

Article

Talk the talk and walk the walk? European insurance capital regulation and the financial vocabulary of motive

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Abstract

‘Financialization’ refers to a variety of processes characterized by the increased prevalence of financial actors and logics in contemporary capitalist societies. Borrowing from Mills, I suggest that financialization may fruitfully be understood as the institutionalization of a financial vocabulary of motive. Mills argues that the type of reasons we give and the type of reasons we accept as legitimate varies, dependent on the social setting. The financial vocabulary of motive requires actors to motivate their actions by analogical extension of key concepts, ideas and paradigmatic problem solutions from modern finance theory. Analysing documents and 44 oral history interviews, I study the implementation of Solvency II—a European regulatory framework for insurance capital that transforms how insurers evaluate their assets and liabilities. To prevent the immediate failure of insurers’ traditional business models, insurers had to re-articulate past practices in the language of financial risk management.

Key words: financialization, risk, financial regulation, financial institutions, evaluation, insurance

JEL classification: G18 general financial markets: government policy and regulation, G22 insurance, insurance companies and actuarial studies, P16 capitalist systems: political economy

1. Introduction

Social scientists have identified the increased prevalence of financial actors and logics as one of the most characteristic developments in contemporary capitalist societies since the 1970s, a development often referred to as financialization (Van der Zwan, 2014). The increased societal prevalence of finance manifests itself in an increased share of corporate profits accumulated through financial channels (Krippner, 2005), the increased dominance of financial markets in macroeconomic policy making (Braun, 2020), the increased tradability of

financial risk (Hardie, 2012), and the increased power of shareholders in corporate governance (Ertürk, 2020). Financialization also manifests itself at the level of practice, in the everyday life of ordinary citizens who assume a growing responsibility for their own financial futures (Martin, 2002), and in the organizational practices in various domains of contemporary capitalist societies, including the financial sector itself. By now, there are various studies documenting the changing culture of financial evaluation, which under the influence of modern finance theory increasingly revolves around the use of formalized quantification conventions (Chiapello, 2015; Chiapello and Walter, 2016) to measure the value and risk of various financial market instruments in such varied areas as derivatives trading (Wigan, 2009), credit ratings (Besedovsky, 2018), financial regulation (Baud and Chiapello, 2017; Stellinga and Mugge, 2017) and international accounting standards (Zhang and Andrew, 2014; Chiapello, 2016). Drawing on and contributing to this line of research, this article examines the role of regulatory change in the financialization of insurance.

Despite the fact that European insurers manage nearly €11 trillion of investments and generate a premium income of 9% of GDP on average, they receive far less attention than the banking sector and to a lesser extent pension funds. This lack of attention is likely related to the idea of insurance as a beacon of stability: even if the American insurer AIG was a central node in the network that unraveled during the global financial crisis (Crotty, 2009), insurance is often seen as a secure and stable institution that stabilizes the financial system. Private insurance provides a mechanism for the pooling of resources that may supplement state-led mechanisms for mitigating uncertainty in various realms of modern life, to protect against the economic consequences of a broad range of events, including death, disability, natural catastrophes, disruption of commerce and terrorist attacks (Ericson *et al.*, 2003; Lehtonen and Liukko, 2015; Elliott, 2021). By investing these capital pools in financial markets, insurers are a source of ‘patient capital’, who are able to invest with a long-term perspective (Deeg and Hardie, 2016). However, with the recent implementation of Solvency II, a new regulatory regime for European insurance, the view of insurance as a stabilizing factor in the economy is increasingly questioned.

The Solvency II directive of 2009 puts forward a major reform of the European insurance solvency regime, representing a paradigm shift in how the adequacy of insurers’ financial reserves should be assessed. Prior solvency regimes in Europe were either based on highly prescriptive rules and regulations constraining the scope of competition, or relied on the intermediating role of the actuarial profession and their valuation methods to secure the insurance system (Pool, 1990). Solvency II replaces these domestic regimes with a new governance system that relies on concepts and techniques from modern finance theory to evaluate the economic worth of insurers’ liabilities and to set reserves in proportion to quantified risk. In so doing, many now worry that insurers’ calculative practices are too closely integrated with financial markets, preventing insurers from stabilizing the European financial system. Solvency II, in this view, contributes to the ‘financialization of insurance’ by replacing long-term insurance considerations with short-term financial ones (François, 2021; Fytros, 2021).

The appropriation of models and concepts from modern finance theory was accompanied by subterranean conflict over what it means to apply concepts from modern finance theory in the context of insurance (François, 2021; Fytros, 2021). Although large insurance groups were initially vocal advocates of regulatory harmonization, once the details of the framework began to emerge and economic circumstances changed, insurers rallied against

its implementation, requesting major revisions of the framework in advance of implementation. The framework was therefore up and running only in 2016, 7 years after the Solvency II directive was initially passed. In the meantime, moreover, the Omnibus II directive of 2014 encompassed some major adjustments, which some argued were at odds with modern finance theory. Considering these subterranean struggles over the translation of modern finance theory to the context of insurance, and the reassertion of traditional insurance considerations, in what sense then did Solvency II contribute to the financialization of insurance?

I contend that the role of Solvency II in the financialization of insurance is best viewed as the institutionalization of a specific financial ‘vocabulary of motive’ (Mills, 1940)—a repertoire of accepted reasons on which actors can draw to justify regulatory reforms and business models. This financial vocabulary of motive draws on paradigmatic models from modern finance theory to translate problems associated with financial uncertainty into problems of risk; it conceives of market value as the best available indicator of true value and requires justification of corporate decisions in terms of their risk-adjusted rewards.

The institutionalization of this vocabulary, I argue, required insurers to re-articulate their practices in the vocabulary of financial risk. This vocabulary privileges particular forms of expertise—that of modern finance theory and financial risk management—but it does so in a way that leaves the door open for traditional business practices if and when they can be re-articulated in ways that *can* be considered consistent with it. Rather than eradicating traditional insurance practices, Solvency II required insurers to reason through the logic of modern finance theory. Regardless of whether insurance practitioners believe their new models accurately reflect the economics of insurance, in the world of Solvency II modern finance theory and financial risk, management became the touchstone for the legitimacy of business practices.

I develop my argument in three sections. First, I develop the concept of the financial vocabulary of motive, drawing on the work of Mills and others that have followed in his tracks. I also explain how this concept relates to different regulatory styles. Second, I describe how Solvency II sought to foster the integration of European insurance industry by harmonizing capital regulation and institutionalizing the financial vocabulary of motive. Third, I show how the initial design of the calculative rules led to significant friction with insurers’ business practices and how insurers subsequently sought to re-articulate their business practices in the language of financial risk management to avoid financial catastrophe.

2. Financialization as the diffusion of a financial vocabulary of motive

Scholarship tracing processes of financialization to the level of calculative practice typically finds its roots in the social studies of finance—a body of literature that has extensively documented how everyday decisions in financial markets are shaped and formatted by the theories, models and formulas participants use to make the financial world visible, legible and actionable (MacKenzie and Millo, 2003; Svetlova, 2018). Thus, rather than describing the economic world from the outside, as it were, economics shapes and formats the calculative processes constituting economic reality (MacKenzie and Millo, 2003). Along these lines, financialization can be understood as the diffusion of calculative practices rooted in modern finance theory and financial risk management—practices that revolve around the carving, cutting and trading of abstract financial risk, for instance through derivatives and structured financial products (MacKenzie, 2006; Wigan, 2009; Besedovsky, 2018). Critics of this

approach, however, have argued that if we are overly focused on the diffusion of calculative practices, we lose track of the role of interests and politics in determining economic processes and outcomes (Mirowski and Nik-Khah, 2007). It is questionable, moreover, how much 'performative power' (Svetlova, 2018) economic models actually have. While quantifications such as models may be used as technical devices to perform economic calculations, they may also be used as 'rhetorical devices' to legitimize decisions already made (Carruthers and Espeland, 1991).

