Preserving the stability of the banking system: the 'bank safety net'

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A. The financial system: functions, infrastructures, services, groups, inclusion

1. The functions of the financial system[1]

1.1 Introduction

In market economies, the financial system is one of the systems set up for the provision of services, within which the following two functions are performed through a complex nexus of markets, services providers and infrastructures:

(a) The first function is channelling funds from the economy's positive savers to the negative savers (for more details see below, **under 1.2**).

Here, it is necessary to make a semantic clarification (aa) and an important note (ab).

(aa) The term 'channelling of funds'[2] is used in a dual manner comprising two individual parts:

- funds provided by positive savers, in the form of bank deposits and insurance premiums, for the purchase of debt instruments issued by negative savers and traded in financial markets (constituting borrowed funds for negative savers), and
- funds provided for the purchase of equities issued by negative savers/ companies and traded in financial markets (constituting own funds for negative savers).

In this context:

- 'positive savers' mean the economic units (households, enterprises, and the government) offering their available income or property for saving, and
- 'negative savers' mean the economic units that seek either borrowed funds to meet their investment, mortgage or consumer needs or (in the case of enterprises with the legal form of a public limited liability company, a stake in their own funds).

In open economies (i.e. economies where there are no restrictions on the international movement of capital), positive and negative savers may also be foreign natural or legal persons.

(ab) In every economy, the amount of funds channelled through the financial system is merely a subset of the funds generally channelled from positive to negative savers.

Borrowed funds are also channelled to negative savers through private lending, while a large part of own funds of public limited liability companies and funds of other corporate forms is drawn from natural and legal persons outside the financial system. Consequently, households and enterprises, as negative savers, can draw funds from positive savers directly without the intermediation of the financial system. The financial system brings added value to the economy by, inter alia, offering businesses the opportunity to draw own and/or borrowed funds from a pool of positive savers to which they either have no access or they have access at a disproportionately high cost.

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[1] The present sub-Section of this study provides an introduction to the functions and infrastructures of the financial system, as well as to financial services. In this respect, the following should be pointed out:

(a) There is quite extensive literature on the issues discussed in this study and it would thus be impossible to cite it exhaustively. Consequently, all bibliographical references are mere indications.

(b) It is the author's intention to distance himself from any legal regime governing the operation of the financial system, as this would lead to restrictive results.

[2] See **Mishkin (2007)**, p. 23, and **Allen and Gale (2001)**.

(b) The second function of the financial system consists in enabling natural and legal persons (including positive and negative savers) to make payments without using cash, namely coins and banknotes.[3]

For the most part, the literature on the functions of the financial system focuses on the channelling of funds from positive to negative savers (first function) and does not address cashless payments as a second function. The author is of the view that this approach is restrictive based on the following arguments:

(i) Payment instruments and fund transfer services, through which this function is performed, are principally offered by financial firms, most of all banks, in the context of the first function.

(ii) In every economy, payment instruments and fund transfer services providers, i.e. payment services providers, are authorised and supervised by those authorities that also supervise financial firms in performing the first function of the financial system. This also applies mainly to banks.

(iii) As discussed below with regard to the infrastructures of the financial system, it is impossible to make a distinction between the securities clearing and settlement systems and the payment systems used to finally settle the payments for the purchase of securities.

(iv) Finally, it should be noted that certain legal acts that form the sources of international, European and national financial law explicitly treat the provision of payment instruments and fund transfer services as financial services (see below, **under 3.3**).

In this respect, it is the author's view that the function of contributing to cashless payments is an integral part of the financial system.[4]

1.2 The first function: channelling funds from positive to negative savers

1.2.1 Introductory remarks

As mentioned above, the first function of the financial system consists in the channelling of funds from the economy's positive savers to the negative savers. This function is performed via two channels:

- direct financing of negative savers by positive savers (see below, under 1.2.2), and
- indirect financing of negative savers by positive savers or financial intermediation (under 1.2.3).[5]

1.2.2 Direct financing

1.2.2.1 The concepts of financial markets and capital markets

The channel of direct financing from positive to negative savers is activated through financial markets, defined as the markets where:

- debt instruments and equities are issued and traded (see under 1.2.2.2.1 below), and
- derivatives are traded (under 1.2.2.2.2).

[3] See below, **under 1.3**.

[4] See **Stillhart (2002)**, pp. 105-121.

[5] See, by mere indication, **Mishkin (2007)**, pp. 23-32 and 35-42, respectively.

Financial markets are also referred to as money and capital markets.[6] The distinction between money markets and capital markets is made on the basis of the maturity of financial instruments[7] traded therein:

- short-term debt instruments (with an initial term of up to one year), issued by businesses and governments, are traded in money markets, whereas
- long-term debt instruments (with an initial term of more than one year), issued by businesses and governments, are traded in capital markets along with equities of listed companies.[8]

For the sake of brevity, the terms 'financial markets' or 'capital markets' will be used in this study to describe both money and capital markets – unless otherwise specified.

1.2.2.2 Categories of financial markets

1.2.2.2.1 Markets for debt instruments and equities

Markets for debt instruments[9] and equities (often collectively referred to as 'transferable securities') are divided into separate categories according to the following criteria:

- the function performed in the market (under a below), and
- the way the market is organised (under b).

(a) Depending on the function performed, debt instruments and equities markets are divided into primary markets (under (aa)), and secondary markets (under (ab)):

(aa) A 'primary market' is a financial market to which certain classes of negative savers[10] can turn in order to draw either borrowed and/or own funds from positive savers through the issuance of debt instruments and equities, respectively.[11] Debt instruments and equities can be sold to positive savers either by private placement, or by a public offer procedure (which entails enhanced regulatory intervention requirements for investor protection).[12]

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[6] *Ibid*., pp. 23-25.

[7] 'Financial instruments' is a general term (also widely used in legislation), which includes debt instruments, equities, and derivative financial instruments. See **Table 2 below**.

[8] See **Mishkin (2007)**, pp. 27-28.

[9] The definition of the term 'debt instruments' includes all types of instruments (now mostly dematerialised) incorporating a usually interest-bearing claim of the bearer (the positive saver) against the issuer (the negative saver), such as bonds and bills. For more details, see **Mishkin (2007)**, pp. 25-26.

[10] The classes of negative savers with access to capital markets are limited in relation to those with access to the banking system. More specifically, access to capital markets is limited to:

- governments when issuing debt instruments, and
- as regards enterprises, to public limited liability companies drawing funds through the issuance of equities and debt instruments.

[11] For enterprises/negative savers, issuing debt instruments in the markets is an alternative to borrowing funds through the banking sector. On the contrary, choosing between a loan (in general) and the issuance of equities depends on the amount of leverage they wish to be exposed to.

[12] See below **under B 2.3**.

(ab) A 'secondary market' is a financial market where debt instruments and equities issued by negative savers are traded. This is the market where the current market value of financial instruments is fixed so as to ensure, *inter alia*, their liquidity.

(b) Depending on the way in which they are organised, debt instrument and equity financial markets are divided into regulated markets (see under (ba) below) and non-regulated markets or over-the-counter markets (OTC) (under (bb)):[13]

(ba) A 'regulated market' is a financial market authorised in a state by the competent supervisory authorities of the capital markets and operating in accordance with the specific rules laid down by the legislation of that state. Stock exchanges are a typical example of this.[14]

(bb) A non-regulated market is initially a financial market that does not fulfil the above-mentioned conditions and in which investment services providers buy and sell financial instruments in the name and on behalf of their clients at prices fixed according to the given demand and supply.[15] At the same time, in the past few years, rapid technological advances and novel applications have made it possible for banks, investment firms and the markets themselves, *inter alia*, to develop alternative trading mechanisms enabling the execution of buy/sell orders for debt instruments and equities outside regulated markets, in particular:

- through multilateral systems operated by a bank, an investment firm, or a market operator and called multilateral trading facilities, also known as 'MTFs', and
- internally within the bank or the investment firm ('internalisation').[16]

1.2.2.2.2 Markets for derivative financial instruments

Derivative financial instruments are instruments available in financial markets allowing on the one hand, to hedge the risks that economic units assume in their commercial (and also financial) transactions, given the price volatility of various parameters (e.g. interest rates, bonds, equities, foreign exchange rates), and on the other hand, to take advantage of speculative opportunities regarding the future price fluctuation of those parameters.[17]

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[13] On this distinction, see **Mishkin (2007)**, pp. 27. Traditionally, regulated markets were known as 'organised markets', a term falling gradually out of use.

[14] Traditionally, stock exchanges were either bodies managed by their members ('mutualisation') or legal persons of public law. Currently, as a rule they are being managed and operated by public limited liability companies (*sociétés anonymes*), which may be listed in regulated markets and are known as 'market operators'. For more information on the 'demutualisation' process, see **Aggarwal (2002)**, and **Steil (2002)**.

[15] Consequently, this market also has a market price fixing mechanism (albeit often inadequate, especially in terms of transparency), which constitutes a condition determining the liquid nature of financial instruments traded therein.

[16] For a precise definition of the terms 'multilateral trading facility' and 'internalisation' and their distinction from the term 'regulated market' (under EU capital markets law), see **Binning and Willey (2008)**, pp. 73-100.

[17] For more details on these financial instruments, see the seminal works of **Cox and Rubinstein (1985)**, and **Hull (1997)**, as well as **Benjamin (2007)**, pp. 64-79, and **McKnight (2008)**, pp. 559-572. See also **Zerey (2010, Hrsg.)**, a study which extensively covers the relevant legal aspects.

Derivative financial instruments are divided into two categories, depending on the way that markets in which they are traded are organised:

(a) The first category includes instruments traded in regulated markets ('exchange-traded derivative instruments'), i.e. exchange-traded contracts such as futures and options contracts.

(b) The second category includes derivative financial instruments developed and valued outside regulated markets, and, as a rule, through the banking system ('over-the-counter derivative instruments') such as forwards, options and swaps. Derivative financial instruments may also be traded in multilateral trading facilities, as already mentioned above (**under 1.2.2.2.1**).

Table 1

Categorisation of financial markets

Markets for debt instruments and equities		**Markets for derivative financial instruments**
Categorisation depending on market function	Categorisation depending on market organisation	Categorisation depending on market organisation
primary markets	regulated markets	regulated markets
secondary markets	non-regulated markets	non-regulated markets

Table 2

Types of financial instruments

1. Transferable securities

2. Money-market instruments

3. Units in collective investment undertakings

4. Options, futures, swaps, forward rate agreements and any other derivative contracts relating to:

- securities, currencies, interest rates or yields, emission allowances or other derivatives instruments, financial indices or financial measures which may be settled physically or in cash,
- commodities that must be settled in cash or may be settled in cash at the option of one of the parties other than by reason of default or other termination event,
- commodities that can be physically settled, provided that they are traded on a regulated market, a MTF, or an OTF, except for wholesale energy products traded on an OTF that must be physically settled,
- commodities, that can be physically settled otherwise and not being for commercial purposes, which have the characteristics of other derivative financial instruments

5. Derivative instruments for the transfer of credit risk

6. Financial contracts for differences

7. Options, futures, swaps, forward rate agreements and any other derivative contracts relating to climatic variables, freight rates or inflation rates or other official economic statistics that must be settled in cash or may be settled in cash at the option of one of the parties other than by reason of default or other termination event, as well as any other derivative contracts relating to assets, rights, obligations, indices and measures not otherwise mentioned in this Section, which have the characteristics of other derivative financial instruments, having regard to whether, *inter alia*, they are traded on a regulated market, an OTF, or an MTF

8. Emission allowances

1.2.2.3 Categories of financial firms

Various categories of financial firms operate in direct financing and can be categorised from a systematic point of view as follows:[18]

(a) The first category includes those providing services on a professional basis, known as 'investment services',[19] to both positive and negative savers on an individual basis. These providers are cumulatively called 'investment firms'.[20] This category includes:

- banks, to the extent that they are allowed by law to provide investment services,[21]
- 'securities firms', which are allowed by law to provide the entire range of investment services, including the execution of orders for the purchase or sale of financial instruments in the name, and on behalf, of their clients, and
- other categories of investment undertakings that have the right to provide certain investment services alone.

The latter subcategory comprises 'investment banks' under US federal financial law. It should be noted that this term often leads to the false impression that these are banks in the traditional meaning of the term, namely financial firms that have the right to accept deposits from the public (as discussed below, **under 1.2.3.2**). This is why in accordance with European financial law, the use of this term is not allowed. Under European law, companies offering the services provided by 'investment banks' in the US fall into the category of 'investment firms'.

(b) The second category of market intermediaries in financial markets includes the 'undertakings for collective investment in transferable securities' (e.g. mutual funds and portfolio investment companies).[22] As a rule, these providers have the legal monopoly of providing financial instruments' portfolio management services on a collective basis, without being precluded from providing at least certain investment services on an individual basis as well.

[18] The mix of providers that can operate professionally by providing investment services in a given state, the terms applicable to the provision of such services and the extent of the investment services provided, are determined by the legislation in force. More often than not, it is legally stipulated that these providers must be authorised and be subject to micro-prudential regulation and supervision.

[19] For more details on these services see below, **under 3.2.1**.

[20] These providers are often referred to as 'market intermediaries'.

[21] See on this below, **under 3.2.2.2** and **3.2.2.3**.

[22] Despite being called undertakings for collective investment in transferable securities (namely equities and bonds), these organisations also make placements in financial derivative instruments.

It is worth mentioning that a type of investment vehicle, known as **'hedge funds'**, has emerged over the last decades. Its operation has only recently, after the recent (2007-2009) international financial crisis, been subject to micro-prudential regulation and supervision, as a collective investment undertaking. This is an asset pool consisting of borrowed funds from (usually high-income) private and institutional investors, placed in various financial instruments, primarily derivatives, with a view to capitalising on the imperfections of the markets and operating at high leverage.[23]

'Private equity funds' are different from hedge funds in terms of their investment strategy which consists in buying equities of non-listed companies, restructuring such companies, and re-selling them at a higher price (usually also aiming at subsequently listing them on a regulated market). The managers of these funds have also been subject to micro-prudential regulation and supervision, just after the recent (2007-2009) international financial crisis.

1.2.3 Indirect financing or financial intermediation

1.2.3.1 The rationale for developing financial intermediation

The second category of channelling funds from positive to negative savers is indirect financing or financial intermediation. According to financial theory, the indirect financing channel has emerged as a result of:

- the (relatively high) cost of transactions in financial markets,
- the (relatively high) credit risk that investments in debt instruments and equities entail for positive savers ('risk sharing'), and
- information asymmetries arising in the relationship between positive and negative savers in the context of direct financing. [24]

These arguments are strong from a theoretical-systematic point of view but have limited practical relevance taking into account two factors: Firstly, banks historically operated as intermediaries before the development of financial markets. In addition, banks and other categories of intermediaries which provide indirect financing services offer the possibility to draw borrowed funds to many categories of negative savers (mainly households and various categories of enterprises) with no access to financial markets, as already mentioned. It is nonetheless true that in most national financial systems indirect financing mainly through banks (**'bank-based' systems**) is more extensive than direct financing, even in the United States and Canada that are traditionally considered to have more advanced financial markets (**'market-based' systems**).[25]

Financial intermediaries[26] operate in the market In order to address the above-mentioned problems. These can be systematically classified into three (3) categories:

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[23] With regard to the operation of hedge funds and the policy objective to regulate and supervise them as financial firms, see **Garbaravicius and Dierick (2005)**, **Chan, Getmansky, Haas and Andrew (2006)**, **Crocket (2007)**, **Ferguson, Hartmann, Panetta and Portes (2007)**, pp. 119-130, and **Athanassiou (2012)**.

[24] On this see **Mishkin (2007)**, pp. 35-39 and 184-198. Specifically regarding the meaning of information asymmetry and the problems that it causes to transactions, see **Rasmusen (1989)**, pp. 181-203 as to 'adverse selection', and pp. 133-179 as to 'moral hazard'.

[25] For more details see **Mishkin (2007)**, p. 36.

[26] The term 'financial intermediaries' covers all categories of financial firms providing services in the financial system in the context of indirect intermediation. For a detailed presentation of

- banks (see below, under 1.2.3.2),
- companies providing credit (under 1.2.3.3), and
- insurance undertakings and pension funds (under 1.2.3.4).

