

CHAPTER 17

Megatrends in the Insurance and Financial Sector

RAIMO VOUTILAINEN & LASSE KOSKINEN

Takeaways for Leading Change

Megatrends are complex in nature, and a good understanding of them requires new skills and perspective. This chapter discusses megatrends in the context of the insurance and financial sectors. It argues that leaders and managers in the insurance and financial sector must be ready to rise to new challenges, from managing businesses in complex environments to operating in fields that are fundamentally changing and in a transition phase. In connection with these developments, more information is available now than ever before, and that information must be managed effectively. Analysing changes in terms of industry specific megatrends and trends presents one possibility to do this. Globalisation has opened new opportunities and brought new risks for businesses. This chapter outlines how leaders and managers within insurance and financial enterprises can endorse the complex character of such transformations as well as the dynamic nature of these changes.

Megatrends and trends offer a fruitful approach to analysing change. The term “megatrend”, as defined by John Naisbitt (1982), describes the significant social, economic, political, and/or technological movements that shape our lives. Megatrends are larger in magnitude, longer in duration, and deeper in their effects than normal trends. They are complex combinations of factors and huge in their effect, in both time and space (Mittelstaedt, Shultz, Kilbourne, & Peterson, 2014). Megatrends can best be identified and analysed in relation to more detailed grassroots trends.

We examine how contemporary megatrends are visible in the insurance and financial sector, alongside key trends that have altered the landscape in this area. We show that managing this change has become a major challenge for the top management of financial enterprises and point out ways in which companies in these sectors can respond to the challenges arising from contemporary megatrends.

At both the European and global levels, the insurance and financial sector has experienced profound structural change in recent decades. One key factor in these developments has been the banking sector and insurance sector competing with each other while at the same time also cooperating with each other (Voutilainen, 2006). Competition has taken place in the form of *financial convergence*. This means insurance companies launch products that perform nearly or exactly the same task as products from banks, or vice versa. Another manifestation of financial convergence is a company in one of these sectors establishing a new company in another sector or acquiring a company in that sector. Finnish banks have been especially active in establishing or acquiring insurance companies, which is why the chapter focuses on examples from Finland.

As for cooperation, *alliances* have been formed between banks and insurance companies. The most preferred alliance model from the executive management point of view is a financial conglomerate – banks and insurance companies operating under common ownership. The benefits of this arrangement is the increased potential for effective cross-selling and diversification of business portfolios. The drawbacks include high capital costs and often significant upswings and downswings in business results (e.g., Voutilainen, 2006). Here too, expansion beyond the financial sector can be seen, with banks and insurance companies starting

joint operations in other fields (e.g., OP Group, 2018). At the same time, non-financial companies have entered the insurance and financial sector.

We then identify various (micro) trends in these fields, providing both Finnish and international examples and discussing the benefits and drawbacks associated with the individual trends. The discussion also examines each of these trends in light of societal megatrends.

Figure 1 summarises the relationship between individual and macro trends. At the upper level there are the three megatrends: (M1) More complex regulation and taxation, (M2) Technology and demographic transition, and (M3) Fundamentally changing business models. We introduce them on the basis of their magnitude, duration, and effects on the insurance and financial sectors. At the lower level we classify individual trends under applicable megatrends.

