosphere of cooperation, friendship, collaboration, helping behavior, mutual understanding, and positive and fluent communication are not diminished.

Recognition and compensation are ranked at the third position in this classification of the most important dimensions for IT employee's satisfaction. Training and career plans offer opportunities to the employees' development and those are relevant variables to IT employees. Their recognition depends on their performance assessment, and compensation, salary and other kinds of remuneration.

At the fourth position, IT employees consider personal labor conditions as a relevant satisfaction variable. That is, the real chance to find a balance between the personal life and the professional one. It also means to feel and verify that their job position and their organization offer a flexible schedule and a workplace that is psychologically and emotionally healthy.

Finally, and with a real moderate importance, the physical labor



conditions and the leadership are situated at the fifth and sixth position respectively. Therefore, the required resources and equipment to do the job, the physical safety of the place to work, and the working environment (light, air circulation, furniture...) do not have strong relevance to IT employees' satisfaction. Furthermore, the leadership is the last variable taken into account for IT employees. In these technological companies the focus is on teamwork, interaction and collaboration with colleagues, so the leadership or direct supervision usually has to do with delegation, democratic participation, autonomy, etc. attending to the competences of the professionals involved. Their own commitment and implication with the organization goals lead them to higher levels of satisfaction and that means that other variables, such as leadership, are not essential.

Last but not least, the corporate values should be highly aligned with staff needs and expectations. However, it is verified that for IT professionals this does not have a direct significance due to the nature of the technological sector itself: very dynamic, open-minded, creative, even the recent creation of this kind of organizations.

5. CONCLUSIONS

This paper focuses on the understanding of job satisfaction dimensions as well as corporate values in the IT sector. According to the *Consejo General de Colegios Profesionales de Ingeniería Informática (CCII)*, General Council of Professional Associations of Information Engineering), the Spanish IT sector will need more than 100.000 professionals in 2020, and between 720.000 and 1.300.000 in the rest of Europe. In the present days, the IT sector represents the 1.23% of total Spanish industry and hires 1.35% of the working population (MINETUR, 2016). Therefore, the current and future importance of this sector and the labor health and satisfaction of their employees become the central aim of this research.

Using a multitude of theoretical literature and based on a survey in ten representative Spanish IT companies with 4207 respondents, we can conclude that among the different aspects, job position dimension and teamwork atmosphere are the two best predictive variables of employees' satisfaction. Related to the second goal of this paper, it highlights that corporate values have no significant effect on IT employees' satisfaction.

Therefore, IT organizations have to pay extra attention and make an effort to design significant, attractive and meaningful job positions, basically at operating core levels. This aspect guarantees the IT employees' happiness at work. They also have to maintain



good levels of teamwork among their professionals. A pleasant, communicative and collaborative work atmosphere implies a better teamwork climate and contributes to an organization's efficiency, creativity, innovation and results, as well as to the employees' well-being.

IT organizations have an implicit differentiation in their way of working, and this explains the relevance of a team atmosphere in their employees' satisfaction. It highlights the competence and background of each of their employees as well as the need of constant collaboration in order to innovate. The environments that favor creativity, innovation, and non-stop advance are those that generate pleasant workplaces so that the people who live with and participate in them feel good, feel respected, accepted, appreciated, and valuable. When the organization leadership empowers staff to create particular teams to join and work in, to voluntarily establish synergies among employees avoiding impositions, it generates a work atmosphere that facilitates the task and the achievement of the organization's goals.

On the other hand, leadership is one of the less significant satisfaction variables, due to the fact that in IT organizations supervisors have a mainly facilitative function. That is, their main function is the creation of a pleasant, communicative and collaborative team atmosphere, but the rest of the work depends on the employees' own talent and competence. Despite leaders or supervisors not actively taking part, their management appears unperceived but very effective. Therefore, employees do not notice this leadership as a driver of happiness. Nevertheless, this transformational leadership is a model of integrity and fairness, provides support and recognition, and gets people to look beyond their self-interests through a variety of inspiring and unperceived mechanisms, and basically creates a sense of identity and being part of the organization project. The main tool used is the cession of autonomy and responsibility in task achievement, that is, sharing power with subordinates and raising their level of autonomy and responsibility in the decision-making processes and the taking on of risks. In that sense, leaders inspire, stimulate, influence and take into consideration each and all of their employees in a totally participative way. They create confidence and pride in the organization, transmit optimism and meaning for tasks, involve the employees in the organization's goals without imposition, but in a natural way. Not for nothing, the weekly briefing yields not only information but also confidence, trust relationship, involvement, participation, team building.

In the central positions of this IT employees' satisfaction classification, we also see the importance of *recognition and compensation and*



personal labor conditions on a similar level. IT employees value the chance to receive professional and development training, to have a career plan, to be well and fairly paid, but also they appreciate the balance with their private and professional life. Transformational leaders take into account these aforementioned aspects, following the individual wishes and aspirations. Yearly motivational and performance-appraisal interviews are used to guide the professional and personal growth of employees. However, daily or weekly impression exchanges, expected goals and feedback do much more to increase job satisfaction.

Finally, corporate values do not have a moderator role regarding IT professionals' satisfaction, which is due to the young, dynamic, open nature of these companies. That is, this sector is not a traditional one, it is a recent economic sector, and therefore its corporate values have no tendency toward discrimination by race, gender, age, religion, etc. In this tech world, personal differences are not much taken into account. The most important issue is the expected outcomes, the answers which the organization demands.

In short, one of the key factors for companies is the satisfaction of their employees. In the case of the technological sector in Spain, organizations have to focus on the two dimensions that are most involved in employee satisfaction: job position and teamwork atmosphere. This will ensure their business success and the retention of the human talent. The employees' well-being generates positivism, enthusiasm, commitment, and loyalty to the organization and teamwork objectives. Pampering, caring, protecting, and retaining talent is the highest goal of any human resource team. Knowing the variables that affect employees' satisfaction allows company managers to design policies for the creation of job positions and teams that contribute to employees' well-being and satisfaction. Transformational leadership plays an important role in this, but in a subtle, unnoticed, unremarked manner. Hence the importance and contribution of this study in relation to the sector of Spanish technological companies.



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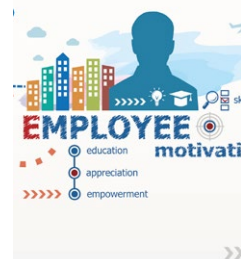
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NOTES

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A question of degree? Why some of the best companies to work for in Spain are better than others

¿Cuestión de grado? Por qué algunas de las
mejores empresas para trabajar en España son
mejores que otras



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I. INTRODUCTION

The condition of companies as great or best places to work for is increasingly gaining interest at the present time, specially when their survival depends on their ability to adapt to changes in five areas of the world of work: new behaviours, technology, *millennials*, mobility and globalization (Morgan, 2014). Jobs fluidity, the lack of long professional careers within a single company, the geographical mobility of workers or the shift of loyalties from companies to leaders, projects or teams, deprive traditional economic (such as salary) or professional status (such as promotions in the organizational hierarchy) incentives of sufficient power to make a company a great workplace.

Hence, two tendencies are accentuated in companies behaviour in the last two decades. On the one hand, firm *benchmarking*, taking as a reference of good human resources practices those carried out by the companies appearing in one or more of the rankings which select a number of companies as the best companies to work for. On the other hand, the use as a tool of employers *branding* (Joo and McLean, 2006) of the diffusion, by the companies themselves, of their position in some of such rankings with the aim to “signal” (Joyce, 2003) in order to attract and retain not only a greater volume of financial capital, but also talented human capital, viewed, more



BEST Companies to Work for

EXECUTIVE SUMMARY

Many national and international rankings select a subset of companies within a country or a set of worldwide international companies as the best to work for. Despite this homogenization, the scores they are assigned by these indexes and from which their positions in the rankings are established, are not equal. In this investigation, we try to establish whether the differences among the punctuations of the best companies to work for in Spain could be explained by certain contextual factors. An econometric model has been estimated in order to ascertain whether the nationality/economic-cultural area of origin, the autonomous community where the headquarters are based (for both factors, either through mechanisms of standardization or through local adjustment), the company size (either through structural flexibility or resources availability), stock exchange listing (through constraints forced on companies by both the property structure and the time-horizons derived from being listed), and the industry can all explain those differences. Results show that companies scores (1) tend to increase as a function of size and of stock exchange listing, (2) vary across autonomous communities, and (3) do not differ neither across nation/economic-cultural areas of incorporation nor across different sector of activity.

RESUMEN DEL ARTÍCULO

Múltiples rankings nacionales e internacionales seleccionan a un subconjunto de empresas de un país o del mundo como las mejores para trabajar. A pesar de esta homogeneización, las puntuaciones que obtienen en los índices en los que se basan los rankings no son iguales. En esta investigación, se trata de averiguar si las diferencias entre las puntuaciones obtenidas por las empresas consideradas como las mejores para trabajar en España se pueden explicar por medio de factores contextuales. Se ha estimado un modelo econométrico a fin de establecer si explican esas diferencias la nacionalidad/área económico-cultural de origen, la comunidad autónoma sede (en el caso de ambos factores, debido a mecanismos de estandarización o, por el contrario, de ajuste local), el tamaño de la empresa (debido a la flexibilidad estructural o, por el contrario, la disponibilidad de recursos), la cotización en bolsa (debido a las constricciones impuestas por la estructura de propiedad y los horizontes temporales derivados de la cotización bursátil) y el sector de actividad. Los resultados del análisis muestran que las puntuaciones de las empresas (1) tienden a aumentar con su tamaño y con la cotización, (2) difieren entre comunidades autónomas y (3) no se diferencian entre naciones/áreas económico-culturales de origen ni entre sectores de actividad.

and more, as the most valuable resource for any organization. Thus, the very own companies often proclaim as an achievement the title as *Employer-of-Choice*, whose credibility is enhanced by their presence in one of the rankings of best companies to work for made popular by the press (Lenaghan and Eisner, 2006, pp. 99 et seq.).

Among such rankings, usually yearly published and with diverse geographical scope, is the pioneering and well-known *Fortune 100 Best Companies to Work for*, made by *Fortune*³ magazine in collaboration with *Great Place to Work*⁴, organization that also elaborates rankings for European countries (Spain among them⁵) and certifies companies. Others are made by *Glassdoor*⁶

(*Best Places to Work*); *Marcaempleo (Merco Talento*⁷);

Universum^{8,9}; *Top Employers Institute*^{10,11}; or *Workforce*¹²

magazine (*The World's Top Companies for HR*)¹³. In Spain, the economics and finance magazine *Actualidad Económica* (hereinafter, AE) produces annually and publishes in the summer a ranking of the 100 best Spanish companies to work for. A simple Internet search¹⁴ revealed that *signalling* or *branding* are common practices for Spanish companies after appearing in this ranking.

These rankings, which classify companies according to their index scores on a phenomenon in which multidisciplinary interests converge (sociology of work, organizational behaviour, organizational psychology, human resource management, among other disciplines), do not only generate interest between the chosen companies, but also receive attention from the media¹⁵, from hundreds of web pages or blogs, or in academic literature. The websites of organizations and the blogs of professionals related to the world of work tend to adopt a prescriptive approach (also present in the piece by Schwartz (2011) for the *Harvard Business Review*) which is materialized in many lists with a variable number of more or less justified characteristics of a great place to work, or recommendations to create it¹⁶.

Despite the current paucity of academic literature (Joo and McLean, 2006), some empirical research is found on the association between the condition of a company as great workplace, based on its presence in the *Fortune* ranking, and its performance (Fulmer, Gerhart and Scott, 2003; Romero, 2004), customer satisfaction (Simon and DeVaro, 2006), resilience in times of financial crisis

**The objective
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other properties.**

(Carvalho and Areal, 2016), dividends obtained by shareholders (Filbeck and Preece, 2003) or representation of women on boards of directors (Bernardi, Bosco and Vassill, 2006); or on the human resource practices by which the companies on that list become the “best” (Hinkin and Tracey, 2010), or the lessons that can be learned from them (Joyce, 2003); and, finally, the relationships between employees’ attitudes towards job-quality (measured by *Fortune* scores as a proxy) and the market value of the companies (Ballou, Godwin and Shortridge, 2003) .

Beyond the works mentioned in the previous paragraph and possibly some others, as Joo and McLean (2006, pp. 25) lament, the researchers’ interest in this kind of indexes is not much. The aforementioned approaches to the subject are oriented either to the characterization of a good workplace, or towards finding out the effects of the condition of great place to work on other characteristics of the company. The present research, on the contrary, tries to explain the differences between the scores of the companies which are a great place to work, a condition measured by their presence in the *AE* ranking, thus adopting a perspective that has been little explored to date. In this way, this work aims to contribute both to increase the empirical knowledge on companies rankings of best-places-to-work for and to explore the potential theoretical fecundity of some explanatory factors. The objective of this research is essentially descriptive: to determine if the differences between the scores of the companies as best places to work for are associated to differences among them with respect to other properties. In order to measure the condition of best company to work for, the *AE* ranking has been chosen, the presence in which is spread by the companies themselves as a *signal* or a *branding* strategy. Two contextual attributes of companies have been selected (the nationality of origin and the autonomous community in which they base their Spanish headquarters), an internal contextual variable (the size of the company, measured by the number of employees), a variable of corporate governance (stock exchange listing) and the industry of the company. The data analysis shows that the stock market listing, the size of the company and the location of its headquarters in one or another autonomous community are statistically associated with their scores in the *AE* ranking. The results obtained are consistent with some of the hypotheses on the effect of one or another of the factors selected in our work and subjected to empirical contrast in

KEY WORDS

Companies, Human Resources, ranking, Panel Data.

PALABRAS CLAVE

Empresas, Recursos Humanos, ranking, Datos de panel.

previous contributions, but not with others, as it will be discussed in this article in the section dedicated to the review of such contributions.

The contents of the article are sequenced as follows. The next section briefly deals with the semantic differences between great workplace and closely related concepts, clarifying certain misunderstandings, as well as showing the usual procedures for measuring the concepts of best company to work for or great workplace. It is followed by a section focused on a bibliographic review of the research on the role of the five explanatory factors that will occupy us in this work. Next, the data used in the econometric analysis is presented: the composition of the sample is indicated and the ways in which both the dependent variable (best company to work for) and the independent variables (the five factors indicated in the previous paragraph) are measured. The analysis of the data is presented afterwards showing the results of the specification and the estimation of an econometric model for panel data, in order to try and detect the net effects of the independent variables. In the final section, the conclusions regarding the relevance of the results for the research objectives are argued and possible means of improvement are proposed.

2. CONSIDERATIONS ON THE CONCEPT AND MEASUREMENT OF THE CONDITION OF BEST COMPANY TO WORK FOR OR GREAT PLACE OF WORK

Tony Schwartz entitles an article published on the *Business Insider* website¹⁷ *Google Is Not The Best Place To Work If You Measure The Quality of Employees' Life*. This statement, shared with methodological scepticism by the signatories of this text, points to two relevant issues to circumscribe the results of the present investigation: firstly, *what* is measured and, secondly, *how* it is measured.

With regard to what is measured, there is no agreement neither between the organizations that make the rankings nor among the few researchers who have paid attention to the topic (Joo and McLean, 2006). The resulting conceptual ambiguity leads to the, at least partial, semantic overlap between multiple concepts that synthesize the worker-(place of) work/job relationship, for the treatment of which we refer to the pertinent literature: work quality,



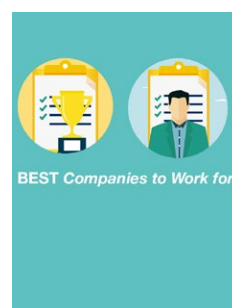
job satisfaction, work well-being, engagement (Little and Little, 2006, Gallie, 2007). The greatest risk, given this overlapping of meanings, is the slippage Schwartz warns about, namely: shifting -inadvertently or deliberately- from statements about certain characteristics that make a workplace one of the best, towards statements about their psychosocial consequences or other consequences (such as rotation, included in the *AE* ranking, or absenteeism) which, according to the meta-analysis by Fried and Ferris (1987), the empirical research shows that, in general, are mediated by psychological mechanisms.

With regards to how the condition of a large workplace is measured, the key question is: *in whose opinion?* The clearest answer is given by *The Great Place to Work Trust Index*: “the most essential measure of whether a company is a great workplace is if employees say it is”. The strictest consistency with this directive seems to be maintained by *Glasdoor*, whose ranking is based exclusively on the responses from employees who choose to anonymously submit an evaluation of their company to *Glasdoor*. Other rankings differ in varying degrees from that guideline, combining the assessments made by employees with those made by managers (*Fortune and Great Place to Work*) or with those made by other relevant publics (*Merco Talento, Workforce*) or waiving them completely (*Universum*) to rely exclusively on the assessment by HR managers (*HR Best Practices Survey of Top Employers*).

Against this background of conceptual ambiguity and heterogeneity of measuring operations, we will consider the conceptualization and measurement practiced by *AE* in the data collection section.

3. HOW IS THE DIFFERENCE OF SCORES IN THE RANKINGS EXPLAINED?

The scarce effort of theory construction on the rankings of the best companies to work for (Joo and McLean, 2006) encompasses the absence of specific theory on the association between the scores obtained by the companies in those rankings and the values of other factors such as organizational, economic or cultural factors (or of another nature). Hence, the limitation in this first approach to our object of research to offer a checklist of factors (selected from empirical research devoted to human resources management practices) whose potential importance to explain the differences





in scores of these companies will be justified in the review of a literature selected eclectically from disciplinary, theoretical and methodological points of view. As we have anticipated, five variables of different classes have been selected: (1) two contextual variables: the country of origin (nation or nationality) of the company and the Spanish autonomous community in which its headquarters is located; (2) a variable that is an attribute of the company: its size, measured by the number of workers; (3) a variable related to the corporate direction of the company: its listing or not on the stock exchange; and (4) the industry. Thereupon, we will explain the reasons for the inclusion of each of them provided by the review of the literature.

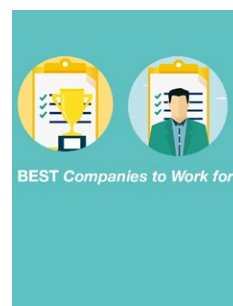
From a general point of view, the role of contextual factors (markets, political, institutional, social environment, culture) explaining the differences in human resources practices and management results between companies is emphasized in Fields, Chan and Akhtar (2002) and Jackson and Schuler (1995). More specifically, recent literature highlights the tension between two kinds of pressures that companies are subject to: universal standardization of practices and adjustment to the local context (Amossé et al., 2016, Gallie, 2007, Ibrahim and Shah, 2013; Quintanilla and Ferner, 2003). Often, both trends are part of institutionalist explanations that select mechanisms of two different kinds: with regard to standardization, they point to the processes of institutional isomorphism and, in terms of adjustment, they focus on the resistance to change derived from the processes of organizational institutionalization (Jackson and Schuler, 1995, Paawee and Boselie, 2007). Expanding in two directions the notion “local”, pressures of this nature can occur in two local contexts: either the one defined by the nation of origin of the company, or the one defined by the nation or subnational-level in which the economic activity is carried out (whether it be as a parent company with the nationality of that territory, or as a subsidiary of a parent company with another nationality of origin).

Nation of origin. A couple of decades ago, Ferner (1997) presented a list of the systematic differences in HR management in multinational companies -based on the country of origin- found in a series of empirical investigations subjected by him to a severe critical analysis from both theoretical and methodological perspectives. Liu (2004) documents the findings following the same approach of the most recent empirical research. Liu (2004, pp. 501 et seq.)

differentiates three possible strategies for a company with activity in a country other than the one of origin: adaptive (adjustment to local practices), exportive (transfer of practices from the nation of origin to another one) and integrative. Which of them prevails depends on (among other factors in which we are less interested in here) the cultural and institutional distance of the two countries. When opting for the exportive strategy, companies can operate using direct (company policy) and indirect (culture and expats, among others) transfer mechanisms (Liu, 2004, pp. 508 et seq.). We must expand the focus of attention and take note that a number of papers in the sociological and economic literature have identified certain configurations of factors and practices that group different sets of economic systems into “varieties of capitalism”, or into different production or employment regimes (such as coordinated market economies or liberal market economies) (Gallie, 2007). These configurations affect, in some form, HR management practices or their results. For this reason (and for other statistical reasons), our research will group countries into economic-cultural areas.

Autonomous community headquarters. The autonomous community represents a possible focus of local resistance both to global or universal standardization and to the transfer of practices from the home country of certain companies. The reviewed comparative research focuses on the nation and not on the subnational territory (whatever its level or denomination: province, region, federated state ...), in which the companies carry out their activity and finds certain differences in HR practices among several countries (Amossé et al., 2016, Conway et al., 2008, Fields, Chan and Akhtar, 2002, Paawee and Boselie, 2007). It is our purpose to find out if there are also signs of resistance to standardization at subnational level.

Size. Being potentially one of the influential factors in HR practices (Fields, Chan and Akhtar, 2002, pp. 265 et seq.), there seems to be no clear consensus as to the positive or negative sign of its effects. On the one hand, Kortekaas (2007) finds a significant positive impact of small / medium size on employee's behaviours (including commitment or job satisfaction) and a negative impact of the same size on an operational performance indicator (sick leave). Kok and Uhlaner (2001) find an association between the firm-size expansion and the formalization of human resources practices. Morgan (2014), who has synthesized arguments developed with greater theoretical



density by Kortekaas, suggests that small companies have several advantages: rapid decision-making, nimbleness of the company, out-of-the-box thinking and experimentation, flexibility in roles, functions and work-styles for employees, ease of performance-recognition and visibility of success, and also, better communication and collaboration. On the other hand, Ibrahim and Shah (2013, pp. 7, 14 et seq.) argue that small companies lack the resources needed to adopt *progressive* HR management practices, but, once the necessary economies of scale are achieved, large companies feel pressured to adopt such practices due to both their greater visibility and the pressures to obtain legitimacy, and find evidence in favour of that position.

Stock listing. Conway et al. (2008, pp. 638) freely admit that research on its effects has not provided clear conclusions. Two possibilities are theoretically admissible, on whose prevalence only empirical investigations can report: the *constraint hypothesis* and the *partnership hypothesis*. The first of the “hypotheses”, as synthesized by Perraudin, Petit and Rebérioux (2008), starts with the differences between listed companies and those which are not in both ownership and governance structures and in time horizons to assess results. Thus, listed companies, subject to pressure from shareholders, could opt for a defensive strategy, focused on short-term financial profitability, which would imply the reduction of the most controllable operating cost (labour) through low-quality HR practices: work flexibility, subcontracting, temporary hiring, staff cuts, salary reductions or disinvestment in training, among others. However, they could also opt for an offensive strategy based on quality HR practices (increased training, investment in motivation ...) aimed at medium-to-long-term profitability. The second hypothesis mentioned “predicts that shareholder pressure does not have to result in a zero-sum game: under certain conditions, managers can continue to make implicit contracts with workers in return for high performance and willingness to undertake firm-specific training”. The empirical results found by Conway et al. (2008) seem unfavourable to the constraint hypothesis: public listing is positively associated with teamwork and performance-related remuneration both in the United Kingdom and in France, and in the latter case, also with the worker’s autonomy and training.

Industry. Jackson and Schuler (1995, pp. 251 et seq.) include the characteristics of the industry in which the company operates among

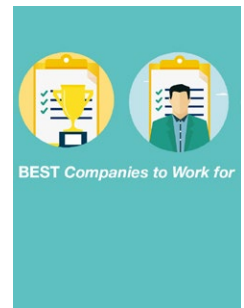


the influential contextual-factors in human resources practices. Conway et al. (2008) point out that factors specific to the industry, including the regulation of the quality of services and the protection of consumer interests in the case of utility companies, extend the time horizons facilitating, thus, the adoption of high-quality human resources practices.

This review of the literature suggests two relevant observations to interpret the results of our investigation. In the first place, empirical research does not yield completely clear results about the sign of the influence of each of the factors. Secondly, the mentioned factors have the condition of a kind of residual variables that can operate through diverse mechanisms often difficult to measure and whose influence could perhaps be calibrated through case studies.

Taking into account everything that has been written in this section, the following hypotheses will be tested:

- with regard to the nationality/economic-cultural areas and the autonomous community: the **hypothesis of isomorphism or universal standardization** (absence of differences between the scores of companies from different territories in each of the levels) and the opposing hypothesis of **local adjustment** (differences between the scores of companies from different territories in each of the levels);
- with regard to size, the **hypothesis of structural flexibility** (companies' scores tend to increase as their size decreases) and the opposing hypothesis of **resource availability** (companies' scores tend to increase as its size increases);
- with regard to the stock listing, the **constraint hypothesis** (listed companies obtain lower scores than those that do not) and the opposing **partnership hypothesis** (listed companies obtain higher scores than those that do are not listed);
- finally, the **hypothesis of the industry** (companies scores differ according to the industry in which they operate).



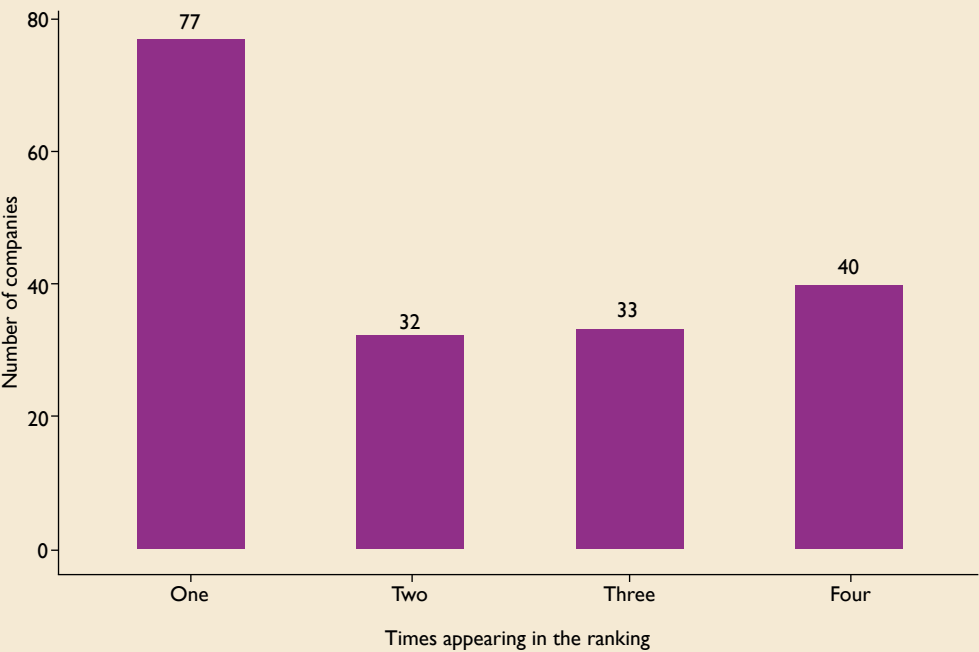
4. THE OBSERVED COMPANIES AND THE CHARACTERISTICS THAT EXPLAIN THEIR SCORES

4.1. Companies observed

The criterion for selecting the companies observed is their presence among the top 100 companies with the highest scores in the *AE*

annual ranking. Companies are observed in four different time points: 2013, 2014, 2015 and 2016. Although that implies that there are 400 observations in total (4 X 100), many companies are present in more than one of the four time points. Therefore, the total number of companies is 182. The ratio between number of observations and number of companies (2.2) is a clear indication of the tendency of certain companies to score frequently among the top 100. **Figure 1** shows that (given the fact that 40 companies repeat their presence in all four years) 40% of the companies included in the ranking one year are also present in the other three years and that 42.3% of the total number of companies are present in the ranking only in one occasion (21 only in 2013, 15 only in 2014, 14 only in 2015 and 27 only in 2016). A more detailed analysis, which we omit for reasons of space, shows that some companies that appear twice in the ranking do so in non-consecutive years, and that some of the ones appearing three times are not present in 2013, and some others are not present in 2016.

Figure 1. Number of appearances of companies in the AE ranking



4.2. Characteristics of the companies

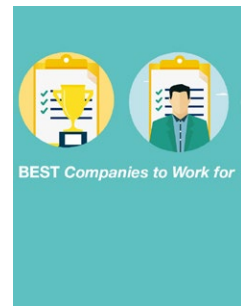
Best company to work for. According to the description of *AE* magazine, the score is the sum of the combination of the partial scores of six dimensions, each of which is, in turn, the result of the sum of several indicators consisting of the companies responses to a battery of questions. According to *AE*, a questionnaire revised by HR experts, with a hundred questions that add up to 1000 points, is sent to more than 500 companies that operate in Spain which have all been in operation for more than five years and have a work force superior to 100 employees. Around 200 companies reply to the questionnaire, which means a response rate of around 40%. Although the organizational role of the person responsible for replying¹⁸ is not specified, for the first five dimensions it seems to be someone with some type of responsibility that allows them to take their answers as an indication of the official position of the company. The sixth of the dimensions (employees) is based on the valuations of three different employee profiles; by reducing its weight to a 6% of the total score, the ranking of *AE* deviates dramatically from the guideline proposed by *Great Place to Work*.

