

Valuation in insurance and financial crisis

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In the course of the recent financial crisis, the issue of asset valuation has regularly moved to center stage, due both to the sharp fluctuations observed in numerous assets, making economic measurement difficult, but also to the impact that fluctuations can have on the behaviour of economic agents that are required to submit annual financial statements –or even interim or quarterly ones. While this issue has not been seen as the cause of the latest crisis, it has nonetheless been considered as a potential source of its increasing magnitude, even though –at the time of this writing (early July)– we have not yet seen any massive sell-offs of major asset classes (equities or bonds, corporate issues in particular).

The question of asset and liability valuation is of particular concern for the insurance industry. Because of the specific characteristics of this industry, valuation poses specific problems which, far from being fully different compared to the other sectors –the banking industry in particular– in fact tend to be magnified. In fact, it is no accident that the only sector to be granted a transition regime in the application of new international accounting standards is the insurance industry, due to difficulties encountered by the International Accounting Standards Board (IASB) in finding a workable solution for the valuation of insurance liabilities. Similarly, it is no accident that the Internet meltdown was suddenly aggravated in 2002-2003 by the massive move on the part of insurance and reinsurance companies to liquidate their equity portfolios when, once a certain downward price threshold had been surpassed, they decided it was time to sell rather than face the consequences of further depreciation in equity prices on their balance sheets and their solvency margins. The memory of this last event, which without any warning whatsoever took on the proportions of a systemic risk for the global financial sector, recently came to mind when the fall in equity prices picked up speed globally in light of soaring oil prices and an uptick in inflation. Accordingly, the issue of insurance asset and liability valuation does not just pose a microeconomic problem in terms of assessing the financial strength of insurance and reinsurance companies. It also poses a macroeconomic problem in terms of financing the economy and ensuring financial stability.

In the rest of this article, we will examine the economic problems posed by the valuation of insurance and reinsurance assets and liabilities. Then, we will analyse the relevance of today's competing accounting standards, concluding that they offer a very imperfect resolution to the challenges of insurance valuation. Finally, we will analyse the consequences of these problems for financial stability –in terms of the solvency of companies, the financing of the economy, and the ability to absorb shocks to the system. We will conclude that they are significantly greater than is often imagined.

1 | THE ECONOMIC PROBLEMS POSED BY VALUATION IN INSURANCE

Insurance poses very specific valuation challenges, on both the asset and liability sides of the balance sheet. These problems are related to the very nature of insurance liabilities. In fact, these liabilities are simultaneously partially virtual, long-tail, illiquid and sub-additive (which means that the value of a portfolio of insurance liabilities is less than the sum of its individual liabilities). This being so, they accumulate all of the valuation challenges that are found individually in other economic activities or transactions.

1|1 The virtual nature of most insurance and reinsurance liabilities

Insurance liabilities measure the value of the obligations that insurers and reinsurers have with respect to their insureds. Since insurance compensates for insured losses, the insurance obligation concerns the promise to indemnify the insured in the event that the risk against which the latter is insured comes to pass. As soon as a covered loss occurs, the insured has a claim on the insurer, obliging the latter to provide compensation under the terms and conditions of the contract. In this particular case, things are fairly straightforward: the value of the insurer's obligation is equal to the cost of indemnifying the loss under the terms of the contract. The real problem lies not in this point but in estimating the value of the insurer's obligations to policyholders who have not yet suffered an insured loss but who could do so during the period that separates them from the end of the policy. The question is all the more relevant considering that the insurer knows, from experience, that between now and the end of the contracts in force, a good number of its policyholders will have sustained an insured loss, such as an auto accident or a health-related mishap. How can the value of this obligation be measured? For one thing, it is purely virtual. And its value is nil because the insured cannot record a receivable from or a claim on the insurer on its balance sheet as the counterpart of the debt the insurer has with respect

to the policyholder. Moreover, statistical laws tell us that when a policy reaches its term, the value of these obligations will not be nil, that certain risks will come to pass, and that we can –without waiting for the policies to expire– arrive at an estimated value of these obligations based on serious probability.

In general, insurance accounting considers that the value of the obligation is nil as long as the risk does not occur and therefore has not created any objective right to indemnification. This hypothesis has no significant implications for the valuation of the obligations of insurers and reinsurers, as long as the value of the liabilities arising from the occurrence of new insured losses is approximately equivalent to the value of the obligations discharged *via* the liquidation of the payout for past losses. This hypothesis surely becomes questionable in the case of a natural or technological catastrophe or an act of large-scale terrorism. This is why certain accounting standards continue to allow insurers and reinsurers to set aside so-called equalisation reserves, which are intended to cover events which have not yet occurred but which, if they were to occur, would probably be particularly costly.