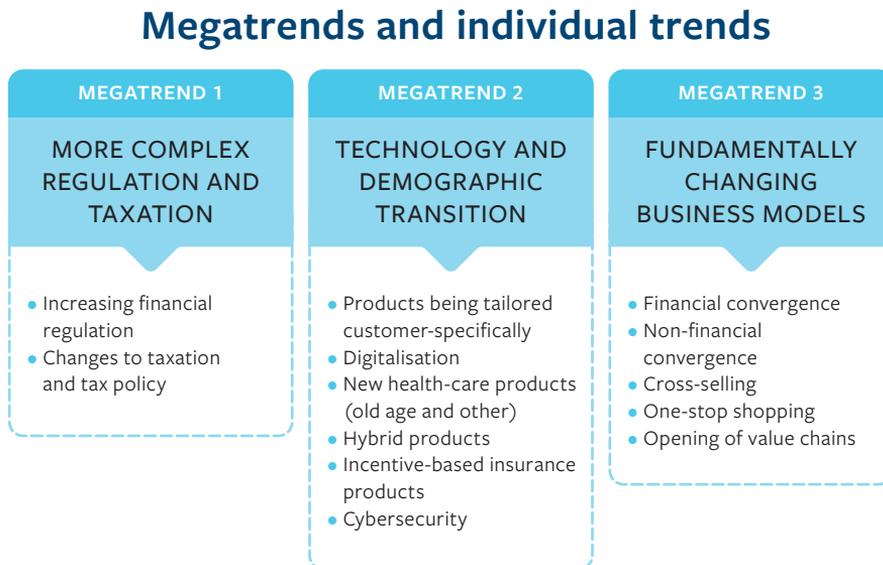


FIGURE 1: Individual trends and corresponding megatrends

This chapter proceeds in the following way. First, we discuss the megatrend, more complex regulation and taxation. We then examine the technology and demographic transition megatrend. This is followed by a discussion on fundamentally changing business models. We then examine the role of risk management

The Trends and Megatrends Observed

Trends in the insurance and financial sector are partly exogenous but are also influenced by the actions of the industry. On the basis of observed industry practice and reports, we have identified several trends:

- Increasing financial regulation
- Changes to taxation and tax policy
- Products being tailored customer-specifically
- Digitalisation
- New health-care products (old age and other)
- Financial convergence
- Non-financial convergence
- Incentive-based insurance products
- Cross-selling
- One-stop shopping
- Hybrid products
- Cybersecurity
- Opening of value chains

Proceeding from scientific findings, we further classify these fundamental trends in terms of societal megatrends. The trends listed above can be best categorised as part of three megatrends: The first of these is a megatrend of more complex regulation and taxation; the second is demographic and technology transition. The third refers to fundamental changes in business models. While the individual trends could be classified in several ways, the authors find this approach to be most logical for the reason that each trend can easily be attached to its corresponding megatrend.

More Complex Regulation and Taxation

Complexity of the financial sector is a well-known phenomenon. Nicola Cetorelli, James McAndrews, and James Traina (2014) have shown that bank holding companies have grown in size and also become substantially more complex. The findings suggest that greater complexity is a natural adaptation to a new model of finance oriented toward securitisation. It is an important one indeed. Åke Freij (2017) has demonstrated the great significance of regulatory change for firms and entire industries and the difficulty in managing the implementation of new requirements arising from such change. The financial sector well exemplifies the type of boundary-spanning phenomenon this book focuses on. Changes occurring in the financial sector are an outcome of actions and interactions of public authorities and private actors. These actions and interactions are also multiscalar in the sense that their origins are in local, regional, national or supranational environments.

The strongest shapers of trends and changes in economic life are the actions of public authorities, particularly in relation to regulation and taxation. Decisive movement in this area is especially strong in the insurance and finance sector. Manifested principally in stricter rules, this clearly qualifies as a megatrend. This section describes the emergence of a more complex regulation and taxation landscape. It dissects this megatrend into two trends: We first examine the effects of increasing financial regulation on the actions of companies. We then detail trends in taxation and taxation policies.

In the insurance sector, the EU Solvency II regulations have been in force since the start of 2016. The new rules are risk-based and entail much more precise risk estimates than earlier regulations, for both the investments and technical reserves of insurance companies. At the same time, with the new Basel rules, capital and liquidity requirements for banks have increased. The Basel rules were set up by the international Basel Committee and regulate mainly capital and liquidity requirements for banks. Many bigger banks apply internal models for capital adequacy calculations, but the Basel committee seems to be heading towards prohibiting the use of internal models (expected with the so-called Basel 4).