1.2.3.2 Banking intermediation

The first (and most important) category of financial intermediaries consists of banks.[27] In banking intermediation: positive savers offer their borrowed funds in the form of bank deposits,[28] and subsequently banks finance negative savers by providing loans and other credit facilities. The indirect nature of this form of financing lies in the fact that, as opposed to financial markets, no legal or economic relationship develops between positive and negative savers, since positive savers obtain receivables against banks and, for their part, banks obtain receivables against the negative savers that they are financing.[29]

Here, it is necessary to make four (4) remarks:

(a) Positive savers resorting to bank intermediation services include households, enterprises and governments. On the contrary, negative savers include, as a rule, households and (private and state-owned) companies alone, because in developed economies governments draw borrowed funds exclusively from capital markets in order to cover their expenditure (unless they are 'excluded' from these markets as a result of credit rating downgrades, as in the case of Greece, Ireland, Portugal and Cyprus recently due to the fiscal crisis in the euro area). However, there is regulatory intervention in many developing economies, on the basis of which banks are forced to place an (often high) percentage of their deposits in short-term and long-term government bonds not issued in the primary market.[30]

(b) Given their function, banks are one of the most highly leveraged categories of companies, since their borrowed funds are significantly higher than their own funds.

(c) Banks draw borrowed funds not only from depositors, but also from their central bank, from other banks as part of interbank market operations, and also through the issuance of debt securities in financial markets.

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the functions that financial intermediaries perform in the financial system see **Allen and Santomero (1999)**, **Allen (2001)**, **Allen and Gale (2001)**, and **Gorton and Winton (2002)**.

[27] The most characteristic (and in most states the larger in terms of size) category of banks is 'commercial banks'. However in various economies there are also special bank categories, such as cooperative, mortgage, development and savings banks. Enactment of such special banks (often called 'special credit organisations') is usually the result of the legislator's regulatory intervention, notably in developing or less developed economies.

[28] A deposit is not just a loan to the bank, but also a consignment. The level of the interest rate of a deposit is the best indicator of the aspect which prevails (obviously, a higher interest rate reflects a bank's need to attract deposits).

[29] In banking economics, many theoretical models have been created in an effort to identify and analyse the reasons why banks are in a position to offer such services and make the transformations mentioned below. For an overview of these models from the existing extensive literature, see **Allen and Santomero (1999)**, and **Gorton and Winton (2002)**, pp. 5-20.

[30] On the contrary, in every economy banks are free to buy government bonds on the secondary market in the context of their asset management.

(d) Banks do not channel the entirety of their deposits into loans or other credit facilities. Apart from retaining liquid and promptly cashable assets in order to meet depositors' demand for cash withdrawals, banks also invest in financial instruments traded in financial markets in the context of their portfolio management:

- either long-term (included in the 'investment book'), or
- aimed at capitalising on the short-term market conditions (included in the 'trading book').[31]

In their capacity as financial intermediaries, banks make a set of transformations:

- credit risk transformation, as they assume the credit risk of the economic units they finance, transferring the risk of their own solvency to positive savers,
- size transformation, since they convert liabilities of usually small nominal value (e.g. deposits) to large-value receivables (e.g. industrial loans), and
- maturity transformation, since they convert short-term liabilities (e.g. sight deposits) into long-term receivables (e.g. housing loans).

The ability of banks to make these transformations is concurrently the main cause of their (structural) exposure to credit risk, interest-rate income risk and liquidity risk, respectively, and, as a result, the main reason behind the need:

- on the one hand, to manage these risks,[32] and
- on the other, for regulatory intervention aimed at ensuring the stability of the banking system, which can be threatened due to excessive exposure to these risks.[33]

1.2.3.3 Intermediation through non-bank companies providing credit

Companies providing credit constitute the second category of financial intermediaries in the context of indirect financing. Although in every economy, taking deposits from the public is a legal monopoly of the banks, as mentioned above, the service of providing credit on a professional basis may also be offered by other companies, which finance this activity by drawing own or borrowed funds either from the financial system or outside of it, with the exception of taking deposits from the public, *inter alia*: leasing companies, factoring companies, and credit companies.[34]

To the extent that credit intermediation is provided by non-bank unregulated entities, reference is made to the 'shadow banking system'. This is defined as *"credit intermediation involving entities and activities outside the regular banking system"*.

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[31] For a detailed overview of the structure of assets and liabilities in banks' balance sheets along with their off-balance sheet items, see indicatively **Sinkey (1992)** and **Meyer (1996)**.

[32] In order to control their exposure to these risks, banks transfer part of their loans to special purpose vehicles (the **'SPVs'**) through 'asset securitisation' in the context of the 'originate and distribute' model. The significant extent to which banks used this practice is considered to be one of the causes of the recent (2007-2009) international financial crisis. On this see **Borio (2008)**, pp. 1-13.

[33] For more details, see below **under C**.

[34] It should be noted that the intermediation function of these financial institutions is incomplete, in that they only deal with negative savers and not with positive savers.

1.2.3.4 Intermediation by insurance undertakings and pension funds

The third category of financial intermediaries operating in indirect financing are insurance undertakings (see under (a) below)[35] and pension funds (under (b)).[36]

(a) Insurance intermediation is divided into two categories:[37]

(i) The first category is the 'benefit policy' under which the insurance undertaking assumes the obligation to pay the insured a predefined lump sum or annuity (life-insurance and private pension schemes), or compensate the insured person for any financial loss incurred as a result of accident or illness ('accident and illness insurance').

(ii) The second category is 'non-life insurance', which comprises assets insurance, liabilities insurance and maritime insurance. In this case, the insurance undertaking assumes the obligation to restore a specific loss suffered by the insured.

(b) Respectively, pension funds collect funds from contributing employers and employees and then invest them in the financial system, on the one hand, and, on the other hand, collect other assets so that the total generated assets make it possible to pay benefits, following retirement or in the event of death or disability.[38]

1.3 The second function: contributing to making cashless payments[39]

1.3.1 Introductory remarks

The second function of financial systems is to contribute to making cashless payments. This function enables the transfer of funds between households, enterprises and the government, from the payer to the beneficiary (or payee) – indicatively, but not limited – to paying off debts from private and commercial transactions (including financial transactions),[40] and from monetary obligations under applicable legislation or as a result of a court ruling, on condition that there is an agreement not to use cash, namely coins and banknotes.[41] This function is performed:

- either through the issuance and acceptance, from various categories of financial firms, of physical (and in an individual case, digital) payment instruments (see below, under 1.3.2), or
- through the provision, of fund transfer services by these providers, on the basis of payment orders (under 1.3.3).

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[35] Similar to the service of accepting deposits (as already mentioned), insurance (and reinsurance) services are, for the most part, a legal monopoly as well, in the sense that only undertakings authorised as insurance undertakings may provide these services.

[36] Here as well (as in the case of credit companies), intermediation is incomplete, since insurance undertakings and pension funds deal directly only with positive and not with negative savers, but invest their available funds in financial instruments and deposits.

[37] See details in **Mishkin (2006)**, pp. 40-41.

[38] *Ibid*.

[39] See details in **Kokkola (2010)**, pp. 25-37.

[40] Funds may also be transferred in view of a donation (for example, a parent placing an order to credit the bank account of his/her child studying abroad).

[41] There is controversy over whether the use of payment instruments or the transfer of funds by order, without the lender's consent, constitutes due payment against monetary obligations.

Here, it is necessary to make a semantic clarification and an important note:

(a) Consistently with the position that money, i.e. coins and banknotes, is the only means of payment, the term 'means of payment', albeit often used in legislation, should not be used to describe the means enabling the performance of cashless payments such as cheques and cards. This is the reason why in this study, the author has opted for the term 'payment instruments'. Furthermore, it would be a paradox to describe both cheques (being one of the 'payment instruments') and sight deposits required for cheques to be issued as means of payment.

(b) Payment services are mainly provided by banks, but also by various other categories of financial firms, such as payment card companies, fund transfer companies, postal cheques bureaus and other categories of payment institutions pursuant to the provisions of legislation applicable at a given time in a given state. However, the use of payment instruments normally presupposes a bank deposit and, therefore, a bank account, and particularly in the case of fund transfers usually at least one such account.

In this context, it should be pointed out that bank deposits are of material importance to the operation of both the monetary and the financial system, given that:

- they constitute money in the context of the operation of the monetary system (either simply sight deposits under the narrow definition of money or also other categories of deposits under the broader definition of money),
- taking such deposits is one of the core services offered in the context of banking intermediation, and
- the existence of a sufficient balance in a deposit account is usually a condition prior to the use of payment instruments and the activation of fund transfer services.

1.3.2 Payment instruments

A 'payment instrument' is any device and/or set of procedures agreed between the payment services user and the payment services provider and used by the payment services user in order to initiate a payment order.[42] The concept of payment instruments, which can be either tangible or digital, includes the following:[43]

(a) The first category of payment instruments includes cheques.[44]

[42] In this regard, see **Committee on Payment and Settlement Systems (2003a)**: "A glossary of terms used in payments and settlement systems", Bank for International Settlements, March, p. 38 (available at: http://www.bis.org/publ/cpss00b.htm). In this CPSS glossary of terms used in payment and settlement systems, the definition of every payment instrument is accompanied by a reference to other studies of the Committee on special issues relating to payment instruments.

[43] With the exception of cheques, payment instruments are usually also called 'electronic payment instruments'. Note also that over the past few years there has been a great increase in the volume of payments made for the purchase of goods and services via the Internet ('internet payments' or 'e-payments') and mobile applications ('mobile payments' or 'm-payments'). Normally, in these cases, there are no new payment instruments (since the relevant payments are performed either with the use of credit cards or by credit transfer or direct debit), but new channels which are used to direct payment orders to the payment systems. A striking example is the execution of payment transactions, where the payer gives his/her consent to execute a payment transaction via a telecommunications, digital or IT device, and payment is made to the operator of the telecommunications or IT system/network, who then acts exclusively as intermediary between the payment systems user and the provider of the goods and services.

[44] For a definition of this payment instrument ('cheque') according to international standards, see **Committee on Payment and Settlement Systems (2003a)**, p. 12.

(b) The second category of payment instruments are payment cards. Debit cards and credit cards are just two, albeit more frequently used, card types that constitute a payment instrument. Other types include charge cards or travel and entertainment cards, retailer cards, and limited-purpose prepaid cards.[45]

(c) The third category of payment instrument includes electronic money. Electronic money means any value stored electronically in a device,[46] such as a chip card ('hardware-based' or 'card-based' product, a typical example of which is the 'multi-purpose, prepaid, reloadable or not, card' or 'electronic purse'), and a hard drive in a personal computer ('software-based' or 'network-based products', a typical example being **'digital cash'**).

1.3.3 Payment order-based fund transfer services

The concept of payment order-based fund transfer services includes remittances, and services for the execution of payment transactions, notably the execution of credit transfers, direct debits and payment transactions with payment cards.[47]

2. The infrastructures of the financial system[48]

2.2 Introductory remarks

In order to implement the above-mentioned functions of the financial system, two infrastructures are absolutely necessary: payment systems (see **under 2.2** below), and clearing and settlement systems for transactions in transferable securities (**under 2.3**).

There are also other important infrastructures which operate in the financial system, usually on an interbank basis, albeit not as significant as the ones mentioned above:

(a) A category of infrastructure are interbank systems used to collect and process data on the behaviour of negative savers/borrowers across the entire banking system, which banks can then use to perform credit ratings of their borrowers and subsequently adjust their pricing policy accordingly (in favour of 'creditworthy' borrowers), and/or avoid providing loans to borrowers with inappropriate credit ratings.

(b) Another category of infrastructure are interbank systems aimed at establishing a register of businesses whose contracts on the use of credit cards as payment instruments have been terminated, following a breach of the terms of transaction (e.g. acceptance of cards that have been reported stolen or lost, fictitious transactions). This file usually does not include any information concerning card purchases or holders.

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[45] For a definition of these payment instruments see *ibid*., pp. 19, 16, 50, 42 and 39, respectively. On this particular point, note that cash cards and cheque guarantee cards do not constitute payment instruments (*ibid*., p. 11 and p. 12, respectively), while the multi-purpose prepaid card (*ibid*., p. 39) falls under the term 'electronic money'.

[46] *Ibid*., p. 22. For more details on electronic money, see **Weber (1999)**.

[47] On these services see below, **under 3**.

[48] From the relatively limited literature on this subject, see **de Haan, Oosterloo, and Schoenmaker (2009)**, pp. 136-163, and **Kokkola (2010)**, pp. 37-47.

2.2 Payment systems – clearing and settlements systems

2.2.1 Definitions

2.2.1.1 Payment systems

Payment system means the set of instruments, services and procedures and, typically, interbank systems that ensure the transfer of funds between bodies participating therein.[49] In order to specify this definition, the following clarifications are needed:

(a) Funds transfer means any transfer of funds conducted using all available payment instruments and order-based fund transfer services.[50]

(b) Participants in payment systems are mostly banks (without excluding other categories of financial firms authorised to provide payment services). This is the reason why payment systems are usually called 'interbank'.

(c) As regards payment systems management, there is no prevailing standard. A payment system may be managed by central banks,[51] by central banks along with banks and other categories of financial firms, or by financial firms alone.

2.2.1.2 Clearing and settlement systems

One of the components of a payment system is the clearing and settlement process for payments carried out in the system. Specifically:

(a) Clearing system means a set of procedures whereby system participants present and exchange data and/or documents relating to fund transfers to other participants at a single location, the 'clearing house', with a view to determining the beneficiaries of payments and the amount of each payment.[52]

(b) Settlement system means a system used to facilitate the settlement of transfers of funds or financial instruments.[53] Settlement of payments is usually made in accounts that the system participants keep in the central bank, through which the bank accounts of those ordering the payment – or in case of direct debits, the debtors – are debited, and subsequently the bank accounts of the final beneficiaries are credited.[54]

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[49] In this regard see **Committee on Payment and Settlement Systems (2003a)**, p. 38.

[50] See above, **under 1.3**.

[51] This is the first function that central banks perform on payment and settlement systems.

[52] See **Committee on Payment and Settlement Systems (2003a)**, p. 14. Clearing often includes a mechanism for offsetting receivables.

[53] *Ibid*., p. 46.

[54] This is the second function that central banks perform on payment and settlement systems. The third function is the oversight of payment systems to ensure the stability and effectiveness thereof. See **Committee on Payment and Settlement Systems (2003b)**: "Policy issues for central banks in retail payments", Bank for International Settlements, March, pp. 8-15 (available at: http://www.bis.org/publ/cpss52.htm).

2.2.2 Classification of payment systems and clearing and settlement systems

2.2.2.1 Payment systems

Payment systems are classified into the following categories, on the basis of six criteria:[55]

(a) Depending on the payment instrument or service used to transfer funds, a distinction is made between cheque systems, credit transfer systems,[56] direct debit systems,[57] payment card systems, and electronic money systems.

(b) Depending on the way in which the system processes payment orders, a distinction is made between electronically and manually managed systems.[58]

(c) Depending on the value of capitals transferred per transaction through the system, the following distinction is made:

- large-value payment systems, and
- small-value payment systems or 'retail payment systems'.[59]

(d) Depending on the netting of instructions in a payment system, a distinction is made between bilateral and multilateral netting payment systems. After bilateral netting has been performed in a payment system, a participant has a net position towards each of the other participants in the system.

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[55] See **Committee on Payment and Settlement Systems (2006)**: "General guidance for national payment system development", Bank for International Settlements, January (available at: http://www.bis.org/publ/cpss70.htm).

[56] In this field, three different cases can be established depending on the number of payers and beneficiaries:

(a) In the first case, the payer orders his/her bank to transfer funds to the bank account of a single beneficiary.

(b) In the second case, the payer orders his/her bank to transfer funds to the bank account of more than one beneficiary (e.g. payment of pensions by an organisation to beneficiary pensioners).

(c) In the third case, more than one payers order their banks to transfer funds to the bank account of a single beneficiary (e.g. payment of employer contributions to an insurance organisation).

[57] In this field, two different cases can be distinguished, depending on the flow of authorisation by the payer to the beneficiary:

(a) In the first case, the payer authorises the beneficiary or the beneficiary's bank, either once or with a standing payment order, to withdraw funds from his/her bank account and credit them to the beneficiary's bank account upon fulfilment of a monetary obligation by the payer to the beneficiary (e.g. single or standing direct debit order for the payment of public utility bills).

(b) In the second case, the payer authorises his/her bank.

[58] Manual management still exists only for certain cheque systems which, as already mentioned, are the only systems processing paper-based instruments.

