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Emerging Insurance Regulation in the European Union and the United States

The global insurance market is undergoing deep and dramatic change. The insurance business is more global than ever. The European Union has become the largest single insurance market in the world, with a new integrated set of rules effective 2016. The financial crisis has brought about new approaches to capital and prudential regulation in general, especially with respect to systemic risk and systemically important financial institutions. These new developments lead towards greater globalization of insurance. But the United States market remains a singular one with different regulation structure than the rest of the world. We ask if recent attempts for greater unity of the EU and the U.S. market proposed under the Transatlantic Trade and Investment Partnership (TTIP) can bring greater convergence and unity between these two markets. We propose that a purely top-down approach may lead to significant friction with the existing structures and traditions, and a more evolutionary approach is more likely to succeed in creating a more efficient global insurance market.

Keywords: Risk-Based Capital, solvency, Solvency II, insurance regulation.

1. Introduction

Effective with the European Union expansion in 2004, the European Union became the largest insurance market in the world, and its integration will be deepened when on January 1, 2016, Solvency II Directive is implemented. European companies are among the largest in the world, and are leading global players in the insurance industry. Below we present two lists of largest insurance companies in the world (table 1, table 2).

Table 1. World's Largest Insurance Companies

Based on 2013 non-banking assets:						
2013 Asset Rank	2012 Asset Rank	AMB#	Company Name	Country of Domicile	2013 Total Non-Banking Assets US$ (000)	% Change*
1	2	085085	AXA S.A.	France	982,287,598	−0.91
2	3	085014	Allianz SE	Germany	924,646,489	2.58
3	4	058175	MetLife Inc.	United States	885,296,000	5.80
4	1	090527	Japan Post Insurance Co. Ltd	Japan	847,198,154	−3.73
5	5	058182	Prudential Financial Inc.	United States	731,781,000	3.17
6	7	085124	Assicurazioni Generali S.p.A.	Italy	619,087,758	1.73

2013 Asset Rank	2012 Asset Rank	AMB#	Company Name	Country of Domicile	2013 Total Non-Banking Assets US$ (000)	% Change*
Based on 2013 non-banking assets:						
7	8	086120	Legal & General Group Plc	United Kingdom	598,893,752	4.87
8	6	090826	Nippon Life Insurance Company	Japan	555,373,335	3.49
9	9	058702	American International Group Inc.	United States	541,329,000	−1.33
10	12	085925	Prudential plc	United Kingdom	537,494,461	5.94
11	10	090906	National Mut Ins Fed Agricultural Coop	Japan	514,785,341	3.26
12	15	086056	CNP Assurances	France	503,819,583	3.62
13	14	085244	Aegon N.V.	Netherlands	486,865,393	-3.09
14	17	058334	Berkshire Hathaway Inc.	United States	484,931,000	13.45
15	13	066866	Manulife Financial Corporation	Canada	480,293,543	5.90
16	11	085909	Aviva plc	United Kingdom	475,427,805	−11.32
17	18	086976	Zurich Insurance Group Ltd	Switzerland	415,053,000	1.52
18	23	093310	Credit Agricole Assurances	France	397,314,190	5.46
19	20	052446	China Life Insurance (Group) Company	China	394,045,228	4.36
20	19	091251	Dai-ichi Life Insurance Co. Ltd	Japan	366,795,952	5.63

Source: Lysiak, Fran Matso, *World's Largest Insurers*, Best's Review, February 2015, pp. 26–28.

Table 2. World's Largest Insurance Companies

2013 Premium Rank	2012 Premium Rank	AMB#	Company Name	Country of Domicile	2013 Net Premiums Written USD (000)	% Change*
Based on 2013 net premiums written:						
1	1	085085	AXA S.A.	France	110,778,705	−0.07
2	2	058106	United Health Group Incorporated	United States	109,557,000	9.86
3	3	085014	Allianz SE	Germany	92,947,768	1.14
4	4	085124	Assicurazioni Generali S.p.A.	Italy	83,614,441	0.04
5	7	086577	Munich Reinsurance Company	Germany	68,019,427	−1.53