Life insurance, when we focus on the savings aspect which represents more than 80% of the insurance turnover, poses a particular problem, since it creates entitlements that accumulate over the life of the contract, in the form of interest on the principal and a guarantee on the value of the capital that is accumulated, with the right to surrender the contract (or exit from the contract) as soon as it is initialised in the event of death. How can we measure the value of this obligation? For one thing, only interest (investment returns) already paid and the capital actually acquired generate an objective claim on the part of the insured beneficiary, which the latter can mobilise at will under the redemption or surrender option that most contracts of this type offer. In addition, if the policyholder does not exercise this right of redemption prior to the end of the contract –and it is rarely done– the interest that the insured will earn and the value of the capital he or she will accumulate under the contract can be estimated with a relative degree of precision using stochastic financial techniques, even though these benefits are only virtual at the time they are estimated. Under normal circumstances, the two valuations show little tendency to diverge. Conversely, in crisis situations –in particular financial crisis–

they have a tendency to diverge significantly, giving very different pictures of the financial position of life insurers, just when they most need to have a failsafe valuation. However, it should be stressed that this problem is not, strictly speaking, specific to insurance, and arises in other financial sectors as well, whenever it is necessary to estimate the value of assets like equities, whose future flows are virtual and uncertain.

1|2 The long-tail nature of insurance and reinsurance liabilities

Insurance and reinsurance liabilities typically have long-term horizons, much longer than bank liabilities. There are two specific reasons for this. For one thing, the viscosity of insurance liabilities is high: while demand deposits made with banks can be withdrawn immediately by clients with no penalty whatsoever, property-casualty insurance policies cannot be redeemed. In addition, they are renewed almost automatically by tacit agreement. Similarly, annuity payments cannot be advanced over time at the behest of the beneficiary; as for life insurance policies, they cannot be redeemed by insureds without being subject to contractual and tax penalties, within deadlines that can be measured in months rather than hours. Secondly, the liabilities of insurers are long-tail: the payment of annuities is spread over several decades. The duration of a life insurance policy is typically five to six years, including the redemption option (excluding the redemption option, the term is typically ten to fifteen years). Because claims settlement never comes just after a loss, even in the case of truly serious losses like the World Trade Center, for example, due to procedures of control and even recourse, which safeguard the interests of all stakeholders, in particular other policyholders, non-life insurance is structurally in a positive cash flow situation.

While the valuation of viscous liabilities is probably less uncertain than for other liabilities due to the lower or even nonexistent weight of redemption/surrender options (which constitute one of the most difficult elements to measure with certainty), the valuation of long-term liabilities and assets is much more difficult than that of short-term liabilities. First of all, it is more complex because it depends on a far greater number of

parameters than the valuation of short-term liabilities. Secondly, it is more uncertain because it also depends on possible changes in trends and in behaviours that are cumulative and which can't be modelised as a simple random variable. This is true in particular with respect to the payout of annuities, pensions and long-term care, for which the horizon can be measured in decades, as opposed to health, auto, homeowners and natural catastrophes, for which the horizon is annual. But the main problem with long-term liabilities is related not to their valuation but rather to the valuation of the assets that are intended to match these long-term liabilities. Since the value of assets has a tendency to fluctuate over time, and given that both insurers and reinsurers are –because of the viscosity and duration of their liabilities– able to hang on to a portfolio of impaired assets as long as it has a reasonable chance of recovering its full value over a time frame that corresponds to their obligations, measuring the snapshot value of assets may not be the best way to evaluate the coverage that these assets offer for the liabilities. The question is all the more legitimate in that recent financial analysis has amply demonstrated, on the basis of available empirical data spanning a century, that both the historic value of assets and their market value are very bad "predictors" of their future value, particularly of their value when the time comes to cover the obligations they have to policyholders and pay the latter. In any case, in terms of actuarial expectation, holding on to a temporarily impaired portfolio of assets is a very profitable operation for insurers and reinsurers because it allows them to pocket the risk premium that is attributable to the short-term volatility of assets, without this volatility having an impact on their ability to satisfy their long-term commitments.

