Unnecessary injury: the economic rationale and costs of new global capital requirements for large U.S. property and casualty insurers[1]

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Abstract

In the wake of 2008-2009 global financial crisis (GFC), governments in most developed countries adopted new forms of financial regulation; more recently their attention has shifted to international regulation. One trans-national effort involves applying new global capital requirements to "Global Systemically Important Insurers" (G-SIIs), whose failure could trigger a new financial crisis. Talks are also underway regarding new global capital requirements for large insurance companies with significant foreign operations that do not present systemic risks to their own economies or the global financial system. We analyze the rationale for this new approach and the costs associated with applying it to large U.S. property and casualty (P&C) insurers. We find that additional capital requirements are unnecessary, because even the largest U.S. P&C insurers pose no systemic risk to the U.S. or global financial systems. We further find that current state-based capital requirements for U.S. P&C insurers are sufficient to ensure that they can handle the claims arising from even the most extraordinary losses. We also find that imposing additional capital requirements on large U.S. P&C insurers, all other factors being equal, would slow the growth of new P&C coverage and increase the cost of that coverage.

I. Introduction

For nearly two centuries, American insurance companies have been regulated almost exclusively by U.S. state governments. This hands-off approach by the U.S. federal government reflects certain features of the American P&C insurance business. People insure their homes, automobiles, businesses, and other property for losses arising from unpredictable events such as thefts, fires, hurricanes, and earthquakes, which do not occur randomly across such a large country. Thefts and auto accidents are more common in urban areas where populations and auto travel are concentrated. Major natural disasters such as hurricanes, tornadoes, and wildfires are concentrated in certain states and regions. The state insurance commissions which license and oversee the operations of U.S. insurers are seen to be closer than a single federal agency to the local circumstances which require coverage and the ability of local populations to secure that coverage.

At the same time, the regulation of insurers across the 50 states and the District of Columbia has substantially converged, mainly through the broad adoption of model laws and regulations developed by the National Association of Insurance Commissioners (NAIC). One area of overall agreement involves capital requirements for insurers, which are standards intended to ensure that insurers can meet the claims of their customers under extraordinary circumstances and continue to provide reliable coverage following disasters, which produce billions of dollars in claims.

Since capital standards involve costs for insurers, their levels, and the rules that determine them, affect the price of coverage and the extent to which people and businesses can access that coverage. Since the mid-1990s, U.S. insurance regulators have moved to risk-based capital (RBC) requirements. These RBC standards use NAIC formulas to assess a broad range of asset risks, insurance risks, affiliate risks, and off-balance risks, in order to determine the capital reserves each insurer needs to take account of those risks and remain financially sound. In recent years, the European Union (EU) has also adopted RBC standards, with Europeans favoring a more uniform RBC standard based on a series of financial models.

The convergence of the EU's ongoing process of adopting RBC standards with the 2008-2009 global financial crisis (GFC) produced calls for a new, global RBC standard for large insurers with substantial foreign business. After the GFC, new forms of financial regulation were adopted by governments in most developed countries, combined with increased attention on international regulation. One trans-national effort involves applying new global capital requirements to "Global Systemically Important Insurers" (G-SIIs), whose failure could trigger a new financial crisis. However, there are also talks underway regarding new global capital requirements, such as the global RBC standards, for large insurance companies with significant foreign operations that do not present systemic risks to their own economies or the global financial system. For U.S. insurers, a global capital requirement would come on top of state-based regulation and likely would be based on the EU's approach to those standards. If adopted on those terms, this initiative would substantially increase capital requirements for those U.S. insurers.

We find, however, no evidence that higher capital requirements are needed to ensure the solvency and operations of large U.S. insurers. Applying a range of measures and standards, researchers Cummins and Weiss (2013); Harrington (2009); Park and Xie (2011) have consistently found that the U.S. P&C industry poses no systemic risk to the financial system or the economy. Under current RBC standards, the U.S. P&C industry already has dealt with extraordinarily large claims arising from recent disasters without threatening their coverage, much less their solvency - from the Northridge earthquake, the 9-11 attacks, and Superstorm Sandy, to the terrible 2005 hurricane season encompassing Katrina, Rita, Wilma, and Dennis. The U.S. P&C industry also weathered the financial and economic upheavals of 2008-2009 with no damage or adverse effects for their policyholders.

We also analyzed the P&C industry's capacity to deal with even larger disasters – events thought to occur possibly once in a century, once every 250 years, and once every 500 years. We find that the current resources set aside for these great catastrophes by P&C companies would cover a once-in-a century event with claims more than twice those of the 2005 U.S. hurricane season. Assuming current reinsurance practices,

the industry's present catastrophe resources also could handle disasters likely to occur once every 250 years and once every 500 years.

Higher capital requirements also would impose new costs, particularly if companies maintain their existing capital margins (the excess of actual capital over required capital). Based on comparative analyses of European and U.S. capital requirements, we estimate that such a global capital standard would at least double the effective capital requirements for U.S. P&C insurers subject to the standard. As a result, the new requirements would raise the price of coverage and/or reduce its availability for millions of U.S. households and businesses.

