SOLVENCY II AND XBRL: NEW RULES AND TECHNOLOGIES IN INSURANCE SUPERVISION

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Abstract:
Purpose – the aim of this paper is to analyze the way in which the insurance industry is confronting the renewal of its regulatory framework with respect to the levels of solvency that insurance entities should maintain, and how technological initiatives in general, and the implementation of the eXtensible Business Reporting Language (XBRL) mark-up language in particular, are making a key contribution to the process of adaptation to the new regulation.
Design/methodology/approach – In this general review, we analyse the particular advantages that the application of the XBRL standard can offer in this process, and highlight new lines for further research.
Findings – In this scenario, it is becoming urgent to have available a technological system such XBRL, that provides support to the important and periodical operations of consolidation of financial information, and to ensure the digital transparency of the insurer organisations that are engaged in this new regulatory challenge.
Practical implications – XBRL represents the key resource for the information support used in the European COREP project for implementation of Basle II in the Union, so, the implementation of Solvency II can take full advantage of this previous experience. For that reason, a proposal for action is incorporated.
Originality/value – the affiliation of the authors to the insurance sector, the academia and the XBRL community contributes to a complete view of the possibilities of this breaking project.
Keywords: Solvency II, European Union, E-finance, insurance sector, international regulation, XBRL.

Article type: Viewpoint

1. INTRODUCTION

It is well-known that new regulatory frameworks have the capacity to drive or demand innovation in organisations (Lin and Wu, 2007) and that governments and regulatory agencies pressure emerges as the strongest factor in the application and acceptance of new rules and technologies (Hsu, et al., 2006). The European Union continues its steady advance towards an effective harmonization of regulatory frameworks in respect of the financial system and collaboration between the various supervisory authorities (Vives, 2001). In the field of banking supervision, the

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directives with reference to the minimum solvency required of financial entities have recently been reformulated. All this is fruit of the transposition of the Basle standards, Basle II in particular, to the European system of juridical governance. The use of the "new technologies" has been fundamental in this process of change. The institutions of the EU have initiated a similar process for other non-banking intermediation activities. The insurance sector has also benefited from these improvements; the means by which information on performance itself is measured, recorded and communicated is being revolutionised, and a new regulatory framework is being established, known as Solvency II, which generates needs for new technological approaches in the insurance corporations and in the regulatory authorities. The free standard, eXtensible Business Reporting Language (XBRL), is transforming the way that financial information is transmitted (Locke and Lowe, 2007, Williams et al., 2006), and XBRL promises to play a central role in current developments in the insurance sector.

1.1 Solvency for the insurance sector

Solvency II was born as a proposal for a "Lamfalussy Process" for the elimination of obstacles to regulations aimed at creating a single financial space in Europe, an integrated European financial market as a consequence of the single currency. The new regulatory framework of Solvency II in the European Union represents not merely an evolution in the methods for calculating capital requirements: it is intended to bring about changes in companies’ systems of internal control, styles of management, the listing of typologies of risk that are covered, and the means of communication used for company interactions with the supervisory authority and with the market. In the realm of a global knowledge-based economy, inter-organisational knowledge-networks are increasingly established with the aim of producing, using and disseminating new knowledge (Kreis-Hoyer and Gruenberg-Bochard, 2006). In the case of Solvency II, it is intended to generate a network formed by the national supervisors of the member states, in which the insurers participate as the active object of supervision and suppliers of basic information about their activity. From several different fronts come warnings of the need to apply technology to risk measurement (Karuppusamy et al., 2007), and to use technology to provide support to corporate reporting which is becoming ever more essential (Chan and Wickramasinghe, 2006). The financial services industry has changed profoundly because of a new delivery channel, the Internet, the explosion of e-commerce and the emergence of a knowledge-intensive economy (Malhotra and Malhotra, 2006). In this context of regulatory change, because of all these developments, the new technologies will again become involved, widely and deeply, as facilitators of implementation.
1.2 The European organisms and the applicable international regulations