[59] The criterion that differentiates between these systems is conventional. Typically, retail payment systems are credit transfer systems used to transfer payments between various consumers, businesses and governments of relatively low value and urgency. See **Committee on Payment and Settlement Systems (2006)**, pp. 70-71.

After multilateral netting has been performed, the participant has an overall net position towards each of the other participants in the system.[60]

(e) A distinction is also made between:

- systemically important payment systems (such as large-value payment ones), i.e. systems in which the occurrence of a malfunction may potentially activate or spread additional malfunctions between participants or systemic malfunctions across the entire financial system,[61] and
- non-systemically important payment systems, i.e. systems that do not have the above-mentioned potential.

(f) Finally, a distinction is made between 'pure' payment systems used exclusively for the transfer of funds between participants and payment systems operating in the context of a transferable securities payment and settlement system for the clearing and settlement of the part that concerns payments for the purchase or sale of transferable securities.

2.2.2.2 Clearing and settlement systems

Clearing and settlement systems are divided into three categories, depending on the manner in which the orders for the transfer of funds are to be settled. Specifically:

(a) Net settlement systems are the systems whose settlement operations are completed by offsetting and clearing all the participants' receivables at one or more discrete, predefined times during the processing day (known as 'settlement cycles') when settlement takes place.[62]

(b) Gross settlement systems are systems where settlement takes place separately for each payment, on an instruction-by-instruction basis, at one or more prescribed times during the processing day.[63]

(c) Real-time gross settlement systems are systems where settlement occurs not only separately for each and every payment, but also in real time and in the order that the relevant payment orders are given.[64] A typical example of such a system is the TARGET2 system (Trans-European Automated Real-time Gross settlement Express Transfer system), used, *inter alia*, to settle payments resulting from open-market transactions in the context of implementing the single monetary policy of the European System of Central Banks ('ESCB') in the eurozone.[65]

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[60] See **Committee on Payment and Settlement Systems (2006)**, pp. 68 and 70.

[61] See **Committee on Payment and Settlement Systems (2001)**: "Core Principles for Systemically Important Payment Systems", Bank for International Settlements, January, p. 5 (available at: http://www.bis.org/publ/cpss43.htm), and **Committee on Payment and Settlement Systems and IOSCO Technical Committee (2012):** "Principles for financial markets infrastructures", Bank for International Settlements, April, p. 12 (available at: http://www.bis.org/publ/cpss101a.pdf).

[62] See **Committee on Payment and Settlement Systems (2003a)**, op. cit., p. 34.

[63] *Ibid*., p. 25.

[64] *Ibid*., p. 41 (see also details in **Committee on Payment and Settlement Systems (1997)**: "Real-time Gross Settlement Systems", March (available at: http://www.bis.org/publ/cpss22.htm).

[65] On this system, see **Geva (2008), pp. 113-123.**

2.3 Securities clearing and settlement systems[66]

The second infrastructure of the financial system comprises clearing and settlement systems for transactions in securities.[67]

(a) Similarly to what applies to payments, the securities clearing and settlement system is the set of procedures whereby system participants present and exchange data and/or documents relating to transfers of securities to other participants at a single clearing house, so as to define the beneficiaries of the securities traded.[68]

(b) The settlement system is the set of means and procedures enabling the settlement of transactions in securities, by crediting securities to the end-beneficiaries' accounts, as well as the safekeeping of securities.[69] The above-mentioned triple classification of payment settlement systems, depending on the manner in which fund transfer orders are to be settled, also applies to securities settlement systems.

The operational framework of these systems also includes a payments clearing and settlement system in view of the clearing and settlement of the part of the transaction that is relevant to the transfer of funds, whereby the monetary obligation generated by the purchase or sale of the securities is fulfilled and the bank accounts of the end-beneficiaries are credited with the amounts due from the transaction.

In view of the above, it is necessary to make the following clarifications:

(a) The term 'payment systems' also includes payment clearing and settlement systems.

(b) Consequently 'payment clearing and settlement systems' constitute a subset of clearing and settlement systems in general.

(c) The semantically more appropriate term would be 'payment and settlement system' which includes:

- on the one hand, payment systems, including payment clearing and settlement systems, and
- on the other hand, securities clearing and settlement systems, used in the clearing and settlement of both securities and payments related to the purchase and sale of securities.

[66] See in detail **Kokkola (2010)**, pp. 75-90, and 106-113 (for derivative financial instruments).

[67] See **Committee on Payment and Settlement Systems and IOSCO Technical Committee (2001):** "Recommendations for securities settlement systems", Bank for International Settlements, November (available at: http://www.bis.org/publ/cpss46.htm), and **Committee on Payment and Settlement Systems and IOSCO Technical Committee (2012):** "Principles for financial markets infrastructures", Bank for International Settlements, April (available at: http://www.bis.org/publ/cpss101a.pdf).

Most studies refer to securities clearing and settlement systems. Note, however, that clearing and settlement procedures also occur for derivatives, both in stock exchange and OTC markets. For more details, see **Committee on Payment and Settlement Systems (2007):** "New developments in clearing and settlement arrangements for OTC derivatives", Bank for International Settlements, March (available at: http://www.bis.org/publ/cpss77.htm).

[68] See **Committee on Payment and Settlement Systems (2003a)**, p. 14. As in the case of payments, clearing often (and usually) includes a mechanism for offsetting receivables.

[69] *Ibid*., p. 44.

3. Classification of services provided in the financial system

3.1 Introductory remarks – classification approaches

The various categories of firms operating in the context of the financial system and its infrastructures, as defined above, provide services. These are designated as 'financial services'. To the author's knowledge, neither the existing literature nor any legal acts provide a systematic recording of all financial services. The single exception would perhaps be Annex 1 to the General Agreement on Trade in Services (GATS). This legal act of international economic law defines the concept of 'financial service' in the broadest possible way, and, as a result, covers sixteen (16) categories of services provided in the financial system.[70]

For the purposes of classifying financial services, it is possible to adopt one of two approaches:

(a) According to the first approach, services are classified on the basis of their providers. In this context, a distinction is made between services provided, *inter alia*, by banks ('banking services'), investment firms ('investment services'), insurance and re-insurance undertakings ('insurance and re-insurance services') or payment institutions ('payment services'). However, this approach stumbles upon two inherent weaknesses:

(i) The first lies in the fact that, if we exclude those services that are provided almost uniformly by one single category of providers (such as deposit-taking by banks), there are many services provided concurrently by more than one categories of firms and, as a result, there is extensive overlapping.[71]

(ii) The second weakness of this approach lies in the fact that this classification can be used only in conjunction with the legislation of a given state (or in the case of the European Union in conjunction with the provisions of European financial law) given that the range of services that individual categories of providers can supply is laid down in such legislation. In cases where this approach is adopted, usually services are further classified according to the rules governing the accounting for the transactions conducted by financial firms. In this context, balance-sheet items (assets-liabilities) may be differentiated from off-balance sheet items.[72] It is also common practice, especially in the case of private banking law (being the law governing banking transactions), for a distinction to be made between commercial banking services and investment services.[73]

(b) In accordance with the above and taking into account the functions performed in the financial system, as well as its infrastructures, it seems more appropriate to adopt the operational approach. This approach groups financial services into the following three categories:[74]

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[70] **World Trade Organisation (1994):** "General Agreement on Trade in Services, Annex on Financial Services", paragraph 5(a).

[71] Investment services are a striking example as they are usually provided by both banks and investment firms (depending on the limitations set by legislation). Another example are payment services which may be offered by banks and other specialised payment institutions.

[72] As regards banks' off-balance sheet services, see **Äberli R. W. (1989)** (still accurate).

[73] For more details, see **Schwintowski and Schäfer (2004)** and **Einsele (2006)**.

[74] An exhaustive reference to the typology of transactions per individual service goes beyond the scope of this study and therefore transactions are categorised on the basis of their common characteristics.

- services offered in the context of the first function of the financial system, differentiating between services provided in the framework of direct intermediation between positive and negative savers (see under 3.2.1 below), and services provided in the framework of indirect intermediation (under 3.2.2),
- services provided in the context of the second function of the financial system relating to the contribution to making cashless payments (under 3.3), and
- services provided in the context of the infrastructures of the financial system (under 3.4).

3.2 Services provided in the context of the financial system's first function

3.2.1 Services provided in the context of direct financing: investment services and collective portfolio management

The category of services provided as part of direct financing of negative savers by positive savers, includes all services provided in capital markets. These services can be broken down into two broad categories:

(a) The first category includes services provided by financial firms in capital markets on an individual basis; these are called investment services. Investment services are provided both to negative savers (see under (i) below) and to positive savers (under (ii)). Investment services are also provided by financial firms on their own behalf, while the operation of a multilateral trading facility constitutes an investment activity.

(i) The category of investment services to positive savers includes:

- reception and transmission of orders on behalf of clients for transactions in relation to one or more financial instruments (securities and derivatives),
- execution of orders on behalf of clients, which consists in acting to conclude agreements to buy or sell one or more financial instruments on behalf of clients,
- portfolio management, which consists in managing clients' portfolios, at the clients' discretion and in the context of their mandate in relation to one or more financial instruments,
- investment advice, which consists in providing personal recommendations to a client, either upon the client's request or upon the initiative of the provider, in respect of one or more transactions relating to financial instruments,
- safe-keeping and administration of financial instruments for the account of clients, including custodianship and related services such as cash/collateral management,
- granting credits or loans to an investor to allow him to carry out a transaction in one or more financial instruments, where the supplier granting the credit or loan is involved in the transaction,
- foreign exchange services where these are connected with the provision of investment services, and
- investment research and financial analysis or other forms of general recommendation relating to transactions in financial instruments.

(ii) Accordingly, the category of investment services to negative savers includes:

- underwriting and/or placing of financial instruments on a firm commitment basis,
- placing of financial instruments without a firm commitment basis,
- provision of underwriting-related services, and
- advice to undertakings on capital structure, industrial strategy and related matters, and advice and services relating to mergers and acquisitions of undertakings.

(b) The second category includes collective (securities) portfolio management, a service provided by financial firms known as 'undertakings for collective investment in transferable securities' (the **'UCITS'**).

3.2.2 Services provided in the context of indirect financing

3.2.2.1 Introductory remarks

The category of services provided in the context of indirect financing (or financial intermediation) includes:

- services provided by banks in the context of this intermediation,[75]
- services provided by insurance undertakings, and
- services provided by credit companies, which form a subset of the services provided by banks.

Only services provided by banks will be discussed below, without any reference to those provided by insurance undertakings.[76]

3.2.2.2 Services provided by banks in the context of indirect financing (financial intermediation)

The category of services provided by banks in the context of financial intermediation includes the following services provided either to positive savers (see under (a) below) or negative savers (under (b)):

(a) The category of services to positive savers includes taking deposits or other repayable funds from the public, a service that (according to EU banking law, and the law of most states in the world) can only be provided by institutions authorised as banks.

(b) The category of services provided to negative savers includes lending for own account, including, *inter alia*, financing of commercial transactions, consumer and mortgage (mostly housing) credit and factoring, financial leasing, and guarantees and commitments (off-balance sheet services).

[75] The author has opted not to use the term 'banking services' given that, for the most part, banks are allowed to provide a broader range of services, covering investment and payment services. In view of the above, the meaning of the term 'banking services' encompasses all the services that banks may provide in a given state in accordance with applicable legislation.

[76] As a rule, the insurance services category includes direct insurance services, both in life and other branches, reinsurance services, insurance mediation services (e.g. agents), and ancillary services, such as consultancy.

3.2.2.3 Other services provided by banks

Banks are often allowed to also offer other services which are not directly connected to financial intermediation. This category includes:

- payment services (see just below, under 3.3),
- services provided "on own account",
- money brokerage (interbank services),
- insurance intermediation services,
- the rental of safety deposit boxes, and certain 'ancillary services' such as credit reference services, IT services and consultancy services.

3.3 Services provided in the context of the financial system's second function: payment services

3.3.1 Introductory remarks

The category of services provided in the context of the second function of the financial system relating to its contribution to making cashless payments, namely the 'payment services', includes the following two service categories:

- services relating to the issuance and acceptance of payment instruments (see under 3.3.2 below), and
- payment order-based fund transfer services[77] (under 3.3.3).

It is noteworthy that according to a broad definition of the term, also taking into account services provided mostly to facilitate the use of cash in the financial system, payment services include services allowing cash to be placed in a payments account,[78] as well as all activities required to keep a payments account, and services allowing cash withdrawals from a payments account.

3.3.2 Services relating to the issuance and acceptance of payment instruments

This subcategory of payment services includes the following:

- issuing and accepting cheques,
- issuing credit and debit cards and accepting credit and debit cards' transactions, and
- issuing electronic money and accepting electronic money transactions.

In the case of credit and debit cards, as well as electronic money in the form of multi-purpose prepaid cards, the issuance service is provided to the payer, while the acceptance service to the beneficiary, usually a commercial enterprise.

[77] The term 'fund' includes banknotes and coins, deposits and electronic money.

[78] A 'payments account', namely an account kept in the name of one or more payment services users and used to perform payments, may be kept either with a bank or with another payment services supplier, provided this is allowed under applicable legislation.

3.3.3 Payment order-based fund transfer services

This subcategory of payment services includes the following:

(a) Remittances are the first service. In this case, a sum is collected from the payer, without the existence or opening of a payments account in the name of the payer or the beneficiary, with the sole purpose of transferring this sum to a beneficiary or other payment services provider acting on the beneficiary's behalf and/or in which, this sum is collected on the beneficiary's behalf and made available to him.

(b) The second service is the performance of payment transactions, namely transactions activated either by the payer or by the beneficiary, relating to the placement, transfer or withdrawal of funds. Three individual services are identified in the context of this service:

(i) The first service is the execution of credit transfers, including standing orders.

(ii) The second service is the execution of direct debits, including one-off direct debits. This is a payment service whereby the payer's payment account is debited when the beneficiary initiates the payment transaction, based on the payer's consent granted either to the beneficiary or to the beneficiary's payment services provider or the payer's payment services provider.

(iii) Finally, the third individual service is the execution of payment transactions by means of payment cards.

In all cases, funds may be covered by a credit exposure for the payment services user.

3.4 Services provided in the context of the operation of the financial system infrastructures

Finally, in the context of the infrastructures of the financial system, the following two services are provided:

- clearing and settlement of payments and financial instruments, and
- safe-keeping and administration of financial instruments for the account of clients, including custodianship and related services such as cash/collateral management.

Table 3

Classification of financial services

Classification criterion	Service categories
I. Services provided in the context of the financial system's first function	
A. Services provided in the context of direct financing	**1. Individual investment services** • Services to negative savers • Services to positive savers • Services for own account • Multilateral trading facility management **2. Collective portfolio management**
B. Services provided in the context of indirect financing	**1. Services provided by banks (subset of 'banking services')** • Services to negative savers • Services to positive savers • Interbank services • Insurance intermediation services • Safe custody services (safety deposit boxes) • Ancillary services **2. Services provided by insurance undertakings (insurance services)** **3. Services provided by credit companies**
II. Services provided in the context of the financial system's second function	**Payment services** • Services relating to the issuance and acceptance of payment instruments • Payment order-based fund transfer services
III. Services provided in the context of the infrastructures of the financial system	• Clearing and settlement of payments and financial instruments • Safekeeping and administration of financial instruments for the account of clients

4. Groups of financial firms

In view of the above, there are many categories of financial firms allowed to provide all of the financial services stipulated by the law of a given state. Irrespective of the approach adopted at a given time and at a given state, a general rule applies: in all states a legal monopoly has been established in three cases:

- only banks are allowed to take deposits,
- only insurance undertakings are allowed to provide insurance and re-insurance services, and
- mutual funds can only be managed by mutual fund management companies (most of which are exclusive scope companies).

Financial firms are often organised into 'financial groups'. A financial group usually consists of (at least) one bank, one insurance undertaking and one investment firm. As a result of the different regulatory conditions in place,[79] financial groups are usually distinguished into two categories:

(a) The first category is 'groups with homogeneous financial activities'. These groups comprise either financial firms that are similar in nature (i.e. only banks or only insurance undertakings or only investment firms) or banks and investment firms. In such cases, the standard corporate structure is typically based on the parent company's relationship with its subsidiaries.