Based on 2013 net premiums written:						
2013 Premium Rank	2012 Premium Rank	AMB#	Company Name	Country of Domicile	2013 Net Premiums Written USD (000)	% Change*
6	13	058180	WellPoint Inc.	United States	66,020,800	16.71
7	9	052446	China Life Insurance (Group) Company	China	62,792,381	3.67
8	10	020013	State Farm Group	United States	60,384,279	4.80
9	5	090906	National Mut Ins Fed Agricultural Coop	Japan	59,479,424	−12.42
10	12	070936	Kaiser Foundation Group of Health Plans	United States	58,728,239	4.33
11	6	090527	Japan Post Insurance Co. Ltd	Japan	57,482,869	−8.84
12	14	085925	Prudential plc	United Kingdom	49,215,740	4.27
13	15	086976	Zurich Insurance Group Ltd	Switzerland	48,303,000	1.70
14	11	090826	Nippon Life Insurance Company	Japan	47,265,239	−9.44
15	21	085320	People's Iris Co. (Group) of China Ltd	China	44,626,093	16.60
16	17	091251	Dai-ichi Life Insurance Co. Ltd	Japan	42,348,212	19.37
17	…	058700	Aetna Inc.	United States	41,836,600	31.91
18	24	086446	Ping An Ins (Group) Co of China Ltd	China	40,600,383	12.18
19	18	085485	Life Insurance Corporation of India	India	39,616,318	13.52
20	22	058052	Humana Inc.	United States	38,829,000	4.92

Source: Lysiak, Fran Matso, *World's Largest Insurers*, Best's Review, February 2015, pp. 26–28.

We see that several major global companies, leading in the world are European: AXA, Allianz, Generali, Munich Re, and Zurich. Notably, these are companies with large North American operations in the United States.

The United States and the European Union together represent approximately 60% of global GDP, 33% of world trade in goods and 42% of world trade in services (International Monetary Fund, 2015). These two large economic areas are currently negotiating the new trade arrangement, the Transatlantic Trade and Investment Partnership (European Commission, 2014, see also Barkerand Workman, 2013), which is expected to include a provision for expanded open trade in service, including insurance services. But given significant presence of major European companies in the American market already, why is it necessary to negotiate further opening of insurance services market? Companies such as AXA, Allianz, Generali, Munich Re, Zurich, Lloyd's, Aviva,

and others, are doing business in North America (and worldwide). The answer lies, in our view, in a sentence this author offers to new international graduate students arriving to study with him: "The United States is unlike the rest of the world, and the rest of the world is unlike the United States and both sides are unaware of the difference".

2. The uniqueness of the United States

The main question we are asking is if recent attempts for greater unity of the EU and the U.S. market proposed under the Transatlantic Trade and Investment Partnership can bring greater convergence and unity between these two markets. The European Union and the United States are already integrated greatly through extensive mutual trade, including trade in services, among them insurance. Major European insurance companies have great presence in American markets, and American companies are also present in the European markets, although seemingly less so. But a key issue that we would like to point out is the uniqueness of the United States. The United States market remains a singular insurance market with different regulation structure than the rest of the world. Let us examine that singularity.

When comparing the United States and the European Union, it is commonly assumed that the United States is a monolithic entity, one economy, generally of uniform structure, despite federal form of government, while the European Union is a collection of many nations with differing political systems, and different economies, with loose federal structure superimposed by the European Parliament, the European Commission and the European Court of Justice. While such a perspective is correct in general, it is almost exactly the opposite of reality in one area: insurance. The European Union (EU) has been a large unified insurance market to a great degree for several decades, and has greatly increased since 2004, the last major expansion of the EU. But effective January 1, 2016, when Solvency II EU Directive (following the EU Parliament vote on the Omnibus II Directive on 11 March 2014) goes into effect (see European Commission, 2014, a web site that provides comprehensive access to the Directive), the EU will become mostly one insurance market, ruled by one common set of legal rules and subject to a uniform system of regulation, especially in the area of prudential control. Despite impressions to the contrary, in the area of insurance the United States is not that.

