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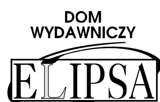

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Problems and Opinions

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Financial market supervision: recent developments and challenges ahead

Abstract

Supervision of the financial markets has become over the last twenty years or so, an increasingly important element of the financial system. It is progressively moving away from passive compliance checks, towards becoming a real and active influence of the financial markets. It is encompassing a growing range both of issues and entities and is undertaking an ever-deeper insight. Financial supervision is also increasingly acquiring regulatory powers through the extensive application of self-produced 'soft' regulatory norms as well as accumulation of resources. (proliferating particularly after the recent global financial crisis).

The goal of this article is to provide a systematic review of principal challenges currently facing financial supervision. The article is split into three parts. Its first part discusses the theoretical foundations of the supervisory system trying to indicate the sources of its powers, including its societal role. It deserves more attention in view of the unprecedented powers acquired by supervisors over supervised institutions and the financial markets. In the second part we take a close look at the changing supervisory paradigm in its current form. The third part reviews the new challenges facing financial supervision in its search for innovations which adapt to new requirements, and the available opportunities in the development of its new toolkit.

Key words: supervision, supervisory paradigm, supervisory toolbox, macroprudential approach

JEL: G18, G22, G28

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1. Introductory remarks

Supervision of the financial markets has become over the last twenty years or so, an increasingly important element of the financial system. It is progressively moving away from passive compliance checks, towards becoming a real and active influence of the financial markets. It is encompassing a growing range both of issues and entities and is undertaking an ever-deeper penetration into the material processes of the financial market and in the activities of the financial institutions. Amongst other things, supervision of the market is also increasingly acquiring regulatory powers of the financial markets through the extensive application of self-produced 'soft' regulatory norms. Supervisory activities should therefore attract growing attention of both theoreticians and practitioners.

All of this results in the increasing importance of the supervisory system and both its old and new institutions (proliferating particularly after the recent global financial crisis), and of the resources that are allocated to them. The US Securities and Exchange Commission, the most powerful financial supervisor in the world may be taken as a good example of the existing situation. It currently oversees over 4300 stock listed companies with a capitalisation level of over US $30 trillion. It supervises the equity market of an annual value of around US $80 trillion and of an approximate debt market of US $40 trillion. It also directly supervises over 26000 registered investment companies. It has on its payroll over 4500 people of which 1200 are in enforcement alone.

The goal of this article is to provide a strategic overview of principal challenges currently facing financial market supervision. Its first part discusses the theoretical foundations of the supervisory system trying to indicate the sources of its powers, including its societal role. It deserves more attention in view of the unprecedented powers acquired by supervisors over supervised institutions and the financial markets. In the second part we take a close look at the changing supervisory paradigm in its current form, which emerged in the aftermath of the recent global financial crisis. The third part of the paper reviews the new challenges facing financial supervision in its search for innovations and adequate supervisory tools, all while adapting to new needs and available opportunities.

2. Theoretical foundations – why is financial supervision needed

The oversight of the financial market, referred to as supervision over the financial sector, or simply financial supervision, means application by the State of administrative law vis a vis financial markets and financial institutions, to ensure that their activities comply with the law. Today this formal compliance is frequently broadened to also include the adequate method of business.

This oversight may relate to various areas of financial activity and may be exercised by either a single, a few, or by more numerous specialised entities.

Contrary to what one might think, neither the concept itself nor the premises of supervision over the financial markets are based on uniform understanding and interpretation. Theoretically, achievements with regard to supervision are particularly poor[1].

The principal components of supervision consist of controlling supervised entities and the modification of their activities by means of applied supervisory instruments. Thus, supervision not only checks for compliance with the requirements of the law and method of business, but must also have the means of influencing the behaviour of the supervised entities. In other words, it needs to possess the measures to enforce its will. Without such measures, the supervising authority is no more than a passive observer of the events. At the same time, supervised entities must accept the supervisory activities undertaken by the oversight organs and cooperate with them in the course of their activities.

The special role of the public oversight system includes its powers with regard to financial institutions as well as its far-reaching quasi-ownership rights. This role however, is currently incomparable to any other sectoral solutions, and has not yet been the subject of intense theoretical interest[2]. A lot more consideration is devoted to the issue of how to perform various supervisory tasks than to the premises of special supervisory powers and their boundaries[3].