The insurers and reinsurers are of such economic and social importance that the need for the public authorities to intervene with prudential supervision is generally accepted. The insurers not only provide protection against future events that may result in losses, but they also channel the savings of families to the financial markets as capital needed by the real economy (Solvency II, 2007). The beginnings of the international regulation known as Solvency can be situated in the 1970's, as a regulatory framework for the insurance companies. The basic objective was to guard against possible crises in the insurance market. It was initiated in consequence of the opening of the markets, and its specific objective is to detect inappropriate behaviours of the insurers in order to protect their customers, those buying insurance. Solvency was intended as a common standard on the basis of which the European regulators and, in turn, the national regulators, could develop the standards most suitable for their particular environment. This gave rise to the existing legislation, the Directives, of the EU on solvency in the insurers.

Solvency II has emerged after diverse changes experienced in the regulation of Solvency. It was early in 2001 when the Commission of the European Union began the Solvency II project with the object of studying the possibility of initiating consultations to produce a new standard of common prudential supervision for insurance companies. In March 2003 there was an ostensible change of approach to the application of Solvency; the project passed from being based entirely on the risk of underwriting to an integrated risk approach whose particular feature is the position of the insurer against all the risks assumed.

The Solvency rules or standards have been binding since 2004, and the insurance companies were obliged to apply them before 2007. In the intervening period, the Directives in force underwent profound and significant modifications with the aim of reflecting the real situation more faithfully: for example, the minimum guarantee fund was increased and, in non-life insurance, the threshold for calculating the solvency margin was raised; and as an additional measure, the supervision was made stricter, and compliance of greater requirements was demanded.

To take account of the modifications imposed by the new regime, Solvency II, the 13 Directives (see Annex) have been recast in a single text, and new legislation that substantially modifies the background of the content has been added; these Directives covered the topics of life and non-life insurance, reinsurance, insurance groups and winding-up, which are enumerated below (EU Commission, 2007).

The application of the first standards of solvency proved to be simple and robust, and the results can be compared between different insurance companies. However, deficiencies were identified including, among others,
the valuation of the financial variables of the entity in relation to the situation of the rest of the market was found to be impossible;

- it does not take account of all the risks to which the insurance entities are effectively exposed, such as the operating risk, which is dealt with next

Therefore the regulation that is being applied does not determine a valuation of global scope, so it is not possible to establish the entity's position in relation to the rest of the market, as a reference situation vis à vis other insurers. The behaviour of the markets and developments in the general economy also affect the insurance sector. The international presence of the insurers and the management of cross-border risks make it necessary to value the portfolio of risks on a global basis, and to obtain reference values vis à vis the rest of the market. These economic factors demanded the application of new regulatory rules, and demonstrated that the partial reforms of the previously-cited Directives were insufficient.

Solvency II emerged as a report proposing a type of "Lamfalussy Process". In this report, some general principles were established based on the regulation applied to the securities markets, whereby a European Securities Commission is created to determine the technical details and set up a framework to bring about greater cooperation among the European regulators.

In summary, the Lamfalussy-style report calls for the adoption of rules or standards covering the European market for financial services, on four levels, and

- these general principles have been approved by the European Parliament:

- the development of the rules or standards by separate committees for the stock market, banking and insurance, and pension funds, that are presided over by the Commission and formed by representatives of the member states at the political level;

- the convergence of the supervisory practices to be achieved through the work of the supervisory committees that are formed by representatives of the corresponding supervisory bodies of the member states; and

- the verification by the Commission itself that there exists adequate compliance with the measures adopted at the two first levels.

The objectives of Solvency II are set out in the work plan of this Lamfalussy-style proposal: to protect those insured; to establish capital requirements for solvency in accordance with the risks assumed by the insurance companies; to avoid complicated processes; to take into account the development of the sector; to establish principles without being excessively rule-bound; and to prevent unnecessary over-capitalisation. The capital requirements for solvency will not be the only rule that the insurers must comply with, since they will be accompanied by further requirements for the company managements and national government bodies to prevent the occurrence of financial scandals like Enron, TYCO International, Peregrine Systems or WorldCom; in addition there will be accounting regulation to
ensure greater transparency, by applying the IFRS (International Financial Reporting Standards). The Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) had an important part in the drafting of Solvency II. In particular, since the new Directive does not contain technical details on the implementation of Solvency II, CEIOPS will be asked to provide further advice concerning the detailed technical aspects of possible measures for implementing it.