In 1869, the Supreme Court of the United States decided the case known as *Paul v. Virginia* (United States Supreme Court, 1868). In its decision, the court held that a corporation is not a citizen within the meaning of the Privileges and Immunities Clause. Furthermore, the Court further claimed that "issuing a policy of insurance is not a transaction of commerce". That last statement implied that the Commerce Clause of the United States Constitution did not apply to the business of insurance, because insurance was ruled to be not a commercial business. Prior to that decision, in the 19th century, the insurance business in the United States was regulated by the states, individually, despite the view of many insurance firms, especially those based in New York,

that it should fall under Federal Government regulation, under the Commerce Clause. As a result of that historical decision, the system of regulation of insurance in the United States developed as a decentralized one, with each state having its own Department of Insurance/Insurance Commissioner regulating insurance in that state. Additionally, insurance law is written in each state separately, and does not need to be the same for all the states (as well as the District of Columbia and Territories). There is a national agency that coordinates insurance law: the National Association of Insurance Commissioners (NAIC), coordinating the work of state regulatory bodies, and also writing *model laws,* which are then considered for adoption by individual states. As a result of the work of NAIC, most of insurance regulation in the United States is nationally coordinated and consistent nationally. Most, but not all – there are still differences in laws adopted in different states. And an insurance firm that wants to enter the U.S. market must view the process as potentially entering fifty different markets with several additional smaller markets in the District of Columbia and Territories of the United States.

The fundamental structure of state regulation in the United States developed after the historic Paul v. Virginia case was subsequently shaken by two major changes of the legal environment:

- In 1944, the Supreme Court overturned the Paul v. Virginia case in the decision known as *United States v. South-Eastern Underwriters Association,* finding that insurance transactions were subject to federal regulation under the Commerce Clause (United States Supreme Court, 1944). United States Congress responded to that decision by enacting the McCarran-Ferguson Act of 1945, which limited antitrust laws' applicability to the business and assured state authority, would continue over insurance.
- Following the Credit Crisis of 2008, the United States Congress passed and President Barack Obama signed into law the *Dodd-Frank Wall Street Reform and Consumer Protection Act,* known as Dodd-Frank Act (United States Congress, 2010), which, among other major legislative changes, in its Title V of created the Federal Insurance Office (FIO) in the Department of the Treasury. The FIO is authorized to monitor all aspects of the insurance industry and identify any gaps in the state-based regulatory system, effectively creating the first federal oversight of state regulation. The Dodd-Frank Act also established the Financial Stability Oversight Council (FSOC), which is given the mission to monitor the financial services markets, including the insurance industry, and identify potential risks to the financial stability of the United States. One of the key steps in implementation of this mission is designation of *systemically important financial institutions* (SIFI), which are subject to additional new regulations by FSOC, through powers created by the Dodd-Frank Act. As of this writing, the following insurance firms in the United States have been designated as SIFI: AIG, Prudential Financial and MetLife (although MetLife is challenging the designation). Given that there are well over three thousand insurance companies in the United States, these three companies, while large and impor-

tant, do not change the still existing reality of most of the industry being subjected to the traditional state regulation.

In what follows we will provide a general comparison of the legislative framework of Solvency II in the EU versus state regulation of Risk-Based Capital and reserving under state regulation in the U.S.

3. Risk-Based Capital and Reserves

The Solvency II Directive is a European Union Directive that codifies and harmonizes the EU insurance regulation (European Commission, 2014). Primarily this concerns the amount of capital that EU insurance companies must hold to reduce the risk of insolvency, as well as reserving requirements, and overall risk assessment and risk management. Following a EU Parliament vote on the Omnibus II Directive on March 11, 2014, Solvency II is scheduled to come into effect on January 1, 2016. The date of implementation had been previously pushed forward many times, as the law was originally intended to go into effect in 2008. Solvency II aims to develop a new solvency system to be applied to all insurance business, which would be used in a consistent manner among member states. We see immediately how diametrically opposed the legislative approaches to insurance regulation are in the EU and the United States:

- EU has a common legislation for all insurance regulation for its member states, while
- The United States has separate insurance legislations for all of its states and other jurisdictions.

It should be noted, however, that in the United States, the National Association of Insurance Commissioners (NAIC) coordinates state regulatory regimes, and writes model insurance laws then proposed to the state legislatures, which generally adopt them. In the case of Risk-Based Capital requirements for insurance companies, the NAIC-sponsored system of regulations has been adopted nationwide.

Solvency II creates a three-pillar system of insurance supervision, similar to the Basel II system for banking (now extended and partially superseded), consisting of:

- Pillar 1: Quantification of capital requirements;
- Pillar 2: Supervisory review process; and
- Pillar 3: Market analysis of published data.
  Pillar 1 encompasses two capital requirements:
- Solvency Capital Requirement (SCR), and
- Minimum Capital Requirement (MCR).