Most often, the particular importance of the financial system and financial institutions in the operation of microeconomic and macroeconomic systems, as well as the need for the protection of clients' funds are given as the justification of its unique role[4]. This is not a convincing argument, as there are many examples of equally important human activities. Some examples of these exist in the areas of health, safety, energy, transport, nuclear energy, operation of the internet, and the digital economy, where public regulatory and supervisory intervention is much weaker, if any exists at all. There is no control and certification of their market access, no control and certification of the qualifications of their shareholders and no control and certification of key people including members of the management board and supervisory boards in the institutions concerned. There is also no control and certification of internal corporate governance and applied business models, no control and certification of IT systems used, and an absence of rules for leaving the market or administrative control of product policy etc.

[1] D. Masciandaro, M. Quintyn, *The evolution of financial supervision: the continuing search for the Holy Grail*, 263–318, [in] Balling M., Gnan E. (ed.), *50 Years of money and finance: lessons and challenges*, Vienna: Suerf, Larcier, 2013.

[2] J. Monkiewicz, *Wyzwania współczesnego nadzoru nad rynkiem finansowym*, [in:] L. Gąsiorkiewicz, J. Monkiewicz (red. nauk.), *Wyzwania współczesnych rynków finansowych*, Wydział Zarządzania, Politechnika Warszawska, 2019, pp. 61–74.

[3] W. Szpringer, *Instytucje nadzoru w sektorze finansowym. Kierunki rozwoju*, Poltext, 2014.

[4] P. Zawadzka, *Modele nadzoru rynku finansowego*, Cedewu, 2017, pp. 24–25.

So, what exactly is the problem with the financial markets and financial institutions? Why have these special rules emerged and why are they are tolerated and expanded?

The best-known theoretical attempt to address this issue is perhaps the theory of representation which was formulated in 1994[5].

In line with this concept, the special powers of public supervision in the financial market is the result of the coexistence of a series of unique factors. The most important of them is the fact that basic financial institutions such as banks, in addition to insurance and investment funds, apply a specific business model. The essence of the model relies on the financing of their operations to a large extent by debt, rather than by their own funds. They are the debt driven institutions. The financial leverage ratio, measured as the ratio of assets to equity, is usually above the level of 10 and can reach much higher levels.

This debt is incurred mostly from unprofessional market participants who are unable to control and effectively influence the way it is used by financial institutions, as banks do in the case of non-financial corporations. It would require, among other things, that they receive adequate information from the boards, possess appropriate competencies as well as adequate economic potential to perform monitoring duties.

In practice, such a business model may produce a strong tendency in financial institutions to excessively charge their resources with risk. The reason is that the bulk of possible losses is borne by clients who, with their funds, finance the lion's share of the banks' activity. On the other hand, if this activity brings positive results then the entire surplus falls to the financial institutions, ultimately to its investors, who do not share such financial success with others. This asymmetrical balance in the financing of losses and the appropriation of additional benefits may ultimately induce shareholders of financial institutions to exert undue influence on their management boards to take excessive risk.

Additionally, the boards themselves may be the source of an excessive level of risk accepted by the institutions managed by them. This is due to the architecture of their remuneration systems. Its characteristic feature is the widespread use of variable remuneration elements, which depend on the current (and thus short-term), economic results of the institutions they manage. Such management policy is further favoured by the fragmentation of the shareholding structure and its high fluidity due to the predominance of speculative thinking among investors. It results in a significant autonomy of management structures in relation to their shareholders and limits the possibility of the effective corporate control in the entities owned by such a shareholder base.

When taking into account the macroeconomic importance of the financial system and threats to financial stability resulting from its improper functioning, in certain situations it is justified to limit ownership rights and the economic freedom of fi-

[5] M. Dewatripont, J. Tirole, *Prudential Regulation of Banks*, MIT Press, 1994.

nancial institutions. This can be done by creating a public system that will exercise supervision over the risk management system in financial institutions in the name of their clients, and to an increasing level, in the name of their owners. This is precisely why supervisory systems grow, prosper and gain in importance with subsequent financial crises. The growing degree of supervisory penetration into modern financial systems indicates that such a direction of thinking is finding increasing acceptance.