The definitions of the dimensions and their weightings in the total score are the following:

1. *Talent management* (240 points): addresses professional career projection, work performance and unwanted turnover, among other issues.
2. *Remuneration and compensation* (225 points): evaluates the combination of fixed and variable pay, remuneration in kind and social benefits.
3. *Environment* (205 points): work hours, teleworking, conciliation and working conditions.
4. *CSR* (50 points): social policies and corporate volunteering policies in which the workforce is involved.
5. *Training* (220 points): assesses the investment in employee training (master's grant, courses abroad, etc.).
6. *Employees* (60 points): three different employee profiles value the company and tell their own experience.

The sources of data are each issue of the journal in which the rankings for 2013, 2014, 2015 and 2016 are published.

Nation of origin. The nation of origin of a company means the one in which a company has its main or central headquarters. Nations of origin have been grouped into four **economic-cultural areas**:





Anglo-Saxon nations (the United States and the United Kingdom), Central and Northern European nations (Germany, Denmark, Finland, Luxembourg, the Netherlands, Sweden and Switzerland), Mediterranean (France, Italy, Portugal and Spain) and other nations (China, South Korea and Japan). The sources of the data on the nation of origin are the companies' websites .

Autonomous community headquarters. The autonomous community headquarters of a company means the one in which a company's head office is located. The autonomous communities have been grouped into four regions: Community of Madrid, Northern Communities (Asturias, Cantabria, Basque Country and Galicia), Mediterranean communities (Balearic Islands, Valencia, Murcia and Catalonia) and other communities (Andalusia, Aragon, Castile-Leon and the Canary Islands). The sources of data on the autonomous community are the companies' websites.

Size. Size is measured by an indicator: the number of employees the company has in Spain. The sources of the data are the companies' websites.

Stock Exchange. Companies are classified as listed or not listed. The source of data is the information on listed entities provided by the National Stock Exchange Commission.

Industry. The companies are classified according to the categories of the National Catalogue of Economic Activities 1, that is to say, to the highest level of aggregation. The sources of data are the companies own websites.

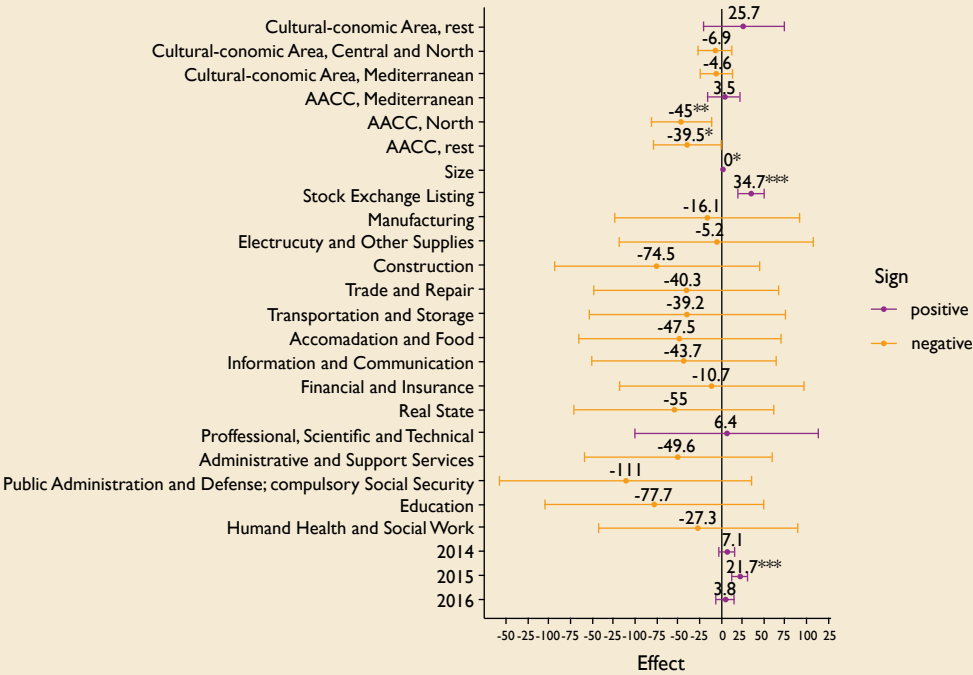
5. RESULTS OF THE INVESTIGATION

Considering the characteristics of our data¹⁹, an econometric model has been chosen to specify and estimate panel data, taking as the population of reference not the total of Spanish companies²⁰ but just the Spanish companies among the 100 best to work for. These would be a *superpopulation* from which the sets of companies included in the annual rankings are *samples*.

Figure 2 summarizes the results of the model²¹. The differences in the economic-cultural areas of origin have no statistically significant effects on the differences in punctuation between companies in Central and Northern Europe, those in the Mediterranean and others compared to the Anglo-Saxon ones (reference group with which to compare the other three). Neither do the differences in the industry

have statistically significant effects (being agriculture, livestock, forestry and fishing the reference groups used to compare the rest with).

Figure 2. Results of the random effects model analysis for panel data



The numbers are the values of the coefficients. The coefficients for the three economic-cultural areas, for the three regions of the Spanish autonomous communities, for the stock market listing and for the industry are interpreted as the average difference between these categories and the reference category, which are, respectively, the economic-cultural area of the Anglo-Saxon countries, the Community of Madrid, the non-listing on the stock exchange and the sector of agriculture, livestock, forestry, and fishing. The coefficient of the company size is interpreted as the increase in the ranking-score result of hiring of a new member of staff by the company.

The lines represent the confidence intervals around the values of the estimates. They have been calculated, for all the variables, at 0.1 level. The blue lines correspond to coefficients with a positive sign; the red lines correspond to negative coefficients. The lines crossing value 0 of the horizontal axis (highlighted with the vertical line) correspond to coefficients lacking statistical significance; those which do not cross value 0 correspond to coefficients with statistical significance. The greater the length of the line, and therefore the wider the confidence interval, the lower the precision of the estimate. The level of statistical significance is represented by the asterisks: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Autonomous community headquarters (at level 0.05), size (at level 0.1) and stock exchange (at level 0.01) have statistically significant effects. Companies based in the communities of the North and in the rest of the country have lower scores than the companies based in the Community of Madrid (reference group with which they are compared), but these seem not to differ from the scores obtained by the companies whose headquarters are in one of the autonomous communities of the Mediterranean. The greater the number of Spanish employees, the higher the score. However, the effect is materially moderate: every 1,000 additional jobs the company's score increases by one point. Finally, listed companies obtain, on average, 34.7 points more than those not listed. The statistically significant (at level 0.01) time effects (detected by conducting econometric tests omitted here) included as fixed in the model are shown in the significance of the 2015 coefficient, with a positive value suggesting that, for some reason or another, in that year the scores tend to be higher than in 2013.

6. CONCLUSIONS

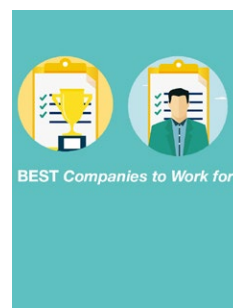
In the present investigation, the aim has been to establish if there are differences between the companies ranked in the *AE* lists of the 100 best companies to work for in Spain that account for the differences in the scores by which these companies are ordered. After reviewing the literature relevant to each concept of interest and its measurement and to the characteristics with explanatory potential, as well as stating our procedures for case selection and variables measurement, an econometric analysis of the data of an original matrix has been carried out. The results show that the differences among companies that could explain the differences in their scores in the list of *AE* are the autonomous community of headquarters, its size and the stock market exchange listing: the company score tends to be lower if its headquarters is located in the communities of the North and in the rest of the country that if it is located in the Community of Madrid and, on the other hand, it tends to be higher the larger its size and if it is listed in the stock exchange.

From the point of view of the *hypotheses* considered by the literature, the absence of effects related to the economic-cultural areas of origin of the companies seems to suggest that for the



HR practices on which the *AE* ranking is based, the mechanisms of isomorphism or standardization predominate over any local adjustment. However, there could be a certain tendency to local adjustment not from the point of view of the origin of the company, but from that of the autonomous community where the company has established its business in. The industry does not seem to be an obstacle to practices of homogenization. Regarding the size of the companies, results suggest that the availability of resources contributes to practices that increase their scores, whereas the structural flexibility does not. Finally, with regard to the stock market listing, our results coincide with those of previous studies, since the evidence is not favourable to the constraint hypothesis and is more consistent with the partnership hypothesis.

It would be simplistic to assume that such results would justify any recommendations to companies, to their shareholders or to their managers of growth and stock exchange listing strategies or, even less, to suggest a change of location. Even when the evidence resulting from our study allows questioning Morgan's recommendation (2014, pp. 145, 154 and ff.) to the companies of the future to act as a small company, the web of interests and preference of multiple *stakeholders* (managers, shareholders, workers, consumers or customers), combined with other criteria that influence the companies' decision whether to trade on the Stock Exchange (Pagano, Panetta and Zingales, 1998), probably implies different balances, all of them satisfactory, even in some of which certain deficiencies (probably minor ones) in the working conditions of the employees are offset by organizational benefits in other areas. It is convenient to conclude by pointing out a series of limitations and suggestions for improvement that any first approach to a topic generates. The first limitation is the sample size. The estimation by econometric models such as those used here would suggest increasing the number of observations in several ways, since it is possible that the absence of statistical significance in some of the variables of our model is due to the scarce variation of scores between companies that are ranked in the first positions for a reason: firstly, by increasing the number of time points, either by including future ones, or by adding, if available, the values of previous years; secondly, by increasing the variation between the companies, so that, if there were data available, it would be an option not to be limited to the best 100; or, finally, maybe embarking



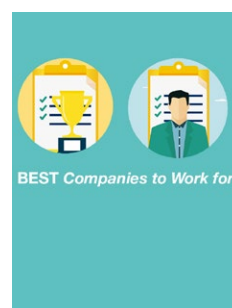
on a comparative research between several economies for which there are rankings of the best companies to work for, even if this means giving up using the *AE* list or drawing up our own rankings based on the existing ones. Another limitation is the measurement of some of our variables. Thus, the number of workers captures part of the concept of a company size, but size should be measured using an index that combines additional indicators. The third limitation is the lack of data on some of the variables used by the literature, among them, the age of the company. The fourth limitation is the non-modeling of the relation between the variables²²: for example, Pagano et al. (1998) find effects of the size of the company (an *ex-ante* condition) in the decision to trade on the stock exchange. Finally, it would be relevant to know the mechanisms through which the effects of size, stock listing or location of the headquarters in one or another region of Spanish territory which are no more than a kind of residual variables, are transmitted.

Despite the limitations just mentioned, our research has produced results that, on the one hand, contribute to increase the empirical knowledge-base on the factors that influence the scores of companies as great workplaces and, on the other hand, could contribute to improve the building of models and theories with which to explain the differences between companies that are great places to work for, as well as the differences between them and other companies.



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NOTES

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2. Thanks are due to Miguel Vázquez Carrero for his conscientious reading of the draft as well as for providing structural and syntactic suggestions.
3. <http://fortune.com/best-companies/>
4. <https://www.greatplacetowork.com/best-workplaces/100-best/2017>
5. <http://greatplacetowork.es/best-workplaces/>
6. https://www.glassdoor.com/Award/Best-Places-to-Work-LST_KQ0,19.htm
7. <http://merco.info/es/ranking-merco-talento>
8. <http://www2.universumglobal.com/worlds-most-attractive-employers-2017>
9. <https://universumglobal.com/rankings/spain/>
10. <https://www.top-employers.com/es-ES/top-employers-certificados/country/spain/>
11. <https://www.top-employers.com/en/get-certified/How-we-certify/>
12. <http://www.workforce.com/2017/04/21/2017-workforce-100-ranking-the-worlds-top-companies-for-hr/>
13. We omit mentioning other rankings that segment the group of companies following various criteria, such as size, sector of activity or specific categories of workers.
14. The following and first Google search results are illustrative, without any intention of exhaustiveness: <http://www.hays.es/general-content/ranking-actualidad-economica-1215445> (consulted 13-10-2017); <http://www.antevenio.com/blog/2017/08/antevenio-mejores-empresas-para-trabajar/> (consulted 15-10-2017); <https://www2.deloitte.com/es/es/pages/about-deloitte/articles/Deloitte-tercera-mejor-empresa-para-trabajar-en-Espana.html> (consulted 15-10-2017); <http://saladecomunicacion.llorenteycuenca.com/tag/las-mejores-empresas-para-trabajar/> (consulted 13-10-2017); <http://www.equipoys talento.com/noticias/2016/09/06/unisono-una-de-las-100-mejores-empresas-para-trabajar-segun-el-ranking-de-actualidad-economica> (consulted 13-10-2017); <http://www.ey.com/es/es/newsroom/news-releases/news-ey-en-el-top-5-del-ranking-de-las-mejores-empresas-para-trabajar-de-actualidad-economica> (consulted 13-10-2017); <http://www.manpowergroup.es/ManpowerGroup-entre-100-mejores-empresas-para-trabajar-2015> (consulted 15-10-2017).
15. To find something outside the United States, origin of the concern for the rankings, and Spain, see the French edition of *The Huffington Post* of December 2016 regarding the *Glassdoor* ranking: http://www.huffingtonpost.fr/2016/12/06/les-25-entreprises-francaises-qui-offrent-les-meilleures-conditions_a_21621766/ (consulted 10-10-2017); or, regarding the ranking of *Great Place to Work*, the newspaper *Le Figaro* march 2017: <http://www.lefigaro.fr/vie-bureau/2017/03/22/09008-20170322ARTFIG000141-le-classement-2017-des-entreprises-o-il-fait-bon-travailler.php> (consulted 10-10-2017).
16. See, for example, <http://www.humanresources.com/1342/7-secrets-to-creating-a-great->

workplace/ (consulted 10-10-2017); <https://www.yourerc.com/blog/post/The-15-Attributes-of-a-Great-Workplace.aspx> (consulted 10-10-2017); <https://www.shrm.org/hr-today/news/hr-magazine/pages/0615-great-places-to-work.aspx> (consulted 10-10-2017); <https://www.greatplacetowork.com/blog/228-5-elements-of-a-great-workplace> (consulted 10-10-2017).
 17. <http://www.businessinsider.com/why-google-is-not-the-best-place-to-work-2014-12> (consulted on 23-09-2017).

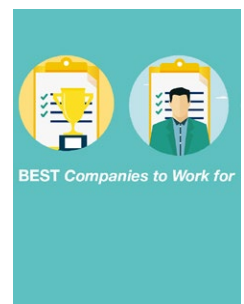
18. Two different attempts by the authors to obtain more detailed information from the journal did not obtain a satisfactory answer.

19. Without going into technical details, the selection of the observed cases is the result of a double-process of *sample selection* or *endogenous selection* (a non-random sample), which generates a systematic pattern of missing observations. The data structure resulting from this mechanism of case selection is a *short* (with only four time points) and *unbalanced* (not all cases are observable in the same time points) panel, in which there are two possible sources of autocorrelation: the *spatial* one (geographically-close companies) and the *temporal* one (companies included in the index multiple years).

20. At the end of May 2017, when the first version of this article was written, the number of companies with registered workers in the Social Security was 1,321,378.

21. Random effects model with only cross-sectional or individual effects; apart from technical reasons, the fact that all the independent variables of our models (except for the company size) have constant values in time for companies, prevents their estimation with fixed-effect models.

22. Partly due to the lack of software to easily carry out a mediation or moderation analysis with panel models, and above all, due to the statistical consequences of the small sample size.





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¿Cuestión de grado? Por qué algunas de las mejores empresas para trabajar en España son mejores que otras

A question of degree? Why some of the best companies to work for in Spain are better than others

I. INTRODUCCIÓN

La condición de las empresas como buenas o mejores que otras para trabajar en ellas cobra un interés creciente en un momento como el presente, en el que su supervivencia depende de su capacidad de adaptación a los cambios en el mundo del trabajo en cinco ámbitos: nuevas conductas, tecnología, *millennials*, movilidad y globalización (Morgan, 2014). La fluidez del trabajo, la ausencia de carreras profesionales que se agoten en una sola empresa, la movilidad geográfica de los trabajadores o el desplazamiento de las lealtades desde las empresas a líderes, proyectos o equipos privan a incentivos tradicionales, ya económicos (como el salario), ya de estatus (como las promociones en la jerarquía organizativa), de potencia suficiente para hacer de una empresa un gran lugar de trabajo.

De ahí que se acentúen en las dos últimas décadas dos tendencias en la conducta empresarial. Por una parte, el *benchmarking* empresarial, tomando como referencia de buenas prácticas de recursos humanos las realizadas por aquellas empresas que figuran en uno o más de los rankings que seleccionan un número dado de empresas como los mejores lugares para. Por otra, el manejo como una de las herramientas del *branding* de los empleadores (Joo y McLean, 2006) de la difusión por las propias empresas de

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C33, J24, J28, M51

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BEST Companies to Work for

RESUMEN DEL ARTÍCULO

Múltiples rankings nacionales e internacionales seleccionan a un subconjunto de empresas de un país o del mundo como las mejores para trabajar. A pesar de esta homogeneización, las puntuaciones que obtienen en los índices en los que se basan los rankings no son iguales. En esta investigación, se trata de averiguar si las diferencias entre las puntuaciones obtenidas por las empresas consideradas como las mejores para trabajar en España se pueden explicar por medio de factores contextuales. Se ha estimado un modelo econométrico a fin de establecer si explican esas diferencias la nacionalidad/área económico-cultural de origen, la comunidad autónoma sede (en el caso de ambos factores, debido a mecanismos de estandarización o, por el contrario, de ajuste local), el tamaño de la empresa (debido a la flexibilidad estructural o, por el contrario, la disponibilidad de recursos), la cotización en bolsa (debido a las constricciones impuestas por la estructura de propiedad y los horizontes temporales derivados de la cotización bursátil) y el sector de actividad. Los resultados del análisis muestran que las puntuaciones de las empresas (1) tienden a aumentar con su tamaño y con la cotización, (2) difieren entre comunidades autónomas y (3) no se diferencian entre naciones/áreas económico-culturales de origen ni entre sectores de actividad.

EXECUTIVE SUMMARY

Many national and international rankings select a subset of companies within a country or a set of worldwide international companies as the best to work for. Despite this homogenization, the scores they are assigned by these indexes and from which their positions in the rankings are established, are not equal. In this investigation, we try to establish whether the differences among the punctuations of the best companies to work for in Spain could be explained by certain contextual factors. An econometric model has been estimated in order to ascertain whether the nationality/economic-cultural area of origin, the autonomous community where the headquarters are based (for both factors, either through mechanisms of standardization or through local adjustment), the company size (either through structural flexibility or resources availability), stock exchange listing (through constraints forced on companies by both the property structure and the time-horizons derived from being listed), and the industry can all explain those differences. Results show that companies scores (1) tend to increase as a function of size and of stock exchange listing, (2) vary across autonomous communities, and (3) do not differ neither across nation/economic-cultural areas of incorporation nor across different sector of activity.

su posición en alguno de tales rankings, con el objetivo de “emitir una señal” (Joyce, 2003) para atraer y retener no sólo un volumen mayor de capital financiero, sino también un talento o un capital humano que se considera, cada vez más, el recurso más valioso de una organización. Así, las propias empresas proclaman a menudo como un logro su condición de *Employer-of-Choice*, proclamación a cuyo crédito contribuye la presencia en alguno de los rankings popularizados por la prensa como una de las mejores empresas para trabajar (Lenaghan y Eisner, 2006, pp. 99 y ss.).

Entre tales rankings, de periodicidad, en general, anual y con diverso alcance geográfico, se encuentra el pionero y célebre

Fortune 100 Best Companies to Work for, elaborado por la revista *Fortune*³ en colaboración con *Great Place to Work*⁴, organización que elabora rankings también para países europeos (España entre ellos⁵) y certifica a las empresas. Otros son elaborados por *Glassdoor*⁶ (*Best Places to Work*); *Marcaempleo* (*Merco Talento*⁷); *Universum*^{8,9}; *Top Employers Institute*^{10,11}; o la revista *Workforce*¹² (*The World's Top Companies for HR*)¹³. En España, la revista de economía y finanzas *Actualidad Económica* (en adelante, AE) elabora anualmente y publica en verano un *ranking* de las 100 mejores empresas españolas para trabajar. Y es práctica de las empresas españolas el *señalamiento* o el *branding* tras aparecer en ese ranking, como revela una simple búsqueda por Internet¹⁴.

Estos rankings, que ordenan a empresas en función de sus puntuaciones en índices sobre un fenómeno en el que confluyen intereses multidisciplinares (sociología del trabajo, comportamiento organizacional, psicología de la organización, gestión de recursos humanos, entre otras disciplinas), no sólo generan interés entre las empresas

elegidas, sino que también reciben atención en los medios de comunicación¹⁵, en centenares de páginas web o blogs, o en la literatura académica. Las páginas web de organizaciones y los blogs de profesionales relacionados con el mundo del trabajo tienden a adoptar un enfoque prescriptivo (también presente en la pieza de Schwartz (2011) para la *Harvard Business Review*), que se materializa en listas con un número variable de características, más o menos justificadas, de un gran lugar de trabajo o en recomendaciones para crearlo¹⁶.

El objetivo de la investigación es esencialmente descriptivo: determinar si las diferencias entre los grados de valoración de las empresas como mejores para trabajar en ellas están asociadas a diferencias entre ellas respecto a otras propiedades.

En la literatura académica, más escasa (Joo y McLean, 2006), se encuentran investigaciones empíricas acerca de la asociación entre la condición de gran lugar de trabajo de una empresa, atribuida por la presencia en el ranking de *Fortune*, y su rendimiento [*performance*] (Fulmer, Gerhart y Scott, 2003; Romero, 2004), la satisfacción de los clientes (Simon y DeVaro, 2006), su resiliencia en tiempos de crisis financiera (Carvalho y Areal, 2016), los beneficios obtenidos por los accionistas (Filbeck y Preece, 2003) o la representación de las mujeres en los consejos de dirección (Bernardi, Bosco y Vassill, 2006); o acerca de las prácticas de recursos humanos que convierten en las “mejores” a las empresas de esa lista (Hinkin y Tracey, 2010) o de las lecciones que pueden aprenderse de ellas (Joyce, 2003); o, en fin, acerca de las relaciones entre las actitudes de los empleados hacia de la calidad del puesto de trabajo, medidas con las puntuaciones de *Fortune* como *proxy*, y el valor de mercado de las empresas (Ballou, Godwin y Shortridge, 2003).

Más allá de los trabajos indicados en el párrafo anterior y posiblemente algunos otros, tal como lamentan Joo y McLean (2006, pp. 25), no es mucho el interés de los investigadores por esta clase de índices. Las aproximaciones al tema mencionadas se orientan bien a la caracterización de un gran lugar de trabajo, bien a averiguar los efectos de la condición de gran lugar de trabajo en otras características de la empresa. La presente investigación, por el contrario, trata de explicar las diferencias entre las puntuaciones de las empresas que tienen la condición de gran lugar de trabajo, medida por la presencia en el ranking de *AE*, adoptando, pues, una perspectiva cuando menos poco explorada. De este modo, este trabajo pretende tanto contribuir a incrementar el conocimiento empírico acerca de los rankings de empresas como mejores lugares para trabajar como explorar la potencial fecundidad teórica de ciertos factores explicativos. El objetivo de la investigación es esencialmente descriptivo: determinar si las diferencias entre los grados de valoración de las empresas como mejores para trabajar en ellas están asociadas a diferencias entre ellas respecto a otras propiedades. Para medir la condición de mejor empresa para trabajar se ha elegido el ranking de *AE*, cuya presencia en él difunden las propias empresas como señal o como estrategia de *branding*. Se han seleccionado dos propiedades contextuales (la nacionalidad de origen y la comunidad autónoma en la que

PALABRAS CLAVE

Empresas, Recursos Humanos, ranking, Datos de panel.

KEY WORDS

Companies, Human Resources, ranking, Panel Data.

tienen su sede central en España), una variable contextual interna (el tamaño de la empresa, medida por el número de empleados), una variable del gobierno corporativo (la cotización en el mercado bursátil) y la actividad económica de la compañía. El análisis de datos muestra que la cotización en bolsa, el tamaño de la empresa y la ubicación de su sede en una u otra comunidad autónoma se asocian estadísticamente con sus puntuaciones en el ranking de AE. Los resultados obtenidos son favorables a algunas y contrarios a otras de las hipótesis sobre el efecto de uno u otro de los factores seleccionados en nuestro trabajo sometidas a contraste empírico en contribuciones precedentes, tal como se expondrá en la sección de este artículo dedicada a la revisión de tales contribuciones.

La secuencia de contenidos del artículo es la siguiente. La próxima sección se ocupa brevemente de despejar equívocos respecto a las diferencias semánticas entre gran lugar de trabajo y conceptos contiguos, así como de mostrar los procedimientos habituales de medición del concepto mejor empresa para trabajar o gran lugar de trabajo. Le sigue en otra sección una revisión bibliográfica de las investigaciones que estudian el papel de los cinco factores explicativos que nos ocuparán en este trabajo. En la sección siguiente, se presentan los datos usados en el análisis econométrico: se indica la composición de la muestra y se explicitan los modos en que se han medido tanto la variable dependiente (mejor empresa para trabajar) como las variables independientes (los cinco factores indicados en el párrafo anterior). El análisis de los datos se presenta en la sección sucesiva, que muestra los resultados de la especificación y la estimación de un modelo econométrico para datos de panel, a fin de tratar de detectar los efectos netos de las variables independientes. En la sección final, se argumentan las conclusiones relativas a la relevancia de los resultados para los objetivos de la investigación y se indican posibles vías de mejora.

2. CONSIDERACIONES SOBRE EL CONCEPTO Y LA MEDICIÓN DE LA CONDICIÓN DE MEJOR EMPRESA PARA TRABAJAR O DE GRAN LUGAR DE TRABAJO

Tony Schwartz titula un artículo publicado en la web *Business Insider*¹⁷ *Google Is Not The Best Place To Work If You Measure The Quality of Employees' Life*. Tal afirmación, que, con escepticismo

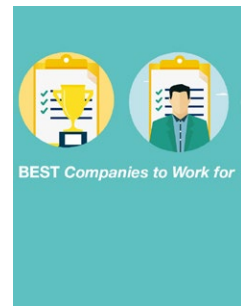


metodológico, compartimos los firmantes del presente texto, apunta a dos cuestiones relevantes para acotar los resultados de la presente investigación: las relativas a, primero, *qué* se miden y, segundo, *cómo* se mide.

Respecto a qué se mide, no hay acuerdo ni entre las organizaciones que elaboran los rankings ni entre los pocos investigadores que han prestado atención al tema (Joo y McLean, 2006). La ambigüedad conceptual resultante aboca al solapamiento semántico, cuando menos parcial, entre múltiples conceptos que sintetizan la relación trabajadores-(puesto de / lugar de) trabajo, y para cuyo tratamiento remitimos a la literatura pertinente: calidad del (en el) trabajo, satisfacción en el trabajo, bienestar en el trabajo, compromiso [*engagement*] (Little y Little, 2006; Gallie, 2007). El mayor riesgo, dada esa superposición de significados, es el deslizamiento sobre el que alerta Schwartz, a saber: pasar, inadvertida o deliberadamente, de las afirmaciones sobre ciertas características que hacen de un lugar de trabajo uno de los mejores a las afirmaciones sobre sus consecuencias psicosociales o sobre otra clase de consecuencias (como la rotación, incluida en el ranking de *AE*, o el absentismo laboral) que, según el metaanálisis de Fried y Ferris (1987), la investigación empírica muestra que están mediadas por mecanismos, en general, psicológicos.

Respecto a cómo se mide la condición de gran lugar de trabajo, la pregunta clave es: *¿a juicio de quién?* La respuesta más clara la da *The Great Place to Work Trust Index*: “[t]he most essential measure of whether a company is a great workplace is whether employees say it is”. La más estricta coherencia con esta directriz parece mantenerla *Glasdoor*, cuyo ranking se basa exclusivamente en las respuestas de empleados que eligen anónimamente someter una valoración de su empresa a *Glasdoor*. Otros rankings se alejan en grados diversos de esa directriz, combinando las valoraciones de los empleados con las de los gestores (*Fortune* y *Great Place to Work*) o con las de otros públicos relevantes (*Merco Talento*, *Workforce*) o renunciado por completo a ellas (*Universum*) y confiando exclusivamente en la valoración ofrecida por los responsables de recursos humanos de las empresas (la *HR Best Practices Survey* de *Top Employers*).

Sobre este trasfondo de ambigüedad conceptual y heterogeneidad de las operaciones de medición, consideraremos la conceptualización y medición practicadas por *AE* en la sección sobre la recogida de datos.



3. ¿CÓMO SE EXPLICA LA DIFERENCIA DE PUNTUACIONES EN LOS RANKINGS?