Admittedly, it can be claimed –and rightly so– that the future value of an asset is too uncertain to be used for the purpose of accounting or prudential valuation, and that the hypothesis of a future random and unforeseeable outcome only serves to integrate the conservatism that is the hallmark of both accounting and prudential standards. Conversely, while this is true when we look at values individually, it is less so when our level of analysis is portfolios of well-diversified assets. Financial econometrics has revealed significant regression to the mean behaviours for equities, and divergence with respect to the mean for bonds,

in the industrialised countries.¹ The chart below, which compares the effective volatility of the CAC 40 and government bonds since 1950 based on their holding horizon to the volatility that they would have if we assumed these assets had followed the random walk of a Brownian variable, clearly illustrates these behaviours. And naturally, these are fundamental for determining the structure of optimal asset portfolios intended to cover the obligations of insurance and reinsurance companies. The most recent generations of internal models increasingly integrate these divergence and convergence behaviour.² So long-tail insurance liabilities pose a very serious valuation problem for the assets that match these liabilities. This problem was ignored for too long, primarily for theoretical reasons: the dominant financial theory of the nineteen seventies and eighties considered that markets were totally efficient, that they incorporated all relevant information available at a given point in time, and that it was therefore impossible to find a better measurement of asset values than that provided by the markets. There were also practical reasons: even if not all assets followed a random walk, it was nonetheless difficult to arrive at a consensus over an acceptable alternative model. This is not true today thanks to recent developments in behavioural finance. The bubble that formed and then burst

around Internet stocks put the subject back on center stage, since the most successful insurance and reinsurance companies in the aftermath were those that were not required by their supervisors –which were late adopters of the efficient markets theory– to unload their equity investments when prices troughed between 2002 and 2003.

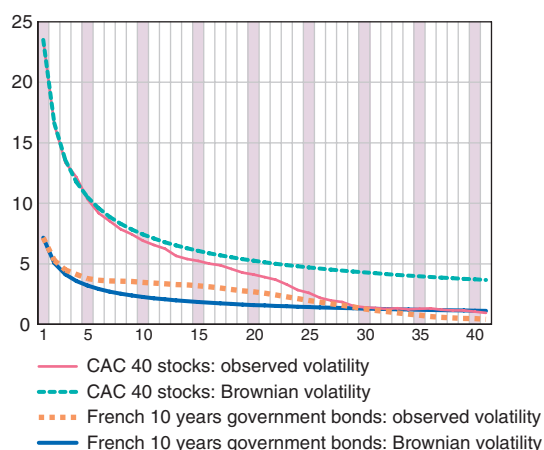
1|3 The illiquid nature of most insurance and reinsurance liabilities

Strictly speaking, there is no real secondary market for insurance liabilities. Insurance contracts do not generally change hands after they are written. There are several reasons for this, which have to do both with the nature of insurance contracts and insurance regulation. The often long horizon of insurance obligations and their largely virtual nature make valuation difficult and uncertain, as we have already seen. Moreover, we need to consider the multi-dimensionality of insurance risks: financial risks most often can be collapsed into a single dimension (the interest rate risk, for example), even if this dimension may itself synthesise several dimensions upstream (a spread risk and an interest rate risk, for example). On the contrary, insurance risks always and immediately have several dimensions (in a policy as simple as auto insurance, coverage can be triggered by a multitude of different events), and their import is therefore more difficult to grasp analytically. In insurance, much more than in finance, it is difficult to have an *ex ante* vision of the outcome of contracts. This complexity makes insurance risks difficult for outside parties to manage. But, above all, it constitutes very fertile ground for the appearance of moral hazard issues, due to the strong degree of information asymmetry that it creates in favor of the underwriting insurer or reinsurer.

This situation, which is understandably not supportive of the emergence of a secondary market for insurance risks, has been aggravated further

Observed and Brownian returns volatilities (short and long term)

(X-axis: time horizon, in years; Y-axis: annual volatility, in %)



¹ See Gollier (2008).

² "Reinsurance and the Swiss solvency test", M. Dacorogna ed., SCOR Studies, 2008.

still by regulation which, in every country, places strict limits on the conditions under which the ownership of insurance and reinsurance portfolios can be transferred, based on the principle that the underwriting insurer or reinsurer must maintain responsibility for it until all of the rights and duties it has created have been performed and have expired. This framework is motivated by the desire to protect the consumer against any deterioration in the security of his or her policy in the event of a transfer. Consequently, a portfolio of insurance contracts cannot be transferred to another licensed insurer until a long and cumbersome process has been completed and pending the prior approval of the relevant regulators. As a result, portfolio trades and transfers are exceptional, and mainly involve companies whose business license has been withdrawn by regulators, or those that have been taken over or aligned themselves with other companies to merge operations within a mutual framework. As such, they cannot in any way serve as a market benchmark for the valuation of insurance risks.