The approach proposed in this article takes seriously both the rhetorical and technical aspects of economics in formatting economic processes. This approach conceives of the diffusion of calculative practices through regulation as the institutionalization of a particular 'vocabulary of motive', a term I borrow from the sociologist Mills (1940). To understand what drives people, social scientists can study the reasons people give for their actions, how actors extrinsically or outwardly motivate their actions to one another. 'The differing reasons men give for their actions', Mills (1940) argues, 'are not themselves without reason' (p. 904); they are situated within broader vocabularies that define what are considered legitimate and plausible reasons in a given situation. The type of reasons we give and the type of reasons we accept as legitimate vary across social settings and depend on the social relation between the reason giver and receiver (Tilly, 2008).

Mills' concept has been used not just to investigate reason giving and receiving between individuals but also to understand how organizations gain legitimacy. Organizations may adopt various legitimation strategies to justify their business models, organizational forms and aims—strategies that must be expressed in 'legitimated vocabularies' of motive (Meyer and Rowan, 1977, p. 349). Financial organizations, for instance, may face pressures to rationalize and legitimate their decision-making towards shareholders, their clients and civil society. Also regulators, who formally represent the public interest, play an important role in the legitimization of business practices: by producing rules and supervising their application, regulators define what practices should be considered legitimate from the state's perspective; in so doing, however, they may also be pushed to legitimize their own choices (Singer, 2007).

In the context of regulation, reason giving may be couched in what Tilly (2008) calls 'codes' and 'technical accounts.' Codes, Tilly (2008) writes, 'need not bear much explanatory weight so long as they conform to the available rules' (p. 17): in the context of regulation, it often suffices to say that a company's practices conforms to the rules and are therefore legitimate. These rules may either be of a generic nature, requiring no specialist expertise or they may require knowledge of specialist terms and concepts. Rules and regulations, however, may also require the production of what Tilly calls 'technical accounts'—accounts that rationalize and justify business decisions couched in some (technical) vocabulary of motive. Economic theory may play a role in both types of regulation: in the case of code-based regulation, economic theory may enhance the legitimacy of rules and regulations; in the case of regulation requiring the production of technical accounts, economic theory may provide the exemplars indicating what can be considered appropriate forms of reasoning.

Different 'regulatory styles' (cf. Black, 2015) will rely in different measures on codes, technical accounts, professional expertise and academic knowledge. Some regulatory styles (including, e.g., 'self-regulation') allocate responsibility for the governance of a business sector to specific professional groups. These groups develop shared norms and understandings of what 'good' business practice looks like. This type of regulation characterizes the

governance of the British insurance sector from the late 19th century onwards, in which the actuarial profession played a key role. Competition would induce attractive pricing for policyholders, but would also come at the risk of opportunism. Actuaries—whose traditional professional identity portrayed them as masters of ‘esoteric’ bodies of knowledge acting on behalf of the public interest (Suddaby and Greenwood, 2005)—operated as the custodians of insurers’ finances, overseeing the fair and prudent distribution of financial surplus across shareholders and participating policyholders (Collins *et al.*, 2009). A key touchstone of the actuarial vocabulary of motive, which defined the legitimacy of insurers’ business strategies, was the notion that surplus should be calculated on a ‘prudent’ basis. When determining the pricing of their products, for instance, an actuary would have to include invisible margins in his (in the past, they were almost exclusively men) calculations so that the company would be able to meet its future promises with reasonable certainty while also offering competitive pricing (Alborn, 1994; Porter, 1995; Alborn, 2009). Business practices gained legitimacy, in other words, when they had received the actuarial seal of approval.

Other regulatory styles may be rooted in the authority of the state and legitimize the imposition of highly prescriptive rules and regulations in the language of security and stability, even if they also serve the interests of established corporate entities. An example of this type is insurance regulation in the German-speaking countries in Europe from the rise of modern insurance industries in the late 19th century until the implementation of the Solvency regime. Throughout this period, regulators prescribed, for instance, what types of products insurers could sell and how much they could charge for these products. They also set restrictions on how insurers could invest their assets. Within the parameters set by regulators, there was little space for price competition. Competition among insurers was secondary; what mattered most was to insulate insurers from destabilizing levels of competition and this was best achieved by restricting the scope of possible competitive strategies (Albert, 1993). State actors could draw on actuarial knowledge to inform rule-making but the primary mode of legitimation was through reference to the public interest. What insurance practices were considered legitimate, in other words, was ultimately defined by state authority.

Still other regulatory styles combine regulatory oversight with governance through technical expertise and ‘regulatory science’ (Jasanoff, 1995). In the past decades, this style of regulation has become increasingly prevalent in financial regulation. In the years prior to the global financial crisis, for instance, banking capital regulation has come to rely increasingly on insurers’ internal risk models, which in turn derive and gain legitimacy from modern finance theory (Goodhart, 2011; Baud and Chiapello, 2017). Since the global financial crisis, moreover, banking regulators have also subjected banks to various stress-testing exercises, asking them to reason through what would happen to their balance sheets in specific scenarios using quantitative models and techniques that draw on the exemplary problem solutions of modern finance theory (Coombs, 2020). This type of regulation thus aims to do more than simply restricting and enabling specific actions. It imposes a specific vocabulary of motive that defines legitimate forms of reasoning. The Basel regime for banking supervision, for example, actively propagated the development of financial risk modelling for risks—most notably credit risk—that were theretofore rarely modelled in great depth (Baud and Chiapello, 2017). The agreements can therefore be seen as a form of ‘enforced self-regulation’ (Munzer, 2019, p. 48), a form of regulation whereby supervisors discipline banks and supervise their internal control mechanisms (Power, 2007; Baud and Chiapello, 2017). This style of regulation need not be accompanied by the belief that financial models can

accurately capture ‘true’ economic value and risk; these models may simply offer practical advantages for structuring power relations and organizing control inside financial organizations and between the regulator and the regulated (Millo and MacKenzie, 2009).

Solvency II represents the introduction of a similar regulatory style in the insurance sector. It displaces traditional vocabularies of motive and institutionalizes a financial vocabulary of motive instead, a vocabulary steeped in modern finance theory and financial risk management (for a comparison of the actuarial and financial vocabularies of motive, see Table 1). At core, this vocabulary revolves around the explicit quantification of economic value and risk, whereby the value of an instrument is proportional to ‘risk’. Solvency II requires insurers to calculate regulatory capital either through the standard formula composed by the regulator or through internal risk calculations (or indeed a combination thereof). Rather than relying on esoteric professional judgements and traditional actuarial calculations to assess the adequacy of insurers’ reserves, the financial vocabulary of motive requires the explicit quantification of ‘best estimate’ liabilities (the expected cost of meeting liabilities), a market value margin (reflecting the market-consistent price of the risk embedded in those liabilities), additional solvency capital (to cover for the risk for which a market-consistent price is not available) and a company’s excess reserves.