The SCR is the capital required to ensure that the insurance firm will be able to meet its obligations over the next year with a probability of at least 99.5%. The MCR is intended to provide an 85% probability of adequacy over a one-year period, and is additionally bounded between 25% and 45% of the SCR.

Both of the capital requirements are in addition to the requirement of holding reserves for payments of claims/benefits, also referred to as *technical*

provisions, calculated as the best estimate of the liability plus a risk margin, as shown in the following diagram taken from the original CEIOPS Consultation Paper 20 (now superseded as the European Insurance and Occupational Pensions Authority, which replaced the Committee of European Insurance and Occupational Pensions Supervisors, known as CEIOPS, in 2011):
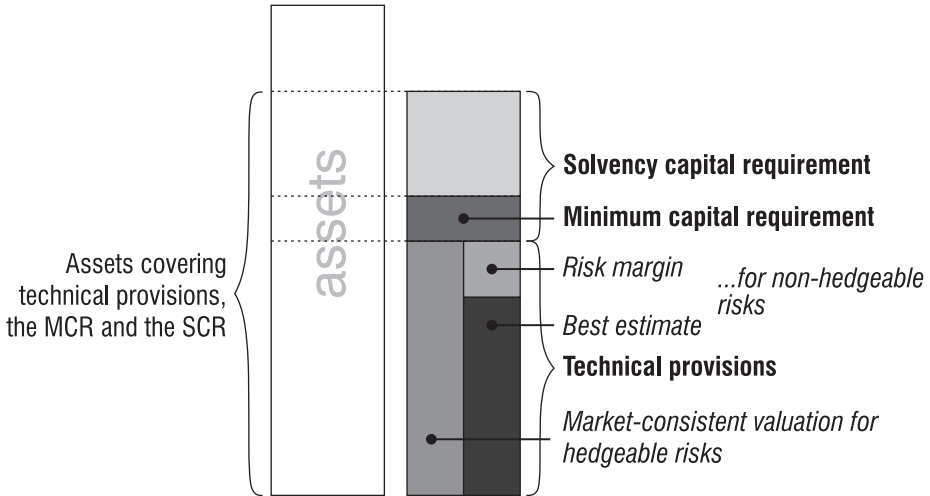
Source: CEIOPS Consultation Paper.

In addition to the capital and reserve (technical provision) quantitative assessment, Solvency II regulation also created a requirement of Own Risk and Solvency Assessment (ORSA), defined as a set of processes constituting a tool for decision-making and strategic analysis. In other words, quantitative tools for reporting and calculating capital and reserve must be used in the management process. This aims to assess, in a continuous and prospective way, the overall solvency needs related to the specific risk profile of the insurance company. Similar risk management regulation, also known as Own Risk and Solvency Assessment has been enacted in the USA by the NAIC. Other jurisdictions around the world are also implementing similar regulations to comply with the Insurance Core Principle 16 enacted by the International Association of Insurance Supervisors (IAIS) (International Association of Insurance Supervisors, 2011). Probably because of the common international standard, the ORSA process is quite similar in the EU and the United States. However, the Risk-Based Capital and reserving processes are significantly different.

Reserve (technical provisions) calculation under Solvency II is based on the principle that technical provisions are intended to represent the current amount the insurance company would have to pay for an immediate transfer of its obligations to a third party. This amount is the market value of the liability if

the market for that liability exists. If there is no market value, the intent of the legislation is to calculate the *fair value,* found as:

- Market-related value, if the liability cash flows can be replicated by market instruments, or
- Modeled market value, with a quantitative model, often of stochastic nature, used to establish a value consistent with observed market values of other financial instruments.

In the United States, methodologies of reserving are, in practice, separated between long-term insurance contracts (life insurance, life annuities), and short-term contracts (health insurance, property-casualty insurance). But in both cases, the system of reserve calculation is undergoing significant overhaul.