The European Insurance and Occupational Pensions Authority (EIOPA) is the authority for regulating solvency requirements for insurance companies and occupational pensions companies in the EU. It has provided instructions for several stress tests (e.g., European Insurance and Occupational Pensions Authority, 2016) to assess the resilience of European insurance companies against adverse macroeconomic developments. The new Solvency II rules are so strict, in fact, that several European insurance companies have opted to take advantage of transition arrangements made possible by supervisory authorities and terms of Solvency II.

The capital requirement associated with traditional and with profits life insurance are one important example of how rigorous the new solvency rules are. In traditional life insurance, there is a capital guarantee and a limited profit guarantee. The capital guarantee obligation requires the firms to hold a large amount of solvency capital. An alternative to the traditional life product, unit-linked life insurance involves no guarantee. The insured decides how to invest his or her money and retains full responsibility for profits and losses during the insurance period.

It is natural that the solvency capital requirement for unit-linked insurance is only a small fraction of the capital requirement for traditional insurance. However, with Solvency II, this difference becomes even larger. Consequently, insurance companies are shifting their businesses from traditional life insurance to unit-linked offerings (see Ruuskanen & Voutilainen, 2015). For regulatory reasons, customers are no longer able to obtain guaranteed policies. They are obliged to make investment decisions they are not qualified to make or at least often dislike. As a response, life insurance companies have started to produce compromise products combining features of traditional and unit-linked life products: so-called variable annuities with a limited guarantee (Ruuskanen & Voutilainen, 2015). In this product, the insurance company may be obliged to pay back at least the amount of the premiums – for example, as a death benefit or as savings at a certain time. The solvency capital requirement of a variable annuity is less than that of traditional life insurance but greater than the amount of capital required for unit-linked insurance.

Supervision of large financial conglomerates is particularly challenging, especially in cases of cross-border groups. Pekka Korhonen, Lasse Koskinen,

and Raimo Voutilainen (2006) brought together Finnish banking and insurance supervisors to ascertain which model for alliance between banks and insurance companies they most preferred. The supervisors chose a loose cross-selling agreement, citing supervisability and management of system risk as the most important criteria in their decision.

The second element in the megatrend of increased regulatory complexity is the taxation environment. Taxes on financial products have profound effects on customer behaviour and, thereby, on product development. Below, we illustrate the effects of shifts and complexities in taxation, which is highly country-dependent, by looking at developments in Finland. This is an interesting example of how public and private actors behind change dynamics interact.

The Finnish state has reformed the tax treatment of individual pension insurance several times over the last two decades. The lowest possible retirement age has been raised and tax deductions for premiums have decreased. Before the latest tax reform, there were 700.000 pension insurance customers, but few have been interested in the product since then. Currently, the lowest retirement age allowed is 68 years and the pension must be paid out over a span of not less than 10 years. Information on Finnish taxation system can be found in *Finanssivalvonta* (2017).

As changes in the state's taxation policy have made individual pension products unattractive for customers, life insurance companies have developed other products suitable for long-term savings purposes. For example, Nordea, which is the biggest financial group in the Nordic countries, has launched a capital redemption plan that pays out regularly. The product, called Target Saving, can supplement the mandatory pension, but it can also be used to finance studies or any time when there is no actual salary, thanks to the regular outpayments.

As changes in the state's taxation policy have made individual pension products unattractive for customers, life insurance companies have developed other products suitable for long-term savings purposes.

The product has no tax-deduction benefits like those for the individual pension, but its taxation is neutral. This is considered satisfactory since there are no restrictions on withdrawals as with individual pension plans (for a closer description of the product, see Nordea, 2017). It is clear that, because of the adverse tax treatment of individual pension insurance, customers are turning to alternative long-term savings products developed by life insurance companies. While lacking tax deductibility of the premiums, they do not impose restrictions on withdrawals of savings.