(b) The second category, which has expanded rapidly over the past decades, encompasses 'financial conglomerates'.[80] A group is a financial conglomerate when at least one of its undertakings is an insurance company and at least another one is a bank or investment firm.[81]

There are three (3) corporate structure standards for groups in this class:

- parent-to-subsidiary corporation,
- a holding company at the top of the group,
- a horizontal group with joint management of all the participating companies.[82]

- In the first case, the parent company is usually a bank ('banking group') or (rarely) an insurance undertaking ('insurance group'). The subsidiaries can be other financial firms in order for the group to effectively cover the entire spectrum of financial services, always taking into account restrictions laid down by domestic law. For instance:
  - a banking group wishing to provide insurance services will need to establish (or acquire) a subsidiary insurance undertaking,
  - if it wishes to manage mutual funds, it will need to establish (or acquire) a subsidiary mutual funds management firm, since the bank cannot offer those services *in-house*,

[79] Regarding the risk arising from a financial group's operation, see **Dierick (2004)**, pp. 15-16.

[80] For more details see **Dierick (2004)**, pp. 6-9, and **Herring and Carmassi (2010)**, pp.195-201.

[81] With reference to the reasons that led to the creation of these groups, see **Dierick (2004)**, pp. 14-15. As regards the risk arising from a financial group's operation, see *ibid.*, pp. 15-16.

[82] *Ibid*., pp. 17-19.

- the same applies to the provision of leasing services, investment services (mainly execution of orders) and the issuance and acquisition of cards, if the legislation does not permit their provision by a bank.

5. Financial inclusion: concepts, main characteristics and data

5.1 Definition and content

(a) Financial inclusion is defined as the process of ensuring affordable, prompt and adequate access to a wide range of financial products and services, as well as proliferation of their use in all parts of society with a special focus on vulnerable groups, through the implementation of existing and innovative approaches, such as financial literacy programmes. A wide range of products and services can be incorporated in this definition, including: savings, investment products, remittance and payment facilities, credit, and insurance.[83]

The United Nations defines the goals of financial inclusion as follows:

- access for all households to a full range of financial services, including savings or deposit services, payment and transfer services, and credit and insurance, at a reasonable cost,
- sound and safe institutions governed by clear regulation and industry performance standards,
- financial and institutional sustainability, to ensure continuity and certainty of investment,
- competition to ensure choice and affordability for clients.

Financial inclusion is assessed both on individual and household level, as well as with regard to firms, especially small- and medium-sized enterprises (SMEs).

(b) Access to specific products can be seen as one component of financial inclusion. For example, the Organisation for Economic Co-operation and Development (OECD) uses:

- the term ‘unbanked’ to describe individuals without a bank account at a deposit institution, and
- the term ‘unserved’ for those who rarely use their account, or do not know how to use it.

The types of transactions that can be linked to an account are:

- receiving regular (electronic) payment of funds such as wages, pensions or social assistance,
- converting cheques or vouchers into cash,
- storing money safely until it needs to be withdrawn,
- paying for goods and services other than in cash,
- paying bills electronically, and making remittances.[84]

[83] See **OECD (2005)**.

[84] See **European Commission (2008)**.

(c) Conversely, the opposite of financial inclusion, i.e. financial exclusion, refers to the difficulties faced by individuals or groups of the population as regards their access to the financial system. It can be either *voluntary* or *involuntary*, as financial exclusion could be either the result of circumstances that impede a person's access to the financial system or the result of personal preference due to a number of reasons.

5.2 Typical indicators for the measurement of financial inclusion

Financial inclusion is measured on the basis of three (3) parameters:

- level of credit institutions' outreach,
- level of usage of financial products and services, and
- quality of the products and services.

(a) Indicators depicting credit institutions' outreach (demographic and geographic penetration) include the number of branches per square kilometre (1,000 m^2), the number of Automated Teller Machines (ATMs) per square kilometre (1,000 m^2), and the number of branches per one thousand (1,000) individuals.

(b) Indicators regarding the usage of financial services/products are the percentages of loans and deposit accounts in the population, the number of transactions per deposit account, and the number of electronic payments.

(c) Finally, indicators regarding the quality of services/products include the cost of usage, and the level of financial literacy.

However, a concrete measurement of financial inclusion is far from simple as it concerns a multidimensional phenomenon that is difficult to assess. Furthermore, there is always the risk that measurements do not accurately depict reality in such instances where, for example, an individual holds more than one accounts. This is a common occurrence in developed countries which, however, obscures conclusions pertaining to the level of inclusion within the general population.

5.3 Causes of financial exclusion

(a) According to the **World Bank (2014)**, *involuntary exclusion* might stem from either efficiency criteria (e.g. inadequate income, high credit risk), or market-or government failure (e.g. discriminatory practices, lack of information, high costs).

(i) *Regulatory restrictions*: it has been shown that often a new regulation benefits exclusively the existing users of financial services without further promoting financial inclusion of the remaining population. For example, if a new unreasonable obligation is added within the framework of "Know Your Customer" (KYC) rules, certain segments of society such as young people or migrants would be irrevocably excluded.

(ii) *Restrictive market practices*: quite often, providers of financial services use practices that exclude parts of the population either indirectly, by favouring specific groups, or directly, by applying special conditions to the use of a service (i.e. high minimum balances) or by setting charges for specific services (e.g. withdrawal costs). Such exclusory practices can be sometimes attributed to providers' perception that some population groups are unprofitable or entail high risk.

Furthermore, financial services are designed, as a general rule, to address the needs of the average consumer. As a result, individuals in a vulnerable position are practically excluded (e.g. vulnerable groups, persons with a low level of financial literacy).

(iii) *Insufficient infrastructure*: some groups within the population might face exclusion from the financial system due to factors such as lack of access to electricity or the Internet. In such circumstances, individuals residing in areas with insufficient infrastructures cannot obtain the necessary information in order to gain access to financial services.

(b) On the other hand, *voluntary exclusion* is mainly attributed to personal reasons such as lack of resources, unemployment, economic and labour informality,[85] cultural and religious needs and beliefs,[86] a low level of financial literacy, the inability to use new technology (e.g. ATMs or the Internet) and possible language barriers (e.g. in the case of migrants). This latter category also encompasses cases where use of financial services and, more particularly, of the banking system is intentionally avoided in order to escape state control (thus accentuating phenomena such as tax evasion). Another common example of such practices is the choice on the part of over-indebted individuals to receive their wages, whenever possible, in cash rather than in a dedicated bank account in order to avoid the risk of having their income withheld or seized by their creditors.

5.4 Statistical data

5.4.1 Level of financial inclusion internationally and in the EU

(a) Currently, it is estimated that 2 billion working adults worldwide do not hold an account with a financial institution. According to the World Bank database, in 2014 the global percentage of individuals over 15 years old who have an account with a bank reached 62%. Out of those 27% have deposit accounts and 11% have taken out a loan.

(b) In the European Union, the level of financial inclusion is higher than the worldwide average, however due to the economic crisis of the past few years, a large share of the population faces an increased risk of financial exclusion. More specifically, it has been noted that lower levels of financial inclusion (based on the number of bank accounts) are more common among poorer countries such as Poland or Bulgaria and in countries confronted with a fiscal crisis such as Greece.

According to the results of the Household Finance and Consumption Survey for the year 2014, in the European continent, 11.6% of households do not have a credit card and 8.2% have either applied for a loan and their application was rejected or were discouraged from filling one in the first place. However, it is also worth noting that, in developed countries, 1.3 billion adult account holders pay their utility bills with cash instead of using their accounts (to make an electronic payment) as an easier, faster and safer means of payment.

[85] See **Committee on Payments and Market Infrastructures - World Bank Group (2015)**, pp. 8-9.

[86] *Ibid.*, p. 9.

5.4.2 Social groups with the lowest levels of financial inclusion (based on specific criteria)

(a) *Income*: Lower-income segments of society do not easily have access to financial services. The same applies to unemployed individuals whose access to the financial system is rendered difficult due to a lack of financial means.

(b) *Place of residence*: Lower levels of financial inclusion are observable in rural or isolated areas. In countries where financial service providers do not have an adequate infrastructure, individuals and firms removed from urban centres are objectively unable to make use of respective services. Furthermore, in cases where an individual is not familiar enough with technology so as to exploit electronic applications, access to financial services is rendered even more difficult.

(c) *Sex*: Especially in developing counties, there are fewer women users of financial services than men. This observation is explained by the fact that women are generally accorded fewer rights and are usually unemployed. Worldwide, the percentage of women that hold an account with a financial institution is estimated at 58% against 65% for men.

(d) *Place of origin*: Migrants rarely make use of financial services. Illegal immigrants, especially, cannot easily present the necessary documentation prescribed by the *Know Your Customer* rules and procedures.

(e) *Education*: The level of education is positively correlated with the usage of financial services (lower levels of education correspond to more restricted usage of financial services).

(f) *Age*: Younger generations usually have a lower level of financial literacy compared to older generations and often misuse the financial means available to them. As a result, they expose themselves to a higher risk of future financial exclusion. Furthermore, over the past few years and mainly due to the economic crisis, an increased number of young adults leave their parents' home at a later stage in their lives than in the past. For as long as these people still live with their parents and, especially, if they are not employed, they lack the incentive to open a bank account on their own.

B. The case for regulatory intervention in the financial system: financial policy objectives and instruments

1. General overview

1.1 Introductory remarks

(a) The financial system (and definitely some of its sectors, mainly the banking sector) is one of the branches of the economy that are subject, in almost every state all over the world, to heavy 'sector-specific' regulatory intervention and supervision. According to **Kane (1987)**, p. 111: *"On average, across the world, the financial sector (and in particular the banking industry) is probably more closely regulated than any other segment of the private economy"*. A notable exception to this are the 'offshore financial centres', which are characterised by the substantial lack of regulatory intervention in the monetary and the financial systems, coupled with favourable corporate taxation ('tax havens').

(b) The extent of this intervention is graduated and there are significant differences between economically less-developed and developing states, on the one hand (see just below, **under 1.2**), and economically developed states, on the other (**under 2**), mainly on account of different policy objectives.[87]

The following analysis is based on the 'public interest approach' to regulatory intervention, whereby financial regulation is intended to promote the common good by calling upon individuals and firms to change their preferred behaviour in ways that will benefit others.[88] This is opposed to:

- the 'public choice theory approach', whereby regulation is the outcome of efforts by interest groups, politicians and bureaucrats to use the political process for their own personal gain,[89] and
- the 'industrial organisation theory approach', whereby financial regulation is a response to the demand of financial firms and their customers for certification of soundness and facilitation of the clearing and settlement of transactions.[90]

A theoretical note is also necessary. According to neoclassical theory, regulatory intervention is needed if its purpose is to eliminate 'market failures'. The main market failures observed in the financial system concern the existence of information asymmetry between providers (of goods and services) and consumers, and conditions favouring negative externalities. By contrast, the financial system is not a natural monopoly.[91]

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[87] As a rule, the classification of the International Monetary Fund can be followed in this respect. See on this **Nielsen (2011)**.

The author avoids the use of the vague term 'emerging markets', which was introduced by the World Bank in the 1980s to replace the term 'third world countries' with regard to states whose financial markets are illiquid and small in terms of capitalisation (currently, with the exception of the G20 member states).

[88] See **Herring and Litan (1995)**, pp. 79-82.

[89] *Ibid.*, pp. 82-83.

[90] *Ibid.*, pp. 83-84. For an overall review of regulatory intervention in the financial system, see ibid., pp. 49-64, and **Herring and Santomero (2000)**.

[91] See **Gorton (1988b)**, p. 5-7.

(c) Financial firms are also subject to regulatory intervention in all states for reasons that apply equally to other categories of services providers, as reflected in the provisions of the following (indicative) areas of law: company law, competition law, data protection law, taxation law, as well as labour and social law.

(1) 'Financial regulation' means legislative or (by delegation) administrative provisions, which prescribe or prohibit behaviour on the part of financial firms and are aimed at achieving specific policy objectives. The outcome of regulatory intervention is the adoption of 'regulations' which comprise the 'regulatory (or normative) framework' and constitute administrative law (hard or soft). Depending on their specific scope, financial regulations of preventative nature are classified as 'micro-prudential' or 'macro-prudential' regulations.[92]

(2) 'Financial supervision' means the monitoring by competent authorities of financial firms' compliance with the provisions of the regulatory framework. Such monitoring is carried out on a preventative basis and is also widely known as 'micro-prudential supervision'.

(3) Oversight is monitoring by the competent authorities with a view to ensuring the sound operation of a market or a subsystem of the financial system.[93]

1.2 Regulatory intervention in economically less-developed and developing states

(a) In economically less-developed states, regulatory intervention in the financial system, notably in the banking sector, is mainly aimed at achieving specific economic and broader social objectives.[94] Taking into account that the financial system and banks, in particular, act as intermediaries for the channelling of borrowed funds (or own funds in the case of listed companies) from positive to negative savers, regulations are imposed on them in order to ensure that these funds are channelled:

- either to the government for financing its expenditures under favourable terms (by administratively fixed interest rates), or
- to enterprises which are considered by the political system to be eligible for financing under the applicable development policy (without due assessment of the credit risk involved).

(b) Some examples of such regulatory intervention include:

(i) Imposing restrictions on banks relating to the provision of non-purely banking services (e.g. not allowing them to provide investment services and/or non-financial services), and/or the geographical range of their activity.[95]

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[92] On the difference of these two terms see **Gortsos (2012),** pp. 91-92 and 94-98, respectively (with extensive further references).

[93] Taking road traffic as an example:

- regulation means laying down rules on the maximum speed limit,
- supervision of compliance with these rules is carried out by traffic wardens, who issue speed tickets to the offenders, and
- oversight is conducted by traffic police helicopters that look for congestion problems in given roads, in order to smooth the traffic with appropriate instructions.

[94] See **The World Bank (1989)**, pp. 54-69.

[95] However, a striking example of an economically developed state which had resorted to this measure was that of the United States, not allowing banks, for a long period of time, to operate beyond the border of the state where their headquarters were seated.

(ii) Imposing maximum limits on loan rates (in order to subsidise bank financing) and minimum limits on deposit rates (in order to make bank deposits attractive).

(iii) Imposing an obligation on banks to invest a significant percentage of their deposits in specific segments of the real sector of the economy, usually with preferential terms and subsidised interest rates, and in government (short-term and long-term) bonds, thus ensuring the subsidised financing of public expenditures.

(iv) State ownership of commercial banks, either directly or through state-controlled entities (mainly pension funds).

(v) Setting-up by law 'specific', typically state-owned banks, such as agricultural, mortgage and development banks.

2. Regulatory intervention in economically developed states

2.1 Introductory remarks

In economically developed states, the above-mentioned objectives of regulatory intervention – particularly the first three – are not common, since most of the measures taken to achieve relevant regulatory objectives are not compatible with the principle of an open market economy with free competition. Therefore, given that this principle is applied in such states as a model for an economy's organisation and functioning, the adoption and implementation of these measures is prohibited.

On the other hand, in economically developed states, there is also intense regulatory intervention in the financial system and, over the past three (3) decades, this intervention was greatly expanded mainly because of the extensive laxity of other regulatory measures (a process known as 'financial deregulation'). However, as a rule:

- the policy objectives of regulatory intervention are primarily associated with the sound operation of the financial system, and
- their main (albeit not sole) task is to address 'market failures' emerging in the financial system.[96]

These aspects of financial regulatory intervention will be examined in more detail below. More specifically, apart from ensuring free competition in the financial system, which is the prevailing objective in the entire market, regulation is also aimed at meeting the following objectives:

- ensuring the stability of the financial system (see under 2.2 below),
- ensuring investor protection and capitals market integrity, efficiency and transparency (under 2.3),
- compensating investors in the event of an investment firm's insolvency (under 2.4),
- safeguarding the efficiency of payment systems (under 2.5),
- protecting the economic interests of consumers trading with financial firms (under 2.6), and

[96] As regards market failures, and, in particular, negative externalities and information asymmetries, see **Mercuro and Medema (2006)**, pp. 60-67 and in more detail **Ippolito (2005)**, pp. 153-379.

- combating the use of the financial system for the commitment of economic crimes, such as money laundering, terrorist financing and fraud in payment instruments and systems (under 2.7).

It should be pointed out, however, that the policy objectives justifying regulatory intervention in the financial system at any given time cannot be exhaustive, given that the prevailing economic and social conditions may call for new objectives in future. The dynamics of this variability are clearly demonstrated by the fact that certain policy objectives which stand today, did not stand a few years ago. In particular:

(a) The rationale for regulatory intervention in the financial system with a view to tackling consumer over-indebtedness emerged in the late 1990s as a result of the full liberalisation of consumer credit and the subsequent extensive exposure of households to debt.