Like the Basel agreements, this reliance of Solvency II on risk models can be seen as an attempt to institutionalize ‘enforced self-regulation’. The framework requires insurers to produce their ‘Own Risk and Solvency Assessment’, which aims to root insurers’ internal

Table 1 Ideal typical descriptions of the actuarial and financial vocabularies of motive

	Actuarial vocabulary	Financial vocabulary
Source of epistemic authority	<i>Professional (expert) judgement</i> ; judgments of economic value and risk ultimately rooted in ‘esoteric’ body of professional expertise	<i>Market judgements</i> ; judgements of economic value and risk should be derived from market values; ‘the market’ is the main source of epistemic authority
Method of accounting for uncertainty	<i>Prudent values</i> ; experts should make ‘prudent’ judgements of economic value and financial uncertainty; residual uncertainty is not quantifiable	<i>Market values and quantification of risk</i> ; experts should use models to calculate ‘market-consistent’ values and to quantify financial risk explicitly
Logic of security	<i>Professional prudence and discretion</i> ; implicit margins of safety and post hoc discretionary distribution of financial resources, the appropriateness of which is determined company actuaries	<i>Risk-based capital</i> ; explicit margins of risk-based ‘solvency capital’ over and above regulatory minimum thresholds, the level of which is known to shareholders

risk management practices in the financial vocabulary of motive. The regulations, moreover, point to the exemplary problem solutions of modern finance theory, legitimizing regulatory requirements. These exemplary problem solutions also provide the raw material for the production of insurers' own 'technical accounts' of economic value and risk. Because regulatory capital constrains insurers' decision-making, moreover, insurers have an incentive to align their own risk and solvency assessment with the regulatory capital calculations of pillar 1. Together with regulatory capital, then, economic capital calculations are an important metric through which insurers' assess the viability of different business strategies and through which the financial vocabulary of motive is institutionalized.

For some, the reasoning implied by the financial vocabulary of motive is fundamentally at odds with traditional actuarial logic. Fytros (2021) argues for instance that the institutionalization of modern finance theory in insurance was 'disrupted' by the Omnibus II directive of 2014, which re-inserted actuarial logic in regulatory capital calculations. Rather than focusing on questions of incommensurability, however, I propose investigating how insurers sought to make pre-existing practices consistent with financial logic. Conceptualizing modern finance theory as a vocabulary of motive, I suggest, enables analysis of tensions between different forms of reasoning and how they are resolved in practice. The financialization of insurance may then be understood as the institutionalization of a financial vocabulary of motive, which requires the legitimization of business models and corporate strategies by explicitly quantifying financial risk and valuing assets and liabilities in market-consistent terms. In the conflicts that ensued, actors did not question the appropriateness of the vocabulary *per se* but rather questioned the legitimate application of this vocabulary in practice.

One of the difficulties in studying vocabularies of motive and their usage is that they must be inferred from the reasons actors give for their actions. These reasons will often point to things like rules, concepts and exemplary problem solutions. I therefore identified the financial vocabulary of motive with the core concepts (e.g. arbitrage), quantification conventions (the use of market values) and exemplary problem solutions (e.g. the Black–Scholes–Merton model for pricing options) of modern finance theory. To trace the institutionalization of this financial vocabulary of motive in the Solvency II regime, I draw on documentary material, including newspaper and trade press articles, policy documents, consultancy reports and academic articles; as well as a set of 44 semi-structured interviews, 8 of which were with people directly involved with Solvency II and the others with company employees, supervisors and consultants in British insurance, most of whom have been involved in the regime's implementation. Nearly all interviewees recognized what I have called the financial vocabulary of motive as a mode of reasoning distinct from traditional 'actuarial' modes of reasoning hitherto prevalent in European insurance.

3. Solvency II: Towards a European insurance industry

In this section, I examine the Solvency II reform. First, I situate Solvency II in a broader context, highlighting the framework's purported aims of integrating the European insurance market and describing the main features of the framework. In the second subsection, I describe in more detail two clusters of evaluation practices that are institutionalized under Solvency II: market-consistent valuation and risk-based capital calculation.

3.1 A fundamental review of insurance regulation

Up until Solvency II, efforts to harmonize insurance regulation across European jurisdictions were thwarted by the ‘battle of the systems’ ensuing from the large differences across member states in industry composition and regulatory preferences (Story and Walter, 1997). One reason for the difficulty to agree on a single regulatory framework was that, as a former head of the insurance division at the European Commission writes, insurance is an ‘area where protectionism may easily disguise itself as consumer protection’ (Pool, 1990, p. 10). Insurance-exporting member states, for instance, may prefer extensive harmonization, while insurance importers may use regulation as a protectionist tool to foster growth in the domestic insurance industry as a source of investment at home. Another related reason is that different regulatory traditions have persisted across countries since the rise of modern insurance in the late 19th century, with German-speaking countries typically taking a more interventionist approach while the UK is known for its more liberal competition-oriented approach (Albert, 1993; Lengwiler, 2015).

Efforts to harmonize insurance regulation in Europe date back to the 1950s and became more prominent in the 1960s, when the European Commission sought to instate the freedoms of establishment and the freedom of services in the financial services sector. Most comprehensive in this regard were the Third Life and Non-Life Directives of 1992, which established minimum standards for calculating capital requirements and for valuing assets and liabilities. The Third Life directive, as a former supervisor said, ‘progressed harmonization of asset and liability values—didn’t achieve it, but progressed it’ (Interviewee BC). Although the directive expressed preference for one specific valuation method, it also allowed for a wide variety of valuation practices to persist.

Some EU Member States developed additional requirements that have resulted in widely diverging capital requirements and supervisory practices throughout the EU. Dual systems for capital regulation are in use in some states. . . The resulting lack of harmonization has led to a lack of comparability between the amount of capital used and disclosed throughout the EU. This undermines the proper functioning of a single market in insurance services and imposes significant costs on insurance groups operating in more than one Member State (Sharma and Cadoni, 2010, p. 56)

Early reforms, however, had lowered the threshold for insurers to become active across Europe and enabled the rise of large insurance groups such as Allianz, Generali and Axa. Organized under the Comité Européen des Assurances (later renamed as Insurance Europe), the large insurance groups with international ambitions subsequently started advocating for further regulatory harmonization. The European Commission also harbored ambitions in this direction, which were expressed for instance by the initiation of the Financial Services Action Plan in 1999, and formed an informal alliance with the large insurance groups (Quaglia, 2011). In 1999, after an initial review of solvency regulations, the Commission decided more fundamental reforms were needed (Quaglia, 2011; François, 2015; Van Hulle, 2019) and ‘decided to detach some early wins’ of the initial review process in the Solvency I directives of 2002 (Interviewee BC). Simultaneously, the Commission started a more fundamental review of insurance regulation drafting an entirely new framework from scratch, on a ‘tabula rasa’ (François, 2015).

Undoubtedly a major factor in the decision to overhaul insurance regulation was that in prior decades the financial vocabulary of motive had gained purchase in various sections of the financial sector and now provided a powerful strategic resource to achieve regulatory

harmonization by relying on the scientific authority of modern finance theory. In the 1990s, large investment banks started building internal risk management systems, which also provided the basis for a new system of capital regulation outlined in the Basel agreements on banking supervision (Goodhart, 2011; Baud and Chiapello, 2017). At the same time, the financial vocabulary of motive also gained ground in international accounting standard bodies. Drawing on modern finance theory, for instance, the International Accounting Standards Board had started work on ‘fair value’ accounting standards for financial instruments and insurance products (Zhang and Andrew, 2014; Chiapello, 2016). Boundaries between the insurance sector and other parts of the financial sector, moreover, had started to fade. In some member states, the business model of Bancassurance—selling insurance through bank branches—gained popularity, leading to a wave of mergers between insurers and banks (Sterzynski, 2003). In countries like the UK, moreover, insurance supervision merged with banking supervision.

Work on Solvency II began in earnest in 2001, first with a learning phase (2001–2003) and later (2003–2007) with a development phase (Sharma and Cadoni, 2010, p. 56). In 2001, the Commission commissioned two influential reports. The first was produced by the EU Insurance Supervisory Conference and was based on an extensive study of past insurance failures and near-failures. The study was led by Paul Sharma of the British Financial Services Authority, who had previously been part of the Basel Committee on Banking Supervision. The report concluded that the absence of effective risk management systems was one of the main reasons for insurance failures and that any regulatory framework should incentivize insurers to improve internal risk management (Conference of Insurance Supervisory Services of the Member States of the European Union, 2002). The second report was produced by KPMG, which one of its authors remembered as ‘not strikingly original’ (Interviewee FB): it recommended the adoption of a structure similar to the three-pillared structure of the Basel capital agreements, as well as the use of fair value accounting and internal risk models (KPMG, 2002). The early reports were thus already strongly rooted in a financial vocabulary of motive, signaling the early commitment of key actors to the strategic deployment of this vocabulary to break through the ‘battle of the systems’ and shift the politics of insurance regulation in favour of a far-reaching harmonization agenda.