Things are different for insurance liabilities securitisation, which offers far more interesting prospects for establishing a market benchmark. In spite of its rapid growth in the course of the last ten years, the insurance securitisation market nonetheless remains small in both absolute and relative terms. At year-end 2007, it was valued at USD 38 billion, compared with USD 11.7 trillion for the asset-backed securities (ABSs) market. The depth and liquidity of the insurance securitisation market are not totally established at this time, especially since the term covers a set of very different products ranging from cat bonds, which cover insurance risks exclusively, to securitisation of embedded value, which covers risks that are essentially financial in nature, not to mention the securitisation of mortality, auto and other risks, which often seek to leverage regulatory trade-offs. A reflection of the limited depth and liquidity of this market, the rates that are established hardly resolve the uncertainties surrounding the valuation of insurance liabilities. Accordingly, cat bond rates fluctuate as broadly as or more so than reinsurance rates. So securitisation does not at this stage qualify as an incontestable market benchmark for insurance liabilities.

1|4 The sub-additive nature of insurance and reinsurance liabilities

At the foundation of insurance and reinsurance, we find the logic of diversification and pooling. This logic governs the constitution of good portfolios: insofar as possible, they must associate risks that are independent of one another –in the sense that the insured population has independent behaviours, that the risks covered are different, or that the geographic regions covered are distinct. The term pooling is often reserved for the underwriting of a single risk for a large number of insureds, whom we suppose are more or less independent of one another. Conversely, the term diversification is used for underwriting different risks in different countries. Market competition should push for the elimination of all of the diversifiable or poolable risk by insurers and reinsurers, such that insureds are left with only those risks that are not diversifiable. If the diversifiable risk is eliminated, then the corresponding risk premium should also be cancelled out, and the valuation of insurance and reinsurance liabilities should no longer cover anything but the actuarial expectation of the cost of the risk, plus the risk premium that corresponds to the non diversifiable risk, which is transferred to the insurer or the reinsurer. This being the case, the value of these liabilities as carried by insurers or reinsurers must be lower than the value of these same liabilities for insureds, with the gap between the two corresponding to the diversifiable risk premium. However, since markets are imperfect, the diversifiable risk is not totally eliminated by competition, and the value of one and the same insurance or reinsurance liability can change from one insurer or reinsurer to the next depending on the quality of its diversification and pooling.

But to successfully factor these benefits of diversification or of pooling into the valuation of insurance liabilities, the approach must be based not on individual contracts but rather on portfolios of contracts or on an entity-by-entity basis. It is only at this level that the effects of diversification and pooling are perceptible. However, by measuring the value of insurance liabilities at these aggregate levels,

we run the risk of over-estimating the decorrelation between insureds, between lines of business, and between geographic regions, particularly in extreme situations, which as a reminder generally are the result of a recorelation of risks that are habitually decorrelated. This is one of the classic causes of the under-estimation of insurance and reinsurance liabilities. On the contrary, by failing to measure the value of insurance liabilities at a sufficiently aggregate level, we encourage insurers and reinsurers to make tradeoffs based on regulatory considerations, and transfer the risks they have written to other economic agents that are not or are less regulated, knowing that the market price of this risk transfer will mostly take into account the extent to which the portfolio is pooled and diversified, as estimated on the date of the transaction.³ Some might consider that this situation would not necessarily be bad for the industry, since the market will have enabled the emergence of an objective value for the risk. Independently of the subjective perception of the entities involved, it would be possible to refer to it when assessing the values of the corresponding insurance liabilities. In fact, even if the insurance securitisation market were sufficiently deep and liquid, this would hardly be possible, since the effects of diversification are specific to each transferred portfolio and, as such, do not constitute a solid basis for measuring the value of the effects of diversification included in portfolios that have not been transferred.

2 | THE LIMITED RELEVANCE OF EXISTING ACCOUNTING STANDARDS

As we have seen, it is not these problems taken individually but rather their concatenation that makes it hard to estimate the value of the liabilities and assets of insurance or reinsurance companies. In other words, no accounting solution to date has been able to offer a satisfactory solution to this problem set as a whole. All of the accounting standards contemplated up to now must be viewed as very imperfect with respect to this point, whether it is the historic cost standard, the fair value standard, or hybrid standards. In a universe that would correspond to static economic models, such as

the Arrow-Debreu model, where institutions play no role, these differences and imperfections would be of no consequence since economic agents are presumed to be capable of understanding the economic reality that lies behind the accounting veil. More radically, in a universe where the Modigliani-Miller theorem applies, these differences disappear because the value of the firm must be the same regardless of how it is financed and the accounting standard it uses. Conversely, behavioural finance attaches a great deal of importance to these imperfections, to the biases that they introduce into the valuation process, and to the market inefficiencies they are capable of introducing. The aim of this section is not to present the various accounting standards, but rather to analyse the relevance of the solution these standards offer in light of the problems raised in the valuation of insurance assets and liabilities, as well as their impacts on the behaviour of economic agents.