3. New paradigm of the financial markets supervisory model

The pillars of the financial sector supervisory system are in keeping with the dominant view of the features and characteristics of financial activities. It should be noted that the basic components of this view are (at least from the 1980s), common to all segments of the financial market, including the banking, insurance and securities markets. To elaborate, the banking sector has for a long time enjoyed a special role, thus leading to the dominance of other related areas by the banking model. It is still also the case today.

The model, sometimes referred to as a paradigm, always changes as a result of a change in dominant views, which most often occur as a result of some external shocks. These especially occur in the form of a financial crises. Testing its resilience by these external shocks is probably the best way to check its correctness and to formulate possible normative proposals aimed at modifying the existing regulatory and supervisory model. In this sense, it is legitimate to treat the existing regulatory and supervisory model as a cumulative set of responses to crises experienced in the past.

As a result of the experience of the last global financial crisis, there is a rapid and deep change in the paradigm that had been in force before its outbreak. This paradigm, called the Washington consensus, due to the special role of the International Monetary Fund in defining global financial standards, was in force since the 1980s[6]. Boiled down to its essence, it is an absolute belief in the rationality of financial markets. They were considered to be essentially effective, although prone to short-term turmoil. Their proper functioning required only good access to market information by market participants. The functioning of these markets should not be disturbed by public intervention. It was viewed that only the efficient operation of their own mechanisms should be enabled. This consistently meant assigning the main role to market discipline, supported only in a second row by regulatory discipline. This consensus acknowledged that the financial system is safe through private risk management at the level of individual financial institutions. The quality of this management was guaranteed by public financial supervision systems in the form of micro-prudential supervision. The supervisors focused mainly on the financial sta-

[6] E.A. Helleiner, *Bretton Woods Moment? The 2007–2008 crisis and the future of global finance*, International Affairs, 86(3), 2010, pp. 619–636.

bility of individual entities without taking into account their external links and the external consequences of their decisions. However, their task was not to interfere in the internal corporate governance of these entities, their risk culture, or the business models adopted by them.

It was also believed that financial innovations are by definition good as they increase the resilience of financial systems to shocks and increase the quality of risk management. They were viewed therefore as a desirable element of financial development and financial systems.

Supervision in this system was formal and superficial, with no special material powers and the sole object of its care was the safety of individual financial institutions. There was a belief that the whole system would then be safe.

In general, the heart of the Washington consensus constituted a kind of 'regulatory trilogy' – greater transparency, more disclosure, and better risk management by financial institutions[7].

The crisis has led to the underlying belief in the rationality of markets and financial institutions to be questioned. Before the crisis, it seemed that possible problems related to insolvency might affect rather small, 'lower-grade' institutions of the system. It was believed that large, first-class financial entities had their own experts, excellent risk management systems, flawless procedures of conduct, and were basically resilient to eventual instability. However, the crisis showed that this did not work and that the biggest problems came from large, rich and innovative institutions. Their risk management systems proved to be unreliable and provided improper information and false solutions when they started to operate under stressful conditions.

The new consensus, known as the 'Basel' consensus – from the place where the centre of global regulatory solutions in the financial sector is now located, is based on quite a different premise. Its starting point is the assumption that the financial market is fundamentally unstable and pro-cyclical, with a tendency towards herd behaviour. Its instability is further increased by the excessive complexity of financial systems and by the business models used, as well as by the financial innovations introduced into circulation[8].

This may sometimes require appropriate public intervention prohibiting the use of certain solutions in financial models or the prohibition of – or restrictions on – the sale of certain products. By definition, innovation has ceased to be something good and sought after, but has become as an element increasing the complexity of the financial system and in some cases increasing its instability. In addition to this, internal corporate governance and internal risk management by financial institutions have become elements subject to the assessment and validation processes of supervisory bodies.

[7] J. Eatwell, *Practical proposals for regulatory reform*, [in] P. Subacchi, R. Monsarrat (eds.), *New ideas for the London summit: recommendations to the G20 leaders*, Royal Institute for International Affairs, Chatham, The Atlantic Council, 2009, pp. 11–15.