Given the realities of the global insurance industry, and the particular complexities of marketing insurance in the framework of the single financial market that the EU is constructing, the European Commission has adopted a proposal concerning "the taking-up and pursuit of the business of Insurance and Reinsurance", to introduce a new framework of solvency, capital and supervision for insurers and reinsurers (EU Commission, 2007).

We can give details of the structure of the new supervisory approach (Solvency II FAQs, 2007):

- Pillar 1 consists of the quantitative requirements (i.e. how much capital an insurer should hold). This could be decided by the European Standard Formula. Currently, this formula is being calibrated on the basis of the reality and needs of the European insurance market. It is expected that this calibration will be finalised during the second half of 2009. As a notable innovation, it incorporates the measurement of Operational Risk, a concept that encompasses diverse types of loss not clearly financial, such as frauds, errors, faults in systems and external events (Fontnouvelle et al., 2003).

- Pillar 2 sets out requirements for the governance and risk management of insurers, as well as for the effective supervision of insurers. The increasing need for collaboration between national supervisory bodies, with the effective exchange of information that this implies, is the principal novel aspect of the new supervision scheme.

- The focus of Pillar 3 is on supervisory reporting and transparency requirements. Effectively, all the recent changes in regulation imply an increase in the transparency of financial corporations (Davenport and McDill, 2006). Here again, the technologies of information and communications will pay a significant role in support of the efficient release of information to the public and market, as well as in the correct communication of information to the supervisory authority.

- Additionally, the principle of proportionality is introduced, whereby less strict requirements are established for medium-size and small entities in respect of the calculation of risks and the handling of necessary information. Those entities may be concerned that they do not have adequate resources and administrative capacities for compliance, and this makes the use of the new
technologies an important point to prevent them suffering competitive disadvantages as a result of the new regulation.

Regarding the relationship of the new regulatory framework with the legal accounting framework, the IFRS will really provide the financial information support to enable the effective application of Solvency II; of particular relevance is IFRS 4, which specifically addresses contracts of insurance. This regulation has been drafted by a working group formed by insurers and auditors of accounts, and the following observer institutions have provided guidance during the drafting: EFRAG: “European Financial Reporting Advisory Group”; IOSCO: “International Organization of Securities Commissions”; IAIS: “International Association of Insurance Supervisors”; and the FASB: “Financial Accounting Standards Board”.

1.3 National transposition of the project

The implementation of Solvency II in the EU involves the need to monitor a series of steps, in which the participation of the private agents involved is of vital importance for discussing the regulation in detail and putting the finishing touches, particularly in regard to the transposition of the Directive, which currently has the reference COM(2007) 361 final, to each national regulatory framework. Thus, the European Directive will be a "directive framework", and in its later phases this will result in the regulation at national level, ensuring homogeneity and, at the same time, flexibility between countries. What is now necessary is to select the most suitable technological instruments and to obtain collaboration between entities and regulators, which will enable this flexibility to be achieved without losing the compatibility that will make mutual understanding possible. To sum up, this is an international project, at various levels, that requires strategic decision-making on the means that will make possible the exchanges of information that will be important throughout the whole regulatory process.

![Figure 1 National transposition of the project](image)

In this scenario (Fig. 1), it is becoming urgent to have available a technological system that provides support to the important and periodical
operations of consolidation of financial information, and to ensure the digital transparency of the insurer organisations that are engaged in this new regulatory challenge.