Another part of the picture is mortality cover – life insurance with death as insured event. The term “mortality protection gap” refers to the shortfall between the amount of coverage and what is necessary for maintaining the living standards of dependents. The size of this gap is calculated as follows: resources needed minus coverage in place through individual policies and employer-sponsored group life coverage. The reinsurance company Swiss Re (2015) has estimated the mortality protection gap in the Asia-Pacific region has increased sharply, amounting to 58 trillion US dollars, or 255% of the region’s gross domestic product. Unsurprisingly, a large mortality protection gap is a sign of sales potential for life insurance companies. In Finland the death sum (i.e., the amount payable upon death) has enjoyed certain benefits in inheritance taxation. However, these benefits ceased at the beginning of 2018. This change affects individual and group policies alike, also encompassing policies sponsored by the employer. The new legislation has led to great disappointment (expressed by consumer organisations and labour unions), because there are compelling social reasons for favorable tax treatment of mortality coverage.

One advantage of unit-linked insurance is that the value change of investment objects (most often investment funds) does not result in taxable capital income. The tax is not collected before the end of the insurance term, which could be called a tax postponement benefit. A working group under the leadership of the Finnish Ministry of Finance is reviewing the possibilities for taxing this benefit, as is done in Sweden. The Finnish insurance industry is lobbying heavily against this because insurance already has disadvantages when compared to other forms of saving. In Finland, there is double taxation, at least in part, for almost

all types of life insurance. The only exception is risk life insurance which is not mortality insurance and in which the claim amount is paid out as a tax-free lump sum.

This megatrend includes changes in both regulation and taxation. The regulation trend has affected the product offerings of life insurance companies. The taxation trend has made certain products unattractive to customers which in turn has affected product development and offerings of life insurance companies and banks as their agents.

The Finnish Government has introduced a new banking product – the investment savings account – for equity saving. The product has the same tax-postponement property as unit linked insurance.

Technology and Demographic Transition

Breakthroughs in such fields as artificial intelligence and the Internet of things are making a huge impact on industry, on both the technology and the business fronts. At the same time, the aging of populations contributes to everything from economic shifts to changes in societal norms. In our analysis, the combined effect of technological developments and demographic transition constitutes a megatrend. This megatrend is transforming society radically. We have dissected this megatrend into several smaller scale trends (see Figure 1).

Evidence of this megatrend can be seen in the digitalisation of the insurance and financial sector where the interface between company and customer is moving to the Internet. Jobs are vanishing in large numbers while new jobs emerge. Peter Weill and Stephanie L. Woerner (2013) discuss optimisation of digital business models. While many are pessimistic about the loss of jobs, others are less worried, stating, for example, that “Booz & Company’s econometric analysis estimates that, despite the unfavourable global economic climate, digitalisation provided a USD 193 billion boost to world economic output and created 6 million jobs globally in 2011” (p. XIV, Sabbagh, Friedrich, El-Darwiche, Singh, & Koster, 2013). Either way, financial-services enterprises should respond by investing in developing the abilities of their employees to deal with change.

One manifestation of this megatrend in the Finnish context, in both the insurance and the financial sectors, is that physical meetings between a customer and the company are being replaced by online meetings. Nearly all customer transactions can already be handled over the Internet. It is a general belief in Finnish insurance and financial companies that most customers find Net meetings to be sufficiently intimate, since the customer can see the service worker on the screen while the service is being provided. Nonetheless, some capacity for physical meetings will be retained for a while yet – integrating customer relationship management across the various channels (branch offices, telephone service, and the Internet) is challenging.

Artificial Intelligence (AI) and robotics are revolutionising the work processes of insurance companies and banks. AI has had significant success in the health-care sector in particular (e.g., Zang, Zhang, Di, & Zhu, 2015; Acampora, Cook, Rashidi, & Vasilakos, 2013). In the insurance field, promising applications of AI have been found in underwriting, policy administration, claims handling, and customer-advising-related chat functions. Though uses of AI are still developing and robotics is not yet mature, it is clear that groundbreaking effects are ahead. Social media also represents both potential threats and opportunities. Insurance and financial enterprises must respond actively to these. Marketing and product development options are available with the aid of social media but not in the traditional way.