The European Commission outlined the basic features of the new framework in an initial ‘framework for consultation’ that would go through several rounds of consultations and revisions. The main features of the regime, however, remained very similar throughout and were eventually adopted in the directive of 2009. First, following the suggestion of KPMG, the framework would have a Basel-like three-pillared structure, with the pillars, respectively, outlining quantitative capital requirements, qualitative governance requirements and disclosure requirements. Second, the framework would set capital requirements according to quantifiable measures of ‘risk’, and would incentivize insurers to develop their risk modeling capacities. Third, the framework would follow a ‘total balance sheet’ approach, requiring insurers to impute an ‘economic value’ to *all* assets and liabilities; the available solvency capital, which insurers could use to cover for any risk, would then be defined as the difference between the ‘economic’ value of assets and liabilities. Fourth, the framework would require insurers to value assets and liabilities in line with international accounting standards. At the time, it was assumed this would be according to the fair value accounting standards developed by the International Accounting Standards Board. However, as it became clear that the fair value accounting standard for insurance contracts would fail to materialize in

the foreseeable future, the framework required valuation of assets and liabilities on a ‘market-consistent’ basis instead, ‘and in line with international developments in accounting and supervision’.¹ Most of the key features of Solvency II were thus drawn from developments in financial governance in other parts of the financial sector; in the context of insurance, they would combine to give a transparent ‘economic’ view of insurers’ solvency position that would more ‘holistically’ capture relevant risks than the Basel framework for banking supervision (Van Hulle, 2019).

Even if the Commission’s early proposals were mostly welcomed by the large insurance groups, Solvency II is not simply a case of big business getting its way. This becomes obvious if we look at one of the early proposed features that didn’t make it to the final version of the directive passed in 2009. This was the issue of ‘group supervision’, which was hugely favoured by the large international insurance groups (Von Fürstenwerth, 2008). The notion of group supervision entailed that insurance groups would be supervised by their home country supervisors rather than having to deal with different supervisors across the different member states. When the framework was finally implemented in 2016, this feature, which was the most obviously political, was heavily watered down and essentially removed from the framework altogether (see also François, 2021).

Market-consistency, however, was a principle from which the Commission was ‘not willing to diverge’ (Interviewee BG), constraining the room for maneuver on the quantitative features of the regime to the translation of modern finance theory to the setting of insurance. On this point, the Commission stated in the impact assessment section of the 2007 proposal of the directive that

The analysis conducted and the feedback received from stakeholders and interested parties confirm that the introduction of a new economic risk-based solvency regime . . . is the most effective and efficient means to meet the general objectives of the Solvency II project. Namely, to deepen the integration of the EU (re)insurance market, enhance protection of policyholders and beneficiaries, to improve the international competitiveness of EU insurers and reinsurers, and to promote better regulation.²

The Commission thus perceived the vocabulary of motive rooted in modern finance theory as a strategic resource to overcome the battle of the systems that hitherto had frustrated regulatory harmonization and market integration. However, many of the concepts, ideas and exemplary problem solutions characteristic of this vocabulary were relatively new to the insurance business. Insurers, their supervisors and regulators still had to figure out what a regulatory framework rooted in the financial vocabulary of motive would mean in practice.

3.2 Filling in the ‘tabula rasa’: Market-consistency and the calculation of risk

Around the turn of the century, modern finance theory was relatively new to European insurance on the whole, but some were more familiar with it than others. Many of the large insurance groups and the consultants advising them, for instance, had drawn on modern finance theory to calculate the ‘embedded economic value’ of insurance businesses—that is, the ‘economic worth’ of a business measured as the economic value of assets minus the economic value of liabilities—in the context of the very active merger and acquisitions market

1 COM/2007/361/FINAL, p. 22.

2 COM/2007/361/FINAL, p. 3.

of the 1990s (François, 2015; Bizieux and François, 2017). In the UK, moreover, the newly established Financial Services Authority decided to impose market-consistent and risk-based capital requirements in advance of Solvency II, as it was confronted with a crisis in the domestic insurance industry that was caused by declining interest rates and the bursting of the Dotcom bubble in the early 2000s. Even if by 2003 the Financial Services Authority considered market-consistent valuation still a ‘developing art’ (FSA, 2003, p. 23), British supervisors were subsequently among the ‘pace setters’ that were widely regarded to master ‘considerable *technical knowledge* and *expertise* on these issues’ (Quaglia, 2011, p. 115).

German, French and Italian supervisors, on the other hand, reportedly were less familiar with the core models and ideas of modern finance theory and ‘did not like the idea of a breathing balance sheet’ (Interviewee FC). One interviewee who was heavily involved in working out the framework’s details remembers. . .

...a CEIOPS meeting where all European supervisors were seated around the table and where one of the supervisors asked what market consistent valuation of technical provisions meant. Does it mean that we have to apply discounting to technical provisions? Apparently, even for some of the supervisors it wasn’t entirely clear yet that risk-free discounting of technical provisions was an essential requirement of a risk-based solvency regime. We then adjusted the framework for consultation to make clear that risk-free discounting was required. (Interviewee BG, author’s translation)

What it would mean to perform market-consistent valuation and risk-based capital calculation was thus not immediately obvious to many and was worked out in subsequent years through various rounds of consultations and so-called Quantitative Impact Studies (see also François, 2015).

So what does a market-consistent capital regime entail? At core, market-consistent valuation requires insurers to value their assets and liabilities at current market prices, or, where no such prices are available (as in the case of insurers’ liabilities), at prices *were these liabilities to be traded in a secondary financial market* (see also François and Frezal, 2018; Fytros, 2021). In practice, this means that insurers are required to make point-based ‘best estimates’ of insurance-related variables (as opposed to ‘prudent’ estimates), which then yields an estimate of ‘expected cash flows’. These expected cash flows can then be deconstructed as a portfolio of financial instruments and can be ascribed a value as such.

To perform these calculations for large portfolios of insurance contracts with more complex structures than the example provided above, insurers may rely on what Chiapello and Walter (2016) identify as the ‘market-consistent’ quantification convention of ‘risk-neutral’ valuation. This quantification convention, which derives from the famous Black–Scholes–Merton model for pricing financial options, requires insurers to model a fictive financial reality in which all assets are expected to yield a risk-free rate of return and in which no opportunities for arbitrage exist. This imagined financial world allows modellers, many of whom see this quantification convention merely as a trick, to calculate the value of assets and liabilities even if their value depends on some underlying random process.

One of the main attractions of market-consistent valuation is its alleged ‘objectivity’, in the sense of it being an ‘impersonal’ measure (Porter, 1995); ‘if you give me a book [of insurance contracts] . . . and you want to know what the liability is, then . . . any competent actuary should come up with a really pretty similar value’ (Interviewee CB). The same cannot be said for the calculation of risk capital. Having valued their assets and liabilities, insurers

must calculate how much capital they need to remain solvent in all but the worst of 200 one-year scenarios—that is, the value-at-risk (VaR) over a 1-year period at a 99.5% level.