El escaso esfuerzo de construcción de teoría sobre los rankings de las mejores empresas para trabajar (Joo y McLean, 2006) se extiende a la ausencia de teoría específica sobre la asociación entre las puntuaciones obtenidas por las empresas en esos rankings y los valores de otros factores organizativos, económicos, culturales o de otra naturaleza. De ahí que nos limitemos, en este primer acercamiento a nuestro objeto de investigación, a ofrecer una relación de factores (seleccionados a partir de las investigaciones empíricas dedicadas a las prácticas de gestión de recursos humanos) cuya potencial importancia para explicar las diferencias de las puntuaciones de las empresas se justificará en la revisión de una literatura eclécticamente seleccionada desde los puntos de vista disciplinar, teórico y metodológico. Como hemos anticipado, se han seleccionado cinco variables de distintas clases: (1) dos variables contextuales: el país (nación o nacionalidad) de origen de la empresa y la comunidad autónoma española en la que tiene su sede; (2) una variable característica de la empresa: su tamaño, medido por el número de trabajadores; (3) una variable relacionada con la *dirección corporativa* de la empresa: su cotización o no en bolsa; y (4) el sector de actividad. Seguidamente, expondremos las razones aportadas por la revisión de la literatura para la inclusión de cada una de ellas.

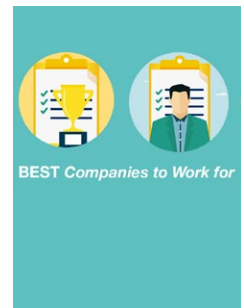
Desde un punto de vista general, el papel de los factores contextuales (mercados, políticos, institucionales, entorno social, cultura) para explicar las diferencias en las prácticas y los resultados de la gestión de recursos humanos entre empresas se enfatiza en Fields, Chan y Akhtar (2002) y Jackson y Schuler (1995). Más específicamente, la literatura reciente pone de relieve la tensión entre dos clases de presiones a las que están sometidas las empresas: la estandarización universal de prácticas y el ajuste al contexto local (Amossé et al., 2016; Gallie, 2007; Ibrahim y Shah, 2013; Quintanilla y Ferner, 2003). A menudo, ambas tendencias forman parte de explicaciones institucionalistas que seleccionan mecanismos de dos clases diferentes: respecto a la estandarización, apuntan a los procesos de isomorfismo institucional y, respecto al ajuste, se centran en la resistencia al cambio derivada de los procesos de institucionalización organizativa (Jackson y Schuler, 1995; Paawee y Boselie, 2007). Extendiendo en una doble dirección la noción de lo “local”,



las presiones de esta naturaleza pueden darse en dos contextos locales: bien el definido por la nación de origen de la empresa, bien el definido por la nación o territorio de nivel subnacional en el que la empresa desarrolla su actividad económica (sea como matriz con la nacionalidad de ese territorio, sea como filial de una matriz con otra nacionalidad de origen).

Nación de origen. Hace un par de décadas, Ferner (1997) presentó una relación de las diferencias sistemáticas en la gestión de recursos humanos en las empresas multinacionales en función del país de origen encontradas en una serie de investigaciones empíricas que somete a un severo análisis crítico tanto teórico como metodológico. Liu (2004) documenta los hallazgos en el mismo sentido de otras investigaciones empíricas más recientes. Liu (2004, pp. 501 y ss.) diferencia tres estrategias posibles de una empresa con actividad en un país distinto del de origen: adaptativa (ajuste a las prácticas locales), exportadora (transferencia de las prácticas de la nación de origen a otra) e integradora. Cuál de ellas prevalezca depende (entre otros factores que aquí nos interesan menos) tanto de la distancia cultural nacional como de la distancia institucional nacional. Cuando se opta por la estrategia exportadora, pueden operar mecanismos de transferencia directos (política de la empresa) e indirectos (cultura y *expats*, entre otros) (Liu, 2004, pp. 508 y ss.). Cabe ampliar el foco de atención y reparar en que parte de la literatura sociológica y económica ha identificado ciertas configuraciones de factores y prácticas que agrupan a conjuntos distintos de sistemas económicos en “variedades del capitalismo” o en diferentes regímenes de producción (como las economías de mercado coordinadas o las economías de mercado liberales) o de empleo (Gallie, 2007). Esas configuraciones afectan de algún modo a las prácticas de gestión de recursos humanos o a sus resultados. Por esa razón (y por otras de carácter estadístico), en nuestra investigación se agruparán los países en áreas económico-culturales.

Comunidad autónoma sede. La comunidad autónoma representa un posible foco de resistencia local tanto a la estandarización global o universal como a la transferencia de prácticas desde la nación de origen de ciertas empresas. Las investigaciones comparativas revisadas se centran en la nación y no en el territorio subnacional (sea cual sea su nivel o denominación: provincia, región, estado federado...), en el que las empresas desempeñan su actividad y encuentran ciertas diferencias entre las prácticas de recursos humanos en



distintos países (Amossé et al., 2016; Conway et al., 2008; Fields, Chan y Akhtar, 2002; Paawee y Boselie, 2007). Es nuestro propósito averiguar si en el nivel subnacional también se dan resistencias a la estandarización.

Tamaño. Siendo el tamaño uno de los factores potencialmente influyentes en las prácticas de recursos humanos (Fields, Chan y Akhtar, 2002, p. 265 y ss.), no parece haber consenso sobre el signo, positivo o negativo, de sus efectos. Por un lado, Kortekaas (2007) halla un notable impacto de signo positivo del tamaño pequeño/medio en las conductas de los empleados (incluidos el compromiso [*commitment*] o la satisfacción en el trabajo) y un impacto de signo negativo del mismo tamaño en un indicador de rendimiento operacional (bajas por enfermedad). Kok y Uhlaner (2001) hallan una asociación entre el aumento del tamaño de las empresas y la formalización de las prácticas de recursos humanos. Morgan (2014), en quien se encuentran sintetizados argumentos que desarrolla con mayor densidad teórica Kortekaas, sugiere que las empresas pequeñas tienen varias ventajas: la rapidez en la toma de decisiones, la ligereza de la empresa, el pensamiento *out-of-the-box* y la experimentación, la flexibilidad de roles, funciones y estilos de trabajo para los empleados, la claridad del alineamiento, la facilidad de reconocimiento y la visibilidad del éxito, y las mejores comunicación y colaboración. En cambio, Ibrahim y Shah (2013, pp. 7, 14 y ss.) aducen que las empresas pequeñas carecen de los recursos necesarios para adoptar prácticas de gestión de recursos humanos *progresivas*, mientras que, alcanzadas las necesarias economías de escala, las empresas grandes se sienten presionadas a esa adopción debido tanto a su mayor visibilidad como a las presiones por obtener legitimidad y hallan evidencia a favor de esa posición.

Cotización en bolsa. Conway et al. (2008, pp. 638) admiten sin reservas que la investigación sobre sus efectos no ha generado conclusiones claras. Son teóricamente admisibles dos posibilidades, sobre cuya prevalencia pueden informar sólo las investigaciones empíricas: la *hipótesis de la constricción* y la *hipótesis del partenariado*. La primera de las “hipótesis”, por sintetizarla con Perraudin, Petit y Rebérioux (2008), parte de las diferencias entre las empresas cotizadas y las no cotizadas tanto en las estructuras de propiedad y de dirección como en los horizontes temporales de la valoración de los resultados. Así, las empresas cotizadas, sometidas a la presión de los accionistas, podrían optar por una estrate-



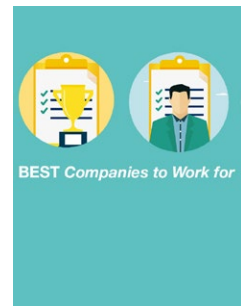
gia defensiva, centrada en la rentabilidad financiera a corto plazo, que implicaría la reducción del coste operativo más controlable (el laboral) mediante prácticas de recursos humanos de baja calidad: flexibilización, subcontratación, contratación temporal, recortes de plantilla, reducciones salariales o desinversión en formación, entre otros. Sin embargo, podrían optar también por una estrategia ofensiva basada en prácticas de recursos humanos de calidad (aumento de la formación, inversión en motivación...) orientada a la rentabilidad a medio/largo plazo. La segunda hipótesis mencionada “predice que la presión de los accionistas no tiene por qué resultar en un juego de suma cero: en ciertas condiciones, los directivos pueden seguir acordando contratos implícitos con los trabajadores a cambio de alto rendimiento y disponibilidad a la formación específica de la empresa”. Los resultados empíricos hallados por Conway et al. (2008) parecen poco favorables a la hipótesis de la constricción: tanto en el Reino Unido como en Francia, la cotización se asocia positivamente con el trabajo en equipo y la remuneración relacionada con el rendimiento, y en el segundo de los países también con la autonomía y la formación del trabajador.

Sector de actividad. Jackson y Schuler (1995, pp. 251 y ss.) incluyen entre los factores contextuales influyentes en las prácticas de recursos humanos las características del sector de actividad [*industry*]. Conway et al. (2008) señalan que factores específicos del sector de actividad, incluida la regulación de la calidad de los servicios y la protección de los intereses de los consumidores en el caso de las empresas suministradoras de servicios [*utilities*], extienden los horizontes temporales, facilitando, pues, la adopción de prácticas de recursos humanos de alta calidad.

Esta revisión de la literatura sugiere dos observaciones relevantes para interpretar los resultados de nuestra investigación. En primer lugar, las investigaciones empíricas no arrojan resultados completamente nítidos acerca del signo de la influencia de cada uno de los factores. En segundo lugar, los factores mencionados tienen la condición de una especie de variables *residuales* que pueden operar a través de mecanismos diversos a menudo difíciles de medir y cuya influencia se pudiera calibrar quizá mediante estudios de caso.

Teniendo en cuenta cuanto se ha escrito en esta sección, se pondrán a prueba las siguientes *hipótesis*:

- respecto a la nacionalidad/áreas económico-culturales y a la comunidad autónoma: la **hipótesis del isomorfismo** o de la



estandarización universal (ausencia de diferencias entre las puntuaciones de las empresas de distintos territorios en cada uno de los niveles) y la hipótesis, opuesta, del **ajuste local** (diferencias entre las puntuaciones de las empresas de distintos territorios en cada uno de los niveles);

- respecto al tamaño, la **hipótesis de la flexibilidad estructural** (las puntuaciones de las empresas tienden a aumentar a medida que se reduce su tamaño) y la hipótesis, opuesta, de la **disponibilidad de recursos** (las puntuaciones de las empresas tienden a aumentar a medida que se incrementa su tamaño);
- respecto a la cotización, la **hipótesis de la constricción** (las empresas que cotizan obtienen puntuaciones menores que las que no lo hacen) y la hipótesis, opuesta, del **partenariado** (las empresas que cotizan obtienen puntuaciones más altas que las que no cotizan);
- finalmente, la **hipótesis del sector de actividad** (las puntuaciones de las empresas difieren por sector de actividad).

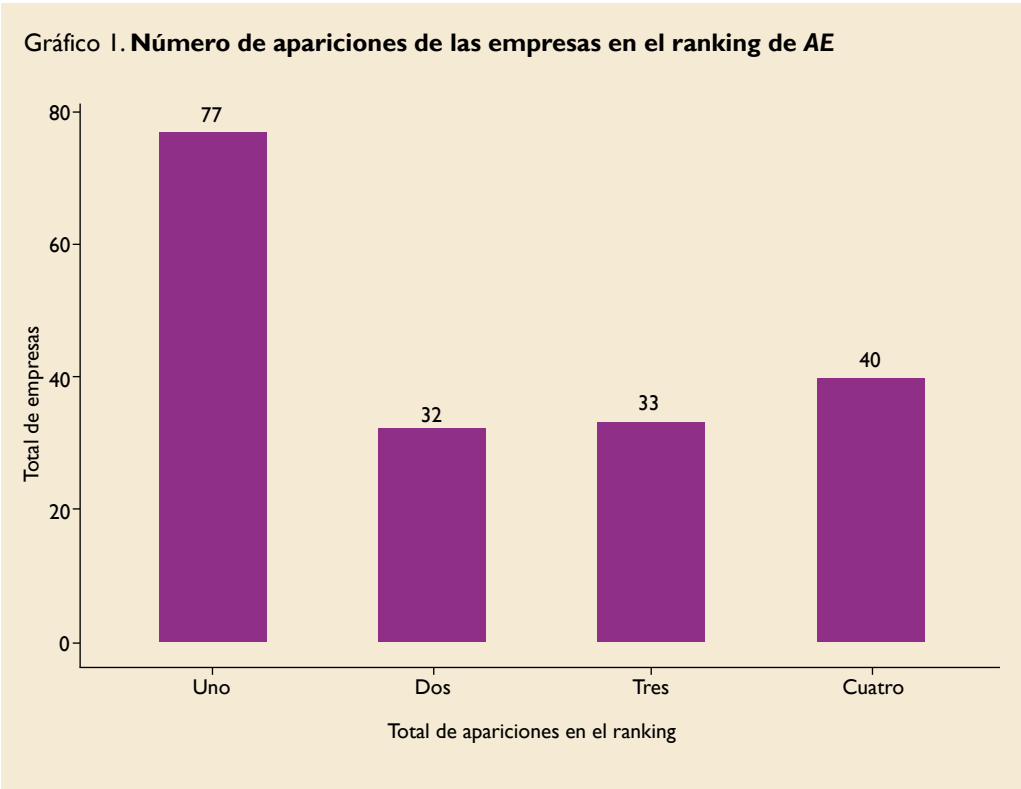


4. LAS EMPRESAS OBSERVADAS Y LAS CARACTERÍSTICAS QUE EXPLICAN SUS PUNTUACIONES

4.1. Empresas observadas

El criterio de selección de las empresas observadas es su presencia entre las 100 empresas con las puntuaciones más altas en el ranking anual de AE. Se observan las empresas en cuatro puntos temporales: 2013, 2014, 2015 y 2016. Aunque eso implica que se dispone de 400 *observaciones* en total (4 X 100), bastantes empresas repiten presencia en más de uno de los cuatro puntos temporales. Por eso, el número total de empresas es de 182. La ratio entre número de observaciones y número de empresas (2.2) es un indicio claro de la tendencia de ciertas empresas a puntuar con frecuencia entre las 100 mejores. El **Gráfico 1** muestra que (dado que 40 empresas repiten presencia los cuatro años) el 40% de las empresas presentes en el ranking un año está también presente los otros tres y que sólo el 42.3% del total de empresas están presentes en el ranking en una ocasión (21 sólo en 2013, 15 sólo en 2014, 14 sólo en 2015 y 27 sólo en 2016). Un análisis más detallado, que omitimos por razones de espacio, muestra que algunas empresas que aparecen dos veces en el ranking lo hacen en años no consecuti-

vos, y que algunas de las que aparecen tres no están presentes en 2013, y otras no están presentes en 2016.



4.2. Características de las empresas

Mejor empresa para trabajar. De acuerdo con la descripción de la revista *AE*, la puntuación es la suma de la combinación de las puntuaciones parciales en seis dimensiones, cada una de las cuales es, a su vez, el resultado de la suma de varios indicadores consistentes en las respuestas a una batería de preguntas por parte de las empresas. Según *AE*, se envía un cuestionario supervisado por expertos en Recursos Humanos, con un centenar de preguntas que suman 1000 puntos, a más de 500 empresas que operen en España, que lleven más de cinco años en funcionamiento y tengan una plantilla superior a los 100 empleados. Contestan en torno a 200 empresas, lo que supone una tasa de respuesta de en torno al 40%. Aunque no se precisa el rol organizativo del o de los encargados de responder¹⁸, para las cinco primeras dimensiones pa-

rece que se trata de alguien con algún tipo de responsabilidad que permita tomar sus respuestas como representativas de la posición oficial de la empresa. La sexta de las dimensiones (empleados), se basa en las valoraciones de tres perfiles de empleados de la empresa; al reducirse su peso a un 6% de la puntuación total, el ranking de *AE* se aparta notablemente de la directriz propuesta por *Great Place to Work*.

Las definiciones de las dimensiones y su peso en la puntuación total son los siguientes:

1. *Gestión del talento* (240 puntos): aborda la proyección profesional, el rendimiento y la rotación no deseada, entre otros asuntos.
2. *Retribución y compensación* (225 puntos): evalúa la combinación de salario fijo y variable, la remuneración en especie y los beneficios sociales.
3. *Ambiente* (205 puntos): horario, teletrabajo, conciliación y condiciones de trabajo.
4. *RSC* (50 puntos): políticas sociales y de voluntariado en las que se involucra a la plantilla.
5. *Formación* (220 puntos): valora la inversión en formación del empleado (subvención de másteres, cursos en el extranjero, etc.).
6. *Empleados* (60 puntos): tres perfiles diferentes de la plantilla valoran la empresa y cuentan su experiencia.

La fuente de los datos son los números de la revista en los que se publican los rankings correspondientes a 2013, 2014, 2015 y 2016.

Nación de origen. Por nación de origen de una empresa se entiende aquella en la cual tiene su sede principal o central. Se han agrupado las naciones de origen en cuatro **áreas económico-culturales**: naciones anglosajonas (Estados Unidos y Reino Unido), naciones del Centro y Norte de Europa (Alemania, Dinamarca, Finlandia, Luxemburgo, Países Bajos, Suecia y Suiza), naciones del Mediterráneo (Francia, Italia, Portugal y España) y resto de naciones (China, Corea del Sur y Japón). Las fuentes de los datos sobre la nación de origen son las páginas web de las empresas.

Comunidad autónoma sede. La comunidad autónoma sede de una empresa es aquella en la que está ubicada su sede social. Se han agrupado las comunidades autónomas en cuatro regiones: Comunidad de Madrid, comunidades del Norte (Asturias, Cantabria, País Vasco y Galicia), comunidades del Mediterráneo (Balears,



Valencia, Murcia y Cataluña) y resto de comunidades (Andalucía, Aragón, Castilla y León e Islas Canarias). Las fuentes de los datos sobre la comunidad autónoma sede son las páginas web de las empresas.

Tamaño. Se mide el tamaño con un indicador: el número de trabajadores de la empresa en España. Las fuentes de los datos son las páginas web de las empresas.

Cotización en Bolsa. Se clasifica a las empresas como cotizantes y no cotizantes. La fuente de datos es la información sobre entidades que proporciona la Comisión Nacional del Mercado de Valores.

Sector de actividad. Se clasifica a las empresas de acuerdo con las categorías del Catálogo Nacional de Actividades Económicas 1, es decir, al nivel más alto de agregación. Las fuentes de los datos son las páginas web de las empresas.

5. RESULTADOS DE LA INVESTIGACIÓN

Teniendo en cuenta las características de nuestros datos¹⁹, se ha optado por especificar y estimar un modelo econométrico para datos de panel, tomando como población de referencia no el total de empresas españolas²⁰, sino las empresas que están entre las 100 mejores para trabajar, que serían una *superpoblación* de la que los conjuntos de empresas presentes en los rankings anuales serían *muestras*.

El **Gráfico 2** sintetiza los resultados del modelo²¹. Las diferencias en las áreas económico-culturales de origen carecen de efectos estadísticamente significativos en las diferencias de puntuación entre las empresas del Centro y Norte de Europa, las del Mediterráneo y las restantes frente a las anglosajonas (grupo de referencia con el que se comparan los otros tres). Tampoco tienen efectos estadísticamente significativos las diferencias en el sector de actividad (siendo el grupo de referencia, con el que se comparan los demás, el sector de agricultura, ganadería, silvicultura y pesca). Tienen efectos estadísticamente significativos la comunidad autónoma sede (al nivel del 0.05), el tamaño (al nivel del 0.1) y la cotización en bolsa (al nivel del 0.01). Las empresas con sede en las comunidades del Norte y del resto del país tienen puntuaciones inferiores a las empresas con sede en la Comunidad de Madrid (grupo de referencia con el que se comparan), pero no parecen diferenciarse de las puntuaciones de éstas las obtenidas por las

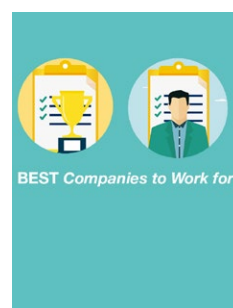
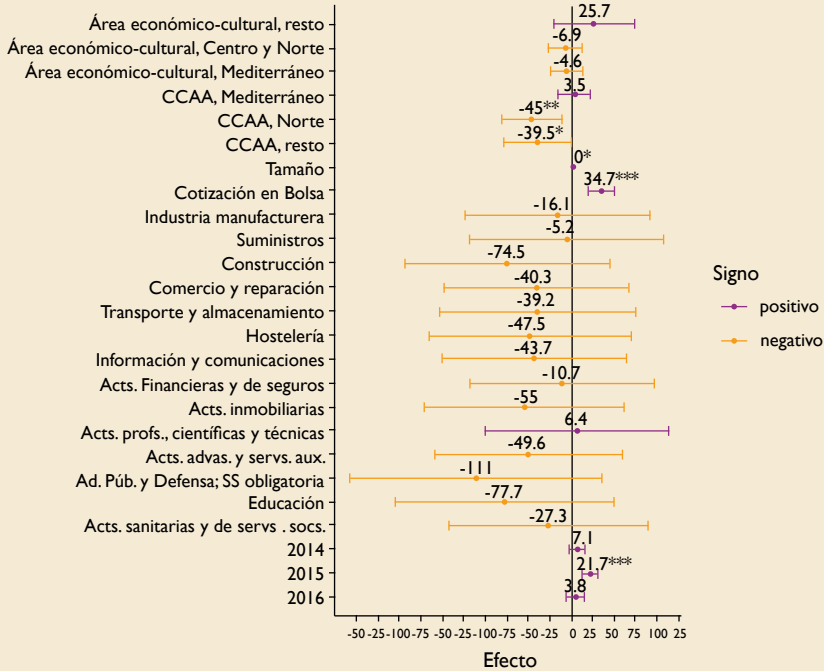


Gráfico 2. Resultados del análisis del modelo de efectos aleatorios para datos de panel



Los números son los valores de los coeficientes. Los coeficientes de las tres áreas económico-culturales, de las tres regiones de comunidades autónomas españolas, de la cotización en bolsa y del sector de actividad se interpretan como la diferencia que hay, en promedio, entra esas categorías y su categoría de referencia, que es, respectivamente, el área económico-cultural de los países anglosajones, la Comunidad de Madrid, la no cotización en bolsa y el sector de agricultura, ganadería, silvicultura y pesca. El coeficiente del tamaño de la empresa se interpreta como el incremento en la puntuación del ranking debido al aumento de un trabajador en la empresa.

Las líneas representan los intervalos de confianza en torno a los valores de las estimaciones. Se han calculado, para todas las variables, al nivel del 0.1. Las líneas de color azul corresponden a coeficientes de signo positivo; las líneas de color rojo corresponden a coeficientes negativos. Las líneas que cruzan el valor 0 del eje horizontal (destacado con la línea vertical) corresponden a coeficientes carentes de significación estadística; aquellas otras que no cruzan el valor 0 corresponden a coeficientes con significación estadística. Cuanto mayor es la longitud de la línea y, por lo tanto, más amplio el intervalo de confianza, menor es la precisión de la estimación. El nivel de significación estadística se representa con los asteriscos: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

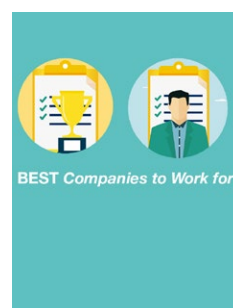
empresas cuya sede es una de las comunidades autónomas del Mediterráneo. Cuanto mayor es el número de empleados españoles, mayor es la puntuación. Sin embargo, el efecto, materialmente, es moderado: cada 1000 empleos adicionales aumentan en torno a un punto la puntuación de la empresa. En fin, las empresas que cotizan en bolsa obtienen, en promedio, 34.7 puntos más que aquellas otras que no cotizan. Los efectos temporales (detectados con pruebas econométricas que aquí omitimos), incluidos como

fijos en el modelo y estadísticamente significativos (al nivel del 0.01), se muestran en la significación del coeficiente del año 2015, con un valor positivo que sugiere que, por alguna razón, ese año las puntuaciones tienden a ser más altas que en 2013.

6. CONCLUSIONES

En la presente investigación, se ha tratado de averiguar si existen diferencias entre las empresas que figuran en las listas de *AE* de las 100 mejores empresas para trabajar en España que permitan dar cuenta de las diferencias de puntuaciones que las ordenan en esa lista. Tras revisar la literatura pertinente al concepto de interés y su medición y a las características con potencial explicativo, así como de explicitar nuestros procedimientos de selección de casos y de medición de las variables, se ha realizado un análisis econométrico de los datos de una matriz propia que arroja como resultado que las diferencias entre empresas que podrían explicar las diferencias en sus puntuaciones en el listado de *AE* son la comunidad autónoma sede, su tamaño y la cotización en bolsa: la puntuación de las empresas tiende a ser menor si su sede se ubica en las comunidades del Norte y del resto del país que en la Comunidad de Madrid y, en cambio, tiende a ser mayor cuanto mayor es su tamaño y si cotizan en bolsa.

Desde el punto de vista de las *hipótesis* consideradas por la literatura, la ausencia de efectos de las áreas económico-culturales de origen de las empresas parece sugerir que en las prácticas de recursos humanos en las cuales se basa el ranking de *AE* los mecanismos de isomorfismo o de estandarización predominan sobre el ajuste local. Es posible que, en cambio, haya cierta tendencia al ajuste local desde el punto de vista no del origen de la empresa, sino de la comunidad autónoma sede de su actividad. El sector de actividad económica no parece ser un obstáculo a prácticas resultantes en la homogeneización. En lo concerniente al tamaño de las empresas, los resultados sugieren que la disponibilidad de recursos contribuye a prácticas que aumentan la puntuación, mientras que la flexibilidad estructural no lo hace. En fin, respecto a la cotización en bolsa, nuestros resultados coinciden con los de estudios previos, puesto que la evidencia no es favorable a la hipótesis de la constricción y es más coherente con la hipótesis del partenariado.



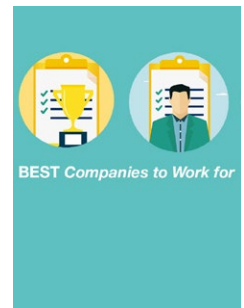
Sería una simpleza suponer que tales resultados justificarían la recomendación a las empresas, sus accionistas o sus gestores y directivos de estrategias de crecimiento y cotización o, menos aún, el cambio de sede. Aun cuando la evidencia resultante de nuestro trabajo permite discutir la recomendación de Morgan (2014, pp. 145, 154 y ss.) a las empresas del futuro de actuar como una empresa pequeña, el entramado de intereses y preferencias de públicos múltiples (directivos, accionistas, trabajadores, consumidores o clientes), en combinación con otros criterios que influyen en la decisión de las empresas de cotizar (Pagano, Panetta y Zingales, 1998), probablemente implique equilibrios distintos todos ellos satisfactorios, incluso algunos en los cuales ciertas deficiencias (probablemente menores) en las condiciones de trabajo de los empleados se compensen con beneficios organizativos en otros ámbitos.

Conviene terminar señalando una serie de limitaciones y sugerencias de mejora que toda primera aproximación a un tema acaba por generar. La primera limitación es el tamaño muestral. La estimación mediante modelos econométricos como los usados aconsejaría incrementar el número de observaciones de varios modos, puesto que es posible que la ausencia de significación estadística de algunas de las variables de nuestro modelo se deba a la escasa variación de puntuaciones entre empresas que por algo ocupan las primeras posiciones del ranking: en primer lugar, aumentando el número de puntos temporales, bien prolongándolos a los sucesivos, bien añadiendo, si están disponibles, los valores de años precedentes; en segundo lugar, aumentando la variación entre las puntuaciones de las empresas, de modo que, si hubiera datos disponibles, cabría no limitarse a las 100 mejores; o, en fin, quizá emprendiendo una investigación comparativa entre varias economías en las que haya rankings de mejores empresas para trabajar, aunque ello suponga renunciar a emplear la lista de AE o elaborar rankings propios a partir de los existentes. Otra limitación es la medición de alguna de nuestras variables. Así, el número de trabajadores capta parte del concepto tamaño de una empresa, pero el tamaño debería medirse con un índice que combine indicadores adicionales. La tercera limitación es la falta de datos de algunas variables manejadas por la literatura, entre ellas, la antigüedad de la empresa. La cuarta limitación es la no modelización de la relación entre las variables²²: por ejemplo, Pagano et al. (1998)



hallan efectos del tamaño de la empresa (una condición *ex-ante*) en la decisión de cotizar en bolsa. Finalmente, sería relevante conocer los mecanismos a través de los cuales ejercen sus efectos el tamaño, la cotización en bolsa o la ubicación de la sede en una u otra región del territorio español, que no dejan de ser una especie de variables *residuales*.

A pesar de las limitaciones recién señaladas, nuestra investigación ha arrojado unos resultados que, por una parte, contribuyen a aumentar la base de conocimiento empírico sobre los factores que influyen en las puntuaciones de las empresas como grandes lugares de trabajo y, por otra, podrían contribuir a mejorar la elaboración de modelos y teorías con los cuales explicar las diferencias entre empresas que son grandes lugares de trabajo, así como entre ellas y otras empresas.