Another perhaps less surprising example of digitalisation is The Payment Services Directive (PSD2), the new EU directive on payment services that came into force in February 2018. The Directive puts the financial industry, banks especially, into a totally new position. Banks must open their customer interfaces to external players that want to create good customer relations. To retain customers, banks have to give excellent customer service with comprehensive service offerings. The risk for the banks is of being left as a processor of transactions while the “customer ownership” moves to the external player. Banks have already formed alliances with “fintechs” to avoid disruptive actions by those players.

In both the non-life and life insurance areas, there is already incentive-based insurance with which a customer can, as his or her choices or

behaviours dictate, receive premium discounts or other benefits. This can be developed further. The mechanism can be applied to a broad spectrum of life insurance, in what is often called smart life insurance. Some bonus programs have incentive features, as with Finnish automobile insurance encouraging careful, accident-free driving.

The pioneer of these kinds of insurance is Discovery, from South Africa. The concept is rapidly spreading on several continents. In Finland, LocalTapiola (2016) has been particularly strong in piloting products in this field. Voutilainen and Koskinen (2017) have conducted a study on the views of Finnish customers of such solutions. So far, the reception has been mixed: some people are interested, while others have strong feelings against incentive-based insurance.

A combination product combines one or more bank products with one or several insurance products. The term “hybrid product” is used for a combination product whose bank and insurance products are tightly bound together in a logical sense, as with a loan and insurance in the loan protection insurance. A hybrid product offers balance-sheet-based earnings for both the bank and the insurance company. Hybrid products are also a driver for cross-selling; see the work of Irinja Mäenpää and Voutilainen (2011). It is possible to develop a wide variety of hybrid products for both private and corporate customers.

As to demographic trends, the birth rate in Finland has decreased very sharply (Lassheikki, 2017), and the population is aging. This has raised concerns about how the statutory pension system will cope and has led to questions as to whether pension benefits will need to be cut. While Finland’s statutory pension system is internationally acknowledged as sustainable, voluntary savings can always serve as a complementary system. The financial industry can create viable new products depending on how the taxation landscape develops.

A sweeping reform to the national social and health-care systems – the SOTE reform – is currently in progress in Finland. In connection with the SOTE reform, introduction of long-term-care insurance (a long-term savings vehicle for the costs of health care in old age) would be a feasible option. This insurance would require a public service promise and suitable new taxation. Also, fixed annuity options (single-premium lifelong pension

insurance for managing personal longevity risk) might suit the SOTE world, but it too would require suitable new taxation. The significance of health insurance in relation to health-care costs under the SOTE system remains to be seen.

The fundamental question in preparing for old age is “Should the individual’s saving be subsidised?” Decreases in tax benefits associated with individual savings and pension systems have sometimes been accompanied by the argument that individual-based systems jeopardize the legitimacy of public systems; especially the occupational pension system. We do not agree. Voluntary savings can usefully supplement the public system. However, this is an ideological and political question and such questions are a necessary part of any complex system.

Fundamentally Changing Business Models

The megatrends described above – greater complexity in regulation and taxation and transition taking place in demographics and technology – are forcing businesses to change. This change is so complex in nature and extensive in impact that fundamental change to business models can be classified as a megatrend in its own right. This megatrend can be further analysed in terms of its constituent lower level trends: financial convergence and non-convergence, cross-selling, one-stop shopping and opening of value chains.

Cross-selling is a major trend that has emerged recently in financial alliances. With this development, bank customers are offered insurance and insurance customers are offered bank products. A bank can cross-sell life insurance to, for example, its deposit and housing-loan customers, and non-life insurance to almost any customers of other services. High estimated cross-selling potential has been a factor behind numerous mergers and acquisitions, among them the Finnish OP–Pohjola transaction in 2005 (see Voutilainen 2006). The OP Bank has utilised the cross-selling potential of banks and insurance companies with great effectiveness. In response, If P&C Insurance Ltd (publ) has claimed that customer bonuses have been used inappropriately here from the perspective of competition

legislation (see Kauppalehti, 2015). The dispute is currently under consideration in the Competition Court.