To produce ‘present futures’ (Esposito, 2011; Beckert, 2016) of this kind, insurers can either rely on the ‘standard formula’, which is a set of pre-specified parameters used for the calculation of individual risk modules that are then aggregated to obtain a VaR, or they can produce their own expectations, tailored to their specific business model. In the latter case—and depending on the specific risk module—insurers may produce such expectations by fitting distributions to historical data—which is complicated by the fact that this would require 200 years of data (Fytros, 2021)—or using ‘expert judgement’ to decide what a 1-in-200 scenario could look like. VaR calculations are subject to fundamental uncertainty (Lockwood, 2015), and rather arbitrary, which regulators then seek to circumvent by benchmarking insurers’ calibrations against the standard formula and each other (Interviewees BB and CI).

Although interview evidence indicates that actuaries generally perceive risk calculations as involving ‘a lot of subjectivity’ (Interviewee CC), many also see risk-based regulatory capital as a potentially positive force in insurance, incentivizing insurers to think about various forms of uncertainty. In this sense, Solvency II ‘disciplines’ insurers to conduct their business according to the postulates of financial risk management (cf. Baud and Chiapello, 2017), by imposing quantitative risk-based capital requirements under the first pillar and by requiring insurers to perform risk analyses of their business under the second pillar. This implies not so much that the risk management vocabulary determines outcomes but rather that organizations are pushed to reframe their interests through the reasoning implied by the financial vocabulary of motive.

4. Re-articulating insurance in financial terms

With its reliance on explicit quantification of financial risk and economic value, the market- and risk-based regime of Solvency II meant a significant departure from traditional code-based and profession-based modes of insurance governance. In the development and implementation phase, however, frictions emerged between the evaluation practices on which this new regime was founded and insurers’ business practices, which caused substantial delays in implementation and some significant adjustments in the calculative basis of the regime. In this section, I scrutinize the frictions that emerged, why they became seen as problematic and how they were resolved through arguments derived from the financial vocabulary of motive.

4.1 *Frictions and unexpected consequences*

In both regulation and policymaking, models very often become a site for ongoing contestation, which is partly because they are idealized representations of reality and therefore by definition arbitrary (Weisberg, 2013). They are designed to account for specific features of the reality that they purport to describe, while leaving out those aspects considered ‘unimportant’ or not readily modelled. When models are applied in practice, especially in such a high-stakes setting as insurance capital regulation, it is, therefore, very likely actors may seek to problematize the discrepancy between the reality in the model and the reality it purports to describe (Van der Heide, 2020). In the case of Solvency II, three such frictions can be identified.

First, a tension emerged between traditional discretionary mechanisms for dealing with uncertainty and the explicit quantification of financial risk. Most German life insurers, for example, had sold long-term insurance contracts with profit participation, whereby insurers would accumulate bonus reserves that were distributed to policyholders only once payments were due. Such a system was designed to make sure that policyholders got their fair share of investment income, while avoiding any ‘hard’ promises. These so-called surplus funds thus had a liminal status; they were both a reserve for policyholders’ future profit participation as well as a buffer for potential shortfalls. The vocabulary of risk management, however, struggles to deal with a discretionary mechanism of this kind; to calculate the risk embedded in these liabilities would require an explicit estimation of the likelihood that these funds could be used as reserves or whether they would be paid out to policyholders. While some argued that the surplus funds should be counted as a liability, German insurers and supervisors argued that they should be counted among insurers’ reserves (see also [François, 2021](#)).

A second type of friction concerns the diverging time horizons of the insurance business and the regulatory framework. Insurers argued that the 1-year time horizon of the VaR models introduced unnecessary volatility. The calibration of the equity stress for the standard formula in the second Quantitative Impact Study, for instance, suggested a scenario in which equity prices would drop 40%. Especially French insurers, whose ‘Euro fund’ products were heavily invested in equity, worried this would make equity investment prohibitively expensive. They worried, moreover, that the 1-year time horizon would induce excessive volatility. The time horizon of insurers’ investment strategies went beyond the 1-year period, they argued, and to avoid fostering ‘procyclical’ investment behaviour, volatility should therefore be measured over longer periods ([Van Hulle, 2019](#), p. 70).

Concerns about volatility were compounded by the fifth Quantitative Impact Study in 2010. Even if the field study allowed insurers to dampen their equity stresses over 3-year periods and the results showed insurers were generally well capitalized—they had a buffer of €110bn in excess of capital requirements ([Davies, 2011](#))—the results were perceived as problematic. An analysis by Eric Serant of Milliman suggested that French life insurers would have seen their capital ratio reduced from 179% to 104% if they had used their 2010 balance sheets rather than those of 2009. This volatility, he argued, was primarily due to the equity stress and the limits of the ‘dampener’, ‘which set a 3-year horizon on the equity stress, well short of the duration of stock market cycles’ ([Jullien, 2011](#); see also: [François, 2019](#)). The relatively short time-frame of the risk calculations thus clashed with the long-term orientation of buy-and-hold strategies, many argued.

A third type of friction similarly relates to what many perceived as insurers’ distinct investment logic. While the models of modern finance theory and financial risk management imply that risk can best be contained by continuously adjusting the portfolio to insulate price movements, traditional actuarial investment logic focused on the concept ‘duration matching’ ([Turnbull, 2017](#)). The latter strategy holds that insurers should invest in assets with maturities similar to the maturities of their liabilities (or at least on average). Although some perceived these ideas as broadly commensurable (see, e.g. [Boyle, 2005](#)), their manifestation in practice had some unintended consequences that manifested themselves during the 2007–2009 global financial crisis. The first signs of trouble came in late 2008. From April to July, Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) had just completed the fourth Quantitative Impact Study, which indicated that insurers were well-capitalized ([Lansch, 2008](#)). In September 2008, however, the collapse of Lehman

Brothers triggered a flight to safety, causing further drops in equity prices and widening spreads between the interest rates on corporate bonds and government bonds. If Solvency II would have already been implemented, the widening spreads would have spelt trouble for British annuity providers. They tended to match their annuity liabilities with investments in corporate debt and the widening spreads caused divergent movements in their assets and liabilities reducing available solvency capital. The widening spreads, however, were said to poorly reflect true economic expectations, increasing the cost of annuities by roughly 20% (Felsted, 2008a). Among the most vocal in this regard was the CEO of Legal and General, who openly claimed Solvency II showed a ‘non-appreciation of the dynamics and economics of the annuity business’ (Felsted, 2008b).

Initially, only British insurers were affected but widening spreads would later also become a problem for insurers in other member states. The eurozone crisis (and the widening spreads on peripheral eurozone government debt), for instance, caused similar problems for German life insurers; their savings and pension business were typically backed by investments in government bonds from countries like Spain and Italy. In March 2011, analysts estimated that German life insurers would need to raise €54bn additional capital if Solvency II would have already been up and running (Pilla, 2010). To make the calculative logic of Solvency II commensurable with insurers’ investment practices, many argued, an adjustment had to be made to the calculation of the risk-free rate.

The calculative framework of Solvency II thus clashed with the way most European insurers operated, which became visible only during the quantitative impact studies and as the financial crisis started to impact the broader financial and economic environment. Member states had distinct concerns, but they were united in arguing that Solvency II would induce too much volatility and was poorly adapted to the insurance business (François, 2019; Van Hulle, 2019).

4.2 *Liquidity risk and the re-articulation of the traditional insurance model*

In the long period between the first Quantitative Impact Studies in the mid-2000s and the official start of Solvency II in 2016, several key adjustments were made in the regime’s calculative framework. Many of these adjustments initially seemed to contradict the core postulates of modern finance theory, which leads to the question of how insurers managed to persuade regulators and supervisors to align the framework more closely with insurers’ existing business practices.