In life insurance, the NAIC has been implementing Principle-Based Reserving (PBR) (National Association of Insurance Commissioners 2012 and 2015) since 2008. The proposed PBR framework would define the minimum reserve as the greater of the amounts calculated using a seriatim deterministic method (deterministic reserve) and a stochastic method when the underlying risks of the polices require a stochastic approach (stochastic reserve). Both the deterministic reserve and the stochastic reserve would be determined by taking the present value of net cash flows arising from the contract, where the net cash flows reflect all cash outflows (e.g. benefits, expenses, but excluding Federal Income Taxes) less all cash inflows (gross premiums and other revenue items). However, only interest rates and equity returns are required to be modeled stochastically for the purpose of the life insurance valuation in the U.S., while EU models, by seeking market value, will have to take all randomness into account. The U.S. PBR approach also takes into account a possibility of a deterministic valuation, while the EU does not. And in the purely stochastic modeling case, the U.S. PBS reserve is, generally speaking, set at the conditional tail expectation (i.e., expected value conditional on exceeding the 70-th percentile) of the so called *scenario reserves,* which are determined based on scenario of future interest rates and related variables, and calculated from the deficiency of assets held to cover the reserve versus the value needed to pay all liabilities in the scenario considered. This methodology does not come with a guarantee, or even a guideline, of being close to the market value of liabilities, but rather it aims at providing sufficient assets to be able to make payments promised to clients in the policy.

For short-term insurance policies (property-casualty, health, etc.), the most common U.S. practice is to calculate *incurred but not reported* (IBNR) reserves without discounting future cash flows. The implied 0% interest rate used for reserving with this method results in relatively conservative valuation. New emerging methodologies are mostly stochastic in nature, and are generally used to set reserves based on relatively high quantiles of the distribution of deficiency of assets held versus present value of cash flows to be covered by those assets. One significant concern arose from the Sarbanes–Oxley Act of 2002 (United States Congress, 2002), which increased the criminal penalties

associated with white-collar crimes and conspiracies, potentially including any fraudulent reserve valuations. The potential of criminal sanctions has, in our view, increased interest in the actuarial profession in better stability of reserve calculation, and in assuring that reserves are adequate for the purpose of payment of claims. This is likely to cause the stochastic modeling for the purpose of reserve calculation to be relatively conservative, as well.

In summary, reserve calculations in the United States are likely to produce more conservative reserves than the fair value approach prescribed by Solvency II. This already makes any coordination of regulatory approaches a significant challenge. But the biggest challenge arises from the Risk-Based Capital requirements, which are fundamentally different in the U.S. versus the unified approach of Solvency II.

In the United States, the NAIC's RBC regime began in the early 1990s as an early warning system for U.S. insurance regulators (National Association of Insurance Commissioners, 2015, see also Sharara, Hardy, and Saunders, 2010, and Campbell, 2012). The regime has two main components:
- The Risk-Based Capital formula that establishes a hypothetical minimum capital level compared to a company's actual capital level, and
- A Risk-Based Capital model law that grants automatic authority to the state insurance regulator to take specific actions based on the level of impairment.

Separate RBC models have been developed for each of the primary insurance types: Life, Property/Casualty, Health and Fraternal. The final step of the process of calculation is the calculation of the ratio:

$$\text{Risk-Based Capital Ratio} = \frac{\text{Total Adjusted Capital}}{\text{Total (Required) Risk-Based Capital}}$$

Total Adjusted Capital (TAC) is made up primarily of capital and surplus, and the asset valuation reserve (AVR), with all of those calculated as *statutory values,* i.e., values defined in insurance law, as opposed to Generally Accepted Principles, or tax accounting principles.The Asset Valuation Reserve is used for smoothing the impact of credit default and equity gains and losses on the insurer's surplus. Note that U.S. statutory accounting also uses Interest Maintenance Reserve (IMR): Realized gains and losses resulting from changes in interest rates on fixed income investments are deferred in the IMR and amortized into investment income over the remaining life of the investment sold.

Total Risk-Based Capital (RBC) is calculated by multiplying the risk factors by some measure of volume for each risk class and adding together the resulting "risk requirements".

Further, regulatory responses to the calculated value of the Risk-Based Capital Ratio is defined in the table 3.

Table 3

RBC Level	Required Action
Above 200%	No negative trend, No action
150% to 200%	Company submits a plan to improve capital
100% to 150%	State regulator specifies corrective actions
70% to 100%	State regulator may take control of company
Below 70%	State regulator takes control of company

Source: National Association of Insurance Commissioners.

Let us note that if the RBC ratio falls below 70%, the state regulators are *required by law* to take over the insurance company and process its resolution (i.e., a bankruptcy under regulatory supervision).