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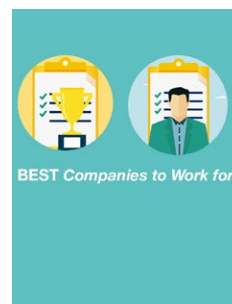
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NOTES

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2. Agradezco a Miguel Vázquez Carrero su concienzuda lectura del borrador del texto y sus sugerencias argumentales, estructurales y sintácticas.
3. <http://fortune.com/best-companies/>
4. <https://www.greatplacetowork.com/best-workplaces/100-best/2017>
5. <http://greatplacetowork.es/best-workplaces/>

6. https://www.glassdoor.com/Award/Best-Places-to-Work-LST_KQ0,19.htm
7. <http://merco.info/es/ranking-merco-talento>
8. <http://www2.universumglobal.com/worlds-most-attractive-employers-2017>
9. <https://universumglobal.com/rankings/spain/>
10. <https://www.top-employers.com/es-ES/top-employers-certificados/country/spain/>
11. <https://www.top-employers.com/en/get-certified/How-we-certify/>
12. <http://www.workforce.com/2017/04/21/2017-workforce-100-ranking-the-worlds-top-companies-for-hr/>
13. Omitimos la mención de otros rankings que segmentan el conjunto de empresas por criterios varios, como el tamaño, el sector de actividad o categorías específicas de trabajadores.
14. Valgan como ilustrativos los siguientes y primeros resultados de búsquedas en Google, sin ánimo de exhaustividad alguna: <http://www.hays.es/general-content/ranking-actualidad-economica-1215445> (consultado 13-10-2017); <http://www.antevenio.com/blog/2017/08/antevenio-mejores-empresas-para-trabajar/> (consultado 15-10-2017); <https://www2.deloitte.com/es/es/pages/about-deloitte/articles/Deloitte-tercera-mejor-empresa-para-trabajar-en-Espana.html> (consultado 15-10-2017); <http://saladecomunicacion.llorenteycuenca.com/tag/las-mejores-empresas-para-trabajar> (consultado 13-10-2017); <http://www.equipostrytalento.com/noticias/2016/09/06/unisono-una-de-las-100-mejores-empresas-para-trabajar-segun-el-ranking-de-actualidad-economica> (consultado 13-10-2017); <http://www.ey.com/es/es/newsroom/news-releases/news-ey-en-el-top-5-del-ranking-de-las-mejores-empresas-para-trabajar-de-actualidad-economica> (consultado 13-10-2017); <http://www.manpowergroup.es/ManpowerGroup-entre-100-mejores-empresas-para-trabajar-2015> (consultado 15-10-2017).
15. Por salirmos de Estados Unidos, origen de la preocupación por los rankings, y de España, véase la edición francesa de *The Huffington Post* de diciembre de 2016 respecto al ranking de *Glassdoor*: http://www.huffingtonpost.fr/2016/12/06/les-25-entreprises-francaises-qui-offrent-les-meilleures-conditions_a_21621766/ (consultado 10-10-2017); o, respecto al ranking de *Great Place to Work*, el diario *Le Figaro* en marzo de 2017: <http://www.lefigaro.fr/vie-bureau/2017/03/22/09008-20170322ARTFIG00141-le-classement-2017-des-entreprises-o-il-fait-bon-travailler.php> (consultado 10-10-2017).
16. Véase, por ejemplo, <http://www.humanresources.com/1342/7-secrets-to-creating-a-great-workplace/> (consultado 10-10-2017); <https://www.yourerc.com/blog/post/The-15-Attributes-of-a-Great-Workplace.aspx> (consultado 10-10-2017); <https://www.shrm.org/hr-today/news/hr-magazine/pages/0615-great-places-to-work.aspx> (consultado 10-10-2017); <https://www.greatplacetowork.com/blog/228-5-elements-of-a-great-workplace> (consultado 10-10-2017).
17. <http://www.businessinsider.com/why-google-is-not-the-best-place-to-work-2014-12> (consultado el 23-09-2017).
18. Dos tentativas distintas de los autores de obtener información más detallada de la revista no obtuvieron respuesta satisfactoria.
19. Sin entrar en detalles técnicos, que la selección de los casos observados sea el resultado de un doble proceso de *selección muestral* o *selección endógena* (es decir, no aleatoria), que genera una pauta sistemática de observaciones perdidas; y que la estructura de los datos resultante de ese mecanismo de selección de casos sea un panel *corto* (con sólo cuatro puntos temporales) y *desequilibrado* (no todos los casos son observados en los mismos puntos temporales), en el que existen dos posibles fuentes de autocorrelación: la *espacial* (empresas geográficamente próximas) y la *temporal* (empresas que repiten en el índice en varios años).
20. A finales de mayo de 2017, cuando se escribió la primera versión de este artículo, el número de empresas con trabajadores inscritas en la Seguridad Social era de 1.321.378.
21. Modelo de efectos aleatorios sólo transversales o individuales; otras razones técnicas aparte, que todas las variables independientes de nuestros modelos (salvo el tamaño de la empresa) sean invariables en el tiempo para las empresas, impide su estimación con modelos de efectos fijos.
22. En parte, debido a la falta de software con el que realizar fácilmente análisis de mediación o moderación con modelos de panel y en parte, sobre todo, debido a las consecuencias estadísticas del pequeño tamaño muestral.





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International diversification and global credit risk: a methodology for portfolio building¹

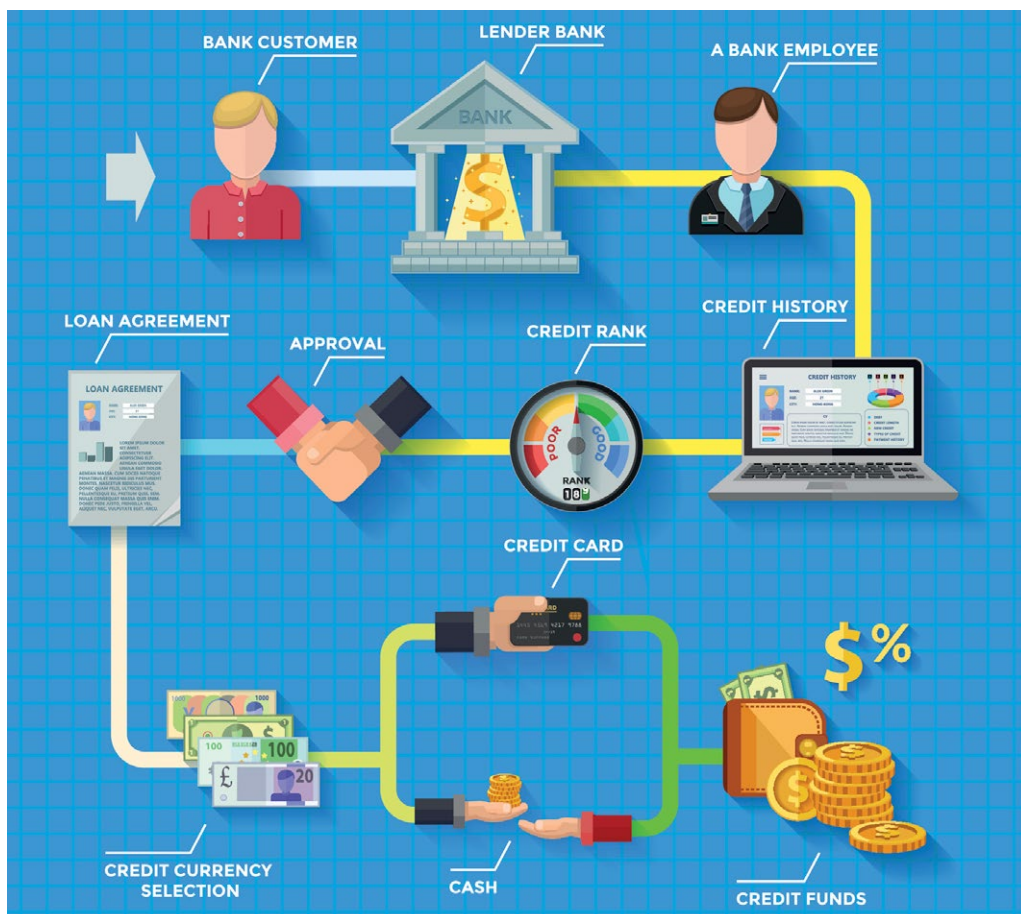
Diversificación internacional y riesgo de crédito global: una metodología para construir carteras

I. INTRODUCTION

The globalization of business and the international financial activity provide links between different local markets and help to understand the connection between sectors and countries. This reality however hinders the formation of internationally diversified portfolios. Recent evidence in financial markets suggests that the benefits of international diversification have declined in the post-2000 period. In fact, this reduction in the potential for diversification entails a greater risk in investments (Cotter et al., 2016).

While there has been an explosion of publications related to systemic risk linked to financial institutions and to contagion in financial markets, the scarce number of articles published in relation to global systematic risk and therefore, to the implications for the investor of a more integrated and less diversified world, is striking. In this paper we contribute by offering a simple and novel methodology to develop globally diversified portfolios, which adds value and solutions to the international investor. Our proposal is based on the information collected by two complementary markets, the Credit Default Swaps (CDS) market and the equity market.

The integration of the information collected in the CDS market is motivated by the finding reported in Cotter et al. (2016), which suggests that the high level of credit risk in the markets leads to a



EXECUTIVE SUMMARY

Credit risk has recently been identified as a cause of declining international diversification capacity; in this paper we offer an alternative methodology to create an equity portfolio with exposure to global credit risk and controlled market risk. Following the factor decomposition methodology, we reduce a sample of the biggest international companies to a portfolio composed by just 11 stocks, representing different risk factors, which show high diversification in terms of systematic risk and a risk-return binomial comparable to benchmark international equity indices.

RESUMEN DEL ARTÍCULO

Recientemente se ha señalado el riesgo de crédito como una causa del descenso en la capacidad de diversificación internacional; en este trabajo ofrecemos una metodología para formar una cartera de inversión en renta variable con exposición al riesgo de crédito global y con riesgo de mercado controlado. Siguiendo la metodología de descomposición factorial, reducimos la muestra de las mayores empresas internacionales a una cartera con tan solo 11 acciones, representantes de diferentes factores de riesgo, que muestran una elevada diversificación en términos de riesgo sistemático y un binomio riesgo-rentabilidad equiparable a los principales índices de renta variable internacionales.

deterioration in diversification capacity.

This is not the first paper that addresses the relationship between market risk and credit risk. In fact, this has been a very fruitful area of research in the young 21st century. Within the academic literature, several articles have analyzed the long-term relationship between the two markets, their fundamentals or causality links (eg, Carr and Wu, 2010). Additionally, the options theory framework introduced by Merton (1974) provides groundwork for linking credit risk and market risk. In this context, the liability of a company can be considered as a right over its assets. In this way, the value of assets affects both the company's debt and equity. As shown in the work of Ben Dor and

Xu (2015) as well as Gebhardt et al. (2005), there are clear advantages from analyzing the information underlying debt and equity markets for investment decision making.

Traditionally, most investors focused on just one type of information, without considering, for example, the contribution of CDS spreads in improving the prediction of equity market returns (Blonk, van der Grient and de Groot, 2017). The information used for portfolio decision making has now expanded in a way that investors also draw their attention to the transmission of information from credit risk markets to the equity market incorporating this information in

portfolio selection models.

Following this line of literature, and using a sample of multinational companies selected according to the global exposure of their business, we use the information collected in two different financial instruments, the stock price and the CDS premium of a given company to compose a global portfolio with diversified credit and market risk.

We apply a Principal Component Analysis (PCA) to the CDS market. We find that there are common factors that impact the credit risk of multinational companies, detecting a high degree of commonality consistent with previous studies. These factors are used as metrics for portfolio selection purposes. The main objective is to construct a fully diversified equity portfolio with a small number of corporates. According to Roll (2013), portfolio managers must go beyond the correlations and take into account the common factors that affect risks. The underlying argument is that, even when the correlation between two stocks is low, these assets may be sharing common factors and therefore exhibit no benefit from diversification. Under

...we study how to achieve an optimal diversification by using the common factors that drive changes in multinational single name CDSs.

a component analysis framework, the factors include the underlying risks to which financial assets are exposed. Thus, if for two given assets those components are the same, combining these assets does not reduce systematic risk. Assets that provide different idiosyncratic (or specific) risk and therefore depend on different factors are needed for means of portfolio diversification.

In this work we apply this approach for international diversification purposes and provide a new application, demonstrating its benefits for global investors. Following the approach of Longstaff and Rajan (2008), we study how to achieve an optimal diversification by using the common factors that drive changes in multinational single name CDSs. By doing so, we find that a portfolio of 11 international companies and global exposure to credit risk, selected according to the factorial method, reaches the same diversification benefits as the benchmark global indices.

The main contributions of our work are: (1) the estimation of the diversification potential in a portfolio constituted by multinational companies that meet certain globalization requirements and are exposed to credit risk,³ (2) the evidence of the existence of global credit risk driven by global factors, (3) the use of information on credit risk provided by the CDS market when structuring investment in equities portfolios (4) the proposal of a simple method of diversification of international portfolios based on the selection of those companies with greater factorial load in the PCA and (5) an empirical application of this method that culminates with satisfactory results in terms of market risk reduction and profitability. Therefore, we contribute to the literature regarding international diversification by offering a simple way to diversify the systematic risk in portfolios exposed to credit risks.

The rest of the paper is organized as follows: In Section 2 we summarize the data used in our analysis. We present our methodology and report our empirical results on global credit risk in Section 3. Section 4 proposes a new and simple investment diversification strategy. Finally, conclusions are presented in section 5.

2. MULTINATIONALS WITH HIGHER DEGREE OF GEOGRAPHIC DIVERSIFICATION

A multinational company with geographically highly delocalized revenues should in itself constitute an asset with diversified risk.

KEY WORDS

diversification, global credit risk, investments, market risk, Credit Default Swap.

PALABRAS CLAVE

diversificación, riesgo de crédito global, inversiones, riesgo de mercado, Credit Default Swap.

Investing in these assets does not carry a specific geographic risk since their incomes do not come only from the country where they are domiciled but from many other places. Therefore, an investor eager to maintain a well-diversified portfolio could opt for a set of the largest global companies. However, if the number of these entities turns to be high, investing in all of them is likely to lead to excessive fees payments and high management needs. Furthermore, the investor may also be investing in companies with similar risk exposures consequently enhancing the vulnerability of the portfolio. For this reason we go beyond simple diversification based on correlations and deepen the selection criteria of companies by considering global credit risk.

To this end, we use CDS spreads of multinational companies to be able to evidence the existence of global credit risk and provide guidance for its management.

A CDS is a contract that protects against the risk of a credit event (usually a default) by a particular company or country. The protection buyer makes periodic payments to the seller (typically a recurring quarterly fee) until either the occurrence of a credit event or the maturity date of the contract, whichever comes first. The annualized payment made by the buyer is known as the CDS spread or premium. This price will be higher for CDS on reference entities with lower credit quality (Blanco, Brennan and Marsh, 2005). Therefore, these CDS are useful indicators of the default risk of the underlying entity (Longstaff, Mithal and Neis, 2005) and suitable for analyzing the risk of default (Berndt and Obreja, 2007).⁴

Given that corporate CDS spreads are found to be linked to the performance of the global economy (Aretz and Pope, 2013), the CDS premium of diversified companies in geographical terms is useful to evidence the global credit risk faced by investors.

In order to constitute our sample, we search for the largest listed companies in the world using the 2016 Forbes list, which is based on a score composed of equally weighted measures of income, benefits, assets and market value.⁵ We select those that with global income profile, i.e. those whose incomes come from at least 3 continents which singly do not represent more than 50% of the firm's incomes. In addition, and because the starting point of the analysis relates to global credit risk, we only consider those which, according to the December 2015 DTCC®⁶ survey constitute underlying assets of the 1.000 most liquid CDS contracts.⁷



We use end-of-day quotes in weekly basis between January 3, 2007 and November 16, 2016. Companies with missing observations exceeding a 19% level are discarded (in a similar way as Diaz, Groba and Serrano, 2013, do). This criterion results in 75 firms with an average of 508 weekly observations, summarized in **Table 1**.

The sample selected therefore incorporates companies with different types of long-term credit ratings in local currency as for January 2017: from AA (Canon, Nestlé, Pfizer and Sanofi) to B (Weatherford Int.), resulting the debt classification of these companies in 5 groups: High grade in 7 cases (9.3%), Upper medium investment grade for 30 firms (40%), Lower medium grade 30 times (40%), Non-investment grade speculative in 6 cases (8%) and Highly speculative grade in 2 companies (2.7%). This provides an appropriate representation of the overall credit risk.⁸

In terms of economic activity, the selected 75 firms are distributed along 10 different sectors: 13.3% of them are included in the Automotive industry, 12% Chemicals, 12% Consumer Products, 9.3% Energy, 8% Financial Institutions (which includes 3 banks, 1 insurance firm and 2 reinsurance companies), 14.6% Manufacturing, 8% Pharmaceuticals, 4% Technology and 4% Telecommunications. 13.3% of the companies are aggregated as belonging to "Other" sectors as they carry out very different activities. Two of those companies belong to the Aerospace and Defense sector (The Boeing Co. and Bae Systems), while Retailing, Conglomerate, Media, Healthcare, Restaurants, Lodging, Packaging and Metals-Mining have only one component (Kering, Sodexo, WPP 2005, Baxter Int., McDonald's, Starwood Hotels, Sealed Air Corp. and Arcelormittal respectively).

Geographically, 26 firms are fiscally domiciled in the USA, 7 in Japan, 9 in Germany and in UK, 8 in France, 5 in Switzerland and in the Netherlands, 3 in Sweden and 1 in Belgium, Finland, and Luxembourg (35% America, 9% Asia and 56% Europe).

Table 2 reports summary statistics for 5-year CDS spreads for each of the selected companies. We use end-of-day quotes with weekly frequency (Wednesday's prices to avoid sharp movements due to irregular trading on, for example, derivatives expiration dates which usually are on Fridays).⁹

For most companies reported CDS average spreads are below 100b.p. (being the lowest mean for Bristol-Myers), and 35% of the average spreads range between 100.21 (Hewlett-Packard) and

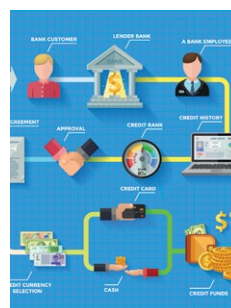


Table 1. Firms in the sample.

This table shows the distribution of firms across sectors, ratings and countries with their geographic revenues exposure. Ratings refer to the S&P local currency long-term category as for January 24th, 2017. The sector classification is based on information in Moody's website. Data for the geographic revenues exposure are taken from Factset. They are 2015 year-end figures in almost all cases. (*) stands for 2016 data.

Company	S&P Rating	Sector	Domicile	Geographic Revenues Exposure
Aktiebolaget Electrolux	A-	Consumer products	Sweden	Africa and Middle East 4.2%, Americas 49.3%, Asia/Pacific 19.4%, Europe 27.1%
Aktiebolaget Volvo	BB	Manufacturing	Sweden	Africa and Middle East 6.7%, Americas 38.3%, Asia/Pacific 16.5%, Europe 38.4%
Akzo Nobel n.v.	A-	Chemicals	Netherlands	Africa and Middle East 5.2%, Americas 27%, Asia/Pacific 25%, Europe 42.8%
Apache Corporation	BBB	Energy	USA	Africa and Middle East 30.8%, Americas 49.1%, Europe 20.1%
Arcelormittal	BB	Other	Luxembourg	Africa and Middle East 10.5%, Americas 39.1%, Asia/Pacific 5%, Europe 45.4% (*)
Arrow Electronics, inc.	BBB-	Technology	USA	Africa and Middle East 6.7%, Americas 48%, Asia/Pacific 23.1%, Europe 22.2% (*)
Astrazeneca plc	A-	Pharmaceuticals	UK	Africa and Middle East 0.7%, Americas 46.5%, Asia/Pacific 24.4%, Europe 28.4%
Avnet, inc.	BBB-	Technology	USA	Africa and Middle East 4.2%, Americas 39.8%, Asia/Pacific 30.2%, Europe 25.8% (*)
Bae Systems plc	BBB	Aerospace and Defense	UK	Africa and Middle East 22.3%, Americas 38.6%, Asia/Pacific 4.7%, Europe 34.4%
Baker Hughes Incorporated	A	Energy	USA	Africa and Middle East 6.4%, Americas 45.5%, Asia/Pacific 25.8%, Europe 22.3% (*)
Baxter International inc.	A-	Other	USA	Africa and Middle East 0.6%, Americas 52.4% (USA 40.1%, Canada 2.9%), Asia/Pacific 19.3%, Europe 27.7%
Bayer Aktiengesellschaft	A-	Pharmaceuticals	Germany	Africa and Middle East 9%, Americas 35.1%, Asia/Pacific 21.6%, Europe 34.3%
Bayerische Motoren Werke Aktiengesellschaft	A+	Automotive	Germany	Africa and Middle East 4.6%, Americas 23.3%, Asia/Pacific 26.6%, Europe 45.5%
Borgwarner inc.	BBB+	Automotive	USA	Africa and Middle East 1.1%, Americas 34.5%, Asia/Pacific 26.1%, Europe 38.2% (*)
BP PLC	A+	Energy	UK	Africa and Middle East 5%, Americas 39%, Asia/Pacific 19.5%, Europe 36.5%
Bristol-Myers Squibb Company	A+	Pharmaceuticals	USA	Africa and Middle East 4.6%, Americas 54.2% (USA 49%), Asia/Pacific 20.3%, Europe 20.9%
British American Tobacco plc	BBB+	Consumer products	UK	Africa and Middle East 19.9%, Americas 20.8%, Asia/Pacific 28%, Europe 31.3%
Canon inc.	AA	Manufacturing	Japan	Africa and Middle East 0.7%, Americas 30.1%, Asia/Pacific 40.9%, Europe 28.2%
Caterpillar inc.	A	Manufacturing	USA	Africa and Middle East 5.5%, Americas 55.6% (USA 41.4%, Canada 5.2%), Asia/Pacific 20.5%, Europe 18.4% (*)
Citigroup inc.	BBB+	Financial Institution	USA	Africa and Middle East 3.3%, Americas 57.4% (USA 39%, Canada 3.4%), Asia/Pacific 17.9%, Europe 10%, Unspecified 11.5%
Continental Aktiengesellschaft	BBB+	Automotive	Germany	Africa and Middle East 2.6%, Americas 28.1%, Asia/Pacific 19.9%, Europe 49.4%
Credit Suisse Group ag	BBB+	Financial Institution	Switzerland	Africa and Middle East 4%, Americas 35.6%, Asia/Pacific 12%, Europe 48.4%
Daimler ag	A	Automotive	Germany	Africa and Middle East 3.2%, Americas 31.2%, Asia/Pacific 22.7%, Europe 42.9% (*)
Diageo plc	A-	Consumer products	UK	Africa and Middle East 15.2%, Americas 42.2%, Asia/Pacific 18.8%, Europe 23.4%, Unspecified 0.3% (*)
E. I. Du Pont de Nemours and Company	A-	Chemicals	USA	Africa and Middle East 5.5%, Americas 53.1% (USA 39.4%, Canada 3%), Asia/Pacific 25.8%, Europe 22.3% (*)
Eastman Chemical Company	BBB	Chemicals	USA	Africa and Middle East 6.2%, Americas 51% (USA 42.5%, Canada 2.5%), Asia/Pacific 23.4%, Europe 19.4%
GKN Holdings plc	BBB-	Automotive	UK	Africa and Middle East 1.8%, Americas 38.2%, Asia/Pacific 13.8%, Europe 46.2%
Glaxosmithkline plc	A+	Pharmaceuticals	UK	Africa and Middle East 6.5%, Americas 41.7%, Asia/Pacific 25%, Europe 26.9%
Halliburton Company	BBB+	Energy	USA	Africa and Middle East 5.4%, Americas 54.3% (USA 41%, Brasil 4.1%, Mexico 2.9%), Asia/Pacific 23.6%, Europe 16.7% (*)
Hannover Rueck SE	AA-	Financial Institution	Germany	Africa and Middle East 5.4%, Americas 33.2%, Asia/Pacific 22.7%, Europe 38.6%
Heidelbergcement ag	BBB-	Manufacturing	Germany	Africa and Middle East 4.6%, Americas 31.8%, Asia/Pacific 32.4%, Europe 31.2%
Heineken n.v.	BBB+	Consumer products	Netherlands	Africa and Middle East 10.5%, Americas 25%, Asia/Pacific 13.6%, Europe 50%, Unspecified 0.4% (*)
Henkel ag & co. kga	A	Consumer products	Germany	Africa and Middle East 8%, Americas 26.3%, Asia/Pacific 16.9%, Europe 48%, Unspecified 0.7%
Hewlett-Packard Company	BBB	Technology	USA	Africa and Middle East 6.6%, Americas 44.4%, Asia/Pacific 27.6%, Europe 21.5% (*)
Honda Motor co., ltd.	A+	Automotive	Japan	North America 48.55%, Asia/Pacific 42.44%, Europe 4.41%, Other 4.60% (*)
Johnson Controls, inc.	BBB+	Automotive	USA	Africa and Middle East 3.7%, Americas 50.6% (USA 43%), Asia/Pacific 18.7%, Europe 27% (*)
Kering	BBB	Other	France	Africa and Middle East 20.5%, Americas 26.3%, Asia/Pacific 35.1%, Europe 33.6% (*)
Komatsu ltd.	A	Manufacturing	Japan	Africa and Middle East 8.4%, Americas 35.7%, Asia/Pacific 45.1%, Europe 10.7% (*)

Table I. Firms in the sample. Cont.