II. The Terms for Regulating the Insurance Industry

The regulation of insurers should reflect the character and importance of the insurance product. Insurance is not simply a good designed to satisfy fleeting consumer desires. Reliable insurance is essential for the efficient planning and functioning of most households and businesses, and therefore for the entire economy and society. Governments regulate insurance products and services in order to protect households and businesses from fraud, misrepresentation, and injury. But the regulation of insurance also should recognize its character as a private good that produces important social and economic benefits. Insurance regulation should promote the conditions for a strong, healthy insurance industry, so people and businesses can secure coverage under reasonable terms.

Given the insurance industry's social and economic purposes, much of its regulation involves the regular review of the financial conditions of insurance companies, to ensure that they have the resources to pay the claims of those they insure. Their capital reserves should be adequate to meet those claims under a variety of conditions without impairing the industry's capacity to provide and maintain continuing coverage.

In theory, if regulators could correctly quantify all of these risks borne by each insurer, they could set capital requirements at an optimal level that would make payments of claims secure while minimizing increases in the cost of coverage. In practice, deriving optimal capital requirements has proven to be elusive.[2]

2 See, for example, BIS assessment of the long-term economic impact of stronger capital and liquidity requirements; also, Kashyap, Stein and Hanson (May 2010).

However, the only recent instance of huge, unanticipated claims crippling a major U.S. insurer was AIG's crisis in 2008-2009, and that involved transactions in financial derivatives unrelated to AIG's P&C business. Such transactions are now regulated under the 2010 Dodd-Frank financial reforms, and derivatives today account for less than one-tenth of 1 percent of the assets of U.S. P&C insurers.

Nevertheless, some regulators, especially in Europe, see the GFC as sufficient reason to raise capital requirements for American as well as European insurers. Yet, raising those requirements could entail significant, additional costs for U.S. insurers and their customers; and as the International Monetary Fund (IMF) has noted, wider safety margins intended to provide greater security during extraordinary crises provide no benefits in the absence of a crisis.[3]

Proposals for New Capital Requirements on Large U.S. Property and Casualty Insurers

Despite grounds for caution, American and foreign regulators are considering a proposal to apply new global capital standards for major international insurers under the aegis of the Financial Stability Board (FSB).[4] The FSB was created by the G20 nations in April 2009 to monitor the global economy and recommend measures to avert financial disruptions and crises. Under its mandate, the FSB directed the International Association of Insurance Supervisors (IAIS) to develop a new "Basic Capital Requirement" (BCR) for "global systemically important insurers" (G-SIIs), as additional protection against the failure of an insurer which could trigger serious pressures and failures in other financial institutions. The IAIS issued its draft BCR for G-SIIs in October 2014.[5] The FSB also directed the IAIS to develop "a comprehensive, group-wide supervisory and regulatory framework" for "Internationally Active Insurance Groups" (IAIGs), including a new global Insurance Capital Standard (ICS).[6] In contrast to G-SIIs, IAIGs are simply large insurance groups operating in at least three countries. Unless they are also G-SIIs, their own failures should carry no risk of triggering national or international systemic problems.

3 Elliott and Santos (2012).
4 FSB 2016.
5 IAIS (2014a).
6 FSB 2013.

Finally, the IAIS has said that its approach to G-SIIs "will inform development of the ICS" for IAIGs.[7] The contemplated ICS is expected to follow the EU's uniform, financial model-based approach to capital requirements for P&C insurers, rather than the U.S. alternative of risk-based quantitative and qualitative assessments and risk management techniques attuned to the conditions applicable to each insurer.

Capital Requirements in the EU and the U.S.

At a general level, capital regulation of insurers in the EU follows a set of fixed principles that drive the application of a uniform set of financial models, in contrast to the application of multiple quantitative and qualitative rules in the U.S. State regulators begin by applying two types of capital requirements. The first is a fixed, minimum requirement much like Europe's, although lower than the EU standard. The second requirement is set by risk-based capital standards based on formulas developed by NAIC.[8] Insurers are required to meet the higher capital standards as determined by the two requirements.[9] For P&C insurers, risk-based capital requirements (RBC) cover the evaluation and assessment of a range of asset risks, insurance risks, affiliate risks, and off-balance sheet risks. Each insurer's RBC amount is compared to the company's actual, total risk-adjusted capital, and regulatory actions are indicated if the total adjusted capital falls below certain levels of its RBC.[10] The RBC formula is as follows:

> *RBC = 0.5 [investments in affiliates and off-balance sheet liabilities, such as derivative instruments and contingent liabilities + (fixed income assets + equity assets + credit risk associated with reinsurance recoverables) + (loss reserves + premium or underwriting risks)]*

Since insurers often shift a substantial share of their risks to reinsurers, U.S. reinsurers are subject to comparable requirements, and non-U.S.-based reinsurers are required to post collateral scaled to an insurer's financial strength rating before that insurer can claim accounting credit for risks transferred to those reinsurers. Beyond RBC standards, each state also monitors the financial condition of its insurers using detailed rules that govern their financial organization and transactions.[11]

In contrast, the EU system for capital requirements and regulation is built on two master agreements. The first, called Solvency I, focuses mainly on coordination issues across EU member states, but it also sets solvency capital requirements based on an insurer's premiums and claims, rather than its risks. These requirements were widely criticized as rigid and unrealistic.[12] As a result, a second agreement, Solvency II, seeks to adapt the American risk-based approach to European principles and produce RBC standards for the EU. Its quantitative standards set a minimum capital requirement as well as a "target capital" standard, which is the economic capital an insurer is deemed to need to operate within a safe range given its underwriting risk, market risk, credit risk, and default risk.[13] The RBC for P&C insurers in the EU also takes account of operational risks and the prospect that an insurer's liabilities will increase based on the timing, frequency, and severity of insured events and associated claims settlements.