2|1 The imperfection of historic cost accounting

Under historic cost accounting, which is still the method of choice for most local standards, assets and liabilities are measured at their entry cost or their amortised cost. It offers a great deal of stability for balance sheet carrying values, since these values only evolve on the basis of changes in the entitlements or claims of companies or clients. Insurers and reinsurers have mostly been fervent supporters of this method, which ensures a great deal of stability in their balance sheets and amortises economic and financial shocks (both upside and downside). As a result, this method is viewed as a source of conservatism: fluctuations in capital gains and losses neither inflate nor deflate the earnings or net assets of the company. Immunised against short-term fluctuations, the insurer or reinsurer can define a long-term strategy and stick to it for as long as its solvency is not affected. However, the historic cost standard does not in any way resolve any of the valuation problems we have identified:

- the effects of diversification and pooling between the contracts of a single portfolio and between the different portfolios of a single entity are not taken

³ As a reminder, without the permission of the supervisory authorities, only the financial hedge can be transferred in insurance. The corresponding risks remain, conversely, on the balance sheet of the company that originally wrote them.

into account, for reasons of conservatism that we find in all historical cost accounting in insurance;

- virtual liabilities are partially treated within the context of the equalisation reserve, which anticipates the cost of extreme events while leaving a great deal of latitude for determining the exact amount for individual companies;

- as for long-tail and illiquid liabilities or assets, they are measured on the basis of the price of the transaction that introduced these liabilities or these assets into the balance sheet; they therefore lose all relationship to the underlying economic and financial reality after the insurance contract is initialised.

The solution brought to these valuation problems by historic cost accounting can be summed up as not worrying about them and focusing instead on the accounting treatment of their consequences –*i.e.*, calculating the solvency of companies and measuring their ability to honor their commitments when the time comes to do so. In other words, the counterpart of this simplistic negation of valuation problems is a sophisticated analysis of solvency. As in the universe corresponding to the Arrow-Debreu model, insurers and reinsurers are presumed not to let themselves be taken in by the values written on the balance sheet, whose only function is to give stakeholders –most often assimilated to supervisors– a conservative assessment of the solvency of companies over a long-term perspective.

But the Arrow-Debreu model is purely static, whereas insurers and reinsurers operate in a dynamic world where a certain degree of accounting illusion prevails (as empirical observation confirms). The principal limitation of historic cost accounting is that it renders the balance sheet valuation insensitive to new signals given by the market price system. For insurers and reinsurers, this insensitivity affects the valuation of assets more than that of liabilities, which contains specific mechanisms intended to incorporate the most recent signals from the market, such as discounting annuities, correcting reserves for inflation, etc. For this reason, historic cost accounting introduces a strong incentive to sell assets that have undergone the most appreciation recently, generally

when the cycle peaks.⁴ This incentive is that much stronger since the assets in question show marked regression to the mean behaviour. The effects of this behaviour are naturally felt beyond insurance and reinsurance: it impacts the capital markets by improving their efficiency.

2|2 The imperfection of fair value accounting

Fair value accounting, which has recently been adopted in many countries, notably in Europe, for consolidated financial statement reporting, seeks to correct the insensitivity of historic cost accounting to new information from the market. In an ideal world, fair value is tantamount to market value, since it is the best available value when markets are functioning efficiently. The value of most of the assets of insurance and reinsurance companies is measured in this way. However, not every asset and liability has a market value that integrates, at all times, the most recent information made available by the market. This is true in particular of insurance liabilities, as we have seen. Hence the need to define an *ad hoc* fair value that is able, insofar as possible, to replicate what the market value of these liabilities would have been if they had been exchanged in an efficient market. After numerous discussions within the IASB, it seems that a consensus has been reached on measuring the value of these liabilities based on their current exit value, *i.e.*, the value they would have today if they were to be transferred to another insurer. This current exit value of insurance liabilities is comprised, according to the IASB, of three elements: the best estimate or actuarial expectation of the cost of the risks underwritten, plus a margin that the market requires to assume an uncertain debt (the risk margin), and another that the market requires to provide other services to insureds (the service margin). In other words, this is an appraised value.

Without discussing this accounting standard and the criticisms it has generated in great detail, notably those concerning the service margin,⁵ it is necessary to stress that fair value, while it introduces market discipline, nonetheless only very imperfectly

⁴ See Plantin, Sapra and Shin (2007).

⁵ See Duverne and Ledouit (2008).

resolves the problems raised by the valuation of insurance liabilities and assets:

- the effects of diversification and pooling between contracts can be taken into account at the level of each homogenous portfolio of contracts, but not between the various portfolios of a single entity. The IASB is hostile to any measurement of liabilities that is dependent on the entity that manages them;
- virtual liabilities are largely excluded from the scope of the fair value accounting for the obligations of insurers and reinsurers, and wind up within the scope of the company's capital and net assets, which are intended to absorb shocks that are not easy to anticipate or that simply have not been;
- long-tail or illiquid liabilities, which are by nature difficult to match, are measured at their current exit value, whose forecasting dimension makes it necessary to take all new information into account;
- concerning the particular case of assets covering liabilities, Japan introduced assets of a fourth type –those held to cover insurance contract obligations and valued at their amortised cost, but the IASB has not, and the links between the valuation of insurance assets and insurance liabilities in IAS standards only transits *via* the discounting of liabilities using the risk-free rate.