The calculation of the required RBC capital differs by the insurance type, and in all cases are based on *risk categories* defined in regulation. For life insurance, originally, the major risk categories in the Life RBC formula were:

C1 – Asset Risk,
C2 – Insurance Risk,
C3 – Interest Rate Risk, and
C4 – Business Risk.

These generic categories have been later refined and currently they are:

C0: Affiliates Risk
C1cs: Asset Risk – Unaffiliated Common Stock
C1o: Asset Risk – Other Assets Risk (i.e., excluding common stock)
C2: Insurance Risk
C3a: Interest Rate Risk
C3b: Health Credit Risk
C4a: General Business Risk
C4b: Administrative Expense Risk

The steps in RBC calculation are:

- Apply risk factors against annual statement values,
- Sum risk amounts and adjust for statistical independence (using the so called *covariance formula*),
- Calculate Authorized Control Level Risk-Based Capital amount,
- Compare ACL RBC to Adjusted Capital.

RBC capital for an affiliate company is calculated based on a pro-rata share, i.e., the parent RBC charge equals to its prorated share of affiliate's RBC. This is the C0 category, and it effectively treats affiliate as an extension of parent. The final calculation is done with the following *covariance formula:*

$$C_0 + C_{4a} + \sqrt{(C_{1o} + C_{3a})^2 + (C_{1c} + C_{3c})^2 + C_2^2 + C_{3b}^2 + C_{4b}^2}$$

This amount represents exactly the upper point of Company Action Level, i.e., 200% RBC ratio level, above which the company does not have to make any adjustments or corrections.

Major categories in the property/casualty insurance RBC formula are:

R0 – Subsidiary Insurers Risk

R1 – Fixed Income Asset Risk

R2 – Equity Asset Risk

R3 – Credit Risk (includes reinsurance credit risk)

R4 – Insurance Risk – Reserve Development

R5 – Insurance Risk – Written Premiums

The RBC formula for property/casualty insurersis:

$$R_0 + \sqrt{R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2}$$

This again represents exactly the upper point of Company Action Level. Major categories in health RBC formula are:

H0 – Insurance Subsidiaries Risk and (non-derivative) off-balance sheet risk

H1 – Asset Risk

H2 – Insurance Risk

H3 – Credit Risk (health provider, reinsurance, misc. receivables)

H4 – Business risk (health administrative expense risk, guaranty fund assessment risk, excessive growth)

and the RBC formula is (this again is the upper point of Company Action Level):

$$R_0 + \sqrt{H_1^2 + H_2^2 + H_3^2 + H_4^2}$$

The calculations of all risk categories are generally done by multiplying factors prescribed by the NAIC by values from the statutory (i.e., prescribed by insurance law) balance sheet of the insurance company. Below is a simple example of a calculation for a bond portfolio. Risk factors are developed by an NAIC Advisory Group, and are based on simulation testing for portfolios of bonds. They are intended to account for default risk only. In what follows we present factors that may not be exactly the ones currently used, this is just an illustration (table 4).

Table 4

Asset portfolio given:		Factor	RBC
NAIC Class 1, U.S. Government	$1000	0.000	$0.00
NAIC Class 1, non-U.S. Government	$1000	0.003	$3.00
NAIC Class 2	$1000	0.010	$10.00
NAIC Class 3	$1000	0.020	$20.00
NAIC Class 4	$1000	0.045	$45.00
NAIC Class 5	$1000	0.100	$100.00
NAIC Class 6	$1000	0.300	$300.00
Total	$7000		$478.00

Source: Author's calculation.

In practical calculation, there is also a bond size adjustment factor. The RBC amount calculated as above is multiplied by a number f_{SIZE}, which is determined by the number of bonds in the portfolio. Let us note that there are no adjustments for portfolio size for stocks and mortgages.

For stocks, the C1 RBC is derived by multiplying the total value of all stocks by a factor provided by NAIC (approximately 30% for life companies, 15% for property/casualty companies, but note that factors do change over time). It is worth noticing that the RBC charges for stock investments are quite large and mostly preclude life insurance companies from investing in stocks.

We will not discuss other risk factors definitions and calculations, as they are extremely detailed and tedious, and vary over time. The one overriding principle that we see in this system of Risk-Based Capital calculation is that the process of calculation is:

- Prescribed by regulators,
- Tedious and complex, and
- Not calculated based on direct market inputs (although the NAIC adjusts the factors given to companies based on the reality of the markets and the overall economy).