III. Assessing the Case for a New Global Capital Requirement for U.S. IAIGs

There are two reasons why international regulators might consider applying an additional global capital requirement to large U.S. insurers with substantial business overseas. Firstly, the regulators lack confidence in the classifications that distinguish between IAIGs and G-SIIs, the "systemically important" insurers whose failure could produce serious financial stresses in other financial institutions and possibly damage the economy. The first issue is whether there is any basis to believe that the failure of a large IAIG could produce systemic costs. The answer, as we will see, is no.

Secondly, foreign regulators may have little confidence in current U.S. risk-based capital requirements and fear that the failure of an IAIG would require a government bailout and undermine public confidence in insurance. The second issue, therefore, is whether there is any significant likelihood that an IAIG facing huge claims could fail, with such adverse effects. Again, the answer, we will see, is no.[14]

7 IAIS (2014b).
8 Eling, Klein and Schmit (2009).
9 Eling Klein and Schmidt (2009).
10 For an excellent overview, see Klein (2012).
11 Eling Klein and Schmidt (2009) op. cit.
12 For example, under Solvency I, an insurer could lower its capital requirements by reducing its premiums, even if doing so increased its risks.
13 Eling Klein and Schmidt (2009). op. cit.
14 A third possibility is that European regulators seek to reduce the competitiveness of large U.S. insurers by imposing the higher capital requirements that European insurers already bear.

Systemic Risks Associated with the Failure of a Large U.S. Property and Casualty Insurer

The issue of systemic risk involves size, interconnectedness, leverage, and in some cases, non-traditional activities that involve unknown risk. The issue is whether an event could produce such large losses by a major P&C insurer or group of insurers that the losses would impair other parts of the financial system. To begin, the Dodd-Frank financial reforms address these concerns. The Financial Stability Oversight Council (FSOC) created by that legislation is charged with identifying financial institutions that could present such risks. Once identified as "systemically important financial institutions" (SIFIs), they are subject to special supervision by the Federal Reserve Board, enhanced capital requirements, higher liquidity requirements, and limits on their short-term debts.

It is generally understood that compared to banks, insurers have neither the size nor the interconnectedness that drive the correlated losses, which can pose systemic risks. To begin, the insurance industry is much less concentrated than banking. The largest U.S. P&C insurer is the Berkshire Hathaway Group with assets of $252.8 billion, compared to the largest U.S. banking institution, J.P. Morgan Chase, with assets of $2.3 trillion. Furthermore, the top five P&C insurers account for less than 31 percent of all P&C assets, compared to the top five banks with nearly 60 percent of all banking assets.[15] Accordingly, Cummins and Weiss concluded that "in terms of their core activities, insurers are not large enough to be systemically important," and that P&C companies were the least likely segment of the industry to have that status.[16]

Insurers also are unlikely to be caught up in the cascading failures, which can be triggered by the failure of a large bank, because insurers are not highly exposed to bank failures: bank bonds represent 5.4 percent of P&C bond portfolios, and the bonds of all financial institutions represent 11.4 percent of P&C insurers' equity.[17] The insurance industry also is more highly capitalized than banking: its capital-to-assets ratio of 39.6 percent (2011) is nearly four times the 11.4 percent ratio for banking.[18] As a result, the failure of another financial institution would not expose P&C insurers to losses sufficiently large enough to threaten their solvency. With the exception of AIG, insurers did not suffer greatly in the 2008-2009 GFC, and AIG's problems did not arise from normal insurance-related transactions.[19]

A recent analysis tested the impact on the insurance sector of an economic crisis in which the broad market gradually fell by 40 percent: Harrington found that P&C insurers were negatively related to systemic risk under those conditions, and concluded that "writing property-casualty lines may act as a stabilizing factor during systemic crises."[20] Another study modeled the impact of a more sudden collapse in stock prices and found again that the insurance industry would not be a source of systemic risk.[21] These findings were confirmed in the recent Great Recession, when the value of the S&P 500 fell 54.9 percent over 15 months. The U.S. P&C industry continued to operate normally. From 2007 to 2009, direct premiums written for personal P&C coverage remained stable, and direct premiums for commercial P&C coverage fell less than 10 percent.[22] Similarly, the net investment income of the P&C industry declined just 12.5 percent, from $56.5 billion in 2007 to $48.4 billion in 2009.

Some observers have questioned the exposure of large P&C insurers to problems in the reinsurance market, but those concerns also have little foundation. A 2011 analysis found that the failure of one of the three top reinsurers (Swiss Re, Munich Re, or Berkshire Hathaway) would threaten 1 percent of P&C insurers, insufficient to trigger or sustain a systemic crisis.[23] A similar analysis conducted in 2006 by the Group of 30 found that if 20 percent of the global reinsurance market failed – if several major reinsurers failed at once – it still would not produce widespread insolvencies among insurers sufficient to affect the real economy.[24]

Other Risks to the Solvency of Large Property and Casualty Insurers

If the failure of a U.S.-based IAIG could not trigger systemic costs for the financial system and economy, the question becomes: is there any prospect that IAIGs facing huge claims

15 Bank Market Share By Deposits and Assets, http://www.cardhub.com/edu/bank-market-share-by-deposits/; NAIC (2013).
16 Cummins and Weiss (2013).
17 Ibid.
18 Ibid.
19 Harrington (2009).
20 Ibid.
21 Grace (2010).
22 U.S. Department of the Treasury (2013).
23 Park and Xie (2011).
24 Group of 30 (2006).