[8] A. Baker, *The new political economy of the macroprudential ideational shift*, New Political Economy, 18(1), 2013, pp. 112–139.

Table 1. Elements of the old and new supervisory paradigms of financial markets

Areas	Perception of financial markets	Enforcement Instruments used	Characteristics of supervision
Old consensus	– rational, wise and self-healing – financial innovations as an important component of financial stability and safety – corporate governance and business models subject to free private choice	– market discipline supported by regulations – extensive market transparency – private management of financial risk	– formal and superficial – micro-prudential perspective – safety is a private domain – supervision isolated from politics
New consensus	– pro-cyclical, often unreliable, without warranty of self-repair – financial innovation a possible factor of the destabilization of the financial system – corporate governance and business models subject to public scrutiny	– regulatory discipline supported through the market as well – extensive supervision powers – public management of financial risk	– material, deep and multi-pillar – macro-prudential perspective taking into account mutual connections – safety of the public domain – consumer protection an important component of the supervisory system – supervision linked to politics

Source: own elaboration based on A. Baker, *The new political economy of the macroprudential ideational shift*, New Political Economy, 18(1), 2013, pp. 112–139.

The Basel consensus is giving the macro-prudential perspective a fundamental role, which in reality constitutes a call for the public risk management of the financial system. In this way, financial safety becomes a public domain, and financial supervision over the market is justified to become material and deep. This approach transfers to the state huge responsibility and a huge reputational risk that it will have to face. Such an approach also gives a new role to central banks, which necessarily become the most natural macro-prudential institutions in national financial systems.

The new consensus places regulatory discipline at the forefront of market enforcement measures, which is supposed to correct market mechanisms. By doing so it also strongly increases the role and responsibility of supervisory systems. This also

includes questioning the principle of the inviolability of private ownership and the consent in crisis management to the application of solutions clearly limiting ownership rights. These are the so-called recovery and resolution procedures and in particular special recovery and liquidation procedures in the event of a systemic threat to the financial system[9]. The systems in question have been developed so far mainly in the banking sector, but the intention of global regulators, is that they are also meant to function in the insurance market and some parts of the capital market. Decision-making powers in this area are located either in special institutions created for this purpose or become part of the architecture of existing financial supervision. In Poland, for example, the functions of resolution management have been taken over by the Bank Guarantee Fund.

Another fundamental element of the new supervisory paradigm in finance is the dissemination of multi-pillar supervisory systems. Thus, apart from the classic micro-prudential bodies (which became common in the financial markets in response to the wave of their liberalisation as early as in the 1980s), macro-prudential supervision, which was previously unknown, is quickly appearing. In addition to the supervision of consumer rights and interests it is becoming more visible as a separate area of supervision.

Table 2. Micro and macro-prudential supervision – basic characteristics

Specification	Micro supervision	Macro supervision
Direct purpose	Limiting the risk for a single financial institution	Limiting the threat to the financial system as a whole
Final purpose	Protection of clients and investors	Avoiding the macroeconomic costs of the crisis
Correlations and mutual relations between financial institutions	Not significant	Very important
Perspective of risk assessment for financial stability	From the point of view of risk for a single institution ('bottom up')	From the point of view of the risk to the stability of the whole system ('top down')
Subject of analysis	Individual institutions	Entire financial system
Time perspective of analysis	Approach based on the past ('backward looking')	Approach based on the future ('forward looking')

Source: C. Borio, *Implementing a macroprudential framework:blending boldness and realism,* BIS, 2010, p. 18; M. Kabza, *Źródła ryzyka systemowego i metody jego ograniczania na przykładzie kredytów walutowych w systemach bankowych krajów Europy Środkowo Wschodniej,* Key Text, 2014, p. 63.

[9] Directive 2014/59/EU of the EP and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms.

Macro-prudential supervision has different objectives, a different analytical perspective and a different subject of interest from micro-prudential supervision, although it often uses the same instruments. Its main goal is to avoid the macroeconomic costs of financial crises, and its area of interest is the entire financial sector.