2. XBRL, TECHNICAL SOLUTIONS FOR BUSINESS PROBLEMS

Regardless of the adequacy of the new regulatory frameworks, the application of the IFRS and of Solvency II may increase financial risk through their own initial utilisation, due to the inherent technical complexities; many of these complexities are caused by the ways that information is handled in intermediate management processes, which can lead to confusion in the information that persons and systems are dealing with. Other factors that may cause errors in the application of Solvency II, through lack of knowledge or distraction, include the need to perform consolidation operations, and the pressing need to communicate information to the market and to the regulators, in addition to the novelty of the two regulatory frameworks. Rigour and order in the use of the information by controls on information systems will serve as an effective guide in their application; consequently the new information technologies will play a fundamental role when used as parallel supports to the application of the two regulatory frameworks, IFRS and Solvency II. These technological tools should not only be employed in the function of delivering complex and consistent information to the regulators; they should provide value to the company for its own control systems, since they will even enable simulation processes to be run as part of the internal management of information. In short, what is required is a tool for the representation and transmission of information that is both flexible and rigorous, that enables reliable and secure communication between the insurer entities, the market and the supervisory authorities, without neglecting the important communication between national supervisors within the framework of collaboration that they must maintain. Thus, by means of the use of the new technologies, the underlying objectives of ensuring the proper protection of those insured and the correct functioning of the European internal market can be achieved in an optimum way (EU Commission, 2007).

(21) In order to guarantee transparency, insurance and reinsurance undertakings should disclose at least annually essential information on their solvency and financial condition. Undertakings should be allowed to disclose additional information on a voluntary basis.

(22) Provision should be made for exchanges of information between the supervisory authorities and authorities or bodies which, by virtue of their function, help to strengthen the stability of the financial system. It is therefore necessary to specify the conditions under which those exchanges of information should be possible. (…)

(24) In order to limit the administrative burden and avoid duplication of tasks, supervisory authorities and national statistical authorities should cooperate and exchange information.

All these constitute a clear call for the adoption of the technological tools referred to.
2.1 XBRL, the new language for financial information via Internet

XBRL (eXtensible Business Reporting Language) is the digital mark-up language successor to XML (eXtensible Mark-up Language) and serves as the nexus between different entities when transmitting business information telematically. The functioning of mark-up languages is based on attaching an electronic label to each datum that is being handled; in the case of HTML (Hyper-Text Mark-up Language), this electronic label provides information on the visual format that we want the datum to have on screen. In contrast, in the case of XML and XBRL, the label provides additional information (meta-information) on the nature of the datum that is transmitted. There are many de facto XML initiatives for vertical or horizontal B2Bi, such as ebXML, RosettaNet, HL7, and cXML. The diversity of XML formats causes difficulty in facilitating XML-based data exchanges (Ho et al., 2004). For this reason, a new language based in XML has been created, to make it suitable for the area of financial management and communication. It is demonstrated that financial markets respond positively to announcements of proprietary XML schema standardization, but not to those of open XML schema standardization (Aggarwal et al., 2006). But now, standardization is needed in this new framework in which regulatory information must be effectively shared, that it is not possible with proprietary systems.

XBRL is based on the production of different XBRL Taxonomies, which are generated and agreed by consensus in various working groups formed by specialists in computer software, systems and business. The principal mission of these Groups is to generate a specific Taxonomy; that is, the group analyses the model of business reporting that XBRL is intended to support and facilitate, and identifies univocally a dictionary of terms for utilizing these labels in the subsequent generation of Reports in XBRL containing real data that will be transmitted telematically. Therefore, the Working Group generates the Taxonomy, which is made available free on the Internet, and this allows users to generate various types of Report and validate them correctly; the taxonomy thus represents the best "substratum" for expressing business information of all kinds for utilisation by the numerous software applications that companies and other organisations must use to manage this information (Fig. 1).

When the XBRL taxonomy is generated, much care is taken to introduce different business rules into it. These rules take material form by way of standards of presentation, labels in different languages, rules of calculation and logical relationships; these are rules with which the real data "hosted" by the digital labels in the various XBRL Reports must comply. A plain text file with the .xml extension supports the transmission of the data expressed in this new language. XBRL Reports are usually very compact in size, which increases the capacity of existing computer systems, in addition to the advantages offered by the syntax that ensures that items
of data are conveyed intact and perfectly delimited. By means of this language a scenario is provided in which the issuers and recipients of this type of information find an efficient "substratum" for making use of it digitally and electronically in various ways, and particularly for using the latest high-performance analytical applications, since all the relevant business information is contained or can readily be contained in XBRL Reports (Fig. 2, Table 1).