Company	S&P Rating	Sector	Domicile	Geographic Revenues Exposure
Koninklijke DSM n.v.	A-	Chemicals	Netherlands	Africa and Middle East 4.1%, Americas 36.7%, Asia/Pacific 25.6%, Europe 33.7%
Koninklijke Philips n.v.	BBB+	Manufacturing	Netherlands	Africa and Middle East 7.4%, Americas 39.4%, Asia/Pacific 26.5%, Europe 26.8%
Lafargeholcim Ltd	BBB	Manufacturing	Switzerland	Africa and Middle East 10.3%, Americas 32.6%, Asia/Pacific 31.8%, Europe 25.3%
Linde Aktiengesellschaft	A+	Chemicals	Germany	Africa and Middle East 3.8%, Americas 32.8%, Asia/Pacific 26.9%, Europe 36.5%
Marsh & McLennan Companies, inc.	A-	Financial Institution	USA	Africa and Middle East 4.9%, Americas 54.6% (USA 48.8%), Asia/Pacific 10.1%, Europe 30.4%
Mcdonald's Corporation	BBB+	Other	USA	Africa and Middle East 2.1%, Americas 39.9%, Asia/Pacific 24.9%, Europe 33.1%
Mondelez International, inc.	BBB	Consumer products	USA	Africa and Middle East 6.5%, Americas 40.4%, Asia/Pacific 14.4%, Europe 38.8%
Nestle s.a.	AA	Consumer products	Switzerland	Africa and Middle East 8.6%, Americas 41.4%, Asia/Pacific 23%, Europe 26.9%
Nissan Motor co., Ltd.	A-	Automotive	Japan	Africa and Middle East 4.4%, Americas 52.9% (USA 39.9%, Canada 4.7%), Asia/Pacific 28.4%, Europe 14.3% (*)
Nokia oyj	BB+	Telecommunications	Finland	Africa and Middle East 10.4%, Americas 20.5%, Asia/Pacific 38.6%, Europe 30.5%
Pernod Ricard	BBB-	Consumer products	France	Africa and Middle East 1.1%, Americas 28.5%, Asia/Pacific 39.3%, Europe 31.1% (*)
Pfizer inc.	AA	Pharmaceuticals	USA	Africa and Middle East 4.5%, Americas 50.5% (USA 44.4%, Canada 2.4%), Asia/Pacific 22.8%, Europe 22.2%
PPG industries inc	A-	Chemicals	USA	Africa and Middle East 6.7%, Americas 54.3% (USA 41.4%, Canada 3.3%), Asia/Pacific 16.2%, Europe 22.8% (*)
Ricoh Company, Ltd.	A-	Manufacturing	Japan	Africa and Middle East 5.7%, Americas 31.4%, Asia/Pacific 44.3%, Europe 18.7% (*)
SabMiller plc	A-	Chemicals	UK	Africa 28.08%, Americas 40.94%, Asia/Pacific 15.11%, Europe 15.87% (*)
Sanofi	AA	Pharmaceuticals	France	Africa and Middle East 8.3%, Americas 46.1%, Asia/Pacific 18.3%, Europe 27.4%
Schneider Electric SE	A-	Manufacturing	France	Africa and Middle East 8.8%, Americas 33%, Asia/Pacific 26.6%, Europe 31.6% (*)
Scor SE	AA-	Financial Institution	France	Africa and Middle East 9.4%, Americas 43.5%, Asia/Pacific 15.5%, Europe 31.5%
Sealed Air Corporation	BB	Other	USA	Africa and Middle East 8%, Americas 51.5% (USA 38.2%, Canada 3.4%) Asia/Pacific 13.9%, Europe 26.6%
Siemens Aktiengesellschaft	A+	Manufacturing	Germany	Africa and Middle East 10.5%, Americas 28.5%, Asia/Pacific 18.7%, Europe 42.3% (*)
Sodexo	A-	Other	France	Africa and Middle East 2.6%, Americas 44.7%, Asia/Pacific 10.9%, Europe 38%, Unspecified 3.8% (*)
Softbank Group corp.	BB+	Telecommunications	Japan	Africa and Middle East 1%, Americas 47.8%, Asia/Pacific 48%, Europe 3.1% (*)
Solvay	BBB-	Chemicals	Belgium	Africa and Middle East 6.3%, Americas 32.9%, Asia/Pacific 27.8%, Europe 33.1%
Sony Corporation	BBB-	Manufacturing	Japan	Africa and Middle East 4.5%, Americas 25.2%, Asia/Pacific 47.1%, Europe 23.2% (*)
Starwood Hotels & Resorts Worldwide, inc.	BBB	Other	USA	USA 34.31%, Rest Americas 16.19%, Europe , Africa and Middle East 16.3%, Asia/Pacific 9.85%, Other 23.36%
Technip	BBB+	Energy	France	Europe, Russia and Central Asia 36.28%, Africa 15.41%, Middle East 8.33%, Asia Pacific 15.91%, Americas 24.06%
Telefonaktiebolaget Ericsson	BBB	Telecommunications	Sweden	Africa and Middle East 20.3%, Americas 34.7%, Asia/Pacific 24.6%, Europe 20.4%
The Boeing Company	A	Aerospace and Defense	USA	Africa and Middle East 16.7%, Americas 45.2%, Asia/Pacific 23.6%, Europe 14.6% (*)
The Dow Chemical Company	BBB	Chemicals	USA	Africa and Middle East 7.1%, Americas 42.6%, Asia/Pacific 27.8%, Europe 22.4%
The Goodyear Tire & Rubber Company	BB	Automotive	USA	Africa and Middle East 5.4%, Americas 53.9% (USA 44.4%, Canada 2.3%), Asia/Pacific 13.6%, Europe 27.1% (*)
The Procter & Gamble Company	AA-	Consumer products	USA	Africa and Middle East 5.8%, Americas 52% (USA 41%, Canada 2.8%), Asia/Pacific 19.2%, Europe 22.9% (*)
Transocean inc.	B+	Energy	USA	Africa and Middle East 7.6%, Americas 34.8%, Asia/Pacific 25.4%, Europe 32.2%
UBS AG	A+	Financial Institution	Switzerland	Africa and Middle East 5.5%, Americas 38.4%, Asia/Pacific 15.9%, Europe 40.2%
Unilever n.v.	A+	Consumer products	Netherlands	Africa and Middle East 8.2%, Americas 32.5%, Asia/Pacific 31.9%, Europe 27.4%
Valeo	BBB	Automotive	France	Africa and Middle East 5.6%, Americas 23.3%, Asia/Pacific 26.2%, Europe 44.9% (*)
Weatherford International Ltd.	B	Energy	Switzerland	Africa and Middle East 21%, Americas 55.9% (USA 30.4%, Canada 6.7%), Asia/Pacific 7.3%, Europe 15.8%
WPP 2005 limited	BBB	Other	UK	Africa and Middle East 4.7%, Americas 40.5%, Asia/Pacific 18.2%, Europe 36.6%

434.642 (Goodyear). No CDS has a mean equal or above 500 b.p., which according to Pelizzon, Subrahmanyam, Tomio and Uno (2016) is the threshold used as an indicator by clearing houses in setting margins. However, the maximum reached by these premiums is above 500 b.p. in several cases (Volvo, Arcelormittal, Avnet, Borgwarner, BP, Citi, Continental, Daimler, GKN, Heidelbergcement, Johnson Controls, Kering, Lafargeholcim, Nissan Motors, Nokia, Pernod Ricard, Sealed Air, Softbank, Starwood Hotels, Dow Chemical, The Goodyear Tire and Rubber, Transocean, Valeo, Weatherford and WPP 2005) indicating that, as expected, during our sample period there are times of financial instability such as the 2007-2009 subprime crisis, and 2009-2015 European sovereign crisis. In this sense, the highest quotation is for Heidelbergcement (5315,85 b.p. on December 12, 2008) and the lowest is the one quoted for Nestle (3.25 b.p. on June 13, 2007) and Canon (3.25 b.p. on June 27, 2007). It is interesting to note the high time-series variations in many cases, being the overall range average 497 b.p. As expected, the maximum range is 5286 b.p. exhibited by Heidelbergcement and the smallest is 48 b.p. observed for Baxter International (who also show the highest and lowest standard deviation).

We also report the estimated sample standard deviation, skewness and kurtosis. In terms of historical volatility the highest CDS spread change is observed for Heidelbergcement, followed by the Transocean, Nokia, Nissan, Johnson Controls, Softbank and Continental CDS. The variation coefficients reported for these companies, i.e. the ratio of the standard deviation to the mean, are all above 1. All CDS spread distributions show some skewness and the hypothesis of normality (Kolmogorov-Smirnov test¹⁰) has been rejected in the CDS prices distribution for every company.

Next, we present the time variation of the CDS spreads of the whole sample (**Graph 1**). After the bankruptcy of Lehman Brothers in September 2008, CDS reached the highest level. The premiums stay at high levels during the U.S. Great Recession, which ends mid 2009. Spreads revert towards their mean with a new (but not as strong as the former) rise between August 2011 and August 2012 (during the European Sovereign Crisis). Another price increase takes place in 2016 1Q when crude oil prices plummet to multi-year lows.

The CDS spreads variation suggests a strong co-movement across firms, which invites us to further explore the possibility of a joint performance of the risk premia. For this purpose, we first analyze

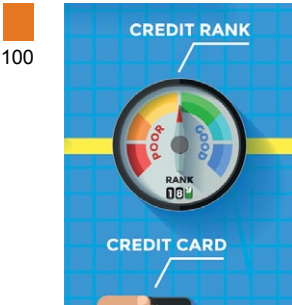


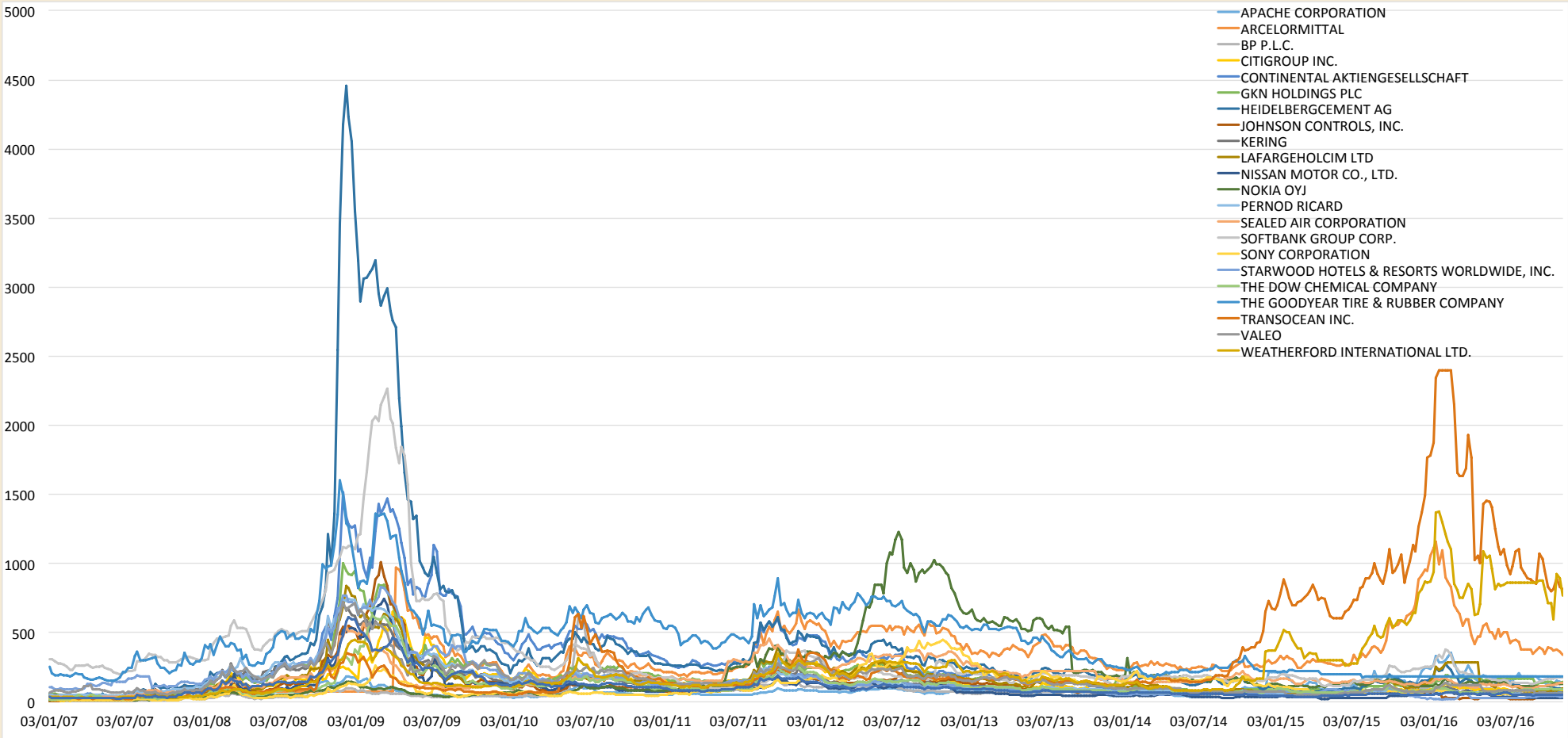
Table 2. Descriptive statistics for weekly CDS prices.

This table reports descriptive statistics for weekly 5-year CDS spreads measured in basis points. The data source is Credit Market Analytics Data Vision through Bloomberg. The time series covers the period from January 2007 to November 2016.

	<i>ELECTROLUX</i>	<i>VOLVO</i>	<i>AKZO NOBEL</i>	<i>APACHE</i>	<i>ARCELOR</i>	<i>ARROW ELEC.</i>	<i>ASTRAZENECA</i>	<i>AVNET</i>	<i>BAE SYSTEMS</i>	<i>BAKER HUGHES</i>	<i>BAXTER INT</i>	<i>BAYER</i>	<i>BMW</i>
Maximo	203,27	606,31	200,44	354,20	1155,91	290,68	187,21	560,76	282,37	130,08	56,35	145,87	496,90
Minimo	22,57	19,94	20,88	13,34	23,23	35,17	4,46	42,51	13,93	13,30	8,75	14,45	8,89
Media	76,51	152,52	75,73	84,84	314,28	106,70	50,07	136,72	90,80	54,44	30,07	55,46	91,07
Desv. Típica	32,25	105,06	31,44	56,16	202,22	45,21	27,64	76,34	45,86	23,72	9,06	22,49	72,01
Asimetría	1,71	1,86	0,79	1,65	1,00	0,85	2,01	2,20	1,01	0,66	0,03	1,12	2,64
Curtosis	3,52	4,11	0,38	3,19	1,78	0,35	6,50	7,03	1,38	0,09	-0,21	1,71	8,64
	<i>BORGWARNER</i>	<i>BP</i>	<i>BRISTOL-MYERS</i>	<i>BRITISH AM TOB.</i>	<i>CANON</i>	<i>CATERPILLAR</i>	<i>CITI</i>	<i>CONTINENTAL</i>	<i>CRED. SUISSE</i>	<i>DAIMLER</i>	<i>DIAGEO</i>	<i>E. I. DU PONT</i>	<i>EASTMAN CHEM.</i>
Maximo	611,63	611,96	68,63	169,60	179,90	414,30	653,79	1513,91	252,01	513,33	126,96	195,03	195,09
Minimo	21,83	3,67	7,93	19,55	3,25	12,57	7,44	38,09	9,96	20,08	13,61	8,69	30,84
Media	97,52	75,99	29,32	55,96	33,99	78,95	144,33	271,11	97,53	96,16	58,82	53,87	83,63
Desv. Típica	78,41	62,89	12,28	21,06	23,81	52,38	100,99	285,54	44,80	70,25	19,87	25,66	27,49
Asimetría	3,62	4,30	0,50	2,10	2,38	2,54	1,89	2,08	0,40	2,63	-0,15	1,84	0,82
Curtosis	16,73	27,93	0,04	7,24	8,40	9,08	5,25	4,69	-0,05	9,06	-0,14	5,73	1,92
	<i>GKN HOLD</i>	<i>GLAXOSMITH.</i>	<i>HALLIBURTON</i>	<i>HANNOVER RU</i>	<i>HEIDELBERGC.</i>	<i>HEINEKEN</i>	<i>HENKEL & CO</i>	<i>HEWLETT-P.</i>	<i>HONDA</i>	<i>JOHNSON CONT.</i>	<i>KERING</i>	<i>KOMATSU</i>	<i>DSM</i>
Maximo	1002,40	114,67	216,36	154,72	4454,34	265,25	176,68	374,41	316,63	1014,02	701,82	158,25	141,06
Minimo	36,96	4,92	14,43	8,50	30,40	31,89	10,42	8,25	4,22	18,57	33,34	7,03	22,73
Media	191,97	43,57	64,76	73,78	395,59	86,13	49,57	100,21	53,87	119,09	141,98	43,08	56,21
Desv. Típica	149,09	18,20	34,70	33,96	644,58	45,30	27,58	74,01	46,55	134,76	116,99	26,40	18,95
Asimetría	2,94	0,42	1,45	0,21	4,02	1,46	1,31	1,12	2,98	3,64	2,62	1,58	1,37
Curtosis	10,46	1,78	3,05	-0,76	16,73	1,93	2,76	0,96	10,79	15,53	7,52	3,18	2,84
	<i>PHILIPS</i>	<i>LAFARGE.</i>	<i>LINDE</i>	<i>MARSH & MCL.</i>	<i>MCDONALD'S</i>	<i>MONDELEZ</i>	<i>NESTLE</i>	<i>NISSAN</i>	<i>NOKIA</i>	<i>PERNOD RICARD</i>	<i>PFIZER</i>	<i>PPG IND.</i>	<i>RICOH</i>
Maximo	161,94	841,65	165,31	163,96	67,56	141,34	86,39	741,77	1230,02	746,02	123,30	278,23	214,56
Minimo	14,21	19,00	15,93	16,00	9,79	12,99	3,25	14,96	8,28	42,25	4,83	16,23	4,92
Media	64,75	163,38	49,98	58,39	31,31	53,81	33,77	96,99	206,69	150,27	40,90	65,93	48,52
Desv. Típica	27,99	128,21	22,29	31,08	11,95	22,21	15,45	111,74	238,80	136,26	23,40	44,71	38,12
Asimetría	0,93	2,41	1,63	1,04	0,36	1,05	0,55	3,39	2,10	2,66	0,67	2,50	2,32
Curtosis	0,60	7,30	4,86	0,33	-0,34	0,79	0,79	12,61	3,98	7,41	0,40	7,29	6,11
	<i>SABMILLER</i>	<i>SANOFI</i>	<i>SCHNEIDER ELEC.</i>	<i>SCOR</i>	<i>SEALED AIR</i>	<i>SIEMENS</i>	<i>SODEXO</i>	<i>SOFTBANK</i>	<i>SOLVAY</i>	<i>SONY</i>	<i>STARWOOD H.</i>	<i>TECHNIP</i>	<i>ERICSSON</i>
Maximo	215,00	128,77	263,30	238,29	567,71	234,80	115,00	2266,67	249,31	451,14	830,41	311,65	431,07
Minimo	26,48	9,07	18,20	10,34	28,75	10,70	18,43	95,00	10,06	8,83	15,49	20,30	20,59
Media	80,18	49,13	72,54	95,00	181,26	59,67	58,30	328,11	85,63	110,63	160,80	108,17	107,30
Desv. Típica	40,21	21,24	42,51	48,83	96,25	32,09	18,28	341,36	42,79	89,84	149,11	49,32	67,47
Asimetría	1,39	0,82	1,54	0,88	1,21	1,86	0,19	3,57	0,87	1,59	2,52	0,98	1,99
Curtosis	1,93	1,01	2,90	0,48	1,72	5,81	-0,01	13,93	1,12	2,63	6,80	2,19	5,26
	<i>BOEING</i>	<i>DOW CHEMICAL</i>	<i>GOODYEAR</i>	<i>PROCTER & G.</i>	<i>TRANSOCEAN</i>	<i>UBS</i>	<i>UNILEVER</i>	<i>VALEO</i>	<i>WEATHERFORD</i>	<i>WPP 2005 LMTD</i>			
Maximo	271,25	630,05	1600,96	150,00	2399,79	347,23	83,34	719,73	1373,23	611,10			
Minimo	7,79	14,45	151,68	6,46	19,66	4,69	12,40	48,40	23,76	21,93			
Media	58,47	117,34	434,64	39,28	339,00	97,32	33,96	165,55	253,44	109,73			
Desv. Típica	43,95	93,67	251,35	24,87	432,15	58,56	11,89	113,27	244,67	93,40			
Asimetría	2,11	3,17	1,40	2,00	2,46	1,12	1,14	2,26	2,01	2,78			
Curtosis	5,71	12,31	2,78	4,98	6,71	1,66	1,51	6,87	3,95	9,19			

Graph I. Evolution of spreads on CDS (basis points).

This figure depicts the evolution of the 75 CDS spreads between January 2007 and November 2016. The prices of the companies not shown follow a very similar path to the less volatile ones.



correlations and other preliminary tests, and then, following Roll (2013) and Cotter et al. (2016), we conduct a PCA to prove the existence of commonality in the data. This method will help us identify the most useful variables in the set of assets and reduce the sample to a smaller number of relevant factors for synthesizing credit risk. Subsequently, and based on these factors, we select the companies whose stocks will integrate the final portfolio in which we will measure market risk.

3. THE EXISTENCE OF A COMMON UNDERLYING CREDIT RISK IN MULTINATIONAL CORPORATIONS

First, we explore the relationship between weekly changes in corporate CDS and explore how closely they move together by measuring Spearman rank correlations for weekly changes in the premia.¹¹ All of them are found to be positive and significant at a 1% level suggesting that the spread changes are driven by common factors.¹² Additionally, the determinant of the correlations matrix is close to zero ($1.019\text{E-}28$), which indicates that the variables are linearly related.

Next, we perform additional diagnostics tests to confirm that the correlation matrix of the 75 CDS weekly price changes ensures an adequate structure to reduce the size of the sample through a PCA. Results of these tests are presented in **Table 3**. Bartlett's sphericity test is used to assess whether the correlation matrix differs significantly from the identity matrix. Under the acceptance of the null hypothesis (that the matrix of correlations is an identity matrix), the factorial model would be inadequate. Reported p-values show rejection of the null hypothesis at the 1% significance level, indicating that the analyzed series are intercorrelated, and therefore the factorial analysis is appropriate. Additionally, we measure the degree of multicollinearity using the Kaiser-Meyer-Olkin (KMO) index of sampling adequacy. As reported in **table 3**, results show that the statistic is very close to 1, confirming a significant dependence between the variables, which share a high degree of information. Given the reported results, we conclude that there is sample adequacy to conduct a factorial analysis, as means of reducing the size of the sample.¹³ Finally, the matrix of anti-image correlations which measures the sample adequacy for each variable, confirms that the factorial model is adequate to explain the data as they all exhibit a value close to 1 (the mean being 0.96).¹⁴

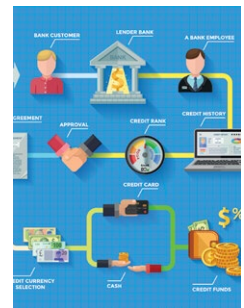


Table 3. Tests of adequacy of the weekly CDS price changes sample for the factor analysis.

This table shows the results obtained through SPSS regarding the Kaiser-Meyer-Olkin (KMO) and Bartlett test. Both preliminary tests confirm the data adequacy for carrying out a PCA.

KMO	0.967
Bartlett sphericity test:	
Aprox. Chi-square	26565.428
df	2775
Sig.	0.0000

Given the results reported in the preliminary tests, we use PCA to estimate the relevance of the common factors that drive the variation in the single name CDSs. This factor analysis explores the underlying structure in the data matrix, analyzes the interrelationships between the variables and calculates a set of latent dimensions (factors) that explain these interrelationships. By doing this, it reduces the size of the sample obtaining a subsample with fewer variables that are a linear combination of the original ones, and whose interpretation allows a more simplified study. In other words, the PCA selects those variables that explain an acceptable proportion of the global variance with a reasonable loss of information. This helps us to extract the systematic component of the default risk (as opposed to the idiosyncratic risk) of the analyzed multinational companies, in line with Diaz, Groba and Serrano (2013). By doing so, we identify the latent or unobserved risks measured by CDS price changes. The factors obtained through the PCA are orthogonal to each other and not correlated, and reflect the structure in which global credit risk is summarized. These factors explain a large proportion of the total variance and they can be used as selection criteria to reduce the dimensionality of our initial group of multinationals to a smaller but highly diversified portfolio. While transforming the sample of companies into a portfolio with a lower number of assets, we retain those corporates that contribute most to the variance explanation and that are also represented by different factors. We therefore leave aside those companies that are redundant for diversification purposes.

The results of the PCA on the 75 companies CDS are shown in **Table 4**. The first factor displays the highest possible proportion of the original variance. The second factor contains the maximum possible variance not included in the first one, and so on. Hence, companies are grouped into 11 factors, interpretable through the orthogonal rotation of the component matrix using the Varimax method with Kaiser standardization. This results in a linear combination of the first matrix, explaining the same amount of initial variance, but offering a more interpretable solution by rotating the axes that represent the factors. Through this rotated matrix, we collect 66% of the variance. A first principal component accounts for 42.3% of the variation in CDS prices. Moreover, by looking at the relationship of the factor with the companies represented in it, we can identify it as a European factor. The second main component explains an additional 4.2% of the variance and is mainly a European automotive factor. The third one explains an additional 3.7% and represents the US energy sector. The fourth component explains an additional 3% of the variance and accounts for a portion of the US market. The fifth principal component accounts for an additional 2.5% and is related to the US automotive sector. Together, the first three principal components explain 50.18% of the total variation in CDS prices, and the 11 common factors account for 65.94% of the variance.

These results suggest that changes in CDS premia evolve together and highlight the existence of common default risk. While this risk is not explained by sector or country specific factors it is related to global drivers. They are in line with Diaz et al. (2013) who find a first component explaining 56% of the variation in spread changes, and with Berndt and Obreja (2010) who note a first factor explaining 53% of CDS weekly returns. However, it must be noted that while both studies deal with European companies, they do not analyze a multinational sample. They are also based on shorter periods (2006-2010 for the former and 2003-2008 for the latter.) Note also that Diaz et al. (2013) look only at investment grade corporates. Their sample is therefore more homogeneous than that selected for this analysis. As a consequence, the dominant factor found is consistent with the existence of common underlying credit risk latent in multinational corporations in all countries and sectors (Longstaff et al., 2008, Cotter et al., 2013).

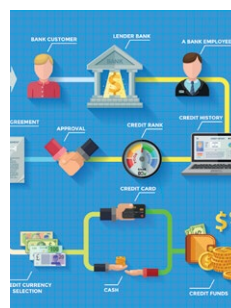


Table 4. Principal Component Analysis (PCA).

The table shows the common factors that underlie the weekly price changes of the 75 CDS. Components have been extracted based on those with eigenvalues greater than 1, using SPSS 15.0 software. The communalities show that all the variables provide information on the structure of the credit risk and therefore all of them can be gathered into components. The rotation of the component matrix has been conducted using the Varimax method with Kaiser normalization and has converged in 12 iterations. This table shows the main components, which are a linear combination of the original values and are not correlated with each other, and the variables that make them up.

	Explained Variance	Components from highest to lowest factorial load							
PC 1 (%)	42.292	Linde	Henkel	Akzo Nobel	Bayer	Unilever	DSM	Solvay	and 21 companies more*
PC 2 (%)	4.186	BMW	Daimler	Valeo	Continental	GKN	Volvo		
PC 3 (%)	3.698	Transocean	BP	Halliburton	Apache	Weatherford Int	Baker Hughes		
PC 4 (%)	2.974	Bristol-Myers Squibb	Pfizer	Baxter Int	Mcdonald's	Procter & Gamble	Mondelez Int	Boeing	
PC 5 (%)	2.535	Johnson Controls	Borgwarner	Goodyear	Starwood Hotels	Caterpillar	PPG		
PC 6 (%)	2.224	Nissan Motor	Honda Motor	Sony	Komatsu	Softbank			
PC 7 (%)	1.910	Avnet	Arrow Electronics	Sealed Air	Hewlett-Packard	Eastman Chemical	E. I. Du Pont	Dow Chemical	
PC 8 (%)	1.683	UBS	Credit Suisse	Scor	Hannover Rueck	Citigroup			
PC 9 (%)	1.601	Ricoh Company	Canon						
PC 10 (%)	1.477	Heineken	Marsh & McLennan						
PC 11 (%)	1.354	Arcelormittal							
Cumulative Var (%)	65.938								

*The remaining 21 companies in PC1, from the highest to the lowest factorial load, are: Astrazeneca, Bae Systems, Nestle, Sanofi, Diageo, Sodexo ,WPP 2005 limited, Philips, Kering , Glaxosmithkline, Pernod Ricard, Technip, Lafargeholcim, Schneider Electric, Siemens, Electrolux, British American Tobacco, SabMiller, Heidelbergcement, Ericsson and Nokia.

4. A DIVERSIFIED EQUITY PORTFOLIO FOR GLOBAL INVESTORS

We are now in position to propose a suitable strategy to design a portfolio of internationally and sectorally diversified assets, displaying a variety of credit qualities, a low number of securities and a controlled market risk level. Each of the 11 factors is associated to the company that in each principal component has the greater factorial load, i.e., those with a stronger relationship to the principal component to which they are related and, therefore, can better explain such factor. The diversified portfolio is thus composed by the stocks of the 11 companies specified in **Table 5**. The portfolio is equally weighted and exhibits low but significant (1% in almost all cases) stock price correlations, as reported in **table 6**.

We now verify the power of this portfolio in decreasing investment risk. To do this, we use stock prices measured in local currency, of each of these companies (not the CDS). Following Markowitz (1952), we calculate the portfolio risk using the standard deviation of the returns of these companies' stocks using the variance-covariance matrix and the correlation coefficients between the 11-company stock returns. By doing so, we are able to compare the risk-return profile of a portfolio built on the basis of credit risk, with other equity indices in order to verify its bounties in terms of risk diversification. In particular, we use as benchmark the MSCI ACWI (USD) global index. This index captures the evolution of 2,490 companies in 23 developed markets and 24 emerging countries.¹⁵

The risk terms of annualized volatility exhibited by the 11-stocks portfolio during the 2007-2016 period is 22.17%. This is slightly higher than the annualized volatility reported for the MSCI ACWI index, which is 17.63. In terms of performance, the portfolio exhibits an annualized return of + 1.18% higher than the + 1.01% of the ACWI index (see **Table 7**).

It is evidenced that a small, internationally and sectorically diversified portfolio, which includes the global credit risk structure, displays a return/market risk relationship very much in line with the global MSCI ACWI USD portfolio, which as previously specified is of 2,490 companies, covering 85% of the global investable equity opportunity set.¹⁶ Additionally, in order to achieve a holistic view of the effectiveness of the portfolio proposed, we compare the results with those of the most widely used equity indices in the financial world, Eurostoxx 50 and S&P 500, being the former geographically

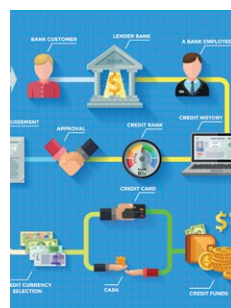


Table 5. **Highly diversified international portfolio.**

Data for geographic revenues exposure are 2015 year-end figures in almost all cases. (*) stands for 2016 data.