	2008	2009	2010	2011	2012
Number of Companies	2,650	2,568	2,606	2,600	2,601
R0 - Asset Risk – Affiliates	41,956,539	44,229,308	45,408,726	45,083,425	48,201,346
R1 - Asset Risk - Fixed Income Assets	6,019,789	6,745,280	6,666,137	7,941,632	7,934,578
R2 - Asset Risk – Equities	52,456,701	57,209,628	69,488,335	74,325,097	80,684,906
R3 - Asset Risk – Credit	17,247,418	16,184,833	14,903,885	15,514,367	13,709,545
R4 - Underwriting Risk – Reserves	99,937,576	100,654,969	101,631,899	102,176,645	103,245,652
R5 - Underwriting Risk - Written Premiums	56,154,339	55,234,918	53,997,075	55,754,469	60,138,046
Total RBC	273,772,362	280,258,936	292,096,057	300,795,635	313,914,073
Total RBC After Covariance	193,386,033	199,654,405	211,980,682	216,938,031	226,376,198
Authorized Control Level (ACL) RBC	96,693,017	99,827,203	105,990,341	108,469,016	113,188,099
Total Adjusted Capital (TAC)	578,401,613	643,578,743	692,557,389	690,336,975	732,657,366
RBC Ratio	**598%**	**645%**	**653%**	**636%**	**647%**

Table 1: RBC Ratio for All Property and Casualty Insurers, NAIC, 2008-2012 ($ 000). Modified by Shapiro and Mathur 2014.

from a major disaster will require public bailouts, which would undermine confidence in the insurance industry? The capacity of P&C insurers to cover huge, unpredicted losses depends on their profits and reserves or, stated differently, their premiums, expenses, investment income, and surplus. The Treasury Department reports that the 2,700 P&C insurers active in 2012 collected $460 billion in net premiums, with the ten largest insurance groups accounting for nearly half of that total.[25] The profitability of these insurers is based on those premiums, plus their investment income, underwriting gains or losses, and overall operating performance.[26]

The traditional way for state regulators to measure a P&C insurer's capacity to meet its obligations is the ratio of its premiums to its surplus, using as a threshold for adequate resources a ratio of less than three-to-one. The surplus refers to an insurer's excess capital after meeting all of the payable claims of its policyholders, or the "policyholders' surplus."[27] The data show that these surpluses have increased every year since 2009. The industry's premium-to-surplus ratio in 2013 hit a record-low of 0.73 or one-quarter of the threshold and half the average 1.45 ratio for the 55 years from 1959 to 2013.[28]

As noted already, the central feature of the regulators' strategy is RBC requirements.[29] Under this strategy, a complex set of formulas establish a minimum level of capital that can be compared to an insurer's actual capital level,[30] and state regulators are authorized to take certain actions based on an insurer's RBC-level of impairment. If the ratio of insurer's Total Adjusted Capital (TAC) to its Authorized Control Level (ACL) RBC falls below one of five defined levels, an action level is triggered. Some 2,601 P&C insurers filed RBC assessments with the NAIC for 2012.[31] Using these and earlier data, we calculated the aggregate, industry-wide RBC ratio for the years 2008 to 2012 (Table 1). Under the RBC system, regulatory action is required when an insurer's TAC is less than twice its ACL RBC. Our results show that the TAC for all P&C insurers, taken together, has been five-to-six times the ACL from 2008 through 2012.

Turning to individual companies, we found that from 2008 to 2012, 2.3 percent to 3.2 percent of P&C insurers were subject to

25 U.S. Department of the Treasury (2013). By 2012, net commercial written premiums exceeded pre-crisis levels.
26 Kearney (2010).
27 Beckman and Tremelling (1972).
28 Property Casualty Insurers Association of America (2014).
29 NAIC (2014b).
30 Ibid.
31 NAIC (2014a).

some regulatory response based on their TAC-to-ACL ratios. Even under the extraordinary financial and economic stresses of 2008-2009, almost 97 percent of P&C insurers had the resources to withstand all of the risks measured by the RBC standard without danger of financial difficulty.

The portfolios of P&C insurers manifest none of the risky behavior that can lead to serious problems. The Treasury Department's most recent report on the industry found that in 2012, 65.3 percent of the financial assets of P&C insurers – $909.9 billion from a total of $1,382.9 billion – were invested in high-quality investment-grade bonds.[32] Of the remaining one-third of assets, $81.6 billion or 5.9 percent were held in cash and short-term cash-equivalents; and $215.9 billion or 19.2 percent were held in preferred or common stocks. Finally, $16.1 billion or 1.2 percent of all P&C assets were held in mortgage loans and real estate, and $592 million or 0.04 percent were held in derivatives. The remaining $115.8 billion were classified as "other investments."

