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Consolidation and systemic risk in the international insurance industry☆

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ABSTRACT

This paper is the first to examine the effects of consolidation in the international insurance industry on the acquirers' contribution to systemic risk. We analyze a sample of 394 international domestic and cross-border mergers and find a strong positive relation between consolidation in the insurance industry and moderate systemic risk in the insurance and banking sector. Furthermore, we find strong empirical evidence in support of hypotheses that firm size, non-traditional financing activities, and diversification across insurance lines all add to the destabilizing effect of insurance consolidation.

1. Introduction

The recent financial crisis of 2007–2009 with the (near-)collapse of American International Group (AIG) and Lehman Brothers has renewed the interest of financial economists and policymakers in the analysis of systemic risks in the global financial sector.[2] The financial economics literature has long been concerned with the consequences of bank runs and defaults of isolated banks. In the seminal work by Diamond and Dybvig (1983), banks are shown to be inherently fragile and subject to runs. Although the existence of deposit insurance should prevent conventional bank runs, the recent financial crisis was nevertheless (at least in part) brought on by a run on repurchase (repo) agreements.[3] While most of the discussion of systemic risk has concentrated on systemic risks in banking, the fact that the high tide of the recent financial crisis was brought on by the near-collapse of AIG has led economists and

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[2] Throughout this paper, we follow the definition of *systemic risk* by the Group of Ten (2001) which defines systemic financial risk as the probability of a loss of economic value in a substantial portion of the financial system as a result of an exogenous shock to individual financial institutions or the system as a whole. As a consequence of this shock, the disruption of the financial system can also lead to adverse effects on the real economy thus (in part) justifying the need for regulating the financial sector (see also De Bandt and Hartmann, 2000 for a rigorous discussion of systemic risk). Note that this definition by the Group of Ten, though originally casted for banks, has also been adopted in the insurance economics literature by, e.g., Cummins and Weiss (2014) and insurance regulators (see International Association of Insurance Supervisors, 2009).

[3] See Gorton and Metrick (2012) for further information on the securitized-banking run during the financial crisis. For some recent studies on systemic risks in banking during the subprime crisis see, e.g., Acharya et al. (2010), IMF (2010), Beltratti and Stulz (2012), Brunnermeier et al. (2012), Fahlenbrach et al. (2012).

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insurance regulators to reassess the possibility of systemic risk in insurance.[4]

The existence of systemic risks in the global insurance industry has been controversially discussed in the literature. As insurers do not accept customer deposits, they do not face the risk of a sudden shortage in liquidity due to a bank run. In addition, insurers in contrast to banks often rely more strongly on long-term liabilities thus further decreasing their exposure to liquidity risk. Furthermore, insurers are said to be less interconnected than banks resulting in a lower probability of contagion among insurers (see Bell and Keller, 2009). Since the near-collapse of AIG, however, it has been argued that the more similar an insurance company becomes to a bank, the more will it contribute to the systemic risk of the financial system. In other words, non-core and non-insurance activities of an insurer could increase the systemic importance of an insurance company. The same argument is brought forward by the Geneva Association (2010) which hypothesizes that the insurance industry could contribute to the systemic risk of the financial sector if insurers engage in too extensive derivatives trading on non-insurance balance sheet or in case their short-term financing is mismanaged. This view has been adopted by insurance regulators as well. For example, the International Association of Insurance Supervisors (IAIS) has based their recently proposed measure of systemically important global insurers on the size of an insurer and the extent in which the company engages in non-insurance activities (see IAIS, 2012).

While there exist only few studies on the systemic risk of insurers, the possible effects of consolidation in the insurance industry on both the default risk of an insurer as well as on its contribution to the systemic risk of the financial sector have not been analyzed in the literature. A merger between two insurers can have both beneficial as well as adverse effects on the default and subsequently the systemic risk of the merging firms.

On the one hand, a merger can reduce competition among the remaining insurers and thus allow insurers to attain monopoly rents. Moreover, the increase in the insured pool should lead to risk reductions and possibly increase profitability. As a consequence, acquirers in insurance mergers should decrease their default as well as their systemic risk following a merger. On the other hand, post-merger integration problems could outweigh the efficiency gains from a merger and lead to a higher default risk of the acquiring insurer. Similar to banks, the increase in size due to a merger could make an insurer too-big-to-fail therefore providing managers with incentives to take on excessive risks.