Company	Rating	Sector	Domicile	Geographic Revenues Exposure	Factor Loadings
Linde	A+	Chemicals	Germany	Africa and Middle East 3.8%, Americas 32.8%, Asia/Pacific 26.9%, Europe 36.5%	0.784
BMW	A+	Automotive	Germany	Africa and Middle East 4.6%, Americas 23.3%, Asia/Pacific 26.6%, Europe 45.5%	0.730
Transocean	B+	Energy	USA	Africa and Middle East 7.6%, Americas 34.8%, Asia/Pacific 25.4%, Europe 32.2%	0.753
Bristol-Myers	A+	Pharmaceuticals	USA	Africa and Middle East 4.6%, Americas 54.2% (USA 49%), Asia/Pacific 20.3%, Europe 20.9%	0.734
Johnson Controls	BBB+	Automotive	USA	Africa and Middle East 3.7%, Americas 50.6% (USA 43%), Asia/Pacific 18.7%, Europe 27% (*)	0.702
Nissan Motor	A-	Automotive	Japan	Africa and Middle East 4.4%, Americas 52.9% (USA 39.9%, Canada 4.7%), Asia/Pacific 28.4%, Europe 14.3% (*)	0.837
Avnet	BBB-	Technology	USA	Africa and Middle East 4.2%, Americas 39.8%, Asia/Pacific 30.2%, Europe 25.8% (*)	0.672
UBS	A+	Financial Institution	Switzerland	Africa and Middle East 5.5%, Americas 38.4%, Asia/Pacific 15.9%, Europe 40.2%	0.778
Ricoh	A-	Manufacturing	Japan	Africa and Middle East 5.7%, Americas 31.4%, Asia/Pacific 44.3%, Europe 18.7% (*)	0.653
Heineken	BBB+	Consumer products	Netherlands	Africa and Middle East 10.5%, Americas 25%, Asia/Pacific 13.6%, Europe 50%, Unspecified 0.4% (*)	0.570
Arcelormittal	BB	Other	Luxembourg	Africa and Middle East 10.5%, Americas 39.1%, Asia/Pacific 5%, Europe 45.4% (*)	0.902

Table 6. **Spearman's correlation coefficients between stock price changes.**

STATA obtained, all found to be lower than 0.58, indicating (*), (**) and (***) a significance level of 10%, 5% and 1% respectively.

	Linde	BMW	Transocean	Bristol-Myers	Johnson Controls	Nissan Motor	Avnet	UBS	Ricoh	Heineken	Arcelormittal
Linde	1										
BMW	0.5795(***)	1									
Transocean	0.2946(***)	0.3049(***)	1								
Bristol-Myers	0.2486(***)	0.2643(***)	0.2276(***)	1							
Johnson Controls	0.3442(***)	0.3555(***)	0.4128(***)	0.3873(***)	1						
Nissan Motor	0.0837(***)	0.0874(***)	0.0542(***)	-0.0129	0.0159	1					
Avnet	0.3282(***)	0.3719(***)	0.3853(***)	0.3512(***)	0.5072(***)	0.0339(*)	1				
UBS	0.4789(***)	0.5489(***)	0.3126(***)	0.2358(***)	0.3449(***)	0.1378(***)	0.3607(***)	1			
Ricoh	0.0876(***)	0.0835(***)	0.0491(**)	-0.0090	0.0170	0.5737(***)	0.0372(*)	0.1304(***)	1		
Heineken	0.4821(***)	0.4504(***)	0.2164(***)	0.2266(***)	0.2666(***)	0.0911(***)	0.2622(***)	0.3652(***)	0.1082(***)	1	
Arcelormittal	0.5384(***)	0.5655(***)	0.4130(***)	0.2069(***)	0.3488(***)	0.0876(***)	0.3663(***)	0.5189(***)	0.1032(***)	0.3632(***)	1

located in the Euro zone and the latter in the United States (see **Table 7 and Graph 2**). It is noted that during the analyzed 10-year period, the Eurozone has shown worse stock performance than the United States. It is also evidenced that the international portfolio exhibits an intermediate position between these two extremes.

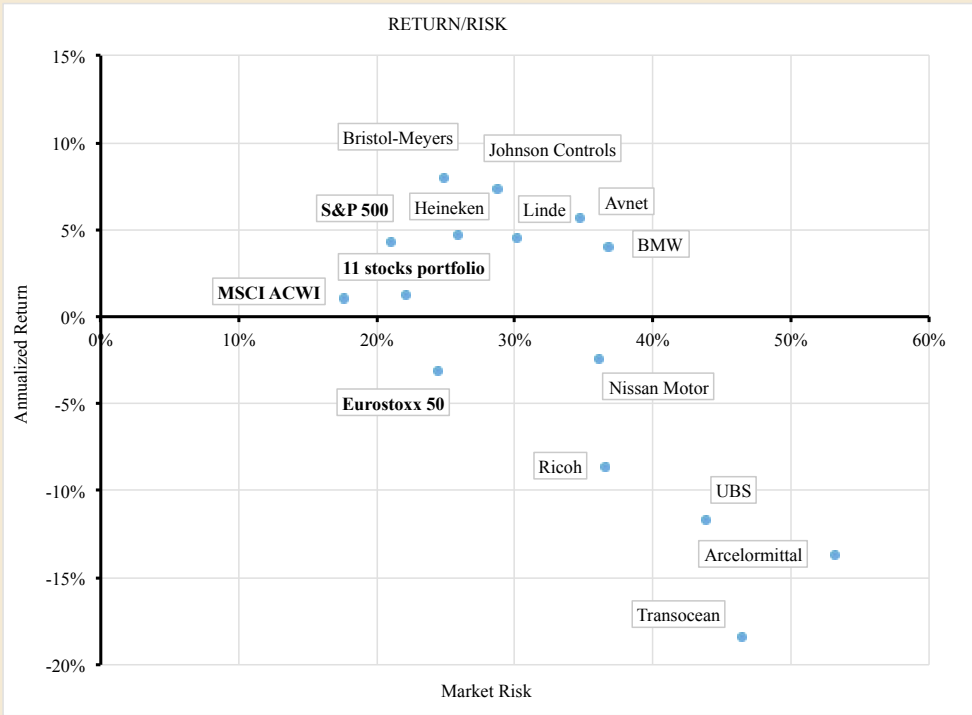
Table 7. Risk and returns

This table shows both the risk and return of the global portfolio and the main equity indices between January 3, 2007 and November 18, 2016. Additionally, the return per unit of risk is displayed (Sharpe ratio assuming that the risk-free interest rate is zero) for comparison purposes.

	Market Risk	Total Return January 3, 2007 - November 18, 2016	Annualized Return	Modified Sharpe Ratio
Linde	30,19%	55,66%	4,52%	0.150
BMW	36,73%	47,92%	3,99%	0.109
Transocean	46,47%	-86,98%	-18,44	-0,397
Bristol-Myers	24,84%	115,16%	7,96%	0.321
Johnson Controls	28,78%	103,31%	7,35%	0.256
Nissan Motor	36,07%	-22,09%	-2,47%	-0,068
Avnet	34,72%	73,62%	5,67%	0,163
UBS	43,82%	-71,07%	-11,67%	-0,266
Ricoh	36,57%	-59,65%	-8,68%	-0,237
Heineken	25,87%	57,99%	4,68%	0,181
Arcelormittal	53,20%	-77,21%	-13,75%	-0,258
11 stocks portfolio	22.17%	12.42%	1.18%	0,053
MSCI ACWI	17,63%	10,87%	1,01%	0,057
Eurostoxx 50	24,43%	-27,87%	-3,14%	-0,129
S&P 500	21,02%	54,02%	4,31%	0,205

Graph 2. Risk vs. Returns.

The graph shows the volatility-annualized return profile of the different stocks and portfolios. It depicts the power of the international portfolio with exposure to global credit risk.



5. CONCLUSIONS

In this paper we propose a portfolio diversification strategy for international investors based on the existence of global credit risk. Specifically, we back the incipient trend in the financial industry integrating CDS market information into stock selection, exploiting the view that both markets react to the same fundamentals (Merton, 1974). Our work is therefore useful for offsetting the negative effect that globalization has on diversification benefits, and for achieving a greater investment risk control without discarding profitability. The proposed methodology and the results obtained are of special interest for a) mutual, pension, and hedge funds managers b) Institutional investors looking for diversification opportunities in an increasingly integrated world and c) retail investors with fewer

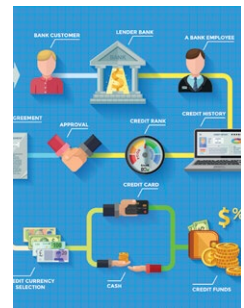
information processing systems and, therefore, fewer decision making capability.

Our results suggest that it is possible to continue enjoying the benefits of portfolio diversification in the current globalized context.

Our contribution evidences, firstly, the relevance of following an adequate methodology when selecting truly multinational companies, taking into account the diversity of the areas where their incomes proceed from. By providing a challenging selection criteria we offer a crucial first step to obtain a definitely global exposure, with appealing results that investors can explore.

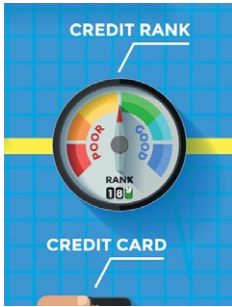
Secondly, our results also underline the usefulness of considering the CDS market information, since credit risk is one of the causes of the diversification power reduction. It is therefore desirable to identify companies that are exposed to different credit factors (PCA method) in order to be able to choose those with a different risk profile. This step is crucial in order to achieve a portfolio of heterogeneous companies whose default risk levels react, at least partially, to different types of shocks. This relevance is verified by the benefit, in terms of diversification, that is achieved once these factors and companies are identified, since the changes in the prices of their stocks are also barely related (in consonance with the implications predicted by the financial theory).

Finally, the empirical evidence confirms that, by investing in a dozen of stocks selected on the basis of credit risk, a significant diversification level is reached. This results in a portfolio with a return/risk profile comparable to the main international equity indices, which include hundreds or thousands of assets which makes its replication more expensive in terms of costs and management.



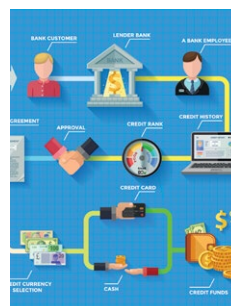
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NOTES

1. **Acknowledgment:** The authors thank the peer reviewers for their comments and recommendations, which have contributed to significantly improve this article. Likewise, they express their gratitude to Ricardo García and Ramón Bermejo for their contribution of data, necessary to make up the sample, as well as to Dr. Antonio Rúa for his suggestions regarding the Principal Components Analysis.
2. Corresponding author: C/ Begonia 240; 28109 Alcobendas (Madrid); Spain
3. Given the global sample that we analyze, we have decided to use CDS because of their homogeneity and comparative ease.
4. Readers interested in more information on CDS can consult Augustin et al. (2016).
5. Readers interested in more information can visit <https://www.forbes.com/sites/steveschaefer/2016/05/25/the-worlds-largest-companies-2016/#6bf9f2fc45a6>.
6. Depository Trust & Clearing Corporation (DTCC) is a US company offering clearing, settlement and custody services for assets traded in the financial markets. As it liquidates the vast majority of transactions in the US capital markets, it is a source of valuable information.
7. It should be noted that CDS contracts are only available if there is any level of debt and therefore are only issued in companies with some credit risk. This implies that we do not account with some large multinational corporations that could have been interesting, such as Inditex. In addition, for companies where the risk of default is low, (which could be the case of companies such as Apple, Google or Microsoft) there are no CDS contracts issued or their liquidity level is not high enough to enter this sample.
8. For the equivalence between the rating and the investment grades, the following correspondences have been taken as criteria:
High investment grade: AA-, AA, AA+
Upper medium investment grade: A-, A, A+
Lower medium grade: BBB-, BBB, BBB+
Non-investment grade speculative: BB-, BB, BB+
Highly speculative grade: B-, B, B+
9. Data are provided by Credit Market Analysis (CMA) Data Vision. Prices are denominated in basic points on the insured nominal value and therefore are free of units of account.
10. The results are available upon request.
11. We use weekly changes instead of weekly prices, following previous empirical work on default risk (eg Longstaff et al., 2011, Eichengreen et al., 2012, Ang and Longstaff, 2013).
12. The results are available to the interested reader.
13. Albeit the ACP implicitly assumes a multivariate normality of the data, which in this case is not met (the Jaque-Bera test, available to the interested reader, rejects the hypothesis of normal distribution in the CDS price changes of the 75 companies) following Bai (2003) the presence of multivariate normality is not a necessary condition to confirm the adequacy of the PCA in the data. Therefore, according to the tests conducted that suggest that carrying out a factorial analysis is adequate, and following the previous financial literature that omits to verify the multivariate normality (Diaz, Groba and Serrano, 2013; Longstaff, Pan, Pedersen, and Singleton, 2011, Berndt and Obreja, 2010 ...) we consider that our methodology is appropriate for the purposes that are expected to be achieved in this paper.
14. The results are available to the interested reader.
15. According to data as of October 31, 2017
16. Readers interested in more information about the index MSCI ACWI (USD) may consult <https://www.msci.com/documents/1296102/1362201/MIS-ACWI-brochure-2017.pdf/e23b68bf-5d62-4ac0-8f5b-4ba783789aa5>





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Diversificación internacional y riesgo de crédito global: una metodología para construir carteras¹

International diversification and global credit risk: a methodology for portfolio building

I. INTRODUCCIÓN

La globalización de los negocios, y la actividad financiera internacional provee un lazo entre diferentes mercados locales y ayuda a entender la vinculación entre sectores y países; sin embargo, esta realidad dificulta la construcción de carteras diversificadas internacionalmente. La evidencia reciente en los mercados financieros sugiere que los beneficios de la diversificación internacional han disminuido en el periodo post-2000. De hecho, esta reducción en el potencial de diversificación conlleva un mayor riesgo en las inversiones (Cotter et al. 2016).

Si bien ha habido una explosión de publicaciones relacionadas con el riesgo sistémico vinculado a las instituciones financieras y al contagio en los mercados financieros, es llamativo el escaso número de artículos publicados en relación con el riesgo sistemático global y las implicaciones que, para el inversor, tiene un panorama más integrado y menos diversificado. Queriendo aportar una solución a esta realidad, ofrecemos en este artículo una metodología sencilla y novedosa para elaborar carteras diversificadas globalmente, que añada valor y soluciones al inversor internacional. Nuestra propuesta se basa en la información recogida por dos mercados financieros complementarios, el de los Credit Default Swap (CDS) y el de las acciones.



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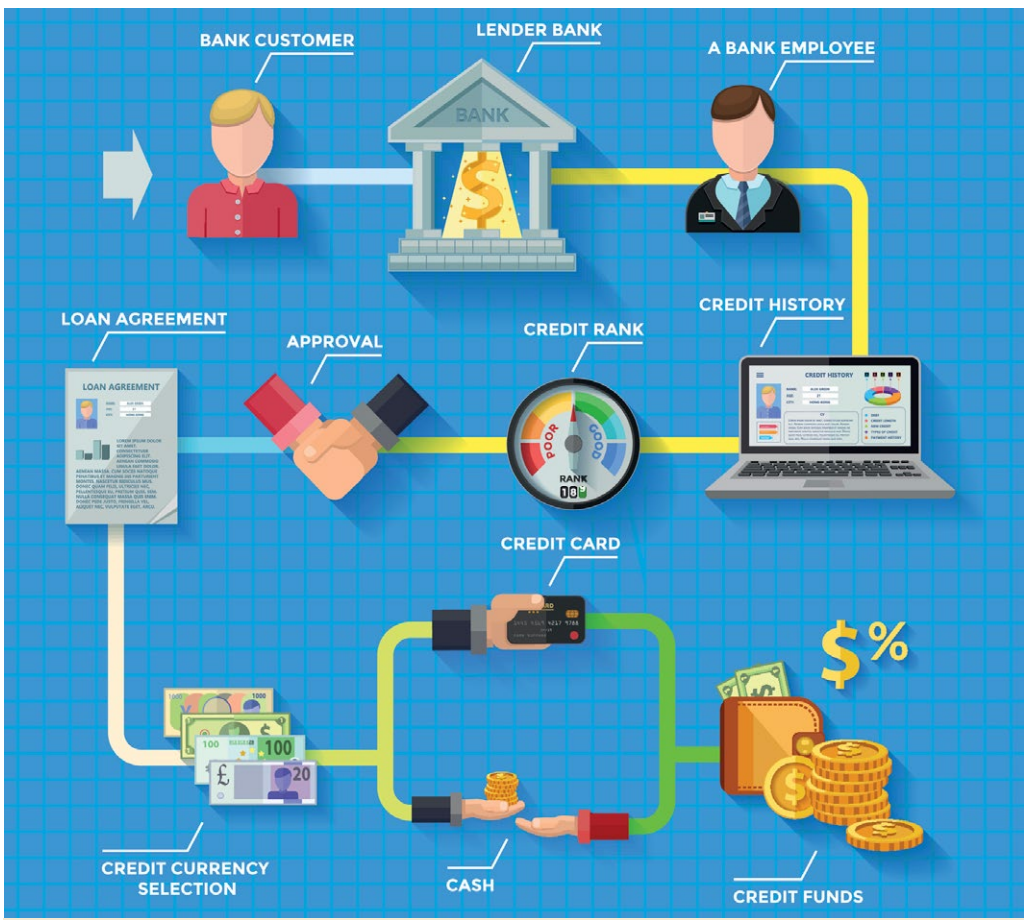


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RESUMEN DEL ARTÍCULO

Recientemente se ha señalado el riesgo de crédito como una causa del descenso en la capacidad de diversificación internacional; en este trabajo ofrecemos una metodología para formar una cartera de inversión en renta variable con exposición al riesgo de crédito global y con riesgo de mercado controlado. Siguiendo la metodología de descomposición factorial, reducimos la muestra de las mayores empresas internacionales a una cartera con tan solo 11 acciones, representantes de diferentes factores de riesgo, que muestran una elevada diversificación en términos de riesgo sistemático y un binomio riesgo-rentabilidad equiparable a los principales índices de renta variable internacionales.

EXECUTIVE SUMMARY

Credit risk has recently been identified as a cause of declining international diversification capacity; in this paper we offer an alternative methodology to create an equity portfolio with exposure to global credit risk and controlled market risk. Following the factor decomposition methodology, we reduce a sample of the biggest international companies to a portfolio composed by just 11 stocks, representing different risk factors, which show high diversification in terms of systematic risk and a risk-return binomial comparable to benchmark international equity indices.

La integración de la información recogida en el mercado de CDS está motivada por el hallazgo en Cotter et al. (2016), quienes sugieren que el elevado nivel de riesgo de crédito en los mercados es una causa del descenso en la capacidad de diversificación.

No es la primera vez que se estudian las relaciones entre el riesgo de mercado y el riesgo de crédito; de hecho, ha sido un área muy fructífera de investigación en el joven siglo XXI. Desde el punto de vista académico, diversos artículos han analizado la relación a largo plazo entre los dos mercados, sus fundamentales o los lazos de causalidad (p.ej., Carr y Wu, 2010). Adicionalmente, la teoría de opciones, en su formulación aplicada a las empresas (Merton,

1974) provee un marco para vincular el riesgo de crédito y el riesgo de mercado. Así, el pasivo de una compañía puede considerarse como un derecho sobre el activo. De esta manera la situación del activo afecta tanto a la deuda como a las acciones de una empresa, y trabajos como los de Ben Dor y Xu (2015) y Gebhardt et al. (2005) evidencian las ventajas de considerar la información de ambos mercados a la hora de tomar decisiones de inversión.

Tradicionalmente, la mayoría de los inversores se centraba en solo un tipo de información, sin considerar, por ejemplo, la aportación que los mercados de los CDS pudieran hacer para mejorar la predicción de la evolución del mercado de renta variable (Blonk, van der Grient y de Groot, 2017).

Esto está experimentando un cambio y en la actualidad los inversores también dirigen su atención a la transmisión de la información respecto al crédito al mercado de acciones e incorporan dicha información en los modelos de selección de carteras.

Siguiendo la filosofía de estos trabajos, y partiendo de una muestra de empresas multinacionales seleccionadas de acuerdo a la exposición global de su negocio, usamos la información recogida en dos instrumentos financieros diferentes, los CDS y las acciones de sus propias empresas, para componer una cartera global con riesgo de crédito y de mercado diversificado.

A través de un Análisis de Componentes Principales (ACP) aplicado a los CDS se obtienen los factores comunes que afectan al riesgo de crédito de las empresas multinacionales, detectando un elevado grado de comunalidad coherente con estudios previos. Estos factores son utilizados como criterio de selección de las empresas que formarán una cartera diversificada. De acuerdo con Roll (2013),

***Estudiamos la forma
de diversificación
óptima estimando
la relevancia de
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cambios en los CDS
de las empresas
multinacionales...***

los gestores de carteras deben ir más allá de las correlaciones y tener en cuenta los factores comunes que afectan a los riesgos, dado que, aunque las correlaciones entre dos activos determinados sean bajas, los factores comunes que afectan a esos activos pueden ser los mismos y por lo tanto los beneficios de la diversificación nulos. Sin embargo, con el análisis factorial, los factores recogen los riesgos subyacentes a los que están expuestos los activos financieros. Si para dos activos dados esos factores son los mismos, nos encontramos con que combinar estos activos no reduce el riesgo sistemático, por lo que se necesitan activos que aporten diferente riesgo idiosincrático (o específico) y por lo tanto que dependan de factores distintos.

Nos hacemos eco en el presente trabajo de este nuevo enfoque en diversificación internacional y aportamos una nueva implementación, demostrando claramente los beneficios que tiene para el inversor global. Estudiamos la forma de diversificación óptima estimando la relevancia de factores comunes que impulsan los cambios en los CDS de las empresas multinacionales, siguiendo el enfoque de Longstaff y Rajan (2008). Encontramos que una cartera con las acciones de 11 empresas internacionales y con exposición global al riesgo de crédito, seleccionada de acuerdo al método factorial, tiene los mismos beneficios de diversificación en términos de riesgo de mercado que los principales índices globales.

Las principales contribuciones de nuestro trabajo son: (1) la estimación del potencial de diversificación en una cartera constituida por empresas multinacionales que cumplen determinados requisitos de globalización y están expuestas a riesgo de crédito,³ (2) la evidencia de un riesgo de crédito global impulsado por factores globales, (3) el uso de la información sobre el riesgo crediticio proporcionada por el mercado de CDS a la hora de estructurar carteras de inversión en renta variable (4) la propuesta de un método simple de diversificación de carteras internacionales a partir de la selección de aquellas empresas con mayor carga factorial en el ACP y (5) una aplicación empírica de este método que culmina con unos resultados satisfactorios en cuanto a reducción del riesgo de mercado y rentabilidad. Con ello, contribuimos a la literatura referente a la diversificación internacional ofreciendo una forma sencilla de diversificar el riesgo sistemático en carteras expuestas a riesgos crediticios.

El resto del artículo está organizado de la siguiente manera: En

PALABRAS CLAVE

diversificación, riesgo de crédito global, inversiones, riesgo de mercado, Credit Default Swap.

KEY WORDS

diversification, global credit risk, investments, market risk, Credit Default Swap.

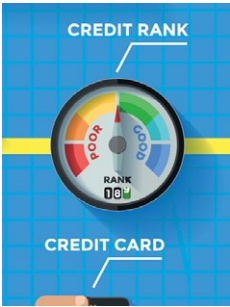
la sección 2 resumimos los datos utilizados en nuestro análisis. Presentamos nuestra metodología e informamos de nuestros resultados empíricos sobre riesgo de crédito global en la sección 3. La sección 4 propone una nueva y sencilla estrategia de inversión diversificada. Finalmente, las conclusiones son presentadas en la sección 5.

2. MULTINACIONALES CON MAYOR DIVERSIDAD GEOGRÁFICA

Una compañía multinacional con ingresos geográficamente muy deslocalizados debería constituir por sí misma un valor con riesgo diversificado. Invertir en este tipo de activos no conlleva un riesgo geográfico específico ya que sus ingresos no provienen solo del país donde están domiciliados sino de otros muchos. Por lo tanto, un inversor deseoso de mantener una cartera bien diversificada, podría optar por un portfolio compuesto por las mayores empresas globales. Sin embargo, si el número de estas entidades es elevado, podría generar excesivas comisiones y necesidades de gestión. Ocurre, además, que podría estar invirtiendo en compañías cuya exposición a los riesgos subyacentes fuera muy similar y consecuentemente estaría potenciando la vulnerabilidad de la cartera. Por este motivo en este trabajo vamos más allá de la diversificación sencilla basada en correlaciones y profundizamos en los criterios de selección de las compañías considerando el riesgo de crédito global.

Con este objetivo, utilizamos los spreads de los CDS de las compañías multinacionales para poder evidenciar la existencia del riesgo de crédito global y ayudar a los inversores a gestionarlo.

Un CDS es un seguro que protege contra el riesgo de un evento de crédito (generalmente impagos) por una empresa o país en particular. El comprador de la protección efectúa pagos periódicos al vendedor (normalmente una prima trimestral) hasta que ocurre un evento de crédito o llega la fecha de vencimiento del contrato, lo que suceda primero. El pago anualizado que efectúa el comprador se conoce como precio o prima del CDS. Esta prima será mayor para los CDS sobre entidades de referencia con peor calidad crediticia (Blanco, Brennan y Marsh, 2005). Por lo tanto, estas cotizaciones de CDS son indicadores útiles del riesgo de incumplimiento de la entidad subyacente (Longstaff, Mithal y Neis, 2005) y convenientes para analizar el riesgo de impago (Berndt y Obreja, 2007)⁴.



Dado que los precios de los CDS corporativos están vinculados a los efectos de la economía global (Aretz y Pope, 2013), la prima del CDS de empresas diversificadas en términos geográficos es útil para evidenciar el riesgo de crédito global al que se enfrentan los inversores.

En este trabajo partimos de las empresas cotizadas más grandes del mundo utilizando la lista de Forbes del año 2016, la cual se basa en una puntuación compuesta de medidas igualmente ponderadas de ingresos, beneficios, activos y valor de mercado⁵. Seleccionamos aquellas que tienen un perfil global de ingresos, es decir, aquellas cuyos ingresos proceden de al menos 3 continentes y que, por separado, ninguno de ellos representa más del 50% de los ingresos de la compañía. Además, y debido a nuestro punto de partida en el riesgo de crédito global consideramos solo aquellas que, según datos del informe DTCC® de diciembre de 2015, tienen sus CDS corporativos entre los 1.000 más líquidos⁷.

Los datos objeto de estudio tienen periodicidad semanal entre el 3 de enero de 2007 y el 16 de noviembre de 2016. Se descartan aquellas empresas para las que falta el 19% de las observaciones (pauta similar a la seguida por Díaz, Groba y Serrano, 2013). Este criterio da como resultado una muestra de 75 empresas, listadas en la **Tabla 1**, con un promedio de 508 observaciones semanales.

Las compañías que constituyen la muestra tienen diferentes calificaciones crediticias a largo plazo en moneda local a enero de 2017: desde AA (Canon, Nestlé, Pfizer y Sanofi) a B (Weatherford Int.), resultando la clasificación de deuda de estas empresas en 5 grupos: Grado alto de inversión en 7 casos (9,3%), Nivel medio alto de inversión para 30 empresas (40%), Grado medio bajo 30 veces (40%), Grado especulativo en 6 casos (8%) y Grado altamente especulativo en 2 empresas (2,7%). Esto nos ofrece una apropiada representación del riesgo de crédito global⁸.

En cuanto a la actividad económica, las 75 empresas se distribuyen en 10 sectores diferentes: el 13,3% de ellas están incluidas en la industria automovilística, 12% en productos químicos, 12% en gran consumo, 9,3% en energía, 8% en instituciones financieras (que incluye 3 bancos, 1 aseguradora y 2 reaseguradoras), 14,6% en manufacturación, 8% en productos farmacéuticos, 4% en tecnología y 4% en telecomunicaciones. El restante 13,3% de las empresas están agrupadas en la categoría “otros” ya que realizan actividades muy diferentes: dos pertenecen al sector aeroespacial y de defensa

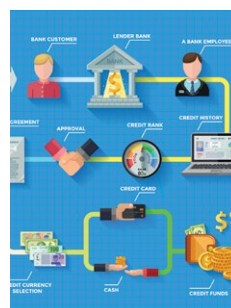


Tabla 1. Empresas que configuran la muestra.

En el cuadro se muestra la calidad crediticia de la deuda, el sector, y los países a los que pertenecen las empresas. Además se añade una columna con la exposición geográfica de ingresos. Las calificaciones crediticias son referidas al largo plazo y en moneda local según Standard and Poors a 24 de enero de 2017. La clasificación del sector está basada en los criterios usados por la empresa Moody's. Los datos sobre la exposición geográfica de ingresos han sido obtenidos de Factset. Se trata de cifras a 31 de diciembre 2015 en la mayoría de los casos. (*) indica que son datos de 2016.