Macro-prudential supervision also has a different manner of accomplishing its tasks than micro-prudential supervision does. It is fundamentally based on applying to the world of financial institutions, new regulation standards that address identified aspects of systemic risk. This may concern, for example, new capital requirements towards the supervised institutions, the introduction of anti-cyclical buffers, new border levels of their debt, leverage ratios, the introduction of LTV or DTI thresholds, etc.[10]. In principle macro-prudential supervision decisions assume therefore, the form of new regulations introduced to the financial system. It is thus, contrary to micro-prudential supervision, directly related to regulatory rights that have a legislative character. Basically, it is a legislative-supervisorial hybrid. It must thus remain in close relation to entities from the legislative world, which practically means its strong institutional relationship with governmental institutions from the world of politics.

This supervision has no controlling or sanctioning instruments over the financial institutions which it supervises, which are so typical of micro-prudential supervision. That is why for its operational activity it must remain in close cooperation with supervisorial systems of a micro-prudential character, which perform tasks of a direct enforcement type.

Along with supervision of a macro-prudential character, a characteristic of modern supervisory systems is the appearance – increasingly independent and separate – of supervision over the protection of the rights of consumers[11]. This is connected not only with the regulatory need in this evermore complex world of more protection for consumers, but also of the growing awareness of the fact that insufficient protection for consumers can lead to the destabilisation of the entire financial system. Its proper formation is thus not only in the interest of private parties but of the public as well[12].

The increase in the authority of supervisory systems accompanies their growing politicisation that pertains not only to the stage of crisis management but also to the conducting of normal supervision in normal times[13]. One way in which this manifests itself is in the direct participation by representatives of governmental insti-

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[10] D. Schoenmaker, P. Wierts, *Macroprudential supervision: from theory to policy*, ESRB, WPRS 2, 2016, pp. 5–10.

[11] J. Monkiewicz, M. Monkiewicz, *Ochrona konsumentów w nowym paradygmacie regulacyjno-nadzorczym rynków finansowych*, [in:] J. Monkiewicz, M. Orlicki (eds), *Ochrona konsumentów na rynku ubezpieczeniowym w Polsce. Współczesne wyzwania*, Poltext 2015, pp. 13–38.

[12] Global survey on consumer protection and financial literacy: oversight frameworks and practices in 114 economies, The World Bank, 2013.

[13] S. Gadinis, *From independence to politics in financial regulation,* California, California Law Review 2013, pp. 327–406.

tutions, in the process of exercising supervision, as well as in the process of undertaking decisions. This is a fundamental change in relation to the old consensus in which the basic characteristic of financial supervision was its broad understanding of political neutrality[14].

4. Innovations in the supervisory toolbox

Since the recent global financial crisis fundamental changes taking place in the general supervisory paradigm have been accompanied by the application of many new innovative supervisory tools, frequently described as supervisory instruments. They are supposed to enhance the effectiveness and efficiency of the supervision and better reflect the new market reality. They are also a pragmatic reflection of the new tasks and powers allocated to the supervisory institutions. Interestingly enough they are so far not subject to comprehensive analysis and empirical evaluations, either in Polish or international studies. This is in spite of their frequently repressive nature and deep influence on the material processes taking place in the financial markets. Let us briefly elaborate on their spectrum. We will concentrate our attention on early supervisory powers, stress tests, supervisory technology (suptech) and whistleblowers, which are the cornerstone of the new supervisory toolbox.

a. Early supervisory powers

As a matter of principle this is about undertaking supervisory interventions before there is a breach of prudent conduct[15]. The aim of these activities is to limit the impact of the material effects of bankruptcy on the stability of the financial system. Early supervisory powers have been applied initially in the supervision of banking to accelerate the actions against banks where weaknesses have been identified, even though no formal breach of law has taken place. Thereafter this instrument has been applied to other segments of the financial sector, in particular the sectors of insurance and securities.

Historically this instrument was first applied in the United States back in 1991, in response to the financial crisis taking place in the late-1980s in savings and loan associations. This crisis led to the bankruptcy of around 1000 savings and loan associations out of a total of over 3200. It resulted in the public bailout to the value of over US$130 billion. As a result, the US Congress approved new regulations which effectively reinforced supervision of the banking institutions and subjected them to federal oversight. It included inter alia annual supervisory reviews, auditing and risk evaluation as well as Prompt Corrective Actions (PCA). Thereafter this instru-

[14] D. Masciandaro, R.V. Pansini, M. Quintyn, *The economic crises: did financial supervision matter?* IMF, WP 11/261.