Alliances through financial conglomerates is another strong development and can be designated as a trend. A financial conglomerate is an entity composed of a mother company, at least one bank, and at least one insurance company (financial conglomerates are discussed more fully by Voutilainen, 2006). The mother company may be a holding company or itself a bank or insurance company. In a survey, Voutilainen (2006) found the financial conglomerate to be the preferred model for alliances between banks and insurance companies, according to top managers of Finnish banks and insurance companies. The advantages of this model include better customer relations management, easier building of earnings logic, better management of product development, easier reduction in excessive capacity of sales channels, lack of channel conflicts, and diversification of the business portfolio.

Customer relations management and the often complicated IT systems associated with it can be managed more efficiently when the relevant parties belong to the same group of companies. Success is influenced considerably by the power balance of the involved parties and the distribution of responsibilities. Simplification of earnings logic (i.e., distribution of profits via commissions) is more possible when one party in the alliance has authority over the other. Product development too is more streamlined when one party is superior to the other in authority. A merger often results in a reduction of worker numbers. This is more easily dealt with if one party is clearly subordinate.

As for the second-to-last benefit listed, channel conflicts occur when multiple parties of an alliance have sales channels and a salesperson working for one party disapproves of a sale made by another's salesperson, with the argument that he or she could have accomplished the same sale. Clear delineation of responsibilities is essential for addressing this factor also.

Business portfolio diversification is an undeniable priority in bigger groups of companies. Profits and losses are evened out when the conglomerate's combination of banking and insurance functions involves bank and non-life insurance operations. Conversely, bank and life insurance activities amplify profits and losses. Hence, banking and non-life insurance

are a better fit to each other in the portfolio diversification sense (for more details, see Estrella, 2001).

Forming of financial conglomerates has been an international trend since the 1990s. In Finland, there are two large conglomerates active in this field: Nordea (a Nordic group composed of a bank and life insurance companies) and OP Group. Nordea does not engage in non-life operations, while OP's activities encompass both insurance types. It should be noted there has been resistance to the trend. In the early 2000s, some giant financial conglomerates were dismantled in Europe: Credit Suisse – Winterthur and Allianz–Dresdner. The advantages noted above may not have compensated for the difficulties in the financial management of these groups.

One-stop shopping is another trend to emerge recently in the customer-service process for financial services, alongside cross-selling and hybrid products. The concept is that of offering the customer a wide assortment of bank and insurance products during the service visit (which may be in a branch office or via telephone, Net meeting, or other online interface). One-stop shopping is a driver for cross-selling (Mäenpää & Voutilainen, 2011). The customer benefit is comprehensively taking care of all financial matters during a single session; the drawback is a package deal and difficulty in comparing to competing products (cf. Voutilainen, 2006).

A closed value chain in the financial sector involves a given sales channel (e.g., a bank) offering the customers only funds of that channel's own fund company and its own life insurance company's unit-linked insurance (which are linked to in-house funds and other investment instruments). An open value chain, in contrast, means the sales channel offers also competing financial groups' products (as an alternative). Banks in Sweden have opened their value chains, while Finnish banks generally have closed value chains. Entities such as Private Bank constitute an exception. As customers grow more demanding, Finnish banks are likely to start opening their value chains.

Solvency II, discussed earlier, is relevant to this connection. Because of the high solvency capital requirements, some banks have divested their insurance holdings at least in part. It has been reported (Navarro, 2014) that the large Spanish banking group Santander sold its traditional life portfolio, with a high solvency capital requirement, and retained its risk life and unit-linked portfolios. When banks give up their insurance holdings

(either partly or totally), they often make an exclusive sales agreement covering those products. Bank divestment of insurance portfolios has not yet spread to the Nordic countries. On the other hand, almost all Nordic life insurance companies have stopped selling traditional life insurance (for further details, see Ruuskanen & Voutilainen, 2015).

Before moving on, let us expand on some remarks made in the introduction. Financial convergence can involve engaging in competition via an insurance company launching a product that performs the same task as a product of a bank (or a nearly identical one) or *vice versa*. An alternative method of financial convergence is to establish a new company in the other sector or acquire a company already active in that sector. Finland has seen an especially strong move in this regard in banks establishing or acquiring insurance companies. More generally, banks were active in financial convergence with the wealth management sector in the 1980s, before turning to the life insurance sector in the 1990s and the non-life insurance sector as the 2000s began.