**Figure 2 How XBRL works**

XBRL is already providing technological and management advantages to a multitude of organisations that, previously, were managing information by more rudimentary methods (Bonsón and Escobar, 2002). Among the descriptive terms associated with XBRL are "better, faster and cheaper" (O 'hAonghusa, 2005). There exist various mechanisms for the calculation and logical validation of content of the labels that comprise an XBRL taxonomy. Because these labels, and the real data that these labels "host" when an XBRL report is produced, can be submitted to these mechanisms, they become simple but powerful tools. When business information is expressed by XBRL, this represents an additional guarantee of the quality of this information. Furthermore, XBRL taxonomies can be extended by the user privately; this facility ensures that, on the one hand, companies can make use of their own more detailed reporting models with particular characteristics specific to their own business, for internal use, and on the other, that there is no loss of compatibility with the general model that the company must use to report externally (Boixo and Flores, 2005). XBRL has arisen to meet the real need to "homogenize" business information and make it compatible in an environment where different entities must communicate rapidly and clearly with each other but where there are no pre-existing programs and formats that are mutually satisfactory and totally efficient. It is important to state that the IFRS standards are also supported by the new XBRL technology (IASB, 2007).

Kernel.xsd:

Here we define

- XBRL items, which only appear once in each report
- XBRL tuples, which could be replicated
- Attributes of these, e.g. datatypes, including proprietary datatypes.

Linkbases.xml:

Here we include
- Presentation rules
- Logical and linear combination rules
- Labels in different languages for each XBRL concept
- References, as legal notes.

In addition to this, one of the greatest advantages of XBRL lies in the property of the Taxonomies whereby they can be extended by the users. In other words, once a Taxonomy has been created at the European level, extensions can be created to cover the particular features of the adapted national regulatory frameworks, thus ensuring the homogeneity of the system of information while giving it the flexibility that the framework requires.

2.2 XBRL: previous European experience

XBRL also benefits from the support of an international consortium in which important public and private bodies are represented. The European Union has supported the standard by applying it to official communication between Banking Supervisory Authorities (COREP, 2006).

The COREP-FINREP Project is being undertaken within a complex structure (Fig. 3) formed by the European financial entities, the supervisory authorities at the national level, and the supranational entities that issue regulations, and promotes collaboration and the implementation of a common communications system among all the participants, using XBRL. The principal objective of this set of institutions is the implementation of the technological-legal system represented by the entry into force of both the regulation of banking risks under Basel II and the international accounting regulation in accordance with the IFRS standards. Notable among these supranational entities are the Committee of European Banking Supervisors (CEBS), a public body that reports to the EU Commission, and two private entities, the Bank of International Settlements of Basel (BIS) and the International Accounting Standards Board (IASB). The BIS puts into effect the regulations on banking risks under Basel II, and the IASB [12] issues the IFRS, in accounting matters. For its part, the CEBS collaborates with the national authorities to obtain the maximum consensus and harmonization in the application of these regulations in the European context.

With this objective, the CEBS collaborates in transposing the banking regulation agreed under Basel II to the EU, and in adapting European financial entities to the international accounting regulations proposed by the IASB through the IFRS. To fulfil this role it is carrying out the COREP-FINREP project, which is
aimed at putting at the disposal of all the regulatory and regulated entities the appropriate technological tools (the COREP-FINREP Taxonomies, in XBRL language) to support the efficient communication of all the information required in this new regulatory framework in which the European financial entities now have to conduct their activities. Lastly, the XBRL consortium is acting as a vital link, facilitating the meetings, encouraging the regulators to reach consensus, and offering the technical support necessary, from the phase of design of the Taxonomies to the more detailed aspects of implementation in each national context of the EU (Bonsón et al., 2007).