[15] Framework for early supervisory intervention, BIS, BCBS, 2018.

ment became popularised by the recommendation of the Basel Committee and became approved in 2014 as part of the supervisory practice of the EU[16].

The essence of this tool lies in the possibility of undertaking supervisory actions of either a corrective or liquidating nature through a supervising body, before an institution falls into the state of formal insolvency. It means that the point of activation is not a breach of prudential regulatory prescriptions and non-compliance with existing regulations, which is the norm in standard supervisory instruments. It means that the actions are taken due to the non-compliance with the spirit of regulation and possible threats which may materialise in the future[17]. It effectively means allocating to the supervisory system, the rights to act on the basis of expert assessments and undertake decisions in the administrative process.

Undertaking such measures frequently means the limitation of the ownership rights of the shareholders and boards of the institutions involved. In extreme cases it may mean the effective transfer of the said rights to the supervisory institutions or other indicated bodies[18].

An extremely important consequence of applying this tool is the transferring of bankruptcy decisions from civil judicial process and private law, to administrative procedures and public law. Amongst other things, this provides different priorities to the process. The major aim of the whole process becomes the lowering of the bankruptcy process costs, the protection of the critical functions of the institutions involved and financial stability. These aims are not always in the interests of individual claim holders.

b. Stress tests

Stress testing is a technique, whereby an early measurement is taken of the sensitivity of individual financial institutions and/or their groups. The entire financial system may be affected by the events characterised by having a small probability of their appearance, but by having great importance once they come up[19].

Stress tests encompass the techniques of both a quantitative and qualitative nature. They are used to assess the degree of impact on a selected institution in a defined time horizon, of unfavourable factors, in particular the change in risk level.

Stress tests are an extremely important tool of forward-looking supervision in the process of a risk management process within financial institutions. They allow taking supervisory action before negative scenarios may take place. It is an important

[16] Understanding bank recovery and resolution in the EU; a guidebook to the BRRD, World Bank Group, April 2017.

[17] Frameworks for early supervisory intervention, BCBS, BIS, March 2018, p. 4.

[18] J.P. Svoronos, *Early intervention regimes for weak banks*, FSI Insights, BIS (April 2018), pp. 18–34.

[19] M. Borsuk, K. Klupa, *Testy warunków skrajnych jako metoda pomiaru ryzyka banków*, Bezpieczny Bank, 3(64), 2016, p. 29.

supervisory innovation which negates the reactive supervisory model, which in essence lies in the taking of measures post factum. Hence, the supervision is frequently in hindsight and thus less effective.

Stress tests came into national regulation and supervisory practice after adoption of Basel III. The US was the pace setter, introducing this tool in the Dodd-Frank Act of 2010. The EU followed with CRD I[20].

The aim of stress tests includes:

- the identification of key risk factors within an institution
- the assessment of the institutional sensitivity regarding changes in the institution's key risk factors
- the evaluation of the impacts of potentially unfavourable changes in factors surrounding institutions in their risk profiles[21].

Stress tests may be carried out in different planes. In this regard, the EBA recommends four different approaches:

- a solvency stress test, which assesses the impact of future macro and micro factors upon the general capital position of the institution, including its minimum capital needs.
- a liquidity stress test where changes taking place both within the institution and outside it are evaluated from the point of view of its liquidity.
- a scenario analysis where the subject matter of the analysis is the resistance of the institution against the appearance of different scenarios which rely on the simultaneous change in a range of factors. The scenarios may be based on historical events or be of a completely hypothetical nature.
- a sensitivity analysis where the subject matter of the investigation is the impact on the institution of a single risk factor.

c. Supervisory technology (suptech)

Simply speaking, suptech is a copy of fintech in the area of supervision. It is defined as the application of innovative technological solutions in financial supervision. It may entail the digitization of supervisory reporting and the implementation of other supervisory processes like monitoring, predictive analysis and use of robo-advisors[22].