Let us point out that Solvency II does have a *standard formula* as an alternative for modeling the Solvency Capital Requirement (SCR) with internal company models. The core formula in that standard formula is of the following form

$$\text{Basic SCR} = \sqrt{\sum_{i,j} \rho_{i,j} \cdot \text{SCR}_i \cdot \text{SCR}_j}$$

In the above, $\rho_{i,j}$ refers to correlation of risks i and j, while SCR_i and SCR_j refer to individual *SCR* measure for those risks.

The more complete SCR requirement includes a separate operational risk charge. It still makes the two approaches to RBC significantly different. And it should be noted that Solvency II approach requires considering *all* risks, while risks in the U.S. approach are prescribed by the regulators. Additionally, Solvency II requires stress testing and scenario testing even when a standard formula is applicable, and this, of course, varies from the U.S. approach. On the other hand, it should be emphasized that calculations for C3 risk for life and annuity companies in the United States are based on scenario testing, and involve certain stress testing equivalencies. Additionally, both the EU and the U.S. companies deemed to be systemically risky may be subject to additional stress testing applicable to systemically risky financial institutions.

4. Conclusion: Significant Incompatibilities

The overall conclusion concerning the comparison of the EU and the U.S. insurance regulatory approaches we draw from the above is that the two systems are incompatible. Let us review these incompatibilities:

- **Reserves**

The EU approach calls for reserves based on the market value or fair value of liabilities. The U.S. approach, whether principle-based, traditional, or stochastic, results in generally more conservative values, with possible excess reserves eventually released in profits in the future.

- **Insurance law**

The EU approach has a unified legal framework effective January 1, 2016. While in the U.S. there is commonality in the way insurance works in different states, this is mostly a result of coordinating work of the National Association of Insurance Commissioners, because insurance law is state-based, and can potentially be different in different states. The newly created Federal Insurance Office, in existence since the 2010 Dodd-Frank Act, has not taken any significant steps toward integrated national insurance supervision and regulation.

- **Risk-Based Capital Requirements**

The EU approach has created a unified, risk-based, short-term (one year) framework for calculation of Risk-Based Capital, based on a Value-At-Risk calculation, with a possibility of simplification with the use of the standard formula. European companies are most likely to use their own internal models, and those models will be a part of an enterprise-level Own Risk and Solvency Assessment (ORSA). While the U.S. companies are also required to create an ORSA framework, their RBC calculations are based on models prescribed by regulators (although continuously adjusted to market and economic realities by them. Furthermore, nothing in the methodologies of RBC calculations of the EU and the U.S. indicates a possibility of convergence of the two regimes – any such convergence would require changing their laws, or possibly a radical unilateral change in the U.S. regulatory prescriptions, which would be, of course, extremely unlikely.

- **Value-at-Risk**

The Credit Crisis of 2008 pointed out significant problems with Value-at-Risk as a risk measure. After all, Basel II regulation was using Value-at-Risk, and all U.S. based investment banks that turned out to be insolvent in the crisis, were compliant with the Value-at-Risk based Basel II RBC regulatory regime they were subject to. The problems were mostly due to two factors: completely unjustified widespread use of Gaussian copula (rooted in the assumption of joint multivariate normal probability distribution of risks), and the "tail blindness" of the models used to extreme risks beyond the quantile considered in the Value-at-Risk models. Obviously, there were other systemic reasons one could point out for that crisis, but in terms in internal management of financial institutions, these two were, in our view, crucial. And it must be noted that these problems may continue in Solvency II. But the U.S. RBC regime is different, because it is unlikely to have such "tail risk blindness", as the regulators use approaches that do not ignore the risks in the tails of probability distribution, or at least they are supposed to include the tail risks in their modeling. Of course, Solvency II also requires that a firm considers all risks, and creates a comprehensive model taking them all into account, but prescription of a Value-at-Risk mathematical methodology is, in our view, contradictory to that general philosophy of comprehensive risk assessment.

- **Time horizon**

Solvency II prescribes a one-year time horizon. The U.S. RBC does not specify a time horizon for its risk charges. It should be noted that different time horizons may be appropriatefor different risks as they develop over time (Campbell, 2012). As Campbell (2012) noted: "While an improvement over the retrospective view of capitalization, the models focused on a one-year horizon, by definition, are not designed to view the business on a multiyear/going-concern basis. The problem with the one-year view is that it misses latent, developing risks that build over time to affect capital". Let us note that this may be yet another manifestation of the "tail risk blindness."