2.3 Solvency II: taking advantage of previous initiatives.

In the case of Solvency II, there exists an analogous structure in respect of the implementation of the new regulation: both cases concern a regulation of general character, with a consortium of agents involved that act in a highly participative way, and in both cases there is a pressing need for the new business rules to be established simultaneously with the availability of an efficient telematic system that enables the appropriate distribution and processing of the information generated by the sector, so that this information is passed correctly to the regulators and to the market.

2.4 Specific proposals for action.

On the basis of the analysis conducted, it becomes necessary to suggest to the agents mentioned a structured proposal for the implementation of XBRL for Solvency II, based on the following strong arguments:

- The standard possesses proven technological quality
- The organisational qualities of the XBRL consortium have been demonstrated to be of great help in the implementation of analogous regulatory frameworks
- Previous experience represents a background of inestimable value, with a substantial number of persons and entities ready to give support in this venture, from the XBRL consortium itself at the European and international levels, to the myriad entities that comprise the consortium, in their individual capacities.

Therefore, the application of XBRL to Solvency II would involve first the creation, under the auspices of XBRL International (European section), of a Working Group whose principal mission would be to monitor, assist and participate as far as possible in the Groups now working on Solvency II; thus from the initial phases of evolution of the regulatory framework, the Group would come to be in a position to foresee what reporting models will be needed. Similarly, as the detailed aspects of the regulatory framework are consolidated and then adapted to the national level, the Group would put in hand the creation of the various different taxonomies that be needed; the first to be defined would be the generally applicable
taxonomies, followed by the extensions to meet the particular national situations, all undertaken in a working environment in which the members of the various groups share previously-defined information and proposals. The XBRL language is already having a revolutionary impact on the ways whereby financial information is moved telematically, by Internet; and users in all spheres are appreciating the benefits of having raw material, i.e. data, of optimum quality for processing according to their particular needs, and for subsequent well-informed decision-making. XBRL represents the key resource for the information support used in the European COREP project for implementation of Basle II in the Union. The advantages derived from the application of this project, together with the particular characteristics of the Solvency II project, indicate that XBRL is the ideal telematic tool, and that it can make a valuable contribution to the reform of the regulatory framework for the insurance sector at the European level.

3. FINAL REMARKS

Solvency II is a European project for the fundamental reform of the system of regulations concerning risks and solvency of the insurance sector. As with Basel II, there is a change of philosophy that is profoundly affecting the methods of risk measurement, the role played by the supervisory authorities, and the priority given to corporate transparency in the strategies of all the entities involved. The complex inter-meshing of regulatory changes and adaptations in business practices inevitably affects the way that information on the entity's own activity is recorded and exchanged at various internal levels, and the ways and formats in which this information is disseminated externally, whether to stakeholders, the public, the market or the supervisory authority. In the case of world wide corporations, flexibility is needed in order to efficiently implement the standards (Svensson and Wood, 2008).

The XBRL language is already having a revolutionary impact on the ways whereby financial information is moved telematically, by Internet, and users in all spheres are appreciating the benefits of having raw material, i.e. data, of optimum quality for processing according to their particular needs, and for subsequent well-informed decision-making. XBRL represents the key resource for the information support used in the European COREP project for implementation of Basle II in the Union. Every insurance corporation should thus consider XBRL in its e-finance strategy (Ye and Keesling, 2006). Equally necessary will be an adequate measure of the success of this technological-regulatory project (Kutsch, 2007). The advantages derived from the application of this project, together with the particular characteristics of the Solvency II project, indicate that XBRL is the ideal telematic tool, and that it can make a valuable contribution to the reform of the regulatory framework for the insurance sector at the European level.
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**ANNEX:**

**EU DIRECTIVES RE-INCORPORATED INTO SOLVENCY II**

The following 13 Directives in the area of life and non-life insurance, reinsurance, insurance groups and winding-up were recast into a single text on the occasion of the new Solvency II amendments to be made:

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<td>Second Council Directive 88/357/EEC of 22 June 1988 on the coordination of laws, regulations and administrative provisions relating to direct insurance other than life assurance and laying down provisions to facilitate the effective exercise of freedom to provide services, and amending Directive 73/239/EEC.</td>
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