Basically, the aim of suptech application is a more effective and proactive monitoring of risk and compliance issues in the supervised entities. Its development is a natural consequence of the digitisation of financial market activities.

[20] Final report on guidelines on institutions stress testing, EBA, GL-2018-04.
[21] E. Renz, M. Tarnowska, *Testowanie warunków skrajnych*, KNF, 2011, p. 3.
[22] D. Broeders, J. Prenio, *Innovative technology in financial supervision/suptech/-the experience of early users*, FSI Insights, No 9, BIS, FSI, July 2018, p. 1.

There are two principal areas of suptech application – aggregation of data and the processing of this data. New applications are widely utilised for supervisory reporting, management of data bases and virtual assistance. An example is the utilisation of supervisory data directly from the information systems of financial institutions, their automatic validation and consolidation. Additionally, they can be used to communicate with customers and with the processing of their claims, to better detect eventual irregularities and fraudulent activities of the supervised entities.

In the second area, data analytics, suptech applications may be used for the monitoring of the processes taking place in the financial markets. They may also be used for the detection of improper market conduct, utilisation of the system of enhanced risk indicators or systems of early warning. Examples include detection of insider trading activities or identification of money laundering incidents. Finally, it may find its direct application in micro and macro supervisory processes.

d. Whistleblowers

A more recent supervisory tool rapidly gaining importance in supervisory practice of the financial markets and its institutions, relies on making use of the system of reporting on financial abuses by outsiders to the supervisory bodies. These people are referred to as being part of the whistleblower's community. The notion of whistleblowers may be defined in many different ways which we will omit here. Its essence however always lies in the reporting of illegal, improper, dangerous or unethical practices of employers. These practices may have been revealed by their current or past employees, and which provide such information revealing their identity to the appropriate supervisory authority[23].

The proportion of people covered by this notion may be of course much larger, including all those which voluntarily provide the tips on identified irregularities. Such an approach is for example used by US Dodd-Frank Act of 2010.

The whole concept of whistleblowing is very simple. It effectively entails the socialisation of the part of the supervisory system which becomes co-generated by private people. It is interesting to note that these people are frequently top experts in financial matters, often more superior than officials from the supervisory institutions. They might be unwilling to work within these institutions due to their uncompetitive work terms and limits associated with their public duties. Use of whistleblowers allows supervisory bodies to effectively enhance their resources and keep the costs down. In reality, the practical implementation of a whistleblowing system is not an easy task and principally requires the provision of a protective system to the whistleblowers from the actions taken against them by the affected subjects. Its effective use may also require the application of a special rewarding system.

[23] Ł. Cichy, *Whistleblowing w bankach*, KNF, Warszawa 2017, p. 6.

Initially a new tool was developed in US in the course of the dotcom financial scandals of 2001–2002.The scandals led to the enactment in 2002 of the Sarbanes-Oxley Act which amongst other things substantially reinforced the corporate governance rules within public companies. The introduction of a whistleblowing system also became a part of the new system. It was also given new life with the subsequent enhancement of the Dodd-Frank Act in 2010, which provided a formal rewarding system for the whistleblowers. According to the new rules all tips which result in the penalty of over US $1 million are rewarded by US SEC, which supervises the system. The reward is in the range of 10–30% of the payments received. In effect the whistleblowing became a very effective supervisory tool. According to the available statistics an annual delivery of tips amounts to over 5000. The total amount of remuneration paid between 2010–2018 accounted for over US $326 million. The highest single reward paid so far amounted to US $35 million[24].

5. Concluding remarks

As follows from the considerations provided in this article, supervision over the financial market is currently undergoing a period of dynamic change. It is becoming an increasingly important component of the financial system. It is moving progressively away from the role of a passive guardian of compliance with regulatory requirements, to the active shaping of reality. It is also covering an increasingly broad range of subject areas and is making deeper and deeper inroads into the material processes of the financial market and in financial institutions. Its internal structure is becoming more and more complex and extensive. It is also becoming an increasingly important market regulator, with growing technical competence, extensively applying soft regulation. Everything indicates that after the central bank, we are witnessing the birth of the second public pillar of the financial system, and a successive stage of the limitation of economic freedom in the financial market.

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