Lately, banks and insurance companies have experienced a new type of convergence and competition led by retail chains. Examples of retail sector actions in finance are Carrefour in France, Tesco in Britain, and S Group (in cooperation with LocalTapiola) in Finland. For their part, banks have extended the operations' scope to non-banking sectors such as health care and automotive operations, as in the case of OP Group in Finland. With non-financial industries penetrating banking and insurance arenas while financial enterprises are entering new business areas, we can conclude that financial convergence has gone a step further: it has turned into industrial convergence.

Discussion

Megatrends require new kind of risk management and solvency regulation. Several authors (e.g., Billio, Getmansky, Lo, & Pelizzon, 2012) have drawn attention to increased risk in insurance and finance, finding that all hedge funds, banks, broker/dealers, and insurance companies are highly interrelated. This is likely increasing the level of systemic risk in the finance

and insurance industries through a complex network of relationships that changes on multiple time scales.

Financial crises such as those of 1998, 2001, and 2008 highlight the need for holistic risk management and risk-based capital requirements. In response, Solvency II and Basel II–IV regulations permit insurance companies and banks to use internal (in-house) models for risk management and for calculating the solvency capital requirement. However, weak internal models were one cause of the crises in 2008.

The main objectives and potential benefits of using internal models for regulatory purposes include risk management that is more risk-sensitive and innovative, along with greater efficiencies in terms of capital and costs. Statistical modeling is a key part of any internal model attempts to forecast the probability distribution for the profit-and-loss account and the funds available internally (European Insurance and Occupational Pensions Authority, 2014).

As for the solvency capital requirement of insurance companies, a forecast looking one year ahead to the 99.5th percentile (VaR) is the calibration target. The modeling areas are addressed by the statistical quality test and calibration test in the Solvency II framework. For an overview, we direct the reader to the key articles of the directive and the aspect of internal models that they address:

- Art. 113: Policy for changing of the model
- Art. 114: Governance and management
- Art. 118: The use test (addressing whether the model is relevant for and used in risk management)
- Art. 119: Statistical quality standards
- Art. 120: Calibration standards
- Art. 121: Profit and loss attribution
- Art. 122: Validation standards
- Art. 123: Documentation standards

Senior management understanding of internal model and its uses is one of the key principles guiding the use test. Leaders should have an overall understanding of the internal model, as well as specific areas they use the model.

All of these standards are useful in the development and application of internal models in today's changing world, with the aim of better risk management. An internal model is principle-based instead of rule-based. That feature is of great importance, since it aids in fitting the model to the changing environment – especially with regard to the business models related to the megatrends described above.

References

- Acampora, G., Cook, D., Rashidi, P., & Vasilakos, A. (2013). A survey on ambient intelligence in healthcare. *Proceedings of the IEEE*, 101(12), 2470–2494. <https://doi.org/10.1109/JPROC.2013.2262913>
- Billio, M., Getmansky, M., Lo, A., & Pelizzon, A. (2012). Econometric measures of connectedness and systemic risk in the finance and insurance sectors. *Journal of Financial Economics*, 104(3), 535–559. <https://doi.org/10.1016/j.jfineco.2011.12.010>
- Cetorelli, N., McAndrews, J., & Traina, J. (2014). Evolution in bank complexity. *FRBNY Economic Policy Review*, 20(2), 1–40.
- Estrella, A. (2001). Mixing and matching: Prospective financial sector mergers and market valuation. *Journal of Banking and Finance*, 25(12), 2367–2392. [https://doi.org/10.1016/S0378-4266\(01\)00195-9](https://doi.org/10.1016/S0378-4266(01)00195-9)
- European Insurance and Occupational Pensions Authority. (2014). EIOPA Guidelines on the use of internal models, EIOPA-BoS-14/180.
- European Insurance and Occupational Pensions Authority. (2016). EIOPA Insurance Stress Test report, 16/302, Dec. 16.
- Finanssivalvonta (2017). Vapaaehtoiset yksilölliset eläkevakuutukset [Voluntary individual pension insurance]. Retrieved from: www.finanssivalvonta.fi/fi/Finanssiasiakas/Tuotteita/Elake-saastaminen/Elakevakuutus/Pages/Default.aspx
- Freij, Å. (2017). *Mastering the impact of regulatory change: The capability of financial services firms to manage interfaces* (PhD dissertation). Stockholm School of Economics, Sweden.
- Kauppalehti (2015, December 16), If ampua OP:tä harkitusti [If threatens OP deliberately].