Post-crisis debates in the broader financial sector had generated a vocabulary around the concept of macro prudential regulation, which enabled insurers to justify their traditional business practices as contributing to the stability of the European financial system. In an opinion article in the financial press, for instance, Allianz’s CFO said that ‘insurers should be able to invest precisely when other investors don’t want to. Future capital regulation, however, will prevent them from doing so’ (List, 2011). In making this case, insurers mustered support from other financial actors, who expressed their concerns over the impact of the regulatory framework on the financial system as a whole (see François, 2019). Researchers from the Bank of England, moreover, suggested that Solvency II would be procyclical, worsening financial booms and busts by forcing sell offs of risky assets in stressed times (Haldane *et al.*, 2014). It was also argued that ‘Solvency II fails to take account of the fact that institutions with different liabilities have different capacities for absorbing different risks and that it is the exploitation of these differences that creates systemic resilience’

(Persaud, 2015, p. 2). Solvency II, in other words, was alleged to prevent insurance from performing its systemic role in the European financial system.

The vocabulary around macro-prudential concerns is often perceived as a departure from the micro prudential focus on internal risk management (Baker, 2013) and may therefore seem to be at odds with some of the core postulates of modern finance theory. From the vocabulary of motive perspective, however, this doesn't seem to be the case. Although the language of macro-prudential regulation and systemic risk shifts the gaze from individual financial institutions to networks of financial institutions, it is typically still concerned with the quantification of risk. The concrete implementation of macro prudential ideas in banking, moreover, often continues to rely on the micro prudential tools available in the regulatory tool kit (Coombs, 2020). The same can be said for insurance: the systemic arguments were translated into concrete proposals for changes in the calibration of the standard formula rather than proposals for a more fundamental change of methodology. Insurers' strategy to achieve adjustments in the calculative framework of Solvency II thus consisted of leveraging 'structural power' (Culpepper and Reinke, 2014) by inserting the systemic concerns that had become part of the post-crisis financial vocabulary of motive, into debates about the regime's calculative framework.

Rendering the proposed adjustments compatible with the financial vocabulary of motive, however, required conceptual work. To tackle the issue of the widening spreads on corporate bonds, for instance, British insurers soon started to propagate the concept of the 'liquidity premium' (e.g. Hibbert, 2009). One of the core postulates of modern finance theory, the efficient market hypothesis, had posited that there was no such thing as a 'free lunch'; any return in excess of the risk-free rate was in effect a compensation for 'risk' and considering that insurers' liabilities were hard promises, their market-consistent value should be calculated by discounting at the risk-free rate. Insurers, however, suggested that at least part of the risk premium on corporate bonds was due to liquidity risk—the risk that an investor is forced to sell securities at a time when there is little demand for it—rather than changing perceptions of creditworthiness. Considering that insurers faced hardly any risk of this kind, the widening spreads on corporate bonds would indeed have 'an element of a free lunch for them' (Interviewee AD): the liquidity premium.

The liquidity premium clearly seemed at odds with a *strong* interpretation of the efficient market hypothesis—any free lunch would immediately be eaten by other investors after all. It was also unclear, moreover, whether and how the liquidity premium could be adequately measured. 'We didn't have a methodology at that point to say ... when a spread increases significantly in size, how much of that is the market reappraising credit risk, how much of that is actually liquidity', a former supervisor remembers (Interviewee BC). Yet, others pointed out that the idea of the liquidity premium could be interpreted in a way that is compatible with modern finance theory. Indeed, one of the authors of the paradigmatic Black-Scholes-Merton model for options pricing, Myron Scholes, had suggested that the collapse of Long-Term Capital Management—a hedge fund employing both Merton and Scholes—had been caused by surging liquidity premiums (Scholes, 2000; see also MacKenzie, 2003). Scholes, moreover, suggested that investors' risk management systems, which did not account for liquidity risk, could affect liquidity and push financial markets into a liquidity spiral. In this interpretation, the existence of a liquidity premium seemed theoretically defensible, even if there was little consensus on how to measure it.

The liquidity premium nevertheless enabled insurers to express systemic arguments in a language that many considered compatible with the financial vocabulary of motive. And although it wasn't clear how the liquidity premium could be measured 'objectively' and consistently with the logic of arbitrage, the concept opened the door to arbitrary but acceptable adjustments that would alleviate financial pressures on insurers' business practices.

4.3 *A financialized regime?*

Three key adjustments in the calculative framework of Solvency II were eventually adopted in the Omnibus II directive of 2014 (see [François, 2019](#)). First, the concept of the liquidity premium was translated into a 'matching adjustment' and a 'volatility adjustment', allowing insurers to increase the 'risk-free' discount rate in proportion to the credit spread on underlying investments. Second, the package delegated responsibility for the construction of the risk-free curve to the successor of CEIOPS, the European Insurance and Occupational Pensions Authority (EIOPA), which settled on a methodology similarly considered dubious by many but that supervisors argued was consistent with modern finance theory. Third, the package included transitional measures, which allowed insurers to postpone the application of the new rules for certain products for another 20 years ([François, 2019](#), p. 37). In contrast to the first two adjustments, the Commission did not attempt to justify these transitional measures in the language of modern finance theory; they provided only temporary capital relief for products that seemed financially unsound from the perspective of modern finance theory to smooth the transition to the new framework.

When Solvency II finally went live in early 2016, few praised the framework for its elegance. Some perceived the adjustments of Omnibus II as fundamentally at odds with 'economic logic' (e.g. [Danielsson et al., 2012](#)). Its solution to the problem of liquidity risk, interviewee AD said, is 'not something which is intellectually a beautiful edifice'. The calibration of some of the risk modules, moreover, was perceived as politically motivated. 'And so the argument that said: "we want capital to be based on risk . . . so the firms make more intelligent risk allocation decisions," well that is defeated when you have politically calculated risk charges' (Interviewee AD). Solvency II thus appears to have an ambiguous relation to modern finance theory: although the framework was grounded in modern finance theory and financial risk management, some also see the long-term guarantees package as a departure from it.

What matters, however, is not so much whether Solvency II should be seen as entirely consistent with modern finance theory or not but that the question of consistency with modern finance theory has become a key touchstone for the legitimacy of regulatory requirements. Rather than interpreting Solvency II as an uneasy wedding of two incommensurable paradigms, it can thus be understood as the institutionalization of a financial vocabulary of motive, which requires the rearticulation of business interests in the language of financial risk and makes it harder to sustain those business practices that appear inconsistent with it. Solvency II, in other words, skews the scope of possibility in favour of those business practices that can more easily be justified in the language of modern finance theory. For instance, by exteriorizing discretionary judgement from the modelling of insurance arrangements and requiring the explicit quantification of financial risk instead, Solvency II makes the business of insurance more 'transparent' to shareholders, who may now more actively push for those kinds of activities that yield the strongest return on capital in the short run. This will likely make it more difficult and expensive for insurers to write products with financial guarantees. One clear example of this is the phasing out of products that now enjoy preferential

treatment under the transitional measures adopted under Omnibus II. These measures are widely used in Germany and the UK and to a lesser extent in France and Spain, especially by companies who sell long-term retirement products that contain guarantees, such as annuities in the UK and pension insurance in Germany (EIOPA, 2019).

5. Conclusion

Past studies of financialization ‘on the ground’ reveal how the structural changes in the economy are accompanied by a cultural transformation characterized by the diffusion of concepts, tools and techniques originating in modern finance theory. While previous work has conceptualized this process primarily through the lens of financial quantification conventions, I argued that financialization may fruitfully be understood as the diffusion and institutionalization of a financial vocabulary of motive. This vocabulary of motive requires actors to justify their business practices in the language of modern finance theory and financial risk management. Solvency regulation, in this view, may serve as a powerful vehicle for financialization because it may institutionalize a vocabulary of motive that serves as a reference point for the legitimacy and ‘soundness’ of business practices not only in the eyes of supervisors and regulators but also in the eyes of third parties such as shareholders. In the case of Solvency II, however, we have also seen that business interests may resist the imposition of specific rules and regulations hampering the viability of established business practices not so much by challenging the legitimacy of the financial vocabulary *per se* but by appropriating it and turning it to their advantage. One advantage, then, of conceptualizing financialization as the diffusion and institutionalization of a financial vocabulary of motive over other approaches is that it draws attention to both the technical and the rhetorical aspects of quantitative practices (cf. Carruthers and Espeland, 1991). This enables a more fine-grained analysis of how financialization is affecting institutional logics and the limits thereof.