Compañía	S&P Rating	Sector	Domicilio	Exposición Geográfica de Ingresos
Aktiebolaget Electrolux	A-	Productos de Consumo	Suecia	Africa y Oriente Medio 4.2%, Americas 49.3%, Asia/Pacífico 19.4%, Europa 27.1%
Aktiebolaget Volvo	BB	Manufacturación	Suecia	Africa y Oriente Medio 6.7%, Americas 38.3%, Asia/Pacífico 16.5%, Europa 38.4%
Akzo Nobel n.v.	A-	Químicos	Países Bajos	Africa y Oriente Medio 5.2%, Americas 27%, Asia/Pacífico 25%, Europa 42.8%
Apache Corporation	BBB	Energía	USA	Africa y Oriente Medio 30.8%, Americas 49.1%, Europa 20.1%
Arcelormittal	BB	Otros	Luxemburgo	Africa y Oriente Medio 10.5%, Americas 39.1%, Asia/Pacífico 5%, Europa 45.4% (*)
Arrow Electronics, inc.	BBB-	Tecnología	USA	Africa y Oriente Medio 6.7%, Americas 48%, Asia/Pacífico 23.1%, Europa 22.2% (*)
Astrazeneca plc	A-	Farmaceútica	UK	Africa y Oriente Medio 0.7%, Americas 46.5%, Asia/Pacífico 24.4%, Europa 28.4%
Avnet, inc.	BBB-	Tecnología	USA	Africa y Oriente Medio 4.2%, Americas 39.8%, Asia/Pacífico 30.2%, Europa 25.8% (*)
Bae Systems plc	BBB	Aerospacio y Defensa	UK	Africa y Oriente Medio 22.3%, Americas 38.6%, Asia/Pacífico 4.7%, Europa 34.4%
Baker Hughes Incorporated	A	Energía	USA	Africa y Oriente Medio 6.4%, Americas 45.5%, Asia/Pacífico 25.8%, Europa 22.3% (*)
Baxter International inc.	A-	Otros	USA	Africa y Oriente Medio 0.6%, Americas 52.4% (USA 40.1%, Canada 2.9%), Asia/Pacífico 19.3%, Europa 27.7%
Bayer Aktiengesellschaft	A-	Farmaceútica	Alemania	Africa y Oriente Medio 9%, Americas 35.1%, Asia/Pacífico 21.6%, Europa 34.3%
Bayerische Motoren Werke Aktiengesellschaft	A+	Automovilística	Alemania	Africa y Oriente Medio 4.6%, Americas 23.3%, Asia/Pacífico 26.6%, Europa 45.5%
Borgwarner inc.	BBB+	Automovilística	USA	Africa y Oriente Medio 1.1%, Americas 34.5%, Asia/Pacífico 26.1%, Europa 38.2% (*)
BP PLC	A+	Energía	UK	Africa y Oriente Medio 5%, Americas 39%, Asia/Pacífico 19.5%, Europa 36.5%
Bristol-Myers Squibb Company	A+	Farmaceútica	USA	Africa y Oriente Medio 4.6%, Americas 54.2% (USA 49%), Asia/Pacífico 20.3%, Europa 20.9%
British American Tobacco plc	BBB+	Productos de Consumo	UK	Africa y Oriente Medio 19.9%, Americas 20.8%, Asia/Pacífico 28%, Europa 31.3%
Canon inc.	AA	Manufacturación	Japón	Africa y Oriente Medio 0.7%, Americas 30.1%, Asia/Pacífico 40.9%, Europa 28.2%
Caterpillar inc.	A	Manufacturación	USA	Africa y Oriente Medio 5.5%, Americas 55.6% (USA 41.4%, Canada 5.2%), Asia/Pacífico 20.5%, Europa 18.4% (*)
Citigroup inc.	BBB+	Institución Financiera	USA	Africa y Oriente Medio 3.3%, Americas 57.4% (USA 39%, Canada 3.4%), Asia/Pacífico 17.9%, Europa 10%, Otros 11.5%
Continental Aktiengesellschaft	BBB+	Automovilística	Alemania	Africa y Oriente Medio 2.6%, Americas 28.1%, Asia/Pacífico 19.9%, Europa 49.4%
Credit Suisse Group ag	BBB+	Institución Financiera	Suiza	Africa y Oriente Medio 4%, Americas 35.6%, Asia/Pacífico 12%, Europa 48.4%
Daimler ag	A	Automovilística	Alemania	Africa y Oriente Medio 3.2%, Americas 31.2%, Asia/Pacífico 22.7%, Europa 42.9% (*)
Diageo plc	A-	Productos de Consumo	UK	Africa y Oriente Medio 15.2%, Americas 42.2%, Asia/Pacífico 18.8%, Europa 23.4%, Otros 0.3% (*)
E. I. Du Pont de Nemours and Company	A-	Químicos	USA	Africa y Oriente Medio 5.5%, Americas 53.1% (USA 39.4%, Canada 3%), Asia/Pacífico 25.8%, Europa 22.3% (*)
Eastman Chemical Company	BBB	Químicos	USA	Africa y Oriente Medio 6.2%, Americas 51% (USA 42.5%, Canada 2.5%), Asia/Pacífico 23.4%, Europa 19.4%
GKN Holdings plc	BBB-	Automovilística	UK	Africa y Oriente Medio 1.8%, Americas 38.2%, Asia/Pacífico 13.8%, Europa 46.2%
Glaxosmithkline plc	A+	Farmaceútica	UK	Africa y Oriente Medio 6.5%, Americas 41.7%, Asia/Pacífico 25%, Europa 26.9%
Halliburton Company	BBB+	Energía	USA	Africa y Oriente Medio 5.4%, Americas 54.3% (USA 41%, Brasil 4.1%, Mexico 2.9%), Asia/Pacífico 23.6%, Europa 16.7% (*)
Hannover Rueck SE	AA-	Institución Financiera	Alemania	Africa y Oriente Medio 5.4%, Americas 33.2%, Asia/Pacífico 22.7%, Europa 38.6%
Heidelbergcement ag	BBB-	Manufacturación	Alemania	Africa y Oriente Medio 4.6%, Americas 31.8%, Asia/Pacífico 32.4%, Europa 31.2%
Heineken n.v.	BBB+	Productos de Consumo	Países Bajos	Africa y Oriente Medio 10.5%, Americas 25%, Asia/Pacífico 13.6%, Europa 50%, Otros 0.4% (*)
Henkel ag & co. kga	A	Productos de Consumo	Alemania	Africa y Oriente Medio 8%, Americas 26.3%, Asia/Pacífico 16.9%, Europa 48%, Otros 0.7%
Hewlett-Packard Company	BBB	Tecnología	USA	Africa y Oriente Medio 6.6%, Americas 44.4%, Asia/Pacífico 27.6%, Europa 21.5% (*)
Honda Motor co., ltd.	A+	Automovilística	Japón	North America 48.55%, Asia/Pacífico 42.44%, Europa 4.41%, Otros 4.60% (*)
Johnson Controls, inc.	BBB+	Automovilística	USA	Africa y Oriente Medio 3.7%, Americas 50.6% (USA 43%), Asia/Pacífico 18.7%, Europa 27% (*)
Kering	BBB	Otros	Francia	Africa y Oriente Medio 20.5%, Americas 26.3%, Asia/Pacífico 35.1%, Europa 33.6% (*)
Komatsu ltd.	A	Manufacturación	Japón	Africa y Oriente Medio 8.4%, Americas 35.7%, Asia/Pacífico 45.1%, Europa 10.7% (*)

Tabla I. Empresas que configuran la muestra. Continuación

Compañía	S&P Rating	Sector	Domicilio	Exposición Geográfica de Ingresos
Koninklijke DSM n.v.	A-	Químicos	Países Bajos	Africa y Oriente Medio 4.1%, Americas 36.7%, Asia/Pacífico 25.6%, Europa 33.7%
Koninklijke Philips n.v.	BBB+	Manufacturación	Países Bajos	Africa y Oriente Medio 7.4%, Americas 39.4%, Asia/Pacífico 26.5%, Europa 26.8%
Lafargeholcim Ltd	BBB	Manufacturación	Suiza	Africa y Oriente Medio 10.3%, Americas 32.6%, Asia/Pacífico 31.8%, Europa 25.3%
Linde Aktiengesellschaft	A+	Químicos	Alemania	Africa y Oriente Medio 3.8%, Americas 32.8%, Asia/Pacífico 26.9%, Europa 36.5%
Marsh & McLennan Companies, inc.	A-	Institución Financiera	USA	Africa y Oriente Medio 4.9%, Americas 54.6% (USA 48.8%), Asia/Pacífico 10.1%, Europa 30.4%
Mcdonald's Corporation	BBB+	Otros	USA	Africa y Oriente Medio 2.1%, Americas 39.9%, Asia/Pacífico 24.9%, Europa 33.1%
Mondelez International, inc.	BBB	Productos de Consumo	USA	Africa y Oriente Medio 6.5%, Americas 40.4%, Asia/Pacífico 14.4%, Europa 38.8%
Nestle s.a.	AA	Productos de Consumo	Suiza	Africa y Oriente Medio 8.6%, Americas 41.4%, Asia/Pacífico 23%, Europa 26.9%
Nissan Motor co., ltd.	A-	Automovilística	Japón	Africa y Oriente Medio 4.4%, Americas 52.9% (USA 39.9%, Canada 4.7%), Asia/Pacífico 28.4%, Europa 14.3% (*)
Nokia oyj	BB+	Telecomunicaciones	Finlandia	Africa y Oriente Medio 10.4%, Americas 20.5%, Asia/Pacífico 38.6%, Europa 30.5%
Pernod Ricard	BBB-	Productos de Consumo	Francia	Africa y Oriente Medio 1.1%, Americas 28.5%, Asia/Pacífico 39.3%, Europa 31.1% (*)
Pfizer inc.	AA	Farmaceútica	USA	Africa y Oriente Medio 4.5%, Americas 50.5% (USA 44.4%, Canada 2.4%), Asia/Pacífico 22.8%, Europa 22.2%
PPG industries inc	A-	Químicos	USA	Africa y Oriente Medio 6.7%, Americas 54.3% (USA 41.4%, Canada 3.3%), Asia/Pacífico 16.2%, Europa 22.8% (*)
Ricoh Company, Ltd.	A-	Manufacturación	Japón	Africa y Oriente Medio 5.7%, Americas 31.4%, Asia/Pacífico 44.3%, Europa 18.7% (*)
SabMiller plc	A-	Químicos	UK	Africa 28.08%, Americas 40.94%, Asia/Pacífico 15.11%, Europa 15.87% (*)
Sanofi	AA	Farmaceútica	Francia	Africa y Oriente Medio 8.3%, Americas 46.1%, Asia/Pacífico 18.3%, Europa 27.4%
Schneider Electric SE	A-	Manufacturación	Francia	Africa y Oriente Medio 8.8%, Americas 33%, Asia/Pacífico 26.6%, Europa 31.6% (*)
Scor SE	AA-	Institución Financiera	Francia	Africa y Oriente Medio 9.4%, Americas 43.5%, Asia/Pacífico 15.5%, Europa 31.5%
Sealed Air Corporation	BB	Otros	USA	Africa y Oriente Medio 8%, Americas 51.5% (USA 38.2%, Canada 3.4%) Asia/Pacífico 13.9%, Europa 26.6%
Siemens Aktiengesellschaft	A+	Manufacturación	Alemania	Africa y Oriente Medio 10.5%, Americas 28.5%, Asia/Pacífico 18.7%, Europa 42.3% (*)
Sodexo	A-	Otros	Francia	Africa y Oriente Medio 2.6%, Americas 44.7%, Asia/Pacífico 10.9%, Europa 38%, Otros 3.8% (*)
Softbank Group corp.	BB+	Telecomunicaciones	Japón	Africa y Oriente Medio 1%, Americas 47.8%, Asia/Pacífico 48%, Europa 3.1% (*)
Solvay	BBB-	Químicos	Bélgica	Africa y Oriente Medio 6.3%, Americas 32.9%, Asia/Pacífico 27.8%, Europa 33.1%
Sony Corporation	BBB-	Manufacturación	Japón	Africa y Oriente Medio 4.5%, Americas 25.2%, Asia/Pacífico 47.1%, Europa 23.2% (*)
Starwood Hotels & Resorts Worldwide, inc.	BBB	Otros	USA	USA 34.31%, Rest Americas 16.19%, Europa , Africa y Oriente Medio 16.3%, Asia/Pacífico 9.85%, Otros 23.36%
Technip	BBB+	Energía	Francia	Europa, Russia y Central Asia 36.28%, Africa 15.41%, Oriente Medio 8.33%, Asia Pacífico 15.91%, Americas 24.06%
Telefonaktiebolaget Ericsson	BBB	Telecomunicaciones	Suecia	Africa y Oriente Medio 20.3%, Americas 34.7%, Asia/Pacífico 24.6%, Europa 20.4%
The Boeing Company	A	Aerospacio y Defensa	USA	Africa y Oriente Medio 16.7%, Americas 45.2%, Asia/Pacífico 23.6%, Europa 14.6% (*)
The Dow Chemical Company	BBB	Químicos	USA	Africa y Oriente Medio 7.1%, Americas 42.6%, Asia/Pacífico 27.8%, Europa 22.4%
The Goodyear Tire & Rubber Company	BB	Automovilística	USA	Africa y Oriente Medio 5.4%, Americas 53.9% (USA 44.4%, Canada 2.3%), Asia/Pacífico 13.6%, Europa 27.1% (*)
The Procter & Gamble Company	AA-	Productos de Consumo	USA	Africa y Oriente Medio 5.8%, Americas 52% (USA 41%, Canada 2.8%), Asia/Pacífico 19.2%, Europa 22.9% (*)
Transocean inc.	B+	Energía	USA	Africa y Oriente Medio 7.6%, Americas 34.8%, Asia/Pacífico 25.4%, Europa 32.2%
UBS AG	A+	Institución Financiera	Suiza	Africa y Oriente Medio 5.5%, Americas 38.4%, Asia/Pacífico 15.9%, Europa 40.2%
Unilever n.v.	A+	Productos de Consumo	Países Bajos	Africa y Oriente Medio 8.2%, Americas 32.5%, Asia/Pacífico 31.9%, Europa 27.4%
Valeo	BBB	Automovilística	Francia	Africa y Oriente Medio 5.6%, Americas 23.3%, Asia/Pacífico 26.2%, Europa 44.9% (*)
Weatherford International Ltd.	B	Energía	Suiza	Africa y Oriente Medio 21%, Americas 55.9% (USA 30.4%, Canada 6.7%), Asia/Pacífico 7.3%, Europa 15.8%
WPP 2005 limited	BBB	Otros	UK	Africa y Oriente Medio 4.7%, Americas 40.5%, Asia/Pacífico 18.2%, Europa 36.6%

(The Boeing Co. y Bae Systems), mientras que los sectores minorista, conglomerado industrial, medios, sanidad, restaurantes, alojamiento, envases y metales-minería tienen sólo un componente (Kering, Sodexo, WPP 2005, Baxter Int., McDonald's, Starwood Hotels, Sealed Air Corp. y Arcelormittal, respectivamente).

Geográficamente, en esta muestra mundial, 26 empresas tienen su domicilio fiscal en Estados Unidos, 7 en Japón, 9 en Alemania y 9 en Reino Unido, 8 en Francia, 5 en Suiza y 5 en los Países Bajos, 3 en Suecia y una en cada uno de los siguientes países: Bélgica, Finlandia y Luxemburgo (35% América, 9% Asia y 56% Europa).

La **Tabla 2** presenta las estadísticas resumidas de las primas de los CDS a 5 años para estos valores. Utilizamos cotizaciones de cierre en base semanal (tomando los precios de los miércoles para evitar movimientos bruscos debido a una posible negociación irregular, como puede ocurrir en las fechas de vencimiento que generalmente son los viernes)⁹.

La mayoría de las compañías tienen un precio medio de su CDS inferior a 100p.b. (siendo la media más baja para Bristol-Myers, sector farmacéutico), y el 35% de estas primas medias oscila entre 100,21 (Hewlett-Packard, sector tecnológico) y 434,642 (Goodyear, sector automovilístico). Ningún CDS tiene una media igual o superior a 500 p.b., umbral que según Pelizzon et al. (2016) es utilizado como indicador por las cámaras de compensación para solicitar garantías. Sin embargo, el máximo alcanzado por estas primas sí es superior a 500 p.b. en varios casos (Volvo, Arcelormittal, Avnet, Borgwarner, BP, Citi, Continental, Daimler, GKN, Heidelbergcement, Johnson Controls, Kering, Lafargeholcim, Nissan Motors, Nokia, Pernod Ricard, Goodyear Tire & Rubber, Transocean, Valeo, Weatherford y WPP 2005), indicando que, como se esperaba, en el período de tiempo de la muestra se han producido épocas de crisis (crisis subprime 2007-2009 y crisis soberana europea 2009-2015). En este sentido, la cotización más alta es para Heidelbergcement (5315,85 p.b. el 12 de diciembre de 2008) y la más baja es la cotizada para Nestlé (3,25 pb el 13 de junio de 2007) y Canon (3,25 pb el 27 de junio de 2007). Es interesante observar las elevadas variaciones sufridas en muchos casos, siendo el rango de variación medio de 497 b.p. Como se esperaba, el rango máximo es de 5286 pb. para Heidelbergcement y el menor 48 pb para Baxter International (que, a su vez, indican la desviación más alta y más baja).

Adicionalmente, mostramos la desviación estándar, asimetría

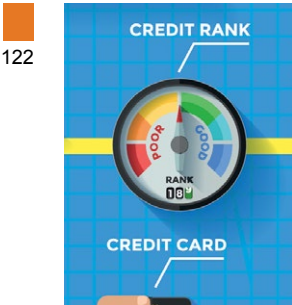


Tabla 2. Estadísticas descriptivas de los precios semanales de los CDS.

Este cuadro muestra las estadísticas descriptivas de los precios semanales de los CDS a 5 años, medidos en puntos básicos. La fuente de datos es Credit Market Analytics Data Vision a través de Bloomberg. La serie cronológica abarca el período comprendido entre enero de 2007 y noviembre de 2016.

	<i>ELECTROLUX</i>	<i>VOLVO</i>	<i>AKZO NOBEL</i>	<i>APACHE</i>	<i>ARCELOR</i>	<i>ARROW ELEC.</i>	<i>ASTRAZENECA</i>	<i>AVNET</i>	<i>BAE SYSTEMS</i>	<i>BAKER HUGHES</i>	<i>BAXTER INT</i>	<i>BAYER</i>	<i>BMW</i>
Maximo	203,27	606,31	200,44	354,20	1155,91	290,68	187,21	560,76	282,37	130,08	56,35	145,87	496,90
Minimo	22,57	19,94	20,88	13,34	23,23	35,17	4,46	42,51	13,93	13,30	8,75	14,45	8,89
Media	76,51	152,52	75,73	84,84	314,28	106,70	50,07	136,72	90,80	54,44	30,07	55,46	91,07
Desv. Típica	32,25	105,06	31,44	56,16	202,22	45,21	27,64	76,34	45,86	23,72	9,06	22,49	72,01
Asimetría	1,71	1,86	0,79	1,65	1,00	0,85	2,01	2,20	1,01	0,66	0,03	1,12	2,64
Curtosis	3,52	4,11	0,38	3,19	1,78	0,35	6,50	7,03	1,38	0,09	-0,21	1,71	8,64
	<i>BORGWARNER</i>	<i>BP</i>	<i>BRISTOL-MYERS</i>	<i>BRITISH AM TOB.</i>	<i>CANON</i>	<i>CATERPILLAR</i>	<i>CITI</i>	<i>CONTINENTAL</i>	<i>CRED. SUISSE</i>	<i>DAIMLER</i>	<i>DIAGEO</i>	<i>E. I. DU PONT</i>	<i>EASTMAN CHEM.</i>
Maximo	611,63	611,96	68,63	169,60	179,90	414,30	653,79	1513,91	252,01	513,33	126,96	195,03	195,09
Minimo	21,83	3,67	7,93	19,55	3,25	12,57	7,44	38,09	9,96	20,08	13,61	8,69	30,84
Media	97,52	75,99	29,32	55,96	33,99	78,95	144,33	271,11	97,53	96,16	58,82	53,87	83,63
Desv. Típica	78,41	62,89	12,28	21,06	23,81	52,38	100,99	285,54	44,80	70,25	19,87	25,66	27,49
Asimetría	3,62	4,30	0,50	2,10	2,38	2,54	1,89	2,08	0,40	2,63	-0,15	1,84	0,82
Curtosis	16,73	27,93	0,04	7,24	8,40	9,08	5,25	4,69	-0,05	9,06	-0,14	5,73	1,92
	<i>GKN HOLD</i>	<i>GLAXOSMITH.</i>	<i>HALLIBURTON</i>	<i>HANNOVER RU</i>	<i>HEIDELBERGC.</i>	<i>HEINEKEN</i>	<i>HENKEL & CO</i>	<i>HEWLETT-P.</i>	<i>HONDA</i>	<i>JOHNSON CONT.</i>	<i>KERING</i>	<i>KOMATSU</i>	<i>DSM</i>
Maximo	1002,40	114,67	216,36	154,72	4454,34	265,25	176,68	374,41	316,63	1014,02	701,82	158,25	141,06
Minimo	36,96	4,92	14,43	8,50	30,40	31,89	10,42	8,25	4,22	18,57	33,34	7,03	22,73
Media	191,97	43,57	64,76	73,78	395,59	86,13	49,57	100,21	53,87	119,09	141,98	43,08	56,21
Desv. Típica	149,09	18,20	34,70	33,96	644,58	45,30	27,58	74,01	46,55	134,76	116,99	26,40	18,95
Asimetría	2,94	0,42	1,45	0,21	4,02	1,46	1,31	1,12	2,98	3,64	2,62	1,58	1,37
Curtosis	10,46	1,78	3,05	-0,76	16,73	1,93	2,76	0,96	10,79	15,53	7,52	3,18	2,84
	<i>PHILIPS</i>	<i>LAFARGE.</i>	<i>LINDE</i>	<i>MARSH & MCL.</i>	<i>MCDONALD'S</i>	<i>MONDELEZ</i>	<i>NESTLE</i>	<i>NISSAN</i>	<i>NOKIA</i>	<i>PERNOD RICARD</i>	<i>PFIZER</i>	<i>PPG IND.</i>	<i>RICOH</i>
Maximo	161,94	841,65	165,31	163,96	67,56	141,34	86,39	741,77	1230,02	746,02	123,30	278,23	214,56
Minimo	14,21	19,00	15,93	16,00	9,79	12,99	3,25	14,96	8,28	42,25	4,83	16,23	4,92
Media	64,75	163,38	49,98	58,39	31,31	53,81	33,77	96,99	206,69	150,27	40,90	65,93	48,52
Desv. Típica	27,99	128,21	22,29	31,08	11,95	22,21	15,45	111,74	238,80	136,26	23,40	44,71	38,12
Asimetría	0,93	2,41	1,63	1,04	0,36	1,05	0,55	3,39	2,10	2,66	0,67	2,50	2,32
Curtosis	0,60	7,30	4,86	0,33	-0,34	0,79	0,79	12,61	3,98	7,41	0,40	7,29	6,11
	<i>SABMILLER</i>	<i>SANOFI</i>	<i>SCHNEIDER ELEC.</i>	<i>SCOR</i>	<i>SEALED AIR</i>	<i>SIEMENS</i>	<i>SODEXO</i>	<i>SOFTBANK</i>	<i>SOLVAY</i>	<i>SONY</i>	<i>STARWOOD H.</i>	<i>TECHNIP</i>	<i>ERICSSON</i>
Maximo	215,00	128,77	263,30	238,29	567,71	234,80	115,00	2266,67	249,31	451,14	830,41	311,65	431,07
Minimo	26,48	9,07	18,20	10,34	28,75	10,70	18,43	95,00	10,06	8,83	15,49	20,30	20,59
Media	80,18	49,13	72,54	95,00	181,26	59,67	58,30	328,11	85,63	110,63	160,80	108,17	107,30
Desv. Típica	40,21	21,24	42,51	48,83	96,25	32,09	18,28	341,36	42,79	89,84	149,11	49,32	67,47
Asimetría	1,39	0,82	1,54	0,88	1,21	1,86	0,19	3,57	0,87	1,59	2,52	0,98	1,99
Curtosis	1,93	1,01	2,90	0,48	1,72	5,81	-0,01	13,93	1,12	2,63	6,80	2,19	5,26
	<i>BOEING</i>	<i>DOW CHEMICAL</i>	<i>GOODYEAR</i>	<i>PROCTER & G.</i>	<i>TRANSOCEAN</i>	<i>UBS</i>	<i>UNILEVER</i>	<i>VALEO</i>	<i>WEATHERFORD</i>	<i>WPP 2005 LMTD</i>			
Maximo	271,25	630,05	1600,96	150,00	2399,79	347,23	83,34	719,73	1373,23	611,10			
Minimo	7,79	14,45	151,68	6,46	19,66	4,69	12,40	48,40	23,76	21,93			
Media	58,47	117,34	434,64	39,28	339,00	97,32	33,96	165,55	253,44	109,73			
Desv. Típica	43,95	93,67	251,35	24,87	432,15	58,56	11,89	113,27	244,67	93,40			
Asimetría	2,11	3,17	1,40	2,00	2,46	1,12	1,14	2,26	2,01	2,78			
Curtosis	5,71	12,31	2,78	4,98	6,71	1,66	1,51	6,87	3,95	9,19			

y curtosis. En términos de volatilidad histórica, las mayores variaciones corresponden al CDS de Heidelbergcement, seguido por los CDS de Transocean, Nokia, Nissan, Johnson Controls, Softbank y Continental, cuyos coeficientes de variación, es decir, la relación entre la desviación estándar y la media, están por encima de 1. Todas las distribuciones de precios de CDS muestran un cierto grado de asimetría y la hipótesis de normalidad (prueba de Kolmogorov-Smirnov¹⁰) se rechaza en todos los casos.

A continuación, presentamos la variación temporal de la prima de los CDS que componen la muestra (**Gráfico 1**). Después de la quiebra de Lehman Brothers en septiembre de 2008, los CDS alcanzan el nivel más alto. Las primas permanecen en niveles elevados durante la Gran Recesión de Estados Unidos, que finaliza a mediados de 2009. Después disminuyen hasta la nueva (pero no tan fuerte como la anterior) subida entre agosto de 2011 y agosto de 2012 (crisis europea soberana). Otro aumento de precios ocurre durante el primer trimestre de 2016 cuando los precios del petróleo se desploman a mínimos de varios años.

Visualmente se puede ya observar que la variación de los precios de los CDS revela un fuerte movimiento común entre las empresas, lo que invita a explorar en mayor detalle la importancia de factores de riesgo comunes entre compañías tan dispares. Para ello, primero expondremos las correlaciones y otras pruebas preliminares, para después, siguiendo a Roll (2013) y Cotter et. al. (2016), llevar a cabo un ACP que pruebe la existencia de comunalidad en los datos. Este método nos ayudará a identificar las variables más útiles en el conjunto de valores y a reducir la muestra a un menor número de factores relevantes para sintetizar el riesgo de crédito. Posteriormente, y en base a estos factores, seleccionaremos las empresas cuyas acciones compondrán una cartera en la que mediremos el riesgo de mercado.

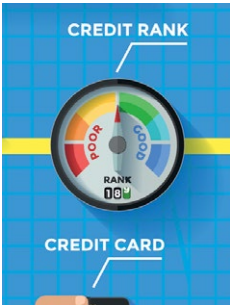
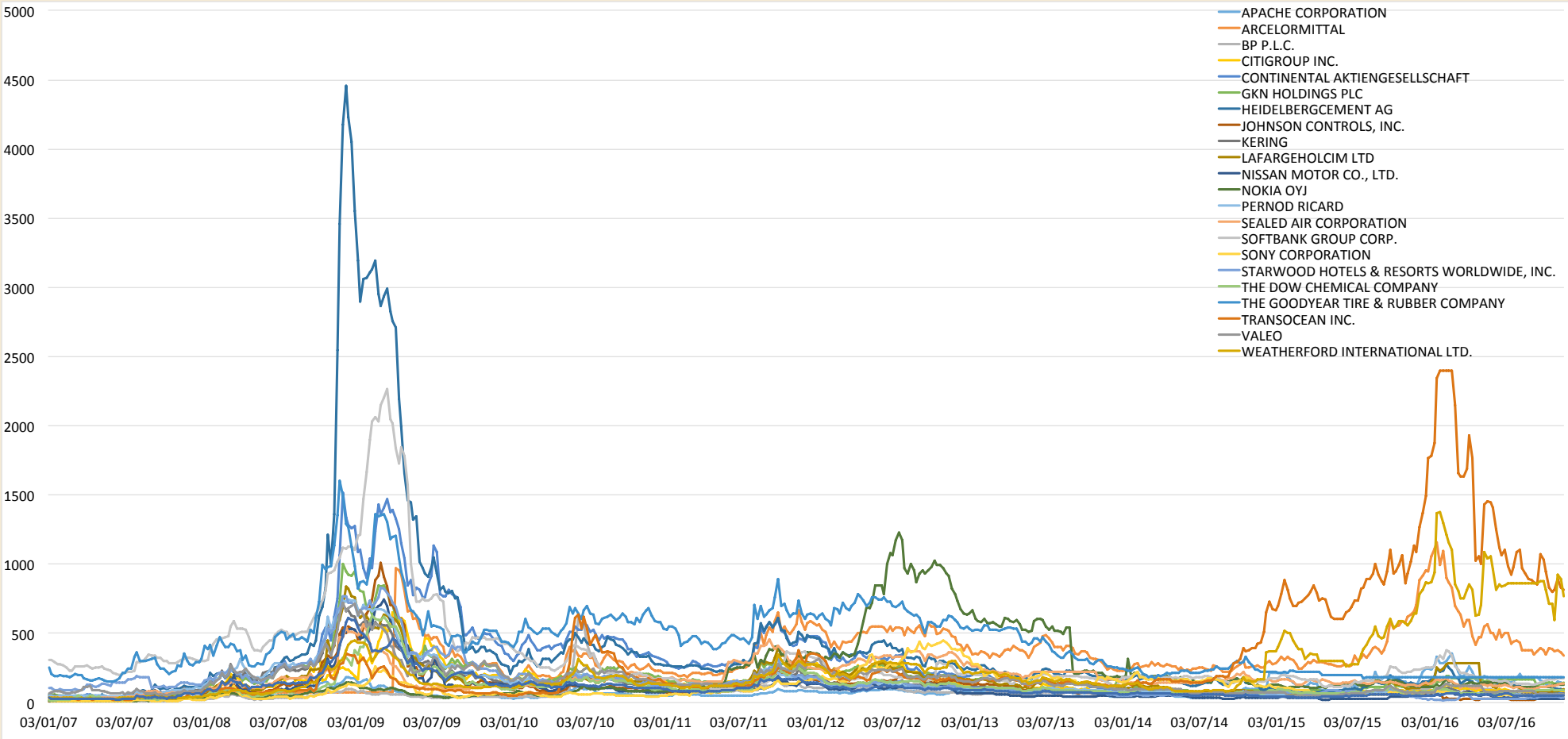


Gráfico I. Evolución de las primas de los CDS (puntos básicos)

Este gráfico representa la evolución de los precios de los 75 CDS entre enero de 2007 y noviembre de 2016. Los precios de las compañías no mostradas siguen una evolución muy similar a las menos volátiles.