P&C Insurers Would Remain Financially Sound After a Terrible Catastrophe

The next question is: are the current standards sufficient for truly terrible natural or man-made catastrophes? Natural or man-made disasters produce "correlated losses" – tens of thousands of substantial claims of a similar sort at one time – on top of the industry's regular claims from unrelated events. P&C insurers prepare for catastrophes by building up their surpluses – loss reserves – over years, and by spreading their risks across many thousands of policyholders in hundreds of places and shifting some potential liabilities to reinsurers.[33]

In 2012, P&C insurers maintained reserves of $596.2 billion for incurred losses and for the losses and loss adjustment expenses for past events that remain unpaid. A standard industry rule designates 20 percent of policyholder reserves for catastrophic events (the "catastrophe surplus") with the other 80 percent to be held for normal risks. In 2012, the industry's catastrophe surplus totaled $117.4 billion – as compared, for example, to insured losses from superstorm Sandy of $25.85 billion, of which private insurers were responsible for $18.8 billion. The 2005 hurricane season included the worst natural disaster in U.S. history (Katrina) plus three other major storms (Hurricanes Rita, Wilma, and Dennis). The insured claims from these disasters totaled $57 billion, or less than half of the industry's most recent catastrophe surplus.[34]

The Congressional Research Service (CRS) recently modeled the capacity of the insurance industry to deal with even more extraordinary catastrophes: a once-in-a-century event with claims of $108 billion, events which theoretically should occur once every 250 years with claims of $164.5 billion; and events which may occur once every 500 years with claims of $217.0 billion (all estimates in 2012 $).[35]

The industry's catastrophe surplus of $117.4 billion in 2012 could clearly manage a once-in-a-century catastrophe with $108 billion in claims, but not the projected claims for even more rare and terrible events. However, these calculations do not take account of the industry practice of hedging such catastrophic costs through reinsurance. For example, reinsurers based mainly in Germany, Great Britain, Switzerland, and Bermuda absorbed 60 percent of the costs of the claims from Hurricane Katrina, the most expensive catastrophe for U.S. insurers on record.[36] The CRS model, again, projects total insured claims of $164.5 billion from a once-every-250-years catastrophe. If U.S. P&C insurers transfer 40 percent of the projected claims from such a catastrophe to the balance sheets of foreign reinsurers – 20 percentage-points less than were transferred for Katrina – the 2012 catastrophe surplus could handle the resulting claims on U.S. insurers of $98.4 billion. If reinsurers absorbed 50 percent of the projected claims of $217 billion from a once-every-500-years catastrophe – still a smaller percentage than were transferred for Katrina – the 2012 catastrophe surplus of P&C insurers also could handle the remaining claims of $108.5 billion.

IV. The Structure of Higher Capital Standards for Property and Casualty IAIGs

The preceding analysis established that under current RBC capital standards and industry practices, U.S. P&C insurers could

32 U.S. Department of the Treasury (2013).
33 King (2009).
34 Shapiro and Mathur (2008).
35 King (2013).
36 Ibid.

handle the claims from any currently-conceivable circumstances. Nevertheless, the IAIS is working to develop a new, global group insurance capital standard (ICS) that would apply much higher capital standards to large U.S. insurance groups with substantial foreign business (IAIGs), defined for now as groups with assets of at least $50 billion, gross written premiums of at least $10 billion, operating in at least three countries with at least 10 percent of its gross premiums written in foreign markets.[37] In this effort, the IAIS is developing a "Common Framework for the Supervision of Internationally Active Insurance Groups" (ComFrame)[38], including new supervisory standards covering corporate governance, enterprise risk management and capital adequacy.

These developments should be matters of concern for the insurance industry and the overall U.S. economy. Thus far, the IAIS discussions of the BCR for G-SIIs reflect a preference for a European approach to insurance regulation, which relies on prescribed financial models applied uniformly across the industry, as compared to the U.S. approach based on qualitative and quantitative analysis of each insurer's business.[39] Moreover, the IAIS has acknowledged that the BCR for G-SIIs "will inform"[40] the development of the ICS for IAIGs, raising concerns that the IAIS is prepared to impose additional, EU-style, factor-based global capital standards on many large U.S. P&C insurers through the ICS. Yet, there is no evidence that those companies warrant additional capital requirements.

The Basic Capital Requirement for G-SIIs

To appreciate how a new ICS for IAIGs would work, we begin with the IAIS's description of the factor-based approach adopted in the BCR for G-SIIs.[41] An insurer's BCR "Adequacy Ratio" is defined as its "Total Qualifying Capital Resources" divided by its "Required Capital," and its BCR is satisfied if its qualifying capital resources exceed its required capital. As with the RBC, "required capital" here is "calculated on a consolidated group-wide basis for all financial and material non-financial activities … using a 'factor based' approach with 15 factors … [and] a Market Adjusted Valuation Approach" based on the major categories of risk from both traditional and non-traditional insurance activities (NTNI), assets, and non-insurance activities.[42]

> *Required Capital = Sum of (Liability factors multiplied by Liability measures) + (Sum of Asset Factors multiplied by Asset measures) + (Sum of NTNI factors multiplied by NTNI measures) + (Sum of Other Factors multiplied by other measures)*

A G-SII's BCR capital adequacy ratio covers several areas of risk also included in RBC ratios, but the results depend on the weight assigned to each factor. Whether the BCR model properly weights the factors will be very consequential. The EU Solvency II Framework states that the European Commission will determine whether non-EU regulatory regimes provide a level of protection for policyholders comparable to the Solvency II regime and therefore "equivalent" to Solvency II; and only insurers in "equivalent" jurisdictions will be allowed to operate in EU markets. If the EU does not accept U.S. "equivalence," difficult competitive issues will arise. Rather than seek equivalence, the U.S. is working through the EU-U.S. dialogue process towards the ICS. The results may be substantially the same, since the NAIC has concluded that the regulatory capital required under the EU solvency framework will be much greater than the capital required under the U.S. RBC approach.[43]

