Journal of Financial Stability 18 (2015) 55–77

Contents lists available at ScienceDirect

Journal of Financial Stability

journal homepage: www.elsevier.com/locate/jfstabil

Regulations, profitability, and risk-adjusted returns of European insurers: An empirical investigation

Chrysovalantis Gaganis[a], Liuling Liu[b], Fotios Pasiouras[c,d,*]

[a] Department of Economics, University of Crete, Greece
[b] College of Business, Bowling Green State University, USA
[c] Surrey Business School, University of Surrey, UK
[d] Financial Engineering Laboratory, Technical University of Crete, Greece

ARTICLE INFO

Article history:
Received 26 January 2014
Received in revised form 27 October 2014
Accepted 9 March 2015
Available online 17 March 2015

JEL classification:
G22
G28

Keywords:
Insurance
Profitability
Regulations
Risk-adjusted returns

ABSTRACT

This study examines the effect of regulations on European insurers' profitability and risk-adjusted returns. We find an inverted U-shaped relationship between return on assets and regulations relating to capital adequacy, accounting and auditing requirements, and disclosures to supervisors. In contrast, requirements related to technical provisions have a negative effect on return on assets, and we find no evidence of an association with regulations related to investment and supervisory power. We also find evidence of an inverted U-shaped relationship between a firm's risk-adjusted rate of return and regulations relating to capital requirements as well as corporate governance and internal control. We observe the opposite in the case of technical provisions. These results are robust to controls for various country-specific attributes such as macroeconomic environment, stock market development, overall quality of institutions, and legal origins.

1. Introduction

In recent years, many policymakers around the world have announced intentions to reform the regulatory framework of the insurance sector.[1] Although regulations mainly aim to control risk-taking, reduce insolvency risk, and protect policyholders, they may also alter the structure and competition of the industry, constrain insurers' prices and products, and impose additional costs on firms (see, e.g., Lee, 2001; Pope, 2004; Ernst and Young, 2013). Consequently, questions arise as to whether and how the various existing regulatory policies influence insurance firms' performance.

The literature on insurance regulations is scarce (Lorent, 2008), especially when compared with a rich banking literature that examines the effect of regulations on various aspects of performance such as profitability, cost of financial intermediation, efficiency, and productivity.[2]

In most cases, the literature offers conflicting theoretical arguments concerning the effect of regulations on financial firms. For example, to the extent that moral hazard encourages riskier behaviour, firms will have more incentives to increase risk if they are allowed to offer a wider portfolio of services (Boyd et al., 1998). In fact, Das et al. (2003) argue that the financial deregulation and liberalization that allowed insurers to assimilate banking-type

* Corresponding author at: Surrey Business School, University of Surrey, UK. Tel.: +44 1483 686130/+30 28210 37252.
E-mail addresses: f.pasiouras@surrey.ac.uk, pasiouras@dpem.tuc.gr (F. Pasiouras).

[1] Australia, Canada, Singapore, and Switzerland, among others, have proposed or introduced changes to the framework for assessing insurance firms' solvency (HM Treasury and Financial Services Authority-FSA, 2006). In the European Union, the Solvency II Directive (2009/138/EC), scheduled to take effect in 2016, aims to codify and harmonize insurance regulation among countries. Like Basel II in banking, the Solvency II framework consists of three pillars. Pillar 1 focuses on the quantitative requirements, covering issues such as technical provisions and minimum capital requirements. Pillar 2 is more qualitative, focusing on issues such as governance, risk management, and the supervisory review process. Pillar 3 consists of disclosure and transparency requirements, aiming to promote market discipline.

[2] See, for example, Demirgüç-Kunt et al. (2004), Shen and Chang (2006), Pasiouras (2008), Chortareas et al. (2012), and Delis et al. (2011). The banking literature has also investigated other issues such as the relationship between regulatory policies and (i) the likelihood of a crisis (Kim et al., 2013; Cihak et al., 2013), (ii) banking sector development (Barth et al., 2004), and (iii) the output cost of banking crises (Angkinand, 2009).

http://dx.doi.org/10.1016/j.jfs.2015.03.001
1572-3089/

activities is one of the main factors for life insurance company failures. On the other hand, fewer regulatory restrictions may positively affect firms' franchise value, leading to prudent behaviour and increased diversification of the asset portfolio (Gonzalez, 2005).

At the same time, the limited number of studies that examine regulations and insurers' performance focus on individual countries such as Austria (Ennsfellner et al., 2004), Germany (Mahlberg and Url, 2000), Spain (Cummins and Rubio-Misas, 2006), the Ukraine (Badunenko et al., 2006), and the United States (Weiss and Choi, 2008), along with Korea, Philippines, Taiwan, and Thailand (Boonyasai et al., 2002). As Pope (2004) points out, such studies do not allow us to reach a clear conclusion concerning the influence of the regulatory framework on insurance firms' performance. One of the reasons is that these studies usually use poor regulatory proxies, such as dummy variables for deregulation (Boonyasai et al., 2002), and/or they simply compare performance before and after the deregulation period (Ennsfellner et al., 2004).[3] Thus, they do not investigate how insurers are influenced by specific regulations, such as capital requirements or technical provisions. Furthermore, it may be difficult to generalize from the results obtained for individual countries, because there is no evidence that successful practices in one country will succeed in another with a different institutional setting (Barth et al., 2004). Thus, the question of how, if at all, regulations affect insurance firms' performance remains unanswered.