3. LA EXISTENCIA DE UN RIESGO DE CRÉDITO SUBYACENTE COMÚN EN LAS EMPRESAS MULTINACIONALES

En primer lugar, exploramos la relación entre los cambios semanales de los diversos CDS corporativos y comprobamos en qué medida varían de forma conjunta realizando un test de correlación de Spearman entre los cambios semanales de las primas.¹¹ Todas las correlaciones resultan positivas y significativas a un nivel del 1%, lo que sugiere la existencia de factores comunes subyacentes que impulsan los cambios en los CDS.¹² Adicionalmente, un determinante de dicha matriz de correlaciones cercano a cero ($1,019E-28$) indica que las variables están linealmente relacionadas.

A continuación, realizamos pruebas diagnósticas adicionales para confirmar que la matriz de correlaciones de los cambios semanales de los precios de los 75 CDS garantiza una estructura adecuada para reducir la dimensión de la muestra a través de un ACP. Los resultados de dichas pruebas se presentan en la **tabla 3**. El test de esfericidad de Bartlett se utiliza para probar si la matriz de correlaciones observada difiere significativamente de la matriz de identidad. En caso de aceptar la hipótesis nula (que la matriz de correlaciones es una matriz identidad), el modelo factorial sería inadecuado. Sin embargo, en este caso, el p-valor de dicho contraste muestra que la hipótesis nula se rechaza al nivel de significación del 1%, indicando que las series analizadas están intercorreladas y es apropiado llevar a cabo un análisis factorial. Adicionalmente, medimos la multicolinealidad utilizando el índice de Kaiser-Meyer-Olkin (KMO) de la suficiencia de muestreo. Como se muestra en la **tabla 3**, el estadístico tiene un nivel muy cercano a 1, confirmando por tanto que existe una significativa dependencia entre las variables, las cuales comparten un alto grado de información. Por tanto, dados los resultados reportados, concluimos que existe adecuación muestral para hacer un análisis factorial, permitiendo así reducir la dimensión de la muestra.¹³ Finalmente, la matriz de correlaciones anti-imagen muestra las medidas de adecuación muestral para cada variable, confirmando que el modelo factorial es adecuado para explicar los datos ya que tienen un valor próximo a 1 (siendo la media 0,96).¹⁴ Dados los resultados de las pruebas preliminares, usamos el ACP para estimar la relevancia de estos factores comunes que impulsan la variación en los precios de los CDS de estas empresas. Este análisis factorial explora la estructura subyacente en la matriz de datos, analiza las interrelaciones entre el elevado número de

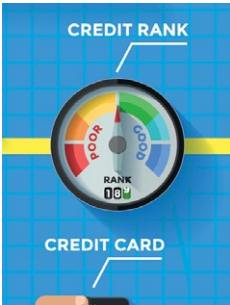


Tabla 3. Pruebas de adecuación de la muestra de los cambios semanales de los precios de los CDS para el análisis factorial.

Este cuadro muestra los resultados obtenidos con SPSS respecto a los test Kaiser-Meyer-Olkin (KMO) y Bartlett. Ambas pruebas preliminares confirman que los datos son adecuados para llevar a cabo un ACP.

KMO	0.967
Prueba de esfericidad de Bartlett:	
Aprox. Chi-cuadrado	26565.428
gl	2775
Sig.	0.0000

variables y calcula un conjunto de dimensiones latentes (factores) que explican dichas interrelaciones. De esta forma, reduce la dimensión de la muestra obteniendo otra con menor número de variables que son una combinación lineal de las primitivas, y cuya interpretación permite el estudio más simplificado. Es decir, el ACP selecciona aquellas variables que explican una proporción aceptable de la varianza global con una razonable pérdida de información, lo que ayudará a extraer el componente sistemático del riesgo de incumplimiento (en oposición al idiosincrásico) de las empresas multinacionales, en línea con Díaz, Groba y Serrano (2013). De esta manera, identificaremos los riesgos latentes o no observados que recogen las primas de estos contratos.

Los factores obtenidos por el ACP son ortogonales entre sí y no correlacionados, y reflejan la estructura en que queda resumido el riesgo de crédito global. Dichos factores explican gran parte de la variabilidad total y podremos utilizarlos como criterio de selección para reducir la dimensionalidad de nuestro grupo inicial de multinacionales a una cartera pequeña pero muy diversificada.

Al transformar así nuestra muestra de empresas en una cartera con menor cantidad de valores, retenemos los que más contribuyen a la explicación de la varianza y que están representados en factores diferentes, y obviamos las empresas que resultan redundantes a efectos de la diversificación.

Los resultados del ACP de los CDS de las 75 empresas se muestran en la **Tabla 4**. El primer factor recoge la mayor proporción posible

de la variabilidad original. El segundo recoge la máxima variabilidad posible no incluida en el primero, y así sucesivamente. De esta forma, las compañías quedan agrupadas en 11 factores, interpretables a través de la rotación ortogonal de la matriz de componentes con el método Varimax con normalización Kaiser. Esta resulta en una combinación lineal de la primera matriz, explicando la misma cantidad de varianza inicial, pero ofreciendo una solución más fácilmente interpretable al girar los ejes de coordenadas que representan a los factores. A través de dicha matriz rotada, recogemos un 66% de variabilidad.

Un primer componente principal explica el 42,3% de la variación en los CDS. Además, al observar la relación de los factores con las compañías en él representadas, lo podemos identificar como un factor europeo. El segundo componente principal explica un 4.2% adicional de la variación y es sobre todo un factor automovilístico europeo. El tercero explica un 3,7% adicional y representa mejor el sector de la energía de Estados Unidos. El cuarto componente principal explica un 3% adicional de la variación y representa una parte del mercado estadounidense. El quinto componente principal explica un 2,5% adicional y está relacionado con el sector automovilístico de Estados Unidos. Juntos, los tres primeros componentes principales explican un 50.18% de la variación total en los precios de los CDS, y los 11 factores comunes ilustran el 65.94% de dicha variación.

Estos resultados evidencian que los cambios en los CDS evolucionan conjuntamente y ponen de relieve un riesgo de incumplimiento que no es explicado por factores específicos del sector o país sino por factores globales. Este hallazgo está en línea con Díaz, Groba y Serrano (2013) quienes encuentran un primer componente que explica el 56% de la variación en los CDS, y con Berndt y Obreja (2010) cuyo primer componente explica el 53% de los rendimientos de los CDS. Sin embargo, hay que diferenciar que ambos estudios tratan de empresas europeas, sin valorar la multinacionalidad, durante periodos más cortos (2006-2010 y 2003-2008 respectivamente), además de que en Díaz, Groba y Serrano (2013) la calidad crediticia de las compañías es grado de inversión, siendo por tanto muestras más homogéneas que la aquí analizada.

En consecuencia, el factor dominante encontrado es coherente con la existencia de un riesgo de crédito subyacente común en las empresas multinacionales de todos los países y sectores (Longstaff et al. 2008, Cotter et. al. 2016).

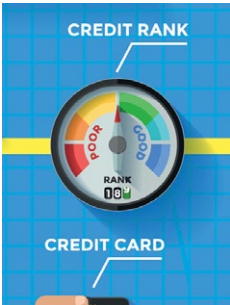


Tabla 4. **Análisis de Componentes Principales (ACP)**

La tabla muestra los factores comunes que subyacen a las variaciones semanales en los precios de los 75 CDS. A través del software SPSS 15.0 se han extraído los componentes basándose en aquellos con autovalores superiores a 1. Las communalidades muestran que todas las variables aportan información sobre la estructura del riesgo de crédito y por tanto todas ellas se pueden reunir en componentes. La rotación de la matriz de componentes se ha realizado con el método Varimax con normalización Kaiser y ha convergido en 12 iteraciones. Esta tabla muestra los componentes principales, que son una combinación lineal de los valores originales y no están correlacionados entre sí, y las variables que los conforman.

	Varianza explicada	Componentes ordenados de mayor a menor carga factorial							
CP 1 (%)	42,296	Linde	Henkel	Akzo Nobel	Bayer	Unilever	DSM	Solvay	y 21 empresas más*
CP 2 (%)	4,186	BMW	Daimler	Valeo	Continental	GKN	Volvo		
CP 3 (%)	3,698	Transocean	BP	Halliburton	Apache	Weatherford Int	Baker Hughes		
CP 4 (%)	2,974	Bristol-Myers Squibb	Pfizer	Baxter Int	Mcdonald's	Procter & Gamble	Mondelez Int	Boeing	
CP 5 (%)	2,535	Johnson Controls	Borgwarner	Goodyear	Starwood Hotels	Caterpillar	PPG		
CP 6 (%)	2,224	Nissan Motor	Honda Motor	Sony	Komatsu	Softbank			
CP 7 (%)	1,91	Avnet	Arrow Electronics	Sealed Air	Hewlett-Packard	Eastman Chemical	E. I. Du Pont	Dow Chemical	
CP 8 (%)	1,683	UBS	Credit Suisse	Scor	Hannover Rueck	Citigroup			
CP 9 (%)	1,601	Ricoh Company	Canon						
CP 10 (%)	1,477	Heineken	Marsh & McLennan						
CP 11 (%)	1,354	Arcelormittal							
Varianza Acumulada (%)	65,938								

* Las 21 empresas restantes del primer factor, de mayor a menor carga son: Astrazeneca, Bae Systems, Nestlé, Sanofi, Diageo, Sodexo, WPP 2005 limited, Philips, Kering, Glaxosmithkline, Pernod Ricard, Technip, Lafargeholcim, Schneider Electric, Siemens, Electrolux, British American Tobacco, SabMiller, Heidelbergcement, Ericsson y Nokia.

4. UNA CARTERA DE ACCIONES DIVERSIFICADA PARA INVERSORES GLOBALES

Nos encontramos ahora en disposición de proponer una estrategia adecuada para formar una cartera de inversión internacional y sectorialmente diversificada, con variedad de calidad crediticia, con bajo número de valores y nivel de riesgo de mercado controlado. Cada uno de los 11 factores es asociado a aquella compañía que en cada componente principal tiene la mayor carga factorial, es decir, aquellas con mayor relación con el componente principal al que se asocian y que por tanto pueden explicar mejor dicho factor. La cartera diversificada queda compuesta por las acciones de los 11 valores, equiponderados, que se especifican en la **tabla 5**, y cuyos bajos coeficientes de correlación y elevada significancia (1% en la mayoría de los casos) se muestran en la **Tabla 6**.

A continuación, comprobamos la eficacia de esta cartera en lo referente a la reducción del riesgo de inversión. Para ello, vamos a utilizar los precios en dólares (USD) de las acciones de estas empresas (no los CDS). Siguiendo a Markowitz (1952), calculamos el riesgo de la cartera con la desviación típica de los rendimientos de las acciones de estas compañías a partir de la matriz varianzas-covarianzas y los coeficientes de correlación de los rendimientos de las 11 acciones. De esta forma, podremos comparar el binomio riesgo-rentabilidad de nuestra cartera, que es representativa del riesgo de crédito global, con otros índices de renta variable y comprobar su eficacia en términos de diversificación de riesgos. En concreto, tomaremos como referencia el índice global MSCI ACWI (USD). Este índice refleja la evolución de 2.490 compañías en 23 mercados desarrollados y 24 países emergentes.¹⁵

El riesgo de nuestra cartera, compuesta por 11 valores, entre 2007 y 2016 es del 22,17% en términos de volatilidad anualizada, algo superior al del índice MSCI ACWI, que muestra una volatilidad del 17.63%. En términos de rendimiento, nuestro portfolio obtiene una rentabilidad anualizada del +1.18% superior al +1.01% del índice ACWI (ver **Tabla 7**).

Se comprueba que una cartera pequeña, internacional y sectorialmente diversificada, que recoge la estructura del riesgo de crédito global, presenta una relación rentabilidad/riesgo de mercado, muy en línea con la cartera global MSCI ACWI USD, que recordamos está compuesto por 2.490 compañías, el 85% de las posibilidades de inversión en renta variable a nivel global.¹⁶ Adicionalmente,

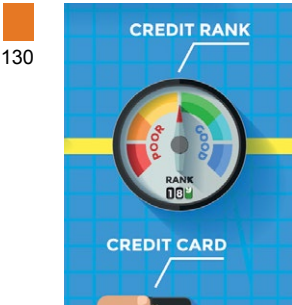


Tabla 5. **Cartera internacional de acciones con elevada diversificación.**

La procedencia de los ingresos es a 31 de diciembre 2015 en la mayoría de los casos, indicando (*) los datos que son de 2016.

Compañía	Rating	Sector	Domicilio	Exposición geográfica de ingresos	Carga Factorial
Linde	A+	Químicos	Alemania	Africa y Oriente Medio 3.8%, Americas 32.8%, Asia/Pacífico 26.9%, Europa 36.5%	0,784
BMW	A+	Automovilística	Alemania	Africa y Oriente Medio 4.6%, Americas 23.3%, Asia/Pacífico 26.6%, Europa 45.5%	0,730
Transocean	B+	Energía	USA	Africa y Oriente Medio 7.6%, Americas 34.8%, Asia/Pacífico 25.4%, Europa 32.2%	0,753
Bristol-Myers	A+	Farmaceútica	USA	Africa y Oriente Medio 4.6%, Americas 54.2% (USA 49%), Asia/Pacífico 20.3%, Europa 20.9%	0,734
Johnson Controls	BBB+	Automovilística	USA	Africa y Oriente Medio 3.7%, Americas 50.6% (USA 43%), Asia/Pacífico 18.7%, Europa 27% (*)	0,702
Nissan Motor	A-	Automovilística	Japón	Africa y Oriente Medio 4.4%, Americas 52.9% (USA 39.9%, Canada 4.7%), Asia/Pacífico 28.4%, Europa 14.3% (*)	0,837
Avnet	BBB-	Tecnología	USA	Africa y Oriente Medio 4.2%, Americas 39.8%, Asia/Pacífico 30.2%, Europa 25.8% (*)	0,672
UBS	A+	Institución Financiera	Suiza	Africa y Oriente Medio 5.5%, Americas 38.4%, Asia/Pacífico 15.9%, Europa 40.2%	0,778
Ricoh	A-	Manufacturación	Japón	Africa y Oriente Medio 5.7%, Americas 31.4%, Asia/Pacífico 44.3%, Europa 18.7% (*)	0,653
Heineken	BBB+	Productos de Consumo	Países Bajos	Africa y Oriente Medio 10.5%, Americas 25%, Asia/Pacífico 13.6%, Europa 50%, Otros 0.4% (*)	0,570
Arcelormittal	BB	Otros	Luxemburgo	Africa y Oriente Medio 10.5%, Americas 39.1%, Asia/Pacífico 5%, Europa 45.4% (*)	0,902

Tabla 6. **Coefficientes de correlación de Spearman entre los cambios de precio de las acciones.**

Obtenidos con STATA, todos ellos resultan ser inferiores a 0,58, indicando (*), (**) y (***) una significancia del 10%, 5% y 1% respectivamente.

	Linde	BMW	Transocean	Bristol-Myers	Johnson Controls	Nissan Motor	Avnet	UBS	Ricoh	Heineken	Arcelormittal
Linde	1										
BMW	0,5795(***)	1									
Transocean	0,2946(***)	0,3049(***)	1								
Bristol-Myers	0,2486(***)	0,2643(***)	0,2276(***)	1							
Johnson Controls	0,3442(***)	0,3555(***)	0,4128(***)	0,3873(***)	1						
Nissan Motor	0,0837(***)	0,0874(***)	0,0542(***)	-0,0129	0,0159	1					
Avnet	0,3282(***)	0,3719(***)	0,3853(***)	0,3512(***)	0,5072(***)	0,0339(*)	1				
UBS	0,4789(***)	0,5489(***)	0,3126(***)	0,2358(***)	0,3449(***)	0,1378(***)	0,3607(***)	1			
Ricoh	0,0876(***)	0,0835(***)	0,0491(**)	-0,0090	0,0170	0,5737(***)	0,0372(*)	0,1304(***)	1		
Heineken	0,4821(***)	0,4504(***)	0,2164(***)	0,2266(***)	0,2666(***)	0,0911(***)	0,2622(***)	0,3652(***)	0,1082(***)	1	
Arcelormittal	0,5384(***)	0,5655(***)	0,4130(***)	0,2069(***)	0,3488(***)	0,0876(***)	0,3663(***)	0,5189(***)	0,1032(***)	0,3632(***)	1

para tener una visión holística de la efectividad de la cartera aquí propuesta comparamos los resultados con los de los índices de renta variable más utilizados en el mundo financiero, el Eurostoxx 50 y el S&P 500, localizados geográficamente en la zona euro en el primer caso y en Estados Unidos en el segundo (ver **Tabla 7** y **Gráfico 2**). Se puede observar que, durante los diez años bajo estudio, la eurozona ha tenido mucho peor comportamiento bursátil que los Estados Unidos. También se observa que la cartera internacional se sitúa en una posición intermedia entre estos dos extremos.

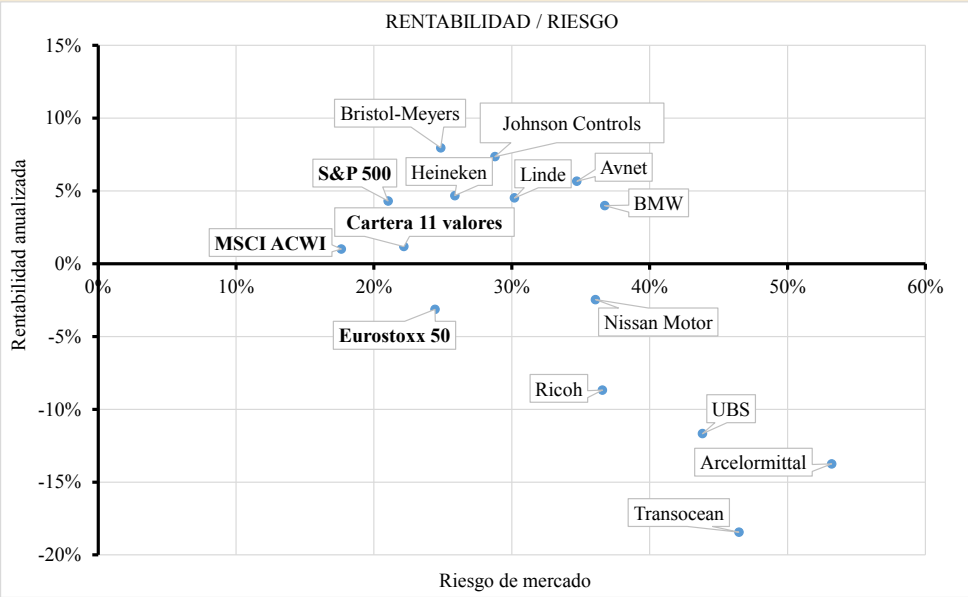
Tabla 7. Riesgo y rentabilidad

el cuadro muestra tanto el riesgo y rentabilidad de nuestra cartera global como de los principales índices de renta variable entre el 3 de Enero de 2007 y el 18 de Noviembre de 2016. Adicionalmente, se muestra la rentabilidad por unidad de riesgo (ratio de Sharpe asumiendo que el tipo de interés libre de riesgo es cero) a efectos de comparación.

	Riesgo de Mercado	Rentabilidad Total 3 Enero 2007 - 18 Noviembre 2016	Rentabilidad Anualizada	Ratio Sharpe Modificado
Linde	30,19%	55,66%	4,52%	0,150
BMW	36,73%	47,92%	3,99%	0,109
Transocean	46,47%	-86,98%	-18,44	-0,397
Bristol-Myers	24,84%	115,16%	7,96%	0,321
Johnson Controls	28,78%	103,31%	7,35%	0,256
Nissan Motor	36,07%	-22,09%	-2,47%	-0,068
Avnet	34,72%	73,62%	5,67%	0,163
UBS	43,82%	-71,07%	-11,67%	-0,266
Ricoh	36,57%	-59,65%	-8,68%	-0,237
Heineken	25,87%	57,99%	4,68%	0,181
Arcelormittal	53,20%	-77,21%	-13,75%	-0,258
Cartera 11 valores	22,17%	12,42%	1,18%	0,053
MSCI ACWI	17,63%	10,87%	1,01%	0,057
Eurostoxx 50	24,43%	-27,87%	-3,14%	-0,129
S&P 500	21,02%	54,02%	4,31%	0,205

Gráfico 2. Riesgo vs. rentabilidad.

El gráfico muestra la relación volatilidad-rentabilidad anual de los distintos valores y carteras. Evidencia el atractivo de la cartera internacional con exposición al riesgo de crédito global.



5. CONCLUSIONES

En este trabajo proponemos una estrategia de diversificación de carteras para inversores internacionales a la vez que profundizamos en el estudio del riesgo de crédito global. En concreto, apoyamos la incipiente tendencia de la industria financiera a la hora de integrar la información del mercado de CDS en la selección de acciones, ya que ambos mercados responden a los mismos fundamentales (Merton, 1974). De esta manera, ayudamos a paliar el efecto negativo que la globalización tiene en los beneficios de la diversificación, y a un mayor control del riesgo en las inversiones, sin renunciar a la rentabilidad.

Así, la metodología propuesta y los resultados obtenidos son de especial interés para a) gestores de planes de inversión, pensiones o hedge funds, b) inversores institucionales que busquen oportunidades de diversificación en un mundo cada vez más

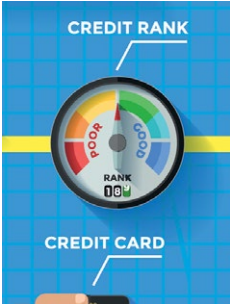
integrado y c) pequeños inversores con menos recursos a la hora de procesar información y por tanto, de tomar decisiones.

Nuestros resultados sugieren que sí es posible seguir disfrutando de los beneficios de la diversificación de carteras en el contexto globalizado actual.

La aportación realizada muestra, en primer lugar, la relevancia de seguir una adecuada metodología a la hora de seleccionar empresas verdaderamente multinacionales, considerando la diversificación de las zonas donde generan los ingresos. Los exigentes requisitos y criterios aquí ofrecidos suponen un primer paso fundamental para obtener una exposición realmente global, de resultados sugerentes que los inversores pueden explorar.

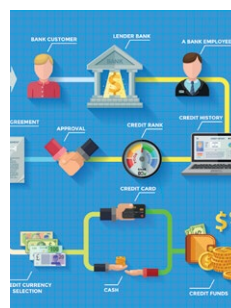
En segundo lugar, nuestros resultados revelan la conveniencia de considerar la información del mercado de CDS, puesto que el riesgo crediticio es uno de los causantes de la reducción en el potencial de diversificación. Es, por tanto, recomendable identificar las compañías que están expuestas a diferentes factores de crédito (técnica de ACP) para así poder escoger aquellas con diferente perfil de riesgo. Este paso es primordial a la hora de poder lograr una cartera heterogénea de empresas cuyos niveles de riesgo de incumplimiento reaccionan, al menos en parte, ante shocks de diferente índole. Dicha importancia queda constatada por el beneficio, en términos de diversificación, que se logra una vez identificados estos factores y compañías, ya que las variaciones en los precios de sus acciones están, igualmente, muy poco relacionadas (de acuerdo con las implicaciones predichas por la teoría financiera).

Finalmente, la evidencia empírica confirma que, invirtiendo en una decena de acciones así seleccionadas, se alcanza una diversificación significativa, resultando una cartera con un perfil rentabilidad/riesgo equiparable a los principales índices internacionales, los cuales incluyen cientos o miles de activos cuya réplica es mucho más costosa en términos de comisiones y gestión.



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NOTAS

1. Agradecimientos: Los autores agradecen a los revisores de pares sus comentarios y recomendaciones, las cuales han contribuido a mejorar significativamente este artículo. Igualmente, expresan su agradecimiento a Ricardo García y Ramón Bermejo por su aportación de datos, necesarios para formar la muestra, así como al Dr. Antonio Rúa por sus sugerencias respecto al Análisis de Componentes Principales.

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3. Dada la muestra global que analizamos, hemos elegido utilizar CDS por su homogeneidad y facilidad comparativa.

4. Los lectores interesados en más información sobre CDS pueden consultar Augustin et al. (2016).

5. Los lectores interesados en más información pueden visitar <https://www.forbes.com/sites/steveschaefer/2016/05/25/the-worlds-largest-companies-2016/#6bf9f2fc45a6>.

6. Depository Trust & Clearing Corporation (DTCC) es una compañía estadounidense de servicios de compensación, liquidación y custodia de los activos negociados en los mercados financieros. Debido a que liquida la gran mayoría de las transacciones en los mercados de capitales de los Estados Unidos, es una fuente de información de gran valor.

7. Debe señalarse que los contratos de CDS sólo están disponibles si existe algún nivel de deuda y, por lo tanto, sólo se emiten en compañías con riesgo crediticio. Esto implica que no contamos con algunas grandes corporaciones multinacionales que podrían haber sido interesantes, como por ejemplo Inditex. Además, para las empresas donde el riesgo de incumplimiento es bajo, (lo que podría ser el caso de empresas como Apple, Google o Microsoft) no hay contratos CDS emitidos o su nivel de liquidez no es lo suficientemente alto como para entrar en esta muestra.

8. Para la equivalencia entre los rating y la calificación por grado se ha tomado como criterio las siguientes correspondencias:
Grado alto de inversión: AA-, AA, AA+
Grado medio alto de inversión: A-, A, A+
Grado medio bajo: BBB-, BBB, BBB+
Grado especulativo: BB-, BB, BB+
Grado altamente especulativo: B-, B, B+

9. Los datos han sido suministrados por Credit Market Analysis (CMA) Data Vision. Los precios están denominados en puntos básicos sobre el valor nominal asegurado y, por lo tanto, están libres de unidades de cuenta.

10. Los resultados están a disposición del lector interesado.

11. Utilizamos los cambios semanales (primeras diferencias) en lugar de los precios semanales, siguiendo anteriores trabajos empíricos sobre el riesgo de incumplimiento (por ejemplo, Longstaff et al., 2011; Eichengreen et al., 2012; Ang y Longstaff, 2013).

12. Los resultados están a disposición del lector interesado.

13. Si bien es cierto que el ACP de manera implícita asume una normalidad multivariante de los datos que en este caso no se cumple (el test de Jaque-Bera, a disposición del lector interesado, rechaza la hipótesis de distribución normal en los cambios de los precios de los CDS de las 75 compañías) siguiendo a Bai (2003) la existencia de normalidad multivariante no constituye condición necesaria para confirmar la adecuación del ACP en los datos. Por tanto, de acuerdo con el resto de pruebas que sugieren que llevar a cabo un análisis factorial es adecuado, y siguiendo la literatura financiera precedente que omite verificar la normalidad multivariante (Díaz, Groba y Serrano, 2013; Longstaff, Pan, Pedersen, y Singleton, 2011; Berndt y Obreja, 2010...) consideramos que nuestra metodología es apropiada para los fines que se pretenden alcanzar.

14. Los resultados están a disposición del lector interesado.

15. Según datos a 31 de Octubre de 2017

16. Los lectores interesados en más información sobre el índice MSCI ACWI (USD) pueden consultar <https://www.msci.com/documents/1296102/1362201/MIS-ACWI-brochure-2017.pdf/e23b68bf-5d62-4ac0-8f5b-4ba783789aa5>