(b) The rationale for combating terrorist financing through the financial system emerged mostly following the terrorist attacks in the United States on 11 September 2001.

(c) The debate on the need to deal with the adverse impact on public finances of exposure to insolvency of banks and other financial firms, which have grown 'too big to be left to fail' or are 'too interconnected to be left to fail' (currently referred to as 'systemically important financial institutions' or **'SIFIs'**), especially those operating internationally, is currently predominant in the financial policy agenda after the recent (2007-2009) international financial crisis. By default, the main concern is to ensure that these entities will not be exposed to insolvency, or if otherwise exposed, their resolution will be feasible without becoming a charge on the public finances.

This problem, associated with the policy objective of ensuring financial stability, is definitely not new, but has become more acute during the recent crisis owing to large-scale government bailouts of financial firms and the ensuing negative impact on public finances (see, for example, the case of Ireland).[97]

2.2 Ensuring the stability of the financial system

The first (and primary) policy objective justifying regulatory intervention in the financial system of economically developed states is ensuring the financial system's stability, which may be threatened by the occurrence of **'systemic crises'**.

It is worth mentioning that there is no single generally accepted definition of the term 'financial stability':

- some authors define it as the opposite to the concept of 'financial instability' by referring to episodes of 'financial crises';[98]
- certain others define it on the basis of the various properties of a stable financial system, while

[97] Regarding the delineation of the definition of SIFIs, see **Huertas and Lastra (2011)**, pp. 255-258 (who use the term 'systemically significant financial institutions' or 'SSFIs'), and **Hofer (2014)**. On policy recommendation to overcome the problems arising out of the operation of SIFIs, see **Carmassi, Luchetti and Micossi (2010)** and **Weber, Arner, Gibson and Baumann (2014)**, pp. 152-171.

[98] For a generally accepted definition of the term 'financial crisis', see **Mishkin (2003)**, pp. 94-95.

- others (including this author) formulate an operational definition by introducing a framework which lays down the objectives of regulatory intervention and defines the adequate instruments to achieve these objectives.[99]

Within this framework, there are five individual, yet closely linked, financial policy objectives (based on the distinct sectors and infrastructures of the financial system):

(a) The ***first objective*** is to ensure the stability of the banking sector by preventing the evolution of negative externalities in the form of contagious bank failures (i.e. by preventing a chain reaction of bank failures or 'bank failure spillover effects').[100] The policy instruments employed to attain this objective comprise the 'bank safety net' and are materialised through the adoption of rules concerning:

- the authorisation and micro-prudential supervision of banks by competent public authorities,
- the micro- and macro-prudential regulation of banks,
- the macro-prudential oversight of the financial system,
- the adoption of specific crisis prevention and crisis management measures for troubled banks (reorganisation, resolution and winding-up), and
- the operation of deposit guarantee systems.

Last-resort lending by the central bank (in its capacity as monetary authority) to solvent banks exposed to temporary illiquidity and monetary authority measures to neutralise a shift in public demand for cash – which is excessive in periods of crisis – aimed at preventing the cumulative collapse of the financial system, constitute the last components of the bank safety net. Recourse to these components is usually not premised on legislative rules but on discretionary decisions of central banks.

This aspect is analysed in details below in Section C.

(b) The ***second objective*** is ensuring capital market stability, which may be disrupted owing to either an abrupt and large-scale price fluctuation of financial instruments traded therein[101] or to the bankruptcy of a financial intermediary offering investment services.[102]

[99] On the various definitions of the term 'financial stability' see **Houben, Kakes and Schinasi (2004)**, pp. 10-11 and 38-42. On the third approach see also **Schinasi (2005)** and **Gortsos (2012)**, pp. 59-76.

[100] From the very extensive literature on this financial policy objective, see **Herring and Litan (1995)**, pp. 50-61. Regarding the synergies between the stability and effectiveness of the financial system, see **Barth, Caprio and Levine (2006)**, pp. 307-309.

[101] This risk is associated with market operation and cannot be addressed in principle with regulatory interventions. Nevertheless, what is needed is to prevent the emergence of inefficient institutional infrastructures that accentuate any problems caused by strong market fluctuations.

[102] See **IOSCO (2008)**: "Objectives and Principles of Securities Regulation", pp. 6-7 (available at: http://www.iosco.org/library/index.cfm?section=pubdocs).

The latter argument has, however, been criticised by those who are of the view that the risk of spillover effects, i.e. of more investment firms becoming insolvent, is extremely limited.[103] It may then reasonably be argued that provisions are adopted mainly to ensure a level-playing field between investment firms and banks in terms of conditions for their authorisation, operation and supervision to the extent that the former provide the same type of services and are exposed to the same kind of risks as the latter.[104]

This objective is pursued through the adoption of rules concerning:[105]

- the authorisation by competent authorities of investment firms and management companies of investment funds (i.e. UCITS and alternative investment funds),
- the micro- and macro-prudential regulation of these firms,
- the micro-prudential supervision by competent authorities of all financial firms providing investment services in capital markets (including banks),
- the reorganisation, resolution and winding-up of investment firms,
- macro-prudential financial oversight,
- the authorisation, oversight and ongoing supervision by competent authorities of securities exchanges and other markets for trading in financial instruments, and
- the sound operation of markets and infrastructures for trading in financial instruments (including OTC derivatives).

(c) The ***third objective*** is ensuring stability in the insurance (and re-insurance) sector of the financial system against the risk of bankruptcy of insurance and reinsurance undertakings.[106] This is achieved with the adoption of rules on authorisation, the micro-prudential supervision, the micro- and macro-prudential regulation, and the reorganisation and winding-up of insurance and reinsurance undertakings, as well as with macro-prudential financial oversight.[107]

(d) The ***fourth objective*** concerns safeguarding the stability of the entire financial system against the emergence of widespread financial crises in the economy as a result of excessive risk-taking by financial conglomerates, comprising banks, insurance undertakings and investment firms. This objective is sought through the adoption of rules concerning the 'supplementary' micro-prudential regulation and supervision of such conglomerates by competent (administrative) authorities.[108]

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[103] See **Haberman (1987)**, and **Herring and Litan (1995)**, pp. 72-73.

[104] On the differences between banks and investment firms in terms of potential spillover effects see **Haberman (1987)**, **Herring and Litan (1995)**, pp. 72-73, and **Allen and Herring (2001)**.

[105] On the best international practices with regard to this aspect, see **IOSCO (2010):** "Objectives and Principles of Securities Regulation", principles 10-12, 29-34, and 37-38 (available at: http://www.compliance-exchange.com/governance/library/ioscoprinciples2010.pdf).

[106] See **Herring and Litan (1995)**, pp. 73-74.

[107] On the best international practices with regard to this aspect, see **International Association of Insurance Supervisors (2011):** "Insurance Core Principles and Methodology", principles 1-23 (available at: http://www.iaisweb.org/temp/Insurance_Core_Principles_Standards_ Guidance _and_Assessment_Methodology_October_2011.pdf).

[108] The supervision exercised on such conglomerates is supplementary in nature. Namely it is exercised additionally to the supervision exercised on the participating financial firms on an

(e) The ***fifth objective*** consists in ensuring the normal and smooth operation of payment and settlement systems. The risk to such systems consists in the contagion of liquidity and/or solvency problems from one member of the system to another, with all the adverse systemic consequences that this may potentially have on the functioning of the financial system.[109] Exposure to this risk is controlled through proper oversight of payment and settlement systems.[110]

(f) Finally, it should me mentioned that there are several reasons why increased financial inclusion may support the central bank's task of safeguarding financial stability:[111]

(fa) Firstly, consumers gaining access to the formal financial system are likely to increase aggregate savings and diversify the banks' depositor base. An increase in savings has the potential to improve the resilience of financial institutions, given the stability of deposit funding, especially when they are backed by an effective deposit insurance scheme.

Furthermore, there is evidence that aggregate balances in the accounts of low-income customers move only gradually and are not prone to sudden month-to-month swings. This resilience could be especially relevant during crises, if low-income savers are able to maintain their deposits when large depositors head for the exit. Indeed, during the recent (2007-2009) international financial crisis, the fall in total deposits was slighter in economies where the degree of financial inclusion was higher in terms of bank deposits, especially for middle-income countries, even after accounting for other factors.

(fb) Secondly, financial inclusion, by improving firms' access to credit, can help financial institutions diversify their loan portfolios. Moreover, lending to firms that were previously financially excluded may also lower the average credit risk of loan portfolios. One study finds that an increased number of borrowers from SMEs is associated with a reduction in non-performing loans and a lower probability of default by financial institutions. However, increased financial inclusion is no guarantee of improved financial stability. If financial inclusion is associated with excessive credit growth or the rapid expansion of unregulated parts of the financial sector, financial risks may still rise.

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individual and on a consolidated basis within homogeneous activity groups. See **Dierick (2004)**, pp. 20-26, and **Herring and Carmassi (2008)**, pp. 214-226.

[109] See **Committee on Payment and Settlement Systems and IOSCO (2012)**: "Principles for Financial Market Infrastructures", April, section 2, (available at: http://www.bis.org/publ/cpss101a.pdf).

[110] See **Committee on Payment and Settlement Systems (2005)**: "Central Bank Oversight of payment and settlement systems", Bank for International Settlements, May (available at: http://www.bis.org/publ/cpss68.htm).

[111] See **Khan (2011)**, **Global Partnership for Financial Inclusion (2012)** and **Basel Committee on Banking Supervision (2015)**.

2.3 Ensuring investor protection and capital markets integrity, efficiency and transparency

2.3.1 The content of the objective

The second policy objective for regulatory intervention in the financial system is related to ensuring the protection of investors that wish to invest, or already invest, in primary and derivative financial instruments, that are either going to be listed in a regulated market, or are already being traded therein,[112] as well as safeguarding the integrity, efficiency and transparency of capital markets.[113] The 'closeness' of the connection between these two financial policy objectives with regard to capital markets can be explained by the fact that they share, to a large extent, the same financial policy instruments, making their distinction often difficult.[114] In this respect, it is worth making three (3) remarks:

(a) Investors need special protection given their participation in the process of direct financing of companies and governments in capital markets where financial instruments – in which they invested or will invest – are traded. Fostering and bolstering investor confidence in a capital market's efficient operation is in any event crucial, as it is a necessary condition for investor participation in such a market. This dictates the adoption of special measures on the basis of the given market's characteristics and mechanisms governing its operation.

(b) In line with the above, obligations set and dictated by the need to protect investors – as those persons who invest in a market with specific characteristics and risks – to make sure that they trust and invest in a market's efficiency, respond to special requirements under capital markets law, which are independent of those arising from consumer protection law. An investor may, however, be a consumer as well, depending on the transactions conducted with the investment undertaking.

Investors/consumers are usually subjected to information asymmetry and have limited negotiating capacity vis-à-vis providers, i.e. financial firms, which is why, as a result, consumer protection provisions are put into effect. Nevertheless, investor protection measures are also sometimes aimed at redressing information asymmetries which, manifestly, go at the expense of investors. But such information asymmetries differ from those under consumer protection law, since they are a function of the investor's knowledge regarding the undertaking that issues the instruments on which he/she will invest his/her savings or regarding the price formation mechanism in the markets where trading takes place. In addition, information asymmetry in capital markets may also exist among investors themselves, such as in the case of insider trading.

(c) With regard to the extent of protection afforded to recipients of investment services under capital markets law, it should be noted that a distinction is made between professional (institutional) and private customers. It has been rightly pointed out that this does not serve an abstract need to categorise investors, but is inextricably linked with the realisation that the need to protect investors – as subjects of capital markets law – is not as strong across all categories.

[112] See **IOSCO (2008)**, pp. 5-6.

[113] *Ibid*., p. 6.

[114] *Ibid*., p. 5.

2.3.2 Policy instruments

Meeting the objective for safeguarding investor protection, as well as capital market integrity, efficiency and transparency, justifies strong regulatory intervention in the capital markets. This is pursued by adopting certain regulations, which can be systematically divided into six (6) categories, depending on their recipients, i.e.: issuers of transferable securities, banks and investment firms providing investment services, UCITS and alternative investment funds, secondary markets, credit rating agencies and auditors (see below, under (a) -(f), respectively).[115]

(a) The first set of rules applies to issuers of transferable securities in capital markets, i.e. listed companies and firms planning their transferable securities' admission to trading in regulated markets, and refers mainly to:

- the obligation of companies intending to raise own or borrowed funds through the capital market ('issuers') to report information to their investors,
- the adequate corporate governance (including internal audit mechanisms) of listed companies,
- listing particulars and prospectus requirements for issuers,
- the periodical dissemination of information by listed companies,
- the protection of rights and interests of minority shareholders in the case of takeover bids, and
- accounting standards for listed companies.

(b) The second set of rules applies to investment firms and banks providing investment services and refers mainly to:

- the adequate internal organisation with regard to the provision of investment services mainly aimed at avoiding conflict of interests, and
- the *stricto sensu* investor protection ensured, *inter alia*, by imposing a code of conduct on the provision of investment services to customers, an obligation to execute orders in the most favourable terms for customers, and also rules on equal treatment of customer orders.

(c) The third set of rules applies to UCITS and the management companies of alternative investment funds (including hedge funds). With respect to UCITS the relevant rules refer mainly to:

- the segregation and protection of investor assets,
- the dissemination of information, essentially addressed to investors as part of their decision-making, by UCITS management companies,
- criteria for the evaluation of UCITS assets and redemption of UCITS units, and
- rules concerning the investment policies of UCITS.

[115] This categorisation is based on **IOSCO**'s **2008 Report**. On the best international practices with regard to this aspect see **IOSCO (2010)**, principles 16-18, 31, 24-28, 33 and 35-38 and 19-22.

The rules concerning the management companies of alternative investment funds set out mainly the conditions governing the conduct of their business and the transparency requirements they need to comply with.

(d) The fourth set of rules relates to the sound operation of secondary markets and refers mainly to:

- the transparency of transactions conducted in secondary markets (i.e. equity, bond and derivative markets),
- combating (i.e. preventing and containing) market abuse (market manipulation and insider trading),
- oversight of systems for the clearing and settlement of transactions in securities and derivative instruments,
- the obligation to clear OTC derivatives that meet certain criteria (e.g. highly liquid OTC derivatives) through a central counterparty (CCP) and report them to trade repositories, in view of bolstering transparency and identifying and addressing systemic risk, and
- the regulation of short selling.

(e) The fifth set of rules relates to the operation of credit rating agencies. The relevant rules lay down mainly obligations for their supervision and registration, and the necessary conditions for the issuance of credit ratings.

(f) Finally, the sixth set of rules is addressed to auditors concerning mainly their supervision, their independence, and the quality of audit standards.

2.4 Compensation of investors

The third policy objective for regulatory intervention also concerns the capital markets. It refers to the compensation of investors trading with an investment undertaking or bank that provides investment services (i.e. investment services provider), if both of the following conditions are met supervisory or judicial authorities decide to suspend the investment services provider's operation, normally in the event of insolvency, and the investment services provider cannot return funds or financial assets to their owners, i.e. the investors.

The appropriate policy instrument in this case is the establishment of explicit investor compensation systems to offer 'explicit coverage' to investors (usually up to a certain amount).[116]

[116] The term 'explicit coverage' is used to incorporate all those arrangements that are not based on the premise that investor coverage should be *ex post*, at the discretion of supervisory authorities or the State, and solely conducted on an *ad hoc* basis, i.e. after a 'systemically' important investment services provider becomes insolvent ('implicit coverage'). On the best international practices with regard to this aspect, see **IOSCO (2010)**, principle 32.

2.5 Safeguarding the efficiency of payment and settlement systems

The fourth policy objective of regulatory intervention in the financial system concerns safeguarding the efficiency of payment and settlement systems, which is the second policy objective associated with these systems.[117] Proper oversight of payment and settlement systems is the appropriate policy instrument in this case as well.[118] Here, the significant role played by central banks should be highlighted. The assignment of this power to central banks is a corollary of the operational synergies that exist between the tasks of conducting monetary policy, safeguarding the stability of the financial system and overseeing payment systems.