This view is supported by a recent study comparing the European Solvency II standard for minimum statutory capital requirements with U.S. and Canadian accounting standards for P&C insurers.[44] Sharara et al. concluded that capital requirements for EU insurers based on Solvency II factors could be nearly four times greater than the capital standards for U.S. insurers under NAIC RBC formulas. This calculation is based on assumptions about the levels and types of assets and liabilities held by hypothetical firms. Nevertheless, the analysis shows that applying European solvency and capital standards to U.S. insurers would significantly increase their capital requirements.

37 Linklaters (2013).
38 IAIS (2014b).
39 For example, the factor-based, quantitative basic capital requirements developed by the IAIS for G-SIIs lack the flexibility to account for much of the variation and complexity in risks and capital needs within and among insurance groups.
40 IAIS (2014b).
41 IAIS (2013).
42 IAIS (2014c).
43 EU-U.S. Dialogue Project Technical Committee (2012).
44 Sharara et al. (2010).

V. The Economic Effects of Higher Capital Requirements on U.S. Insurers

Next, we examine the potential impact on U.S. insurance premiums and coverage if the current U.S.-EU dialogue produces higher capital requirements for large U.S. P&C insurers. For this analysis, we apply the three criteria which the IAIS has acknowledged have informed its deliberations about IAIGs – P&C insurers with assets of $50 billion or more, or direct gross written premiums of $10 billion or more, operating in at least three countries and at least 10 percent of their business conducted in foreign markets. On this basis, a minimum of seven major U.S. P&C insurers would qualify, accounting for 26.6 percent of the U.S. P&C market based on direct premiums written in 2012.[45]

Higher capital requirements for IAIGs would produce a very uneven playing field between those seven companies and non-IAIGs, including U.S. subsidiaries of foreign-based insurers that do not qualify as IAIGs in their own countries. Based on models developed for banking, higher capital requirements for more than one-quarter of the U.S. market for P&C coverage will have significant effects on premiums and premium rates. Capital ratios in banking do not translate directly to the RBC ratios. Nevertheless, applying the models used to analyze how capital requirements affect lending and investment behavior in banks can help inform our understanding of how the ICS for IAIGs could affect premium rates and volume for affected insurers.

A review of the economic literature shows a range of effects when capital requirements rise for financial institutions. One study (Kashyap, Stein and Hanson (2010)) found that banking institutions respond to higher capital requirements by slowing the growth of their assets, which leads to a slowdown or contraction in their lending. Economists also have found that financial institutions pass along higher costs of capital to their customers through higher borrowing costs: studies (Kashyap, Stein and Hanson (2010)) confirm that when the minimum capital ratio for banks increases by 10 percentage points, the interest rates charged for loans rise by 25-to-45 basis points.[46]

We begin by estimating the likely extent of the contemplated increase in capital requirements for IAIGs. Under current rules, an insurer with an RBC ratio of less than 0.7 faces regulatory intervention (i.e., when the ratio of its total adjusted capital to its required capital, given its risks, is 70 percent or less). As noted earlier, Sharara et al. found that a shift to a Solvency II-type regulatory regime would result in capital requirements nearly four times greater than under current RBC standards.[47] Applying this study and the current 0.7 threshold as an absolute minimum capital requirement, we project that the minimum RBC ratio under a Solvency-II type regime would be 1.4 to 2.8 or two-to-four times the current minimum level. This would represent an increase in the minimum capital ratio for P&C insurers of 70 percentage points (under a minimum ratio of 1.4) or 210 percentage points (under a minimum ratio of 2.8). Such a large increase would shock insurance and investment markets, so we also assume that the increase is phased-in gradually. Therefore, we limit our estimates to the short run and project two changes in the minimum capital ratio: an initial increase from 0.7 to 0.85 and a second increase from 0.85 to 1.0, so capital standards rise 15 and 30 percentage points. Our analysis assumes that insurers will seek to maintain their existing capital margins – the excess of actual capital over required capital.

To estimate the impact of the higher capital requirements for IAIGs on their cost of coverage, we focus on homeowner and auto

Year	Average Homeowner Premiums	Average Auto Premiums
2013	$1,076	$850
2014	$1,128	$852
2015	$1,183	$854
2016	$1,241	$856
2017	$1,302	$858
2018	$1,365	$860
Average	**$1,244**	**$856**

Table 2: Estimated Average Premiums for Homeowners' and Auto Coverage With No Change in Capital Standards, 2013-2018 (modified from Shapiro and Mathur 2014, p. 20, Tables 5 and 6).