Our study attempts to add to this strand of the literature by being the first to develop an ad hoc empirical model to investigate the impact of various regulations on European insurers' profitability and risk-adjusted returns. More specifically, we take advantage of information in the Insurance Laws Database, provided by the International Association of Insurance Supervisors (IAIS), to build various indices that proxy for regulations on capital requirements, supervisory power, technical provisions, accounting disclosures and auditing, investments, and corporate governance. Thus, the regulatory indicators that we use proxy for various policies promoted by the IAIS, as well as for the regulations that will be introduced with the implementation of Solvency II in Europe.[4] We then examine whether and how these regulations influence insurance firms' performance. We believe that the use of such informative regulatory indices, together with the application in a cross-country sample, enhances our understanding of the dynamics.[5]

We focus on the profitability and risk-adjusted returns of European insurers for several reasons. First, the insurance industry's importance has risen significantly in recent years, making a noticeable contribution to Europe's economic growth and development. For example, data from the European Insurance Federation indicate that with a 33% share of the global market in 2012, the European insurance industry is the largest in the world, generating premium income of more than €1100 billion, employing almost 1 million people, and investing almost €8400 billion in the economy. Second, insurance firms were the largest institutional investors in Europe, with more than 50% of all European institutional assets under management in 2011, and it is therefore not surprising that there is a close link between the performance and variability of stock markets and the financial results of insurance companies (see Lorent, 2008).[6] Third, the implementation of Solvency II is expected to introduce various changes in European insurers' operating environment (see European Central Bank-ECB, 2007; KPMG, 2011). Thus, an understanding of the factors that influence the performance of European insurers is of interest to various stakeholders including managers, regulators, stockholders, and policyholders.

The rest of the paper is structured as follows: Section 2 provides a background discussion of theoretical arguments and the findings of empirical studies. Section 3 discusses the data and variables used in the study. Section 4 presents the methodology. Section 5 discusses the results, and Section 6 concludes.

2. Background discussion

2.1. Capital/solvency requirements

As in banking, capital/solvency requirements are frequently used in insurance supervision.[7] Despite the general belief that more-stringent capital requirements will improve the well-being of insurers, the effect of such requirements is actually ambiguous. For example, various recent reports mention that capital requirements under Solvency II in Europe could force insurance managers to alter their asset allocation, redesign products, reduce capacity, change the prices of insurance products, or even withdraw from certain insurance sectors (see, e.g., Wagner and Zemp, 2012; KPMG, 2011). Apparently, such actions will affect their performance. Additionally, higher capital charges are expected to result in lower profitability and lower returns to investors. For example, a joint report published by Morgan Stanley/Oliver Wyman (2010) argues that Solvency II capital ratios will be fundamentally more volatile than those reported under Solvency I, resulting in a higher observed cost of capital for the insurance sector. In contrast, the European Central Bank (2007) anticipates that the recognition of diversification benefits will lead EU insurers to reduce their risk concentration and profit from capital relief, eventually reducing their cost of capital and increasing profitability.

Existing theoretical and empirical evidence also provides conflicting views. Munch and Smallwood (1980) find that minimum capital requirements can be effective in reducing the number of insolvencies in the United States; however, this result is achieved by limiting the entry of small risky firms in the market rather than decreasing the frequency of insolvency among firms that do enter the market. Additionally, evidence from the United States raises concern about the effectiveness of risk-based capital (RBC) requirements in facilitating prompt corrective action against troubled insurers (see, e.g., Cummins et al., 1995). Using

[3] Some studies attempt to improve upon this approach by examining differences in regulations among U.S. states (Weiss and Choi, 2008).

[4] It should be emphasized that the indices that we use do not always map exactly the regulations of Solvency II. As such, they cannot provide a direct test of the implications of Solvency II. We believe that such a test will be possible only after this framework has been implemented. Despite acknowledging this potential shortcoming, we believe that it does not reduce the value of the study because we use various informative indices that provide an idea of how various regulatory tools that relate to the policies in Solvency II could influence insurance firms' performance. In principle, our framework is similar to the one adopted in existing work in banking that relates information from the World Bank Database on Bank Regulation and Supervision to the three pillars of Basel II (see, for example, Barth et al., 2004; Pasiouras et al., 2009; Delis et al., 2011).

[5] To our knowledge, the only study that examines some of the aforementioned regulations is Pasiouras and Gaganis (2013). That study does not focus on European firms, however, and it examines the risk of insolvency rather than profitability and risk-adjusted returns.

[6] Weiß and Mühlnickel (2014) also highlight that insurers can contribute to the (in) stability of the financial system, and they provide supporting evidence from the U.S. financial sector during the recent financial crisis.

[7] As mentioned in Eling et al. (2007) a variety of frameworks have been used around the world, including ones without specific levels of capital (New Zealand), static models that can be either risk based (United States, Japan) or non-risk based (European Union under Solvency I), dynamic cash-flow-based models (Netherlands), and a combination of static factor and dynamic cash-flow-based models (United Kingdom, Switzerland).