The scope of the relevant power covers, first of all, large-value payment and settlement systems – given the interest in the smooth execution of monetary policy operations. With regard to small-value payment systems, the scope of the relevant power varies across different states and it may include:

- low-value payment systems,
- systemically important small-value payment systems, and
- systems involving ad hoc systemic risk.[119]

2.6 Protection of the economic interests of financial services consumers

2.6.1 The content of the objective

The fifth policy objective relative to regulatory intervention in the financial system is the protection of the economic interests of financial services consumers, namely consumers contracting with financial firms.[120] Policy concerns in this area are, first of all, based on generally accepted assumptions in the context of financial services provision that apply across the board in relation to the protection of consumers' economic interests[121] and have to do with the following two aspects:

(a) Reducing the information asymmetry that exists between consumers and financial firms[122] with regard to available information on a product or service that may become the object of a transaction between them. Such information asymmetry can be attributed to:

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[117] See **Committee on Payment and Settlement Systems and IOSCO (2012)**, Section 1. Regarding the synergies between the stability and efficiency of payment and settlement systems, see *ibid*., paragraph 1.15, and **Committee on Payment and Settlement Systems (2005)**, paragraph 60.

[118] See **Committee on Payment and Settlement Systems (2005)**.

[119] See **Committee on Payment and Settlement Systems (2003b)**, and **European Central Bank (2011)**: "Eurosystem oversight policy framework", July (available at: http://www.ecb.int/pub/pdf/other/eurosystemoversightpolicyframework2011en.pdf?ab6bddb77fd53f6acfff742adc24f4ef).

[120] See **Herring and Litan (1995)**, pp. 61-62.

[121] These policy objectives and policy instruments refer to the precontractual period and the contractual relationship that develops between the provider and the consumer in terms of a service's promotion and provision. That is, they are associated *lato sensu* with the consumption of a product or service.

[122] With regard to this form of information asymmetry, see **Cartwright (2004)**, pp. 49-84, **Calais-Aulois and Steinmetz (2006)**, pp. 53-67 and **Rasmusen (1989)**, pp. 133-153.

- the provider's typically greater expertise and knowledge on the provided financial service's features, function and characteristics, and
- the consumer's lack of experience and acquaintance with financial transactions.

This information asymmetry – accentuated in the case of specialised and complex financial services – and the consumer's typical lack of the resources necessary to fill the information gap upset the balance between the two parties given that the consumer[123] cannot opt for the financial service of his/her choice based on an accurate assessment of its features. The policy objective for regulatory intervention consists in redressing this information asymmetry, so that the consumer may understand the financial service's nature and characteristics, and make informed and conscious choices that respond not only to his/her needs but also to his/her economic profile.

(b) Addressing the problem of consumers' limited negotiating capacity *vis-à-vis* financial firms, mainly owing to the broad use of general terms of transactions.[124] The recourse to general terms of transactions, as a result of the standardisation of modern transactions, is aimed at ensuring predictability, security, equal treatment and also save providers and customers time and money. However, the absence of a genuine negotiating equity between the parties, given the use of general terms of transactions, results in upsetting their contractual balance, particularly to the extent that abusive terms are used, while it is anyway agreed that the parties do not have the same level of influence on the elaboration of contractual terms. Consequently, the policy objective in this case is to address this limited negotiating capacity which is presumed to consist in the contractual relationship between the consumer and the provider for the reasons mentioned above.

(c) More specifically, with regard to the extension of credit to consumers, over the last decade (at least) households have shown an increased tendency towards over-indebtedness. The liberalisation of consumer credit, consumers' increasingly easier access to financial services, certain households' resort to multiple borrowing, and sometimes consumers' inability to assess their financial capacity objectively and accurately are simply some of the main causes of consumer over-indebtedness. The term 'over-indebtedness' refers to a consumer's inability to meet his/her financial obligations (default) arising from a loan contract he/she has signed or his/her current household financial obligations (i.e. payment of utility bills). However, there are quite different approaches with regard to:

- the notion of such a default (for example genuine inability to repay loans or inability considered to be unbearable),
- the default's timing (after how long is there default?), and
- the criteria based on which it is calculated (on the basis of the person's total assets or net income).

The policy objective for regulatory intervention in this case is to prevent consumer over-indebtedness and avoid the negative consequences that this phenomenon might have from a social and economic point of view.

[123] For example, through the assistance of a legal or technical consultant, available to business people, who either have the necessary infrastructure within the framework of their business or are able to afford such assistance.

[124] With regard to this issue, see **Calais-Aulois and Steinmetz (2006)**, pp. 188-203, and **Howells and Weatherill (2005)**, p. 261 ff. General transaction terms are meant as the terms set *a priori* by the provider for an undefined number of future contracts.

2.6.2 Policy instruments

The policy instruments employed in order to achieve the above-mentioned objectives include rules pertaining to the following:

(a) The provision of adequate information to consumers ensuring the provision of sufficient information to consumers (prior to the contract, upon the conclusion of the contract and in the course of its duration) in respect of the nature, characteristics and risks entailed by the provided service, the content of concluded contracts, as well as the ensuing rights and obligations of the parties.

Furthermore, unfair commercial practices which might either be misleading for consumers in terms of a given service's properties and features or exert pressure on consumers to accept a service that they would not have accepted, had they not been misled or pressured, are prohibited.

Despite the latest trend of legislative provisions on very extensive information obligations for service providers aimed at achieving the above-mentioned objective, it is the author's view that over-information cannot achieve this objective, since it is equally harmful to **'dis-information'**, **'under-information** or **'mis-information'** and weakens the consumer's position by not allowing him/her to concentrate on, and understand, the vital characteristics of the provided financial service, which should affect his/her choice. In this context, the role of financial education could be particularly useful, as it may help consumers understand financial risks and make informed decisions. Financial education has taken on an increasingly broader sense.

(b) Provisions are also set in order to address the problem of consumers' limited negotiating capacity, aiming at:

- the control and prohibition of abusive terms, so that the consumer is not bound by any abusive general terms of financial services contracts (see below, under (i)),
- the safeguarding of certain consumers' contractual rights, which are considered as crucial for the consumer (e.g. the right of withdrawal), in order to ensure that the consumer executes them under certain circumstances (under (ii)), and
- the possibility for consumers to have recourse to judicial proceedings through collective actions or to out-of-court dispute settlement systems (under (iii)).

(i) The prohibition of abusive general terms of transactions is the most direct manifestation of the protection of consumers given their limited negotiating capacity vis-à-vis the providers. This limited ability to shape the content of contractual terms can result in binding consumers to abusive terms, presenting an immediate risk to be dealt with through regulatory intervention.

A contractual term which has not been individually negotiated shall be regarded as abusive if, contrary to the requirement of good faith, it causes a significant imbalance in the parties' rights and obligations arising under the contract, to the detriment of the consumer. The abusive nature of a contractual term is assessed by a court of law.

(ii) Concurrently, the consumer's limited negotiating capacity justifies, to a certain extent, further intervention by the legislator on the principle of private autonomy which governs all contractual relations aimed at safeguarding certain consumer rights concerning the content of contracts concluded, but not negotiated on equal terms, with providers. Particularly with regard to financial services, such regulation consists indicatively in establishing consumers' right for early loan repayment under certain conditions, as well as their right to withdraw from a contract within a specific deadline and with specific legal effects.

(iii) Finally, within the same framework, measures are taken to facilitate the settlement of disputes between consumers and providers. This can be achieved either by encouraging 'out-of-court dispute settlement systems' (saving consumers time and expenses) or by establishing measures to facilitate consumer access to the courts.[125]

In this case, the means to meet the policy objective for regulatory intervention are legally premised solely on the limited negotiating capacity of the consumer, i.e. facilitate consumer access to the courts for *ex post* settlement of disputes with the provider. These measures are also adopted bearing in mind that the – usually small – amounts associated with relevant disputes, the time-consuming processes and the comparatively elevated cost of court action discourage consumers from effectively asserting their rights.

(c) As already mentioned, especially in relation to consumer lending, in recent years the combating (i.e. prevention and containing) of consumer over-indebtedness has been elevated to a separate rationale for regulatory intervention, with a view to avoiding the potential negative social and economic consequences of consumers' excessive exposure to debt.[126] The adequate policy instruments in this case are the adoption of rules on 'responsible lending' and consumer bankruptcy.[127]

As regards the relatively recent phenomenon of over-indebtedness in modern economies, there is still no convergence of opinion on optimum intervention to prevent or address this phenomenon effectively. In the current conjuncture, five (5) measures are being implemented:

- imposing an obligation on banks to develop internal credit risk management systems (already available in most banks), in order to be able to detect (and therefore refuse to finance) existing or potential customers with an increased probability of default,
- establishing rules providing for increased capital requirements if doubtful loans are included in a bank's portfolio,[128]
- indirectly limiting 'financial pressure' on consumers by imposing an obligation on banks not to grant loans to consumers whose debt servicing absorbs more than a reasonable amount (i.e. 40%) of their monthly income,
- establishing the principle of responsible lending, and
- adopting rules on 'consumer bankruptcy'.

It should be noted that the first three (3) categories of measures have not been put in place exclusively for the prevention of household over-indebtedness, but also in view of safeguarding the stability of the banking system. Furthermore, the first four (4) categories of measures refer to the prevention of over-indebtedness, and the fifth to addressing its consequences.

[125] An illustrative example of the latter case is the establishment of collective court action.

[126] See **Finlay (2009)**, pp. 73-76, and **Rosenthal (2002)**, p. 150 ff.

[127] See **Ramsay (1997)** and **Piedelièvre (2008)**, p. 475 ff. The latter is also a protective financial policy instrument.

[128] The regulatory framework on banks' capital adequacy under the Basel Committee's rules on capital adequacy moves in this direction.

2.7 Combating the use of the financial system for the commitment of economic crimes

Finally, the sixth policy objective for regulatory intervention in the financial system consists in combating (i.e. preventing and containing) the use of the financial system for the commitment of economic crimes, such as money laundering, terrorist financing and payment instruments fraud).[129] In order to achieve this policy objective, rules are adopted with regard to:

- the prevention and containment of money laundering through the control of transactions carried out (with a view to identifying 'suspicious transactions') and the forwarding of information to the competent authorities,
- the prevention and containment of terrorist financing, and
- the prevention and containment of fraud in the use of payment instruments (in particular cards).

[129] See **Dupuis-Danon (2005)** and **Blair, Walker and Purves (2009)**, pp. 487-488.

Table 4

Financial policy objectives and instruments

Policy objectives	Policy instruments
1. Ensuring financial system stability	
1.1 Ensuring the stability of the banking system	**1. Crisis prevention** • Structural regulations • Authorisation requirements for banks • Micro-prudential banking regulation • Micro-prudential banking supervision • Macro-prudential policies (regulation and oversight) • Specific crisis prevention measures: Resolution preparation (recovery and resolution planning, intra-group financial support agreements) - Early intervention measures **2. Crisis management** **2.1 Management of liquidity crises** Lending of last resort by the central bank **2.2 Management of solvency crises** • Recapitalisation of banks by public funds (state aid) • Resolution of banks • Winding-up of banks • Operation of deposit guarantee schemes (activated for the payment of compensations in the latter case only)
1.2 Ensuring capital market stability	• Authorisation of investment firms and management companies of investment funds • Micro- and macro-prudential regulation of these firms • Micro-prudential supervision of financial firms providing investment services (including banks) • Macro-prudential financial oversight • Reorganisation, resolution and winding-up of investment firms • Authorisation, conduct of business, supervision and oversight of regulated markets • Sound operation of markets and infrastructures for trading in financial instruments (including OTC derivatives)

TABLE 4 (continued) Financial policy objectives and instruments	
Policy objectives	**Policy instruments**
1.3 Ensuring insurance and reinsurance sector stability	• Authorisation of insurance and reinsurance undertakings • Micro- and macro-prudential regulation of insurance and reinsurance undertakings • Micro-prudential supervision of insurance and reinsurance undertakings • Macro-prudential financial oversight • Reorganisation and winding-up of insurance and reinsurance undertakings
1.4 Ensuring financial stability *in globo* (financial conglomerates)	• Supplementary micro-prudential supervision of financial conglomerates • Ancillary micro-prudential regulation of financial conglomerates
1.5 Ensuring the stability of payment and settlement systems	• Oversight • Functional interventions
2. Ensuring investor protection and capital markets integrity, efficiency and transparency	
2.1 Rules addressed to issuers of transferable securities	• Reporting of information to investors • Adequate corporate governance of listed companies • Listing particulars for issuers • Prospectus requirements for issuers • Periodical dissemination of information by listed companies • Protection of rights and interests of minority shareholders in the case of takeover bids • Accounting standards for listed companies
2.2 Rules addressed to banks and investment firms providing investment services	• Adequate internal organisation with regard to the provision of investment services • *Stricto sensu* investor protection

TABLE 4 (continued) Financial policy objectives and instruments	
Policy objectives	**Policy instruments**
2.3 Rules addressed to UCITS and alternative investment funds' management companies	
2.3.1 Rules addressed to UCITS management companies	• Segregation and protection of investors' assets • Dissemination of information by UCITS management companies • Criteria for the evaluation of UCITS assets and redemption of UCITS units • Rules on the investment policies of UCITS
2.3.2 Rules concerning the management companies of alternative investment funds (including hedge funds)	• Rules on conduct of business • Transparency requirements
2.4 Rules on the sound operation of secondary markets	• Transparency of transactions conducted in secondary markets • Combating market abuse (market manipulation and insider trading) • Oversight of systems for the clearing and settlement of transactions • Obligation to carry out clearing of OTC derivatives through central counterparties (CCPs) and obligation to record transactions in these derivatives in central databases • Regulation of short selling
2.5 Rules concerning credit rating agencies	• Supervision and registration in a register of CRAs • Conditions for the issuing of credit ratings
2.6 Rules concerning auditors	• Supervision of auditors • Independence of auditors • Quality requirements of audit standards

TABLE 4 (continued) Financial policy objectives and instruments	
Policy objectives	**Policy instruments**
3. Compensation of investors	Establishment of explicit investor-compensation schemes
4. Safeguarding the efficiency of payment and settlement systems	Oversight
5. Protection of the economic interests of financial services consumers	
5.1 Reducing information asymmetry	• Provision of adequate information to consumers • Prohibition of unfair commercial practices • Financial education
5.2 Addressing the problem of consumers' limited negotiating capacity vis-à-vis financial firms	• Rules on the control and prohibition of abusive general terms of transactions • Rules on safeguarding of specific consumer rights after the conclusion of a contract • Rules on facilitating consumer access to justice (in-court/out-of-court)
5.3 Tackling consumer over-indebtedness	• Responsible lending regulation • Consumer bankruptcy regulation
6. Combating the use of the financial system for the purpose of economic crimes	Prevention and containment of: • money laundering • terrorist financing • fraud in the use of payment instruments

C. Instruments to achieve the policy objective of ensuring banking stability: the 'bank safety net'

1. The conceptual framework

1.1 Negative externalities in banking

1.1.1 Channels of contagion among banks

As already mentioned, the main policy objective for regulatory intervention in the banking system is safeguarding its stability. The depletion of a bank's equity and its insolvency does not have a negative impact on depositors and other creditor categories alone. A key specificity that sets the banking market apart in the whole economic system lies in the risk of the entire banking system's destabilisation by an individual bank's insolvency.[130] The real sector of the economy may be adversely impacted amidst a banking (or in general a financial) crisis owing to the decline in, or lack of, bank financing to households and enterprises and the fall in total demand in the economy.

Traditionally, the main channel for spillover effects in the banking sector with the potential to lead to generalised (systemic) crises has been panic on the part of depositors (the 'informational channel'). However, 'real channels' of contagion also exist as a result of the interconnectedness of banks with other banks (and financial firms, in general), e.g. through the interbank market,[131] the markets for OTC derivatives (swaps, forwards, options), or the holding of assets (equity and debt).[132] The recent (2007-2009) international financial crisis provides the most important evidence in this respect.[133]

(a) The first channel of contagion is the **'information channel'** and is associated with the emergence of panic, either a run on an individual bank or a bank run in the entire banking system (literally a 'banking panic').[134] A banking panic is an occurrence whereby depositors' demand to be paid in cash for their claims to such an extent that the banking system is only able to respond through a suspension of convertibility or by issuing clearing-house loan certificates. Whereas a bank run need not always lead to a generalised panic, the financial troubles and the potential failure of one bank can become contagious and affect others for two reasons:

- either because depositors assume that their bank is or may become exposed to the same risks as an insolvent bank (pure information contagion), or
- because they place it in the same class of riskiness as others exposed to a troubled bank regardless of whether or not a failure has occurred (signal information contagion).[135]

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[130] The theory on banking crises and their transmission channels is discussed in detail in **Guttentag and Herring (1986b)**, **Saunders (1987)**, **Calomiris and Gorton (1990)**, **Herring and Litan (1995)**, pp. 50-61, and **Caprio and Klingebiel (1996)**.