By choosing market value for the principal assets of insurers and reinsurers, fair value introduces significant volatility into their valuation, without including the equivalent at the level of liabilities, the valuation of which is –by design rather than by nature– less volatile, since it is based on an appraised financial value that is by definition much more stable than market values. In addition, to the extent that the liabilities of insurers and reinsurers are long, the reference to fair value and market value for the valuation of assets introduces artificial volatility into the prices of the value of the net assets. This is particularly true during periods of crisis, when asset prices no longer reflect future profits although liquidity constraints may affect the economy and the company in the short run.⁶ This artificial volatility is aggravated by the fact that fair value offers a strong incentive to sell those assets that have depreciated the most recently,

in general when the cycle troughs.⁷ The effects of this distortion can well spread beyond insurance and reinsurance and into the capital markets, where they reduce efficiency.

2|3 The imperfection of hybrid standards

In practice, accounting systems are not as pure as we have imagined them to be above. They incorporate a healthy dose of pragmatism, the purpose of which is to allow them to adapt to reality. Accordingly, historic cost accounting integrates an impairment mechanism that is used to improve the measurement of long-term assets by allowing the depreciation of those assets whose value slips below the entry value on the balance sheet for a period that exceeds the definition of temporary. However, if guaranteeing that impairments are sufficiently objective requires assessing the other than temporary nature of the depreciation using criteria that reproduce the workings of the market, then we find ourselves once again in a situation where the accounting method is that of historic cost accounting whenever assets appreciate, and in a fair value situation whenever the value of assets is impaired on an other than temporary basis. In fact, far from having reduced the inefficiencies of historic cost accounting, this way of calculating impairments leads to an accumulation of the inefficiencies of fair value accounting, which encourages insurers and reinsurers to sell assets whose price has fallen, independently of their prospects for recovery, with those of historic cost accounting, which encourages them to sell those assets whose price has risen independently.⁷ To avoid this, it would be necessary to calculate impairments on the basis of a discount rate for future cash flows that is specific to each insurer or reinsurer, at a price that is nonetheless more subjective in terms of assessing the other than temporary nature of the depreciation.⁷

Similarly, fair value accounting has developed, as a transition measure, a hybrid standard known as International Financial Reporting Standards 4 Phase I (IFRS 4 Phase I) for insurance and reinsurance while awaiting the definition of a permanent standard that is more appropriate

⁶ See Allen and Carletti (2006).

⁷ See Plantin, Sapra and Shin (2007).

(known as IFRS 4 Phase II). This standard, which is inspired by the US GAAP solution, in practice blends the existing IAS and IFRS standards and local standards. Schematically speaking, assets are measured at their fair value, while liabilities are valued at their historic cost. It is immediately clear that this transition standard poses a major problem in that it applies two different accounting philosophies to assets and liabilities, with the risk of generating, at the level of net assets for insurance and reinsurance companies, substantial artificial volatility that is the pure product of a hybrid accounting convention and, as such, is unrelated to any underlying economic and financial reality whatsoever. In an attempt to reduce this risk, the IASB added a specific mechanism inspired directly by US GAAP, the notion of "shadow accounting", which allows to us take into account the fact that changes in net assets may be passed on to policyholders *via* profit-sharing mechanisms, for example, and to thereby link liabilities to assets when this is necessary. But given the difficulty of defining this link precisely, the IASB opted to remain relatively general in its wording on shadow accounting, leaving the door wide open to a high degree of heterogeneity at the level of market practice, even if domestic auditors and accounting standard boards have imposed a minimum of standardisation. Above all, since shadow accounting deals with only one aspect of insurance and reinsurance asset/liability matching, the hybrid standard of Phase I still contains a serious risk of artificial volatility in the net assets of companies.

Overall, and in light of the specific valuation issues that insurance and reinsurance companies face, the hybrid standards are hardly more effective than the pure standards, despite their stated aim of better taking the industry's concerns into account.