The vocabulary of motive perspective developed in this article lends itself well for studying the cultural dimension and limits of financialization also in other areas of governance. I conclude this article with a few pointers in this direction. First, the vocabularies of motive perspective enable studies of institutional change through a cultural lens: how and why do specific vocabularies of motive, such as the financial one, feature into the strategies of actors, for instance in market fields or professional ecologies (cf. Fligstein, 1996; Abbott, 2005). And how does the institutionalization of a specific vocabulary of motive shape how actors understand their position, role and interests in the broader social context. Second, this approach enables studies of how vocabularies of motive provide the basic conditions for how actors may seek to rationalize business practices and how actors may creatively engage with those vocabularies of motive to defend particular business interests. Third and finally, the vocabularies of motive perspective explicitly acknowledge that the application of theoretical concepts and theories requires explicit decision-making. This enables studies of epistemic authority in governance: who gets to decide what comprises a legitimate application of modern finance theory and how are those decisions made?

Acknowledgements

I’m very grateful to my interviewees without whom this work would not have been possible. The manuscript has greatly benefited from input on (very) early drafts of this article from a large

number of people, with a special mention of Nathan Coombs, Iain Hardie, Vanessa Endrejat, Anne van der Graaf, Edin Ibrocevic, Sebastian Kohl, Donald MacKenzie, Bart Stellinga, Leon Wansleben and participants in the 2019 SASE Early Career Workshop. Finally, I am also grateful to the editor of this journal and two anonymous peer-reviewers for their constructive engagement with this article.

References

- Abbott, A. D. (2005) 'Linked Ecologies: States and Universities as Environments for Professions', *Sociological Theory*, **23**, 245–274.
- Albert, M. (1993) *Capitalism against Capitalism*, Wiley.
- Alborn, T. L. (1994) 'A Calculating Profession: Victorian Actuaries among the Statisticians', *Science in Context*, **7**, 433–468.
- Alborn, T. L. (2009) *Regulated Lives: Life Insurance and British Society, 1800–1914*, Toronto, University of Toronto Press.
- Baker, A. (2013) 'The New Political Economy of the Macroprudential Ideational Shift', *New Political Economy*, **18**, 112–139.
- Baud, C. and Chiapello, E. (2017) 'Understanding the Disciplinary Aspects of Neoliberal Regulations: The Case of Credit-Risk Regulation under the Basel Accords', *Critical Perspectives on Accounting*, **46**, 3–23.
- Beckert, J. (2016) *Imagined Futures: Fictional Expectations and Capitalist Dynamics*, Cambridge, MA, Harvard University Press.
- Besedovsky, N. (2018) 'Financialization as Calculative Practice: The Rise of Structured Finance and the Cultural and Calculative Transformation of Credit Rating Agencies', *Socio-Economic Review*, **16**, 61–84.
- Bizieux, A. and François, P. (2017) *L'invention de La Fonction Risque: Pouvoir, Contre-Pouvoir?*, Working Paper, Paris, Chaire PARI.
- Black, J. (2015) 'Regulatory Styles and Supervisory Strategies', In Moloney, N., Ferran, E. and Payne, J. (eds) *The Oxford Handbook of Financial Regulation*, Oxford, Oxford University Press, pp. 218–253.
- Boyle, P. P. (2005) 'Guest Editorial: Lost in Translation', *British Actuarial Journal*, **11**, 591–594.
- Braun, B. (2020) 'Central Banking and the Infrastructural Power of Finance: The Case of ECB Support for Repo and Securitization Markets', *Socio-Economic Review*, **18**, 395–418.
- Carruthers, B. G. and Espeland, W. N. (1991) 'Accounting for Rationality: Double-Entry Bookkeeping and the Rhetoric of Economic Rationality', *American Journal of Sociology*, **97**, 31–69.
- Chiapello, E. (2015) 'Financialisation of Valuation', *Human Studies*, **38**, 13–35.
- Chiapello, E. (2016) 'How IFRS Contribute to the Financialization of Capitalism', In Bensaïd, D. and Praquin, N. (eds) *IFRS in a Global World*, Springer, pp. 71–84.
- Chiapello, E. and Walter, C. (2016) 'The Three Ages of Financial Quantification: A Conventionalist Approach to the Financiers' Metrology', *Historical Social Research*, **41**, 155–177.
- Collins, D., Dewing, I. and Russell, P. (2009) 'The Actuary as Fallen Hero: On the Reform of a Profession', *Work, Employment & Society*, **23**, 249–266.
- Conference of Insurance Supervisory Services of the Member States of the European Union. (2002) *Prudential Supervision of Insurance Undertakings*. Conference of Insurance Supervisory Services of the Member States of the European Union. Available at: https://www.knf.gov.pl/knf/pl/komponenty/img/Prudential_supervision_of_insurance_undertakings_18431.pdf on July 2, 2022.

- Coombs, N. (2020) 'What Do Stress Tests Test? Experimentation, Demonstration, and the Sociotechnical Performance of Regulatory Science', *The British Journal of Sociology*, 71, 520–536.
- Crotty, J. (2009) 'Structural Causes of the Global Financial Crisis: A Critical Assessment of the "New Financial Architecture"', *Cambridge Journal of Economics*, 33, 563–580.
- Culpepper, P. D. and Reinke, R. (2014) 'Structural Power and Bank Bailouts in the United Kingdom and the United States', *Politics & Society*, 42, 427–454.
- Danielsson, J., Laeven, R., Perotti, E., Wüthrich, M., Ayadi, R. and Pelsler, A. (2012) 'Countercyclical Regulation in Solvency II: Merits and Flaws', *VoxEU*.
- Deeg, R. and Hardie, I. (2016) 'What is Patient Capital and Who Supplies It?', *Socio-Economic Review*, 14, 627–645.
- EIOPA. (2019) *Report on Long-Term Guarantees Measures and Measures on Equity Risk*, Frankfurt, EIOPA.
- Elliott, R. (2021) *Underwater: Loss, Flood Insurance, and the Moral Economy of Climate Change in the United States*, Columbia University Press.
- Ericson, R. V., Doyle, A. and Barry, D. (2003) *Insurance as Governance*, Toronto, University of Toronto Press.
- Ertürk, I. (2020) 'Shareholder Primacy and Corporate Financialization'. In Mader, P., Mertens, D. and Van der Zwan, N. (eds.) *The Routledge International Handbook of Financialization*, Routledge, pp. 43–55.
- Esposito, E. (2011) *The Future of Futures: The Time of Money in Financing and Society*, Cheltenham, Edward Elgar.
- Felsted, A. (2008a) 'EU Told to Rethink Rules on Annuities', *Financial Times* (27 December 2008).
- Felsted, A. (2008b) 'L&G Takes Issue with EU over Annuities', *Financial Times* (6 August 2008).
- Fligstein, N. (1996) 'Markets as Politics: A Political-Cultural Approach to Market Institutions', *American Sociological Review*, 61, 656–673.
- François, P. (2015) *La Fabrique Sociale D'une Tabula Rasa: Le Lancement de Solvency II*, Working Paper, Paris, Chaire PARI.
- François, P. (2019) *Le Jour Sans Find D'Omnibus II*, Working Paper, Paris, Chaire PARI.
- François, P. (2021) *Financiariser L'assurance: Enquête sur Solvabilité II*, Presses de Sciences Po.
- François, P. and Frezal, S. (2018) 'Instaurer L'incohérence. Aléa et Hétérogénéité Au Sein Du Secteur Assuranciel', *Sociologie du Travail*, 60.
- FSA. (2003) *Enhanced Capital Requirements and Individual Capital Assessments for Life Insurers*, CP195, London.
- Fytros, C. (2021) 'The Aporetic Financialisation of Insurance Liabilities: Reserving under Solvency II', *Finance and Society*, 7, 20–39.
- Goodhart, C. (2011) *The Basel Committee on Banking Supervision: A History of the Early Years 1974–1997*, Cambridge University Press.
- Haldane, A., Goldin, I., Gupta, A., Bowie, R., Breeden, S., Davies, P., Gray, R., Hyde-Harrison, M., Mayer, C., Muellbauer, J., O'Neill, J., Palmer, A. and Pilcher, S. (2014) *Procyclicality and Structural Trends in Investment Allocation By Insurance Companies and Pension Funds*, Bank of England Discussion Paper.
- Hardie, I. (2012) *Financialization and Government Borrowing Capacity in Emerging Markets*, Basingstoke, Palgrave Macmillan.
- Hibbert, J. (2009) *Liquidity Premium: Myth or Reality?*, Edinburgh, Barrie & Hibbert.
- Jasanoff, S. (1995) 'Procedural Choices in Regulatory Science', *Technology in Society*, 17, 279–293.
- Jullien, B. (2011) 'Les Besoins En Fonds Propres Des Assureurs Vie Français Varient Selon Les Conditions de Marché', *La Tribune* (15 March 2011).