[131] See **Saunders (1987)**, as early as in the 1980s.

[132] For an overview of all transmission channels (mechanisms) see **Lastra (2015)**, pp. 183-193.

[133] See, in particular, **International Monetary Fund (2010)**, Chapter 2.

[134] See **Calomiris and Gorton (1990)**.

[135] See **Saunders (1987)**, p. 205.

In either case, the catalyst for the transmission of risks is the behaviour of depositors and the existence of information asymmetries. Depositors lack the information necessary to determine whether the run on a bank or even its insolvency was caused by excessive risk vulnerability, or whether the bank was simply the first victim of adverse conditions prevailing throughout the banking system.

Whereas it is impossible to prevent runs on individual institutions, runs should not be contagious because during a generalised withdrawal of funds from the banking system, caused by a sudden and significant increase in depositors' demand for cash, even solvent banks can fail due to their **structural vulnerability to liquidity risk**.[136] This can have a cumulative impact on several other banks with the spillover effect of illiquidity-caused failures. Under such circumstances, business firms are forced to interrupt their productive investments, leading the economy into a sudden recession. The impact on the transaction balances of depositors (known as the 'macro-domino' effect) and the implications on the functioning of the payment system and the conduct of monetary policy are grave as well.[137]

This issue will be examined in detail just below, **under 1.1.2**.

(b) The second channel of contagion is the **'real channel'** and refers to the transmission of problems from one market segment to another following the emergence of systemic risk. Systemic risk is defined as the risk of a disruption in the provision of (and/or inability to provide) financial services due to the weakening of a given sector or of the entire financial system, with the likelihood of serious negative impacts in the real sector of the economy.[138] Systemic risk has two dimensions:

- the time dimension, i.e. the development of systemic risk in the course of time, and
- the cross-sectional dimension, i.e. how risk is distributed in the financial system at a given point in time.[139]

1.1.2 In particular: banking panics

1.1.2.1 Introduction

Panics occur when *"bank debtholders at all, or many, banks in the banking system suddenly demand that banks convert their debt into cash at par to such an extent that banks suspend convertibility of their debt into cash"*.[140] Panic is the cause of failure in the banking market to the extent that as the panic evolves even solvent banks can face a heavy liquidity strain, which in turn may cause their insolvency.[141]

[136] See on this further below **under 1.1.2.2.3**.

[137] See **Guttentag and Herring (1987a)**, pp. 158-159.

[138] See **Committee on the Global Financial System (2010a)**, Section 2.1. See also **Schwarcz (2008)**, Chapter II, and **Brunnermeier et. al. (2009)**, Chapter 2.

[139] See on this further below, **under 2.5.1**.

[140] This definition of panics is given by **Calomiris and Gorton (1990).**

[141] A bank becomes insolvent when either its liquidity is so low that it cannot repay its outstanding debt or the market value of its non-equity liabilities exceeds that of its assets.

There are several models explaining banking panics.[142] All of them view panics as caused by imperfect information to depositors about the quality of bank asset portfolios and bank viability. This makes depositors unable to distinguish between 'good' and 'bad' banks and, under certain circumstances, induces them to withdraw funds from the banking system massively. Depending on the economic event triggering depositors' sudden demand for convertibility, the models on banking panics are classified in accordance with two theories:

(a) The 'non-fundamental theory' considers bank panics to be caused by random large fund withdrawals from the banking system. According to the 'sunspot' or 'random withdrawal hypothesis', panics can be triggered by *"anything that causes depositors to anticipate a run such as a bad earnings report, a negative government forecast or even a sunspot."*[143]

(b) According to the 'fundamental theory', bank panics are caused by any economic event that can induce depositors to change perceptions about bank risk exposure *"if depositors change, on a rational basis, their perception of asset riskiness they will not be able to discern which bank is underperforming. They will be induced to withdraw from the banking system as a whole, leading the system into panic."*[144] **Gorton (1988a)** presents three (3) different versions of the fundamental theory:

(a) The **'recession hypothesis'** maintains that depositors withdraw funds from the banking system after the dissemination of information about a looming severe recession. When an economic variable predicting recession (e.g. unemployment rate, sales) reaches a critical value, depositors hurry to convert their deposits into cash in the anticipation of several bank failures.[145]

(b) According to the **'seasonal hypothesis'**, the origin of panics lies in the existence of stringent money market conditions such as the failure of specific firms, depressed stock prices or high interest rates.[146]

(c) The **'failure hypothesis'** maintains that panics are generated by the unexpected failure of a usually, but not necessarily, large credit institution.[147] The failure of a large bank, or even the anticipation thereof, can change depositor risk perceptions with regard to the entire market and induce domino effects. Because of its relevance to further analysis, this hypothesis will be examined more closely. The lack of market information on the market value of banks' portfolio does not allow for correct assessment of banks' exposure to an individual insolvent bank, whereas depositors may also think that banks of 'similar type' to the insolvent bank are also exposed to similar risks. Therefore, depositors' inability to judge whether the withdrawal of a bank's authorisation is attributed to specific reasons or to factors that concern all banks alike (as a result of information asymmetry), coupled with the demand for payment in full of the nominal value of their claims – if they manage to withdraw their deposits in time – leads to panic in the absence of a reliable deposit guarantee scheme.

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[142] These models are reviewed in **Carisano (1992)**, pp. 32-56.

[143] See on this **Diamond and Dybvig (1983)**, p. 410.

[144] See **Carisano (1992)**, p. 48.

[145] See **Gorton (1988a)**, p. 225.

[146] *Ibid.*, p. 224.

[147] *Ibid*., pp. 224-225.

1.1.2.2 More specifically: the failure hypothesis of banking panics

1.1.2.2.1 Introduction

Any bank can be exposed to insolvency, which is a positive function of two factors: the intensity of potential risks and the extent of its vulnerability to risks:

- risk intensity depends on the insolvency's frequency and predictability, as well as the extent of losses that could be caused if it were to occur, while
- risk vulnerability depends on both the current exposure of a bank to each individual risk as well as its capacity to absorb losses, if risks occur.[148]

Banks are subject to runs because they promise liquidity, i.e. redemption of deposits at nominal value. During a run, many depositors simultaneously demand convertibility of their deposits into cash. The development of runs, like that of panics, is facilitated by two structural features of the banking sector:

- information asymmetries (see under 1.1.2.2.2 below) and
- the structural vulnerability of banks to liquidity risk, arising from the features of bank loans and deposits (under 1.1.2.2.3).

1.1.2.2.2 Information asymmetries in banking

Business loans which account for a large part of banks' asset portfolios are non-marketable and illiquid due to the following: "*Banks are observing information about each loan which is exclusively shared between the borrower and itself. If the intermediary were to sell the loan and transfer the monitoring and the enforcement to someone else, the new claimant would have to incur the monitoring cost again, duplicating the effort of the first intermediary.*"[149]

To the extent that there is no secondary market for business and other bank loans (which exists, in practice, only in the case of asset securitisation), these financial assets cannot be marked to market and thus cannot be precisely valued.[150] This makes it difficult for depositors to determine the current value of the bank asset portfolio and evaluate a bank's net worth. The problem of information asymmetry, present in money and capital markets, also emerges in the banking system. The asymmetric division of information between depositors and the bank has several implications:

(a) It is the main cause of the reduced discipline exerted by depositors in the market.[151]

[148] See **Guttentag and Herring (1988)**, p. 27.

[149] See **Diamond (1984)**, p. 410.

[150] Marking-to-market is an accounting principle requiring the valuation of tradable financial instruments according to market prices. Usually such a valuation must be effected on a daily basis.

[151] The 'market discipline test' refers to whether or not the market value of a firm's liabilities responds to individual risk-taking activity.

(b) It creates moral hazard problems.[152] Bank insiders with superior information about the expected performance of the loan portfolio are tempted, as would any agent exercising control over information, to assume higher risk exposure, because the level of their effort cannot be observed by the principals (i.e. depositors).[153]

(c) Due to the lack of adequate information in the market, reputation and trust play a proportionally more important role in banking than in most other sectors of the economy. Imprudent banks can free-ride and benefit from the reputation established by other banks which have managed risks prudently.[154]

(d) From the perspective of public policy, the most serious consequence of information asymmetries in banking is that depositors are tempted to participate in banking panics.[155] Since bank managers and depositors do not share the same information about a banking firm's financial performance, concerns about its solvency may trigger withdrawals. Uninformed depositors, and especially those who are insured, do not have the time, the competence or even the incentive to monitor and control their bank.

Conversion may be required even from creditors who would have preferred to leave their savings with the bank, but decide to monitor the bank by withdrawing deposits, as they cannot adequately assess its net worth.[156] This process is facilitated by the fact that the claim of bank depositors has a fixed nominal value, which does not vary with changes in the market value of the bank portfolio in assets.[157] Uncertain and unable to coordinate with others, each depositor wants to collect his/her claim before reimbursement is suspended.[158]

1.1.2.2.3 Structural vulnerability of banks to liquidity risk

(a) Bank runs can create extensive liquidity problems; they can even induce solvency problems in the bank hit by the run, resulting from a bank's structural vulnerability to liquidity risk.[159] An illiquidity-caused insolvency occurs when a bank is unable to service deposit withdrawals. As already mentioned, the structural vulnerability of banks to liquidity risk and their subsequent susceptibility to insolvency is caused by their ability to transform liquid liabilities into illiquid assets, which concurrently constitutes the *raison d'être* of banking intermediation.

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[152] **Rasmusen (1989)**, pp. 133 ff., distinguishes between games of moral hazard with hidden action and games of moral hazard with hidden information. In both cases the principal offers a contract, the agent accepts, and then noise is added to the task to be performed.

[153] *Ibid*., p. 140.

[154] This important argument was raised by **Goodhart (1988)**.

[155] See **Gorton (1988a)**, p. 225.

[156] This arises from the non-marketability of a large portion of bank assets; see **Diamond and Dybvig (1983)**, p. 402.

[157] See **Freedman (1987)**, p. 189.

[158] In this case the money supply is also affected due to the increase in the liquidity ratio of the public, which affects the multiplier of the monetary basis.

[159] See **Guttentag and Herring (1988)**, p. 3 and **Carisano (1992)**, p. 14.

To the extent that bank assets are marketable, it can overcome a sudden exposure to liquidity risk by selling such assets in the secondary market. However, since business and consumer loans are illiquid,[160] a bank is unable to satisfy its depositors if they all choose to exercise their withdrawal option. In principle then, banks with a substantial portfolio of illiquid and non-marketable assets are vulnerable to losses incurred either as a result of the liquidation of loans at emergency prices, or because of the need to be funded in the money or interbank market at a high premium.

In other words, a bank hit by a run and finding it impossible either to borrow at market rates or to sell marketable assets at market prices is exposed to illiquidity-caused insolvency.

(b) Whether liquidity problems are transformed into solvency problems depends on the behaviour of depositors after they have exercised their withdrawal option. If they do not redeposit with other banks or if they do not purchase other securities issued by banks, but rather hold their funds in the form of currency outside the banking system, it is more likely that liquidity problems will be transformed into solvency problems.[161]

1.2 The components of the 'bank safety net'

As already mentioned above in Section B, the need for regulatory intervention in the banking system is aimed at ensuring its stability against the risk of simultaneous or successive bank authorisation withdrawals. Ensuring the stability of the banking system, by preventing the above-mentioned spillover effects among banks, renders necessary the adoption of various preventative measures, and also protective (or 'crisis management') policies. Public authorities are greatly concerned about the vulnerability of the banking system to economic and financial shocks, and the preservation of its stability and soundness. In order to prevent the evolution of negative externalities in the form of contagious bank failures, they command a broad range of instruments which comprise the 'bank safety net'. According to **Guttentag and Herring (1988)**, the components of the bank safety net can be viewed as: "*a series of circuit breakers designed to prevent a shock to one part of the financial system from surging through the financial network to damage the rest of the system*".[162]

Even though the various components of this 'crisis prevention and crisis management system' are somewhat complementary,[163] each has a specific contribution to the safeguarding of the banking system's stability.[164]

Apart from the components to be analysed below, the bank safety net also includes measures by monetary authorities to eliminate any tendencies on the part of depositors for excessive cash withdrawals in periods of crisis. This measure is inextricably linked with the conduct of monetary policy and is a manifestation of the close relationship between the operation of the banking and the monetary system.

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[160] These financial assets are not eligible for rediscounting at the central bank.

[161] See **Carisano (1992)**, p. 15.

[162] See **Guttentag and Herring (1988)**, p. 9.

[163] *Ibid*., p. 8.

[164] For an overview of the components of the 'bank safety net', aimed at contributing to the stability of the banking system, see **Guttentag and Herring (1986a)**, and **Demirgüç-Kunt and Huizinga (1999)**.

2. Crisis prevention

2.1 Structural regulations

(a) The issue whether banks should be allowed to provide *directly* investment services, and to what extent, has been and still remains a source of major debate:

- in some states (such as the EU member states[165]), these services can be provided by banks unconditionally, according to the 'universal banking model',[166] while
- in others, limitations are put in place.

In extremis, under US federal financial law, banks were not allowed either to provide investment services directly or to have subsidiaries that offer investment services pursuant to the provisions of the 1933 "Glass-Steagall Act".[167] This law was partly repealed in 1999 with the "Financial Services Modernisation Act" (widely known as "Gramm-Leach-Bliley Act".[168]

This issue re-emerged in the wake of the recent (2007-2009) international financial crisis. The United States have already enacted legislation restricting the power of banks to provide investment services, according to the provisions of the 'Volcker Rule', which is implemented by Title VI of the 2010 "Dodd-Frank Wall Street Reform and Consumer Protection Act".[169] The same applies:

- in the United Kingdom on the basis of the "Vickers Report",[170] as well as
- in Belgium, France and Germany.

(b) In the EU, in November 2011, a High-level Expert Group was set up ("High-level Expert Group on structural aspects of the EU banking sector") in order to assess the need for structural reform of the EU banking sector, chaired by Erkki Liikanen, Governor of the Bank of Finland (hence also "Liikanen Group"). In particular, its mandate consisted in determining whether, in addition to ongoing regulatory reforms, structural reforms of EU credit institutions would strengthen financial stability and improve efficiency and consumer protection.[171]

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[165] The rule of the Investment Services Directive (93/22/EEC), according to which EU Member States were prohibited, since 1996, to impose on EU credit institutions limitations with regard to the provision of investment services, still applies.

[166] On this model, see **Benston (19944)**, **Saunders and Walter (1994)**, pp. 3-9 and 84-126, **Rheinholdson and Olsson (2012)**, **Lang and Schroder (2012)**, and **Goodhart (2013)**.

[167] See **Möschel (1978)** and **Lichtenstein (2010)**, pp. 219-224.

[168] Public Law 106-102, 113 Stat. 1338 (see **O' Neal (2000)** and **Yeager, Yeager and Harshman (2004)**). On whether the adoption of the latter Act, which also eliminated legal barriers to affiliations between banks and insurance companies, contributed to the recent (2007-2009) international financial crisis in the United States, see indicatively **Grant (2010)** (supporting this view), and **Wallison (2009)** and **Norberg (2009)**, pp. 86-87 (arguing against it).

[169] Public Law 111-203, 124 Stat. 1376-2223. See on this Act **Acharya, Cooley, Richardson, and Walter (2011)**, **Whitehead (2011)**, **Thakor (2012)**, **Dumler (2013)** and **Coates (2015)**.

[170] The Report is available at: http://bankingcommission.independent.gov.uk.

[171] For the mandate and list of members, see: http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/mandate_en. pdf.

On the basis of the Report submitted by the Liikanen Group on 29 January 2014,[172] the European Commission adopted two days later a **Proposal for a Regulation** of the European Parliament and of the Council "on structural measures improving the resilience of EU credit institutions" to prevent the largest and most complex (in terms of structure) banking groups from engaging in proprietary trading, and give supervisory authorities the power to require those banking groups to separate risky trading activities from their deposit-taking business.[173] In particular:

(i) The Regulation should apply to the Global Systemically Important Banks (the **'G-SIIs'**) incorporated to EU Member States,[174] and any bank with assets amounting at least to 30 bn euros and trading activities amounting at least to 70 bn euros or 10% of its total assets.

(ii) The Regulation should lay down rules on:

- the prohibition of proprietary trading and investment in leveraged Alternative Investment Funds to profit on own account, and
- the transfer of certain high-risk trading activities (such as market-making, investments in and acting as a sponsor for securitisation, trading in derivatives) to separate legal trading entities within the banking group.