3| FINANCIAL STABILITY AND INSURANCE VALUATION

Often neglected, issues related to insurance valuation nonetheless are located at the heart of many problems of financial stability. Admittedly, insurance and reinsurance companies have virtually never solicited public finances or monetary policy

in crisis situations. The case of Japan is emblematic in this respect: while the difficulties encountered by the banks in the 1990's mobilised both monetary policy and public finances, insurers have experienced numerous bankruptcies without benefiting from any public support whatsoever, even though the responsibility for many of these failures can be attributed to competition from a postal company that is supported by public finances. The stakes in terms of financial stability are not limited to the solvency of insurance and reinsurance companies, and also touch the financing of the economy and the ability of the latter to absorb significant financial shocks.

3|1 Supervising insurance and reinsurance company solvency

In insurance and reinsurance, as in banking, the supervision of solvency is based on compliance with certain defined capital ratios, with capital understood in the large sense –liabilities that can withstand stresses, shocks and unforeseen losses. The measurement of solvency naturally depends on the valuation of insurance assets and liabilities, to the extent that the net worth of the company constitutes the principal constitutive element of solvency. With respect to the issue of solvency supervision, current exit value probably constitutes one of the most interesting innovations in the area of fair value accounting. Indeed, current exit value corresponds pretty well to the economic measurement of the obligations of insurers and reinsurers, which is what supervisors need to be paying attention to. The Solvency II reform, which is currently under discussion at the European level, has integrated current exit value into its standards for the valuation of insurance and reinsurance obligations.

The stability of value measurements made using the historic cost method, or the amortised cost method, has barely any economic significance for solvency. It requires integrating an additional prudential margin into the solvency margin calculation and, to support this aim, setting the margin at a comfortable enough level to absorb not only a new stress but also the earlier adverse deviation in the underlying values. In fact, when company financial statements are presented using the historic cost accounting method, it is generally the case that the financial

position of the companies whose license has been withdrawn by regulators must be drastically revised downward without being able to attribute the earlier over-estimation of its position to fraud.

In the same manner, fluctuations in market value are not particularly relevant to the supervision of insurance and reinsurance company solvency, insofar as they do not correspond to an irreversible impairment in an underlying trend in the valuation of this or that balance sheet line item. The relatively long timeframe of insurance and reinsurance, as well as the viscosity of insurance and reinsurance company balance sheets, still allows for the contemplation of a later correction for these fluctuations as long as the company is solvent *hic et nunc*. It is important to understand the argument: by anticipating a correction of this kind, we are not being imprudent; we are doing no more than engaging in asset/liability management designed to optimise the social gains and economic well-being. Hence, we authorise inter-temporal pooling, which is one of the fundamental aspects of pooling itself.

Supervisors should therefore be wary of both historic values and market values, and should refer insofar as possible to other valuations and other hypotheses. Above all, the combination of assets at market value and liabilities at current exit value carries the risk of an artificial volatility in net worth compared with the real financial wealth of the enterprise. To attenuate the adverse consequences of this artificial volatility, the solvency margin should be able to function as a shock absorber under these circumstances –naturally, under the supervision of the relevant authorities. This is how prudential standards can play an important corrective role with respect to the imperfections of accounting. In fact, it is neither desirable nor possible to obtain accounting standards that suit the specificities of insurance and reinsurance while also ensuring the comparability of their earnings with those of other economic sectors. Conversely, it is part of the exclusive mission of prudential regulation and supervision to stick close to the reality of the industry. We can see the beginnings of a distribution of roles, with accounting standards more specifically in charge of comparability and prudential standards in charge of dealing with the specific features of insurance and reinsurance.

In this vein, the effects of risk pooling and diversification should be taken into account by the prudential standards, much like Solvency II reform does, insofar as they cannot be by the accounting standards. If this limitation of accounting standards were not corrected for by the prudential standards, companies would be encouraged not to conserve risks in their balance sheet and would instead seek to transfer them insofar as possible to other, non-regulated agents. The market values of risks that would result would be for this reason partially inefficient and would not send out the right messages to insurers and their clients. They would lead to the selection of a sub-optimal level of protection in the economy. It should be noted that, in order for these transfers to be mutually profitable, it would not be necessary for the agents involved to be capable of managing these risks. It would suffice that the cost of their relative incompetence versus insurers and reinsurers not be higher than the gain that is to be had in terms of the valuation of the effects of diversification and pooling thanks to risk transfer and securitisation.

3|2 Financing domestic economies

Via the premiums that they invest, insurance and reinsurance companies play a fundamental role in financing domestic economies. They finance a large portion of public debt and investment in corporate debt and equity instruments. In a country like France, households make 40% of their direct and indirect investments in equities *via* insurance and reinsurance.⁸ Similarly, households make 77% of their direct and indirect investments in corporate bonds *via* insurance and reinsurance. Overall, French households make 60% of their investments in businesses *via* their insurance contracts, compared with only 25% *via* their mutual fund investments and 15% directly. These figures attest to the importance of insurance for household investment in the productive economy.