45 U.S. Treasury (2013).
46 Ibid.
47 Sharara et al. (2010).

	15 Percentage-Point Increase in Capital Requirements		30 Percentage-Point Increase in Capital Requirements	
Year	Average Premium	Premium Increase	Average Premium	Premium Increase
2014	$1,173	$45	$1,219	$90
2015	$1,231	$47	$1,278	$95
2016	$1,291	$50	$1,340	$99
2017	$1,354	$52	$1,406	$104
2018	$1,420	$55	$1,474	$109
Average	**$1,294**	**$50**	**$1,343**	**$100**

Table 3: Estimated Premium Increases for Homeowners' Coverage under Higher Capital Standards, 2014-2018. Modified by Shapiro and Mathur 2014.

insurance, because the NAIC has published the average premium rates for homeowner and auto coverage for the years 2003-to-2011.[48] These categories of coverage accounted for 54 percent of all direct premiums written in 2011 and 2012 (39 percent for auto coverage and 15 percent for homeowner coverage).[49] These data show that premiums increased at average rates of 5 percent per-year for homeowners' coverage and 0.2 percent per-year for automobile coverage. We use these calculations to estimate the average premium rates for homeowners' coverage and auto coverage for the 2013 baseline year and then over the following five years (2014-to-2018), assuming that capital standards for P&C insurers remain unchanged (Table 2).

Next, we estimate the increase in those rates for insurers affected by increases in their capital standards of 15 percentage points and 30 percentage points. We recall that research from the banking sector found that each 1 percentage-point increase in capital costs leads to an increase in the interest rates charged for loans of at least 2.5 basis points.[50] If this finding were applied directly to insurers, each 1 percentage-point increase in insurers' capital requirements would produce an increase of at least 2.5 basis points in premium rates. In banking, these costs can be passed on to consumers. If the same held true for insurance, a 15 percentage-point increase in capital requirements would lead to annual increases in premium rates of 37.5 basis points or 0.375 percent per year, and a 30 percentage-point increase in capital requirements would lead to an annual increase in premium rates of 75 basis points or 0.75 percent per year.

How would these increases affect premiums? We start with another banking analogy, the impact of higher capital requirements on bank mortgage rates. Over the decade 2005-2013, the average rate for 30-year fixed mortgages under Freddie Mac was about 5 percent.[51] Applying this to an average loan of $200,000, a typical monthly payment would be $1,074.[52] If capital requirements increased 30 percentage-points, so the mortgage rate rose to 5.75 percent, the monthly payment would increase to $1,167, or an annual increase in premium prices of about 8.7 percent. For a 15 percentage-point increase in capital requirements, mortgage rates would rise to 5.375 percent, and the annual premium would increase by 4.3 percent.[53]

To assess if these increases are in line with how P&C insurers would likely respond to an increase in capital requirements in their industry, we obtained data from SNL Financials on balance sheet items such as reserves and equity, revenues from premiums

48 Insurance Information Institute (2014).
49 NAIC (2013).
50 Kashyap, Stein and Hanson (2010).
51 Freddie Mac (2014).
52 Panchuk (2012).
53 For shorter-term mortgages, the corresponding monthly change will be lower.

	15 Percentage-Point Increase in Capital Requirements		30 Percentage-Point Increase in Capital Requirements	
Year	Average Premium	Premium Increase	Average Premium	Premium Increase
2014	$886	$34	$920	$68
2015	$888	$34	$922	$68
2016	$890	$34	$925	$68
2017	$892	$34	$927	$68
2018	$895	$34	$929	$68
Average	**$890**	**$34**	**$925**	**$68**

Table 4: Estimated Premium Increases for Automobile Coverage under Higher Capital Standards, 2014-2018. Modified by Shapiro and Mathur 2014.

and investments, and costs.[54] A 2005 study found that P&C insurers typically target a return on equity (ROE) of approximately 15 percent, although the value may differ based on the business line.[55] Therefore, an increase in capital requirements that depresses the return on equity will be followed by an adjustment in pricing to maintain a ROE of 15 percent. Applying this analysis at the industry level, we estimate that a 30 percentage-point increase in capital requirements would cause insurers to increase premium prices by 7 percent, and a 15 percentage-point increase in capital requirements would cause premium prices to rise by about 4 percent. These increases are within the bounds produced by adding 37.5 basis points and 75 basis points to average mortgage rates. In the analysis which follows, we model the changes in premium prices when a 15 percentage-point increase in capital requirements causes premium prices to increase by 4 percent, and a 30 percentage-point change causes premium prices to rise by 8 percent. The results for homeowners' coverage are presented in Table 3.

This analysis suggests that increasing capital requirements for IAIGs on the scale contemplated in the ICS would lead to significant increases in premiums for homeowners affecting 26.6 percent of the U.S. market (the IAIGs' market share). If an agreement includes a 15 percentage-point increase in capital requirements, the cost of homeowners' coverage from an IAIG would average $1,294 per year over the years 2014 to 2018, compared to $1,244 per year without that increase (Table 3). Similarly, if the capital requirements for IAIGs increase by 30 percentage points, the cost of their homeowners' coverage would average $1,343 per year over the 2014-2018 period, compared to $1,244 per year without higher capital requirements.

If the FSB process leads to these large increases in capital requirements for IAIGs, the average price for automobile coverage issued by them also would rise significantly. Under a 15 percentage-point increase in capital requirements for IAIGs, the cost of auto coverage is projected to average $890 per-year over the period 2014-to-2018, compared to an average of $856 per-year without a change in capital standards (Table 4). Similarly, if the capital requirements for IAIGs increase by 30 percentage-points, the cost of their auto coverage would average $925 per-year over the 2014-2018 period, compared to $856 per-year without higher capital requirements.