- Korhonen, P., Koskinen, L., & Voutilainen, R. (2006). A financial alliance compromise between executives and supervisory authorities. *European Journal of Operational Research*, 175(2), 1300–1310. <https://doi.org/10.1016/j.ejor.2005.06.033>
- Lassheikki, P. (2017, July 7). Tutkijat eivät olleet uskoa lukuja – lapsia syntynyt alkuvuonna ennätysvähän [Scientists were not believing figures – children born record low] Retrieved from https://yle.fi/uutiset/3_9707111
- LocalTapiola. (2016). Henkivakuutus, joka auttaa sinua pysymään hengissä [Smart life insurance that helps you stay alive, LocalTapiola's campaign for smart life insurance]. Retrieved from <http://www.lahitapiola.fi/henkivakuutus>
- Mäenpää, I., & Voutilainen, R. (2011). Value through combined offerings of bank and insurance. *International Journal of Bank Marketing*, 29(7), 535–554. <https://doi.org/10.1108/02652321111177812>
- Mittelstaedt, J. D., Shultz, C. J., Kilbourne, W. E., & Peterson, M. (2014). Sustainability as megatrend: Two schools of macromarketing thought. *Journal of Macromarketing*, 34(3), 253–264. <https://doi.org/10.1177/0276146713520551>
- Naisbitt, J. (1982). *Megatrends: Ten new directions transforming our lives*. New York, NY: Warner Books.
- Navarro, F. (2014, June). *Entering into bancassurance – redrawing bancassurance strategies depending on the changing market*. Presentation at the Second Annual GLC Bancassurance Forum, Budapest, Hungary.
- Nordea. (2017). Tavoitesäästö [Target Saving]. Retrieved from <https://www.nordea.fi/henkiloasiakkaat/palvelumme/saastaminen-sijoittaminen/vakuutussaastaminen/tavoitesaasto.html>
- OP Group. (2018). OP Financial Group. Retrieved from <https://www.linkedin.com/company/op-financial-group/>
- Ruuskanen, O., & Voutilainen, R. (2015). On the effect of intensified regulation on the product strategy of Nordic life insurance companies. *Scandinavian Insurance Quarterly*, 2015(1).

- Sabbagh, K., Friedrich, R., El-Darwiche, B., Singh, M., & Koster, A. (2013). Digitization for economic growth and job creation: Regional and industry perspectives. *Global information technology report 2013* (pp. 35–42). Geneva, Switzerland: World Economic Forum.
- Swiss Re. (2015, June). Mortgage protection gap – Asia Pacific. Fact sheet.
- Voutilainen, R. (2006). *In search for the best alliance structure between banks and insurance companies* (PhD dissertation). Helsinki School of Economics, Finland.
- Voutilainen, R., & Koskinen, L. (2017). Customers' opinions on incentive based insurance. *Journal of Insurance and Financial Management*, 3(1), 30–52.
- Weill, P., & Woerner, S. L. (2013). Optimizing your digital business model. *MIT Sloan Management Review*, 54(3), 71–78.
- Zang, Y., Zhang, F., Di, C., & Zhu, D. (2015). Advances of flexible pressure sensors toward artificial intelligence and health care applications. *Materials Horizons*, 2015(2), 140–156.
<https://doi.org/10.1039/C4MH00147H>