- KPMG. (2002) *Study into the Methodologies to Assess the Overall Financial Position of an Insurance Undertaking from the Perspective of Prudential Supervision*, Brussels, European Commission.
- Krippner, G. R. (2005) 'The Financialization of the American Economy', *Socio-Economic Review*, 3, 173–208.
- Lansch, R. (2008) 'Versicherer Schätzen Kapitalbedarf Niedriger Ein', *Handelsblatt* (11 November 2008).
- Lehtonen, T.-K., and Liukko, J. (2015) 'Producing Solidarity, Inequality and Exclusion through Insurance', *Res Publica*, 21, 155–169.
- Lengwiler, M. (2015) 'Competing Globalizations: Controversies between Private and Social Insurance at International Organizations, 1900–60'. In Pearson, R. (ed.) *The Development of International Insurance*, Routledge, pp. 167–186.
- List, T. (2011) 'Allianz-Vorstand Wettert Gegen Solvency II', *Börsen-Zeitung* (17 November 2011).
- Lockwood, E. (2015) 'Predicting the Unpredictable: Value-at-Risk, Performativity, and the Politics of Financial Uncertainty', *Review of International Political Economy*, 22, 719–756.
- MacKenzie, D. A. (2003) 'Long-Term Capital Management and the Sociology of Arbitrage', *Economy and Society*, 32, 349–380.
- MacKenzie, D. A. (2006) *An Engine, Not a Camera: How Financial Models Shape Markets*, Cambridge, MA, MIT Press.
- MacKenzie, D. A. and Millo, Y. (2003) 'Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange', *American Journal of Sociology*, 109, 107–145.
- Martin, R. (2002) *Financialization of Daily Life*, Philadelphia, Temple University Press.
- Meyer, J. W. and Rowan, B. (1977) 'Institutionalized Organizations: Formal Structure as Myth and Ceremony', *American Journal of Sociology*, 83, 340–363.
- Millo, Y. and MacKenzie, D. A. (2009) 'The Usefulness of Inaccurate Models: Towards an Understanding of the Emergence of Financial Risk Management', *Accounting, Organizations and Society*, 34, 638–653.
- Mills, C. W. (1940) 'Situated Actions and Vocabularies of Motive', *American Sociological Review*, 5, 904–913.
- Mirowski, P. and Nik-Khah, E. (2007) 'Markets Made Flesh: Performativity, and a Problem in Science Studies, Augmented with Consideration of the FCC Auctions'. In MacKenzie, D. A., Muniesa, F. and Siu, L. (eds) *Do Economists Make Markets? On the Performativity of Economics*, Princeton, NJ, Princeton University Press, pp. 190–223.
- Munzer, M. (2019) 'Justifying the Logic of Regulatory Post-Crisis Decision-Making—the Case of the French Structural Banking Reform', *Critical Perspectives on Accounting*, 60, 44–64.
- Persaud, A. (2015) *How Not to Regulate Insurance Markets: The Risks and Dangers of Solvency II*, Washington, DC, Peterson Institute for International Economics.
- Pilla, D. (2010) 'Worries Mount over Solvency II's Impact on Europe's Insurers', *BestWeek* (15 March 2010).
- Pool, B. (1990) *The Creation of the Internal Market on Insurance*, Luxembourg, Office for Official Publications of the European Communities.
- Porter, T. M. (1995) *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, Princeton, NJ, Princeton University Press.
- Power, M. (2007) *Organized Uncertainty: Designing a World of Risk Management*, Oxford, Oxford University Press.
- Quaglia, L. (2011) 'The Politics of Insurance Regulation and Supervision Reform in the European Union', *Comparative European Politics*, 9, 100–122.
- Scholes, M. S. (2000) 'Crisis and Risk Management', *American Economic Review*, 90, 17–21.

- Sharma, P. and Cadoni, P. (2010) 'Solvency II: A New Regulatory Frontier'. In Kempler, C., Flamee, M., Yang, C. and Windels, P. (eds) *Global Perspectives on Insurance Today: A Look at National Interest versus Globalization*, New York, Palgrave Macmillan, pp. 53–67.
- Singer, D. A. (2007) *Regulating Capital: Setting Standards for the International Financial System*, Ithaca, NY, Cornell University Press.
- Stellinga, B. and Mugge, D. (2017) 'The Regulator's Conundrum. How Market Reflexivity Limits Fundamental Financial Reform', *Review of International Political Economy*, **24**, 393–423.
- Sterzynski, M. (2003) 'The European Single Insurance Market: Overview and Impact of the Liberalization and Deregulation Processes', *Belgian Actuarial Bulletin*, **3**, 42–49.
- Story, J. and Walter, I. (1997) *Political Economy of Financial Integration in Europe*, Manchester, Manchester University Press.
- Suddaby, R. and Greenwood, R. (2005) 'Rhetorical Strategies of Legitimacy', *Administrative Science Quarterly*, **50**, 35–67.
- Svetlova, E. (2018) *Financial Models and Society*, Cheltenham, Edward Elgar.
- Tilly, C. (2008) *Why?*, Princeton, NJ, Princeton University Press.
- Turnbull, C. (2017) *A History of British Actuarial Thought*, Palgrave Macmillan.
- Van der Heide, A. (2020) 'Model Migration and Rough Edges: British Actuaries and the Ontologies of Modelling', *Social Studies of Science*, **50**, 121–144.
- Van der Zwan, N. (2014) 'Making Sense of Financialization', *Socio-Economic Review*, **12**, 99–129.
- Van Hulle, K. (2019) *Solvency Requirements for EU Insurers: Solvency II Is Good for You*, Intersentia.
- Von Fürstenwerth, J. (2008) 'Einzelinteressen Dürfen Solvency II Nicht Verwässern', *Börsen-Zeitung* (26 April 2008).
- Weisberg, M. (2013) *Simulation and Similarity: Using Models to Understand the World*, Oxford, Oxford University Press.
- Wigan, D. (2009) 'Financialisation and Derivatives: Constructing an Artifice of Indifference', *Competition & Change*, **13**, 157–173.
- Zhang, Y. and Andrew, J. (2014) 'Financialisation and the Conceptual Framework', *Critical Perspectives on Accounting*, **25**, 17–26.