- **Internal models**

The European approach encourages internal models. The American approach discourages them, although it considers them in the asset-liability management modeling and it also prescribes Own Risk and Solvency Assessment. But overall, while the U.S. system of insurance regulation is not centralized, in this one aspect, to some degree it is – and this is precisely the area in which the European system is, unusually for its nature, decentralized.

Can the two regulatory approaches be made compatible? The European Union allows for a review of other jurisdictions' regulatory regimes and the possibility of approving them as equivalent. But that would require for the United States to prepare formal requests for such equivalence, and given the structure of the regulatory system in the U.S., this may have to be done by individual states in the U.S. separately – politically a near impossibility. However, one open possibility is through approval of some form of equivalence in an international trade treaty – and such a possibility is under consideration now, for the proposed Transatlantic Trade and Investment Partnership (TTIP). In our view, this door for closer integration of the two markets remains open.

On the other hand, let us note one important feature of the U.S. insurance market. Its unique structure is a product of gradual evolution, continuous improvement and growth. That market has functioned for a long time (1945-2010) formally and legally under federal supervision, but with supervision delegated to the states by the McCarran-Fergusson Act, which allowed for natural evolution of the previously existing system, instead of a sudden shock of a completely changed regulatory regime. We would like to stress that in the current situation a purely top-down approach pushing towards sudden centralization imposed by TTIP may lead to significant friction with the existing structures and traditions, and a more evolutionary approach is more likely to succeed in creating a more efficient global insurance market.

In our view, one possible approach exists that may offer a way out of this impasse. The United States could offer an optional federal regulatory regime, as a gradual replacement for the existing state regulatory regimes, which would be also negotiated with the European Union to gradually converge to a regime that would be deeded equivalent by the EU. This would achieve two key objectives:

- Create simultaneously a path to federal regulation of insurance in the United States, consistent with the spirit of systemic risk regulation imposed

by Dodd-Frank Act, and a path to Solvency II equivalence for U.S. companies. This is the choice of regulatory regime likely to be chosen by larger insurance enterprises in the U.S., which would be interested in global expansion and competition, not just in Europe, as many newly emerging regulatory structures worldwide now emulate the Solvency II structure (e.g., Mexico. Thailand).

• Respect existing structure and allow its continuation under state level supervision. This choice of regulatory regime is likely to be favored by smaller insurance enterprises in the U.S., especially small mutual companies, which do not have global ambitions.

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Nowe kierunki rozwoju nadzoru ubezpieczeń w Unii Europejskiej i Stanach Zjednoczonych

Na globalnym rynku ubezpieczeń dokonuje się proces głębokich i znaczących zmian. Ubezpieczenia nabrały charakteru globalnego bardziej niż kiedykolwiek w historii. Unia Europejska jest największym jednolitym rynkiem ubezpieczeń, zwłaszcza w obliczu wprowadzenia jednolitego systemu prawa i nadzoru w ramach dyrektywy Wypłacalność II w 2016 r. Kryzys finansowy spowodował głębokie zmiany w nadzorze instytucji finansowych, zwłaszcza w kwestii ryzyka systemowego i koncepcji systemowo ważnych instytucji finansowych. Wszystkie te zmiany prowadzą do dalszej globalizacji instytucji finansowych, w tym ubezpieczeń. Ale Stany Zjednoczone Ameryki Północnej nadal są bardzo odmiennym od reszty świata rynkiem ubezpieczeniowym. W artykule autor zadaje sobie pytanie, czy zbliżenie europejskiego i amerykańskiego rynku ubezpieczeniowego proponowane w ramach Transatlantyckiego Partnerstwa w Dziedzinie Handlu i Inwestycji jest możliwe i realne. Obecna struktura i tradycja obu rynków czyni odgórnie narzucone partnerstwo trudnym do wprowadzenia. Wskazane jest raczej podejście stopniowej harmonizacji bez niepotrzebnych szoków dla istniejących struktur i tradycji.

Słowa kluczowe: wymagania kapitałowe, wypłacalność, Wypłacalność II, nadzór ubezpieczeń.