Furthermore, Furfine and Rosen (2011) empirically show that mergers in general increase the default risk of the acquiring firm despite the potential for asset diversification. Even if the default risk of an acquirer could be reduced due to a merger, systemic risk in the insurance sector or even the financial sector as a whole might still increase. While testing the so-called "concentration-fragility hypothesis" against the competing "concentration-stability hypothesis" has been a frequent exercise in the empirical banking literature,[5] the nexus between M&A activity and systemic risk in the global insurance industry has not been analyzed before.

As such, this paper is the first to examine the effects of consolidation in the international insurance industry on the systemic risk of insurers. We analyze a sample of 394 international domestic and cross-border mergers which took place between 1984 and 2010. First, we measure the merger-induced changes in the insurers' contribution to moderate systemic risk[6] using the marginal expected shortfall (MES) methodology by Acharya et al. (2010) and a novel measure of extreme systemic risk based on the lower tail dependence between a bidder's stock returns and the returns on a market index introduced in Weiß et al. (2014).[7]

The key result from our analyses is that mergers in the insurance industry can have a destabilizing effect on both the insurance as well as the banking sector. While our results indicate a strong positive relation between consolidation in the insurance industry and moderate systemic risk in the insurance and banking sector, this effect does not carry over to extreme systemic risk. Whereas insurance mergers thus (expectedly) on average do not lead to immediate crashes of the financial system, they nevertheless coincide with a significant increase in the potential of a system-wide crash.

We also investigate the factors driving these merger-related changes in the moderate systemic risk of both the insurance as well as the banking sector. In our cross-sectional analyses on the changes in the bidding insurers' MES, we find strong empirical evidence in support of hypotheses that size, non-traditional financing activities and diversification across insurance lines all add to the destabilizing effect of insurance consolidation. In addition, our results show that large life insurers contribute more strongly to the systemic risk of the insurance sector by means of a merger than non-life insurers.[8] In line with this finding, MES increases significantly for non-life insurers that merge with a life insurer.

The remainder of this article is structured as follows. Section 2 presents the related theoretical and empirical literature on possible systemic risk effects of consolidation in the global insurance industry. Sections 3 and 4 discuss the data and the methodology employed in the empirical study, respectively. Section 5 presents the results of our empirical study. The concluding remarks are given in Section 6.

2. Related literature

While the effects of bank mergers have been addressed both theoretically and empirically in numerous studies, the impact of mergers in the insurance industry on systemic risk has not been analyzed in detail. The effect of mergers in the insurance industry on efficiency, wealth and individual default risk, however, has been examined in several studies. Both Cummins et al. (1999) and Cummins and Xie (2008), e.g., examine the efficiency effects of mergers in the U.S. insurance industry. They show for the U.S. life as well as property-liability insurance industry that mergers lead to higher efficiency for the acquiring company. The impact of mergers which involve insurance companies as targets on the

[4] See, e.g., IAIS (2008) and Gaganis et al. (2015) for recent studies on the regulation of insurance companies.

[5] The possibly destabilizing effect of concentration in the banking sector has, e.g., been studied by De Nicoló and Kwast (2002), Beck et al. (2006a,b), Schaeck et al. (2009), Uhde and Heimeshoff (2009), Vallascas and Hagendorff (2011) and Weiß et al. (2014). In contrast, the studies by Allen and Gale (2000), Matutes and Vives (2000), Allen and Gale (2004) and Beck et al. (2006b) all argue in favor of the "concentration-stability hypothesis".

[6] We define moderate systemic risk to be the risk that both an individual insurer's stock and the market are in their joint 5% tail. In contrast, we define extreme systemic risk to be an asymptotic probability of a crash in the extreme left tail of the joint distribution.

[7] The recent financial crisis has spawned the development of several competing measures of systemic risk. Alternative measures of systemic risk include the Systemic Risk Indicator by Huang et al. (2011), which is based on credit default swap (CDS) prices, measures of systemic connectedness proposed by Billio et al. (2012), which are based on principal-components analysis and Granger causality and which have also been used in an insurance context by Chen et al. (2014) as well as the CoVaR measure of Adrian and Brunnermeier (2010), which is closely related to the MES methodology used in this study.

[8] This finding is in line with the arguments voiced, e.g., by Chen et al. (2013) and Eling and Pankoke (2014) that life insurers are more vulnerable to economic downturns than non-life insurers due to their higher leverage and less diversified asset portfolio.