It is clear that, if insurers had to reduce their investments in equities, this would not be offset by a rise in other components, which include direct investment (21% of all household investments in equities) and investments in mutual funds (38%

⁸ Estimate based on looking through mutual funds, at their original investments.

of all household investments in equities). Neither the government nor businesses could hope to replace insurers. It would be necessary to increase the role of pension funds or foreign investors. In countries like France, where pension funds are quasi-inexistent, the first alternative is not available. As for the second alternative, that of increasing the role of foreign investors, it is not indefinitely extensible. Indeed, foreign investment already accounts for nearly half of all share ownership in France's, an important psychological threshold for both citizens and foreign investors alike. The consequences for the European economy, which has a substantial need for equity capital, would be disastrous.

In fact, the market value valuation of equities runs the risk of dissuading insurers and reinsurers from investing sufficiently in equities. As we have seen, fluctuations in market value should encourage insurers and reinsurers to unload their equity holdings when the capital markets are down. This is most unfortunate –particularly since, as we have seen, equities exhibit regression to the mean behaviour that should logically make them an attractive ownership option when the markets are bearish (unlike bonds, which exhibit a divergence from the mean). Since equity market depreciation is in general synchronised with situations of financial stress for companies, the latter should also be encouraged by fair value measurement considerations to under-weight equities in their own portfolios compared with what optimal asset/liability management would suggest.

This is why it will be important that the prudential standards correct, insofar as possible, this effect of fair value accounting on the ownership of equities by insurers and reinsurers. From this perspective, the capital requirements on equities proposed today under Solvency II would only aggravate the situation, because they are excessive with respect to the capacity of insurers and reinsurers to hold these securities over periods sufficiently long to hope to reap the beneficial effects of their regression to the mean. The European Commission has proposed that the default stress level be determined for the equity risk on the basis of the volatility of equities over a one year horizon. Calculated on this basis, it would be 32% for listed equities and 45% for private equity. This level is problematic, not only because it would be very dissuasive with respect to equity

ownership, but also because the reference to annual volatility is incorrect given the multi-year timeframe of the insurance liabilities that equities cover. The Solvency II draft runs the risk of reinforcing the distortions introduced by the notion of fair value on equity ownership by insurers and reinsurers. It should be noted that, curiously, prudential standards have historically given preference to the hypothesis of a regression to the mean for bonds alone, even though empirical work highlights the opposite, *i.e.*, divergent behaviour with respect to regression to the mean for bonds and regression to the mean behaviour for equities.

3|3 The financial stability of economies

Insurance and reinsurance do not stop at just helping to finance the economy. They also play the role of shock absorption. By definition, they absorb the real shocks that they insure or reinsure, and some of these shocks may have a macroeconomic dimension –such as major storms or cyclones, earthquakes, terrorist attacks and so on. The bulk of the shock inflicted by the attack on the World Trade Center was absorbed by insurance and reinsurance, and it was the European companies that absorbed half of that shock, thereby helping to spread its impact globally. However, companies are also increasingly encouraged to transfer their risks to other actors, less well qualified than they are to manage and absorb them. This is due not only to the inefficient combination of existing accounting and prudential standards, but also to the emergence of a deeper and more liquid securitisation market, which offers an increasingly competitive alternative to the insurance and reinsurance companies.

But, as we have seen, the longer term horizon of insurance and reinsurance companies compared with other financial services players such as banks, enables them to maintain depreciated/impaired assets in their portfolio that other investors might have a tendency to unload but that these companies will keep in their balance sheet whenever there is a potential for rebound, which is in particular the case for diversified equity portfolios which exhibit regression to the mean behaviour. Unfortunately, we have also seen that the accounting standards in force throughout the world encourage short-term arbitrage

on the part of insurers and reinsurers in financial boom situations as far as historic cost accounting is concerned, and in financial depression situations as far as fair value accounting is concerned, which prevents companies from fully playing their role of long-term investor role and shock absorber in the latter hypothesis.

In the interest of greater financial stability, it is important that the shock absorption potential of insurance and reinsurance not be overlooked, and that the accounting and prudential standards be designed and articulated coherently, so that this potential can be realised. The stakes are high,

because they concern the ability of the market to absorb shocks by itself, with minimum intervention on the part of public policymakers. Otherwise, fiscal and monetary policy will be solicited, at a much higher cost for taxpayers because these interventions are also a source of moral hazard in the economy. The importance lies less where this issue is taken into account –at the level of accounting or solvency– and more with the fact that it be correctly valued in one of these two standards. Above all, it is vital that the two standards avoid aggregating the obstacles. As we have seen, it is likely that prudential standards have a particularly significant role to play in this area.

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