The Impact of Higher Capital Requirements for IAIGs on the Volume of Their Premiums

Next, we turn to the impact of higher capital standards on the volume of insurance issued by the IAIGs, based on the estimated increases in premium rates or prices. Based on past experience, we estimate that state insurance regulators would allow IAIGs to

54 SNL (2014).
55 Cummins and Phillips (2005).

Year	Direct Written Premiums
2013	$522.7
2014	$530.4
2015	$538.3
2016	$546.2
2017	$554.3
2018	$562.5
Total	**$2,731.7**

Table 5: Estimated Premium Volumes of P&C Insurers, Current Capital Standards, 2013-2018 ($ billion) (modified from Shapiro and Mathur 2014, pp. 23-4, Tables 9-A and 9-B).

Year	Premium Volume Affected (26.6% of Projected Baseline)	2% Reduction in Affected, Direct Premiums	5% Reduction in Affected, Direct Premiums
2013	$141.1	$2.8	$7.1
2014	$143.2	$2.9	$7.2
2015	$145.3	$2.9	$7.3
2016	$147.4	$2.9	$7.4
2017	$149.6	$3.0	$7.5
Average	**$145.3**	**$2.9**	**$7.3**
Total	**$726.6**	**$14.5**	**$36.3**

Table 6: Estimated Effects on Premium Volumes from Higher Capital Requirements, Potential IAIGs and 26.6 Percent of Premiums Affected, 2014-2018 ($ billion). Modified by Shapiro and Mathur 2014.

pass along one-fifth to two-fifths of the additional costs in higher premiums. In this section, we will assess the impact of such increases in premium prices on the volume of insurance.

The nature of the insurance market suggests that the elasticity or sensitivity of demand for auto or homeowners' insurance to price is limited. In most places, auto and homeowners are required to carry at least minimum insurance, and they may be subject to additional costs for leaving their current insurers, such as the loss of "safe driver discounts" or the need to have their homes reappraised. The largest study of auto owners' sensitivity to price increases for auto coverage found an elasticity of - 0.57: a 1 percent increase in the price of coverage is expected to lead to a 0.57 percent decrease in demand for the coverage, which can translate to continuing coverage but at lower levels.[56] For homeowners' coverage, one study suggests that a 1 percent increase in price leads to a 1 percent decrease in demand, yet the elasticity of demand for homeowners' coverage is often thought to be less than for auto coverage, especially for homeowner coverage tied to a mortgage.[57] For this analysis, we will also apply the estimate for auto insurance premium elasticity to increases in homeowners' premium rates.

To model these effects, we begin with NAIC data on direct written premiums by P&C insurers from 2003 to 2012.[58] These data, drawn from the annual statements filed by insurers with the NAIC, show that premium volume grew at an annual rate of 1.5 percent over this period, when there were no major changes in capital standards. We use that underlying growth rate in written premiums to estimate the path of premium volumes over the next five years, again in the absence of changes in capital requirements. This provides the baseline for our projections for 2014 to 2018 (Table 5).

From the preceding analysis, we found that the contemplated increase in capital standards for insurers should drive up premium rates by about 4 percent or 8 percent per year, depending on how much those standards increase. We find that a 15 percentage-point increase in capital standards for P&C insurers would result in a reduction in written premiums by insurers affected by the new standards estimated at about 2 percent. Similarly, a 30-percentage point increase in capital requirements would reduce the premium volumes of the affected insurers by about 5 percent.

56 Jaffe and Russell (1998).
57 DeFusco and Paciorek (2014).
58 NAIC (2013).

Again, we assume that the higher capital requirements will affect the seven U.S. P&C insurers that currently meet the tentative criteria for IAIG status, with 26.6 percent of the U.S. P&C insurance market. We also assume that those insurers would maintain their existing capital margins (ratio of actual capital to required capital). Table 6 presents the estimated effects on premium volumes from 15-percentage point and 30 percentage point increases in capital requirements: we estimate that they would reduce premium volumes, on average, by 2 percent and 5 percent, respectively.

This analysis suggests that a 15 percentage-point increase in capital standards affecting insurers that account for 26.6 percent of the market will slow the growth of new premiums by $14.5 billion over the five-year period, 2014 to 2018, or by an average of between $2.9 billion per year. Similarly, a 30 percentage-point increase in those standards for those insurers would slow the growth of new premiums by between $36.3 billion over the five years, for an average annual reduction of $7.3 billion.

VI. Conclusions

Globalization presents many important challenges for the regulation of businesses that operate across borders. Regulators of similar businesses in North America, Europe, Latin America, Asia, and Africa will approach many of the same issues in a variety of ways. Those differences are inevitable and often appropriate, since they may reflect legitimate differences in values, policy priorities, and technical approaches. Financial regulators have a necessary and even urgent interest in those operations of globally-systemic financial institutions that could adversely affect the economies of other nations. But globalization does not require the harmonization of financial regulation, any more than it demands uniform fiscal and monetary policies across nations.

In this spirit, the current effort to apply uniform capital standards for all large, multinational property and casualty insurance companies is misguided. P&C companies pose no systemic risks to other financial institutions or the economy, which could justify new standards. Moreover, there is no evidence that under current capital requirements, U.S. P&C insurers are ill-prepared for virtually any eventuality which could produce very large claims. The new requirements being considered in the U.S.-EU dialogue would impose substantial additional costs on large U.S. P&C insurers with substantial foreign business, and those additional costs would raise the price and slow the growth of their coverage for American households and businesses.

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