(iii) With regard to the separation of trading activities, supervisory authorities must assess the volume and risks arising from the trading activities banks carry out. In case that these trading activities pose significant threat to the financial stability of the bank concerned or of the EU financial system as a whole, the supervisory authority must require these trading activities to be carried out only by a trading entity of the banking group. The trading entity must not take deposits that are eligible for compensation by deposit guarantee schemes and provide payment services.

2.2 Authorisation requirements

The first component of the bank safety net consists in laying down certain conditions, whose fulfilment is a *sine qua non* for the taking up of banking activity. Authorisation requirements serve a screening function. They are aimed at preventing market entry by private or legal persons whose management could lead to heavy losses in a bank and impair the reputation of the banking system as a whole.[175] Authorisation requirements also assure that the banking firm has sufficient financial resources to finance its initial investments and withstand temporary losses. Standard requirements imposed by supervisory authorities in the context of the licensing procedure are the following:

- a minimum initial capital requirement,[176]

[172] High-Level Expet Group on Reforming the Structure of the EU Banking Sector, Final Report (2012), available at: http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_en. pdf. On this report, see **Krahnen (2013)**.

[173] COM(2014) 040 final. On the provisions of the Regulation's proposal, see indicatively **Binder (2015a)** and **(2015b)**, pp. 23-27. For an overview of all the above-mentioned structural reforms, see **Gambacorta and van Rixtel (2013)**, **Vinals, Pazarbasioglu, Surti, Narain, Erbenova, and Chow (2013)**, and **Binder (2015b)**, pp. 16-22 and 27-32.

[174] The definition of and the identification methodology for G-SIIs is laid down in Article 131(1)-(2) of **Directive 2013/36/EU**.

[175] **Guttentag and Herring (1988)**, pp. 12-13.

[176] This is the first function of bank capital, the second being its loss-buffer function.

- requirements on the organisational structure of the bank,
- specific fit-and-proper criteria for major shareholders, and
- similar criteria for the bank management (the 'four-eyes principle').[177]

2.3 Micro-prudential banking regulation

2.3.1 Content

Micro-prudential banking regulation seeks to enforce the safety and soundness of banks by limiting their exposure either to insolvency or to liquidity risk (which might lead to insolvency under certain circumstances[178]) and by curbing their risk vulnerability through:

- limiting their exposure to various categories of financial risks, and all other risks associated with the conduct of their business to which they might be exposed, and
- increasing their capacity to absorb losses incurred in the event of such risks.[179]

Hence, micro-prudential regulation serves a failure-preventing function, by preventing the failure of individual banks, the risk of contagion and subsequent negative externalities in terms of confidence in the financial system as a whole.[180]

2.3.2 Risks to which banks may be exposed

2.3.2.1 Introductory remarks

Banks are exposed to three categories of risk (apart from reputation risk, which, as shown in the recent international financial crisis, is the most severe and may lead to detrimental outcomes for the economy):[181]

(a) Financial risks, which can be subdivided as follows:

- risks arising from the transformation function of banks: credit risk, liquidity risk, and interest-rate income risk, and

[177] See **OECD (1987)**, pp. 46-49.

[178] **Guttentag and Herring (1988**, pp. 34-45) are of the view that supervisors should focus more on the potential exposure of banks to insolvency, because it is such banks that seriously threaten the stability of the system.

[179] In this respect, it should be pointed out that the measures taken by banks themselves in managing the risks involved with their portfolio are aimed at the same objective. Indeed, supervisory authorities issue guidelines to banks regarding their risk exposure management.

[180] Micro-prudential banking regulation and its policy instruments (as well as its correlation with micro-prudential supervision) are discussed in greater detail in **Barth, Caprio and Levine (2006)**, pp. 110-132 (a study published before the outbreak of the recent (2007-2009) international financial crisis). On the relationship between micro- and macro-prudential regulation see **Green (2012)**.

[181] With regard to all these risks, apart from the extensive literature, reference should be made to the relevant work of the Basel Committee on Banking Supervision and the Committee on Payments and Market Infrastructures.

- market risks to the extent that banks operate also in capital, foreign exchange and commodities markets (position risk, foreign exchange risk and risk from open positions in commodities).

(b) Risks arising from payment, clearing and settlement systems.

(c) Finally, operational risk, the definition of which also encompasses legal risk, as well as political risk.

2.3.2.2 Risks arising from the transformation function of banks

2.3.2.2.1 Credit risk

(a) Credit risk is, in principle, a bank's risk of loss following a borrower's default or, in the case of undertakings, credit rating downgrade, which puts borrower debt-servicing ability at risk. Banks' exposure to credit risk arises from their main function, i.e. transformation related to the allocation of liquidity risk according to the above. When managing this risk, banks calculate four specific parameters for each exposure:

- a borrower's probability of default (the **'PD'**),
- loss given default (the **'LGD'**), which refers to the calculation of a bank's (average) expected loss per claim (a function of accepted collateral) in the event of a borrower's inability to meet liabilities (a concept which incorporates capital losses, loss of interest income) and operating expenses),
- exposure at default (the **'EAD'**), which is exposure upon default of a borrower, and
- the loan contract's maturity.[182]

(b) Banks' exposure to credit risk does not only arise from granted loans and credit, but also from the total sum of claims, both on- and off-balance sheet (e.g. bonds or positions in OTC derivatives).[183] Of particular importance within this framework is the credit risk to which banks are exposed as a result of positions in tradable debt securities, equities and financial derivative instruments, held in their trading book.

(c) A special dimension of credit risk is 'country risk', which refers to the probability of adverse, and normally unforeseen, economic, political or social circumstances in a given state, which do not allow borrowers to repay their foreign currency-denominated debt when due, in accordance with the contractual terms laid down.[184] The most significant and frequent manifestation of this risk is 'transfer risk', which relates to the probability of a borrower's reduced ability or limited willingness to secure foreign currency to repay debt denominated in foreign currency.

[182] These parameters are also particularly important for the calculation of banks' capital requirements in accordance with the 'internal ratings-based approach'. See **Gleeson (2010)**, pp. 75-77, and **Hills (2004)**, pp. 39-42.

[183] As regards credit risk to which banks are exposed as a result of their off-balance sheet items, see **Äberli (1989)**.

[184] See **Siegwart, Caytas, and Mahari (1989)**.

2.3.2.2.2 Liquidity risk

Liquidity is the ability to fund assets and to settle obligations when due.[185] Liquidity risk refers to the likelihood of a bank's liquidity position drying up following an unforeseen increase in liquidity needs. This risk arises from maturity transformation and has two aspects:

(a) The first aspect is the 'funding (or liability) liquidity risk', which refers to the probability of loss as a result of a bank's inability to borrow funds at an acceptable cost in order to refinance its debt. Examples of this aspect are:

- a rapid, mass withdrawal of deposits,
- a crisis in the interbank market not allowing fund-raising through this market,[186] and
- inability to issue or refinance debt instruments in money and capital markets.[187]

(b) The second aspect is 'asset (or market) liquidity risk', i.e. the risk of loss resulting from the inability to liquidate assets at prices that do not deviate significantly from their nominal value, in order to meet obligations when due. The lowering of asset value due to haircuts or, in the most extreme case, the complete inability to liquidate, as shown during the recent (2007-2009) international financial crisis, are some of the most indicative examples.

2.3.2.2.3 Income risk

Income risk refers to the likelihood of a decline in bank interest rate income following an unexpected rise/fall of nominal rates. Banks are vulnerable to this risk due to the structure of their portfolio, given that on-balance sheet assets typically have longer maturities than liabilities and, as a result, are less vulnerable to interest rate fluctuations. The greater the short-term repricing gap – defined as the ratio of assets to liabilities, repriced within one year to own funds – and the stronger the fluctuation of interest rates, the more vulnerable banks are to this risk (and thus the greater the decline/increase in its prospective interest income as a result of higher/lower interest rates).

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[185] Liquidity risk and the alternative measures for its assessment, management and supervision are discussed in detail in **Basel Committee on Banking Supervision (2008)**: "Principles for Sound Liquidity Risk Management and Supervision", September (available at: http://www.bis.org/publ/bcbs144.htm).

[186] An indicative example is the 2008 crisis in the interbank market as a result of the recent (2007-2009) international financial crisis.

[187] For example, Greek banks have been exposed to this risk since 2010 due to the considerable downgrading in the credit rating of Greece's government bonds, which brought about the downgrades of their own credit ratings as well.

2.3.2.3 Market risks

2.3.2.3.1 Position risk

Position risk is defined as the probability of loss associated with open positions in debt instruments, equities and derivative instruments (or foreign currency) due to changes in various market parameters, to the extent that these positions are held for the purpose of resale or speculation. From a systematic point of view, the concept of risk arising from positions in primary instruments should be presented separately from risk arising from positions in derivative instruments (analysed below, under (I) and (II), respectively).

(I) Risk arising from open positions in debt securities and equities

According to the prevalent 'building-blocks approach', position risk arising from open positions in debt securities and equities can be broken down in two components: specific (see under (a) below) and general (under (b)):

(a) Specific position risk: this is defined as the probability of loss due to a negative change in a debt security's price, mainly as a result of parameters associated with its issuer. The notion of this component of position risk encompasses:

- 'non-systematic risk', defined as a debt security's volatility (of returns) relative to the market rate of return,
- 'event risk', i.e. the risk of a negative change in the price of debt securities in the case of exceptional events, including issuer default (default risk),
- the risk of inability to liquidate an open position in the market, and
- 'execution risk' in arbitrage transactions.

(b) General position risk: General position risk is defined as the risk of loss as a result of unfavourable price changes. This component of position risk refers to the probability of loss arising from open positions in tradable debt securities and equities following an abrupt change in their market value as a result of either (unfavourable) changes in nominal rates (in the case of debt instruments),[188] or a strong price fluctuation in the markets where equities are traded, which is not attributed to specific issuers' characteristics.

(II) Risk arising from open positions in derivative instruments

The 'building-blocks approach' is also used for derivative instruments included in trading books:

(a) Specific position risk is the result of an abrupt change in the derivative instrument's market value for reasons associated with the underlying security's issuer.

(b) By contrast, general position risk arises from open positions in derivative instruments or derivative portfolios taken on various forms, which can be divided into two systematic categories:

[188] General position risk arising from open positions in debt instruments, also known as 'investment risk', is the first of two components of interest rate risk. The second component of interest rate risk is 'income risk' (see just above, **under 2.3.2.2.3**).

(i) The first category encompasses those forms of market risk that arise from open positions in all derivative instruments, be they based on forward or option contracts, such as 'delta risk'/'absolute price risk,[189] 'rho risk'/'discount rate risk',[190] 'basis risk' and 'spread risk'.[191]

(ii) The second category includes forms of market risk arising exclusively from open positions in option derivatives, such as 'gamma risk'/'convexity risk',[192] 'vega risk'/'volatility risk',[193] and 'theta risk'.[194]

The market value of option derivatives is thus not only affected by changes in the underlying instruments' prices (as is the case with derivative instruments based on forward contracts), but also by other parameters such as the volatility of yields of underlying instruments and the time dimension.

2.3.2.3.2 Foreign exchange risk

Foreign exchange risk relates to a bank's possible loss as a result of unpredictable, unfavourable revaluation of the currencies in which on- and off-balance sheet items are denominated vis-à-vis the currency of the bank's financial statements.[195] In the context of a variable exchange-rate system, in effect internationally since 1971, the risk arising from foreign exchange open positions is a result of the fluctuation of nominal exchange rates. In fact, as a result of the frequency and intensity of foreign exchange fluctuations, supervisory authorities are not only interested in the eventuality of loss, but also in the extent to which banks' open position portfolios could be affected in such an eventuality, as a function of three (3) factors:

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[189] This risk relates to the probability of loss incurred by the holder of an open position in an option derivative due to a change in the price of the underlying asset to the corresponding change in the price of the option ('delta ratio').

[190] This risk relates to the probability of loss incurred by the holder of an open position in an option derivative as a result of changes in discount rate levels. Particularly with regard to currency call options there are two rhos, one for each currency's interest rate.

[191] Basis risk is the risk arising from a shift in rate relationships between two similar (but not identical) financial instruments with comparable maturities. This risk emerges in the event of imperfect hedging, i.e. when an open position in a primary financial instrument is hedged by a derivative instrument, the underlying security of which is another financial instrument. Exposure risk is an aspect of basis risk, where the risk of a shift in the rate relationship between two similar instruments is consciously undertaken by the bank holding the open positions.

[192] This risk relates to the probability of loss incurred by the holder of an open position in an option derivative as a result of a change in the option's delta. Gamma is thus the second 'derivative' (in the mathematical notion of the term) of such a derivative instrument's value with regard to the underlying instrument's price.

[193] Vega risk refers to the probability of loss due to the negative impact on a derivative instrument's price of the underlying instrument's volatility (of returns). The vega of a derivative instrument is also called lambda (λ), kappa (κ) or sigma (σ).

[194] Theta risk refers to the probability of loss due to a change in the derivative instrument's value with regard to the length of time until its expiry. Theta is only expressed in negative values, because the value of an option contract drops as it nears its expiration date.

[195] This definition refers to the first aspect of foreign exchange risk, i.e. transaction risk, and delineates it vis-à-vis the other two aspects of foreign exchange risk, i.e. translation risk and economic risk.

- exchange-rate volatility,[196]
- possible correlation between currency pairs,[197] and
- the duration of foreign exchange open positions.[198]

2.3.2.3.3 Risk arising from open positions in commodities

This risk is associated with the probability of loss from open positions in commodities held in a bank's trading book, as a result of changes in commodity prices.

2.3.2.4 Operational risk

Operational risk refers to the probability of loss attributed either to inappropriate or incorrect internal processes/systems or human error, or to external causes. This risk also covers legal, but not strategic or reputational risk.[199] As pointed out by **Kokkola (2010)**, p. 125: *"This definition has a broader focus and, in addition to technology, also includes organizational aspects and other relevant factors. It creates an awareness that operational failures are not caused by the malfunctioning of technical components alone, but can also be the product of errors, fraud, inaccessibility of key staff, unavailability of external stakeholders, etc."*

2.3.2.5 Settlement risk

Settlement risk refers to the probability of loss attributed to the failure of a counterparty to settle its end of the deal, thereby preventing other counterparties to settle its commitments. It arises usually when payments are not exchanged simultaneously. The nature of this risk differs, depending on whether a participant defaults before any transfer of securities or funds (pre-settlement risk) or once final transfer of securities or funds has begun but not been completed (settlement risk).[200]

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[196] Experience of how international foreign exchange markets work so far suggests that certain foreign exchange positions are more risky than others, as certain currency pairs present relatively stronger volatility.

[197] Market experience and institutional restrictions (e.g. the Exchange Rate Mechanism of the European Monetary System) have also shown that exchange rates for certain currencies tend to move in parallel with one another, i.e. have a high degree of correlation.

[198] The probability of incurring a loss as a result of a foreign exchange open position is a positive parameter for its duration.

[199] See **Basel Committee on Banking Supervision (2011)**: "Principles for the Sound Management of Operational Risk", June (available at: http://www.bis.org/publ/bcbs144.htm). For a detailed definition of legal risk, see **McCormick (2006)**. On reputational risk see just below **under 2.3.2.7**.

[200] See **Committee on Payment and Settlement Systems – Technical Committee of the International Organisation of Securities Commissions Consultative Report (2001)**, Annex 4.

2.3.2.6 Political risk

Political risk refers to the probability of loss attributed to political instability in a country that may result in cancellation of a license or otherwise affect the bank's ability to provide financial services. In principle, political risks are insurable risks and overlap with the political component of force majeure risks.

2.3.2.7 Reputational risk

Finally, reputational risk refers to the probability of loss attributed to the actions of the bank itself (direct approach), an employee or employees (indirect approach) or tangentially third parties (i.e. suppliers).

2.3.3 Policy instruments

Micro-prudential banking regulation is mainly performed by laying down rules on:

- banks' capital adequacy ratios against exposure to risks associated with the conduct of their business,[201]
- liquidity ratios,[202]
- a leverage ratio,[203]
- the organisation and operation of in-house risk management units,
- the limitation of banks' holdings in other companies, mainly outside the financial system,
- provisioning for future exposure to risks,
- portfolio diversification (namely rules on 'large exposures'), and
- public disclosure of information on those matters.

[201] On the different meanings of the 'capital's' concept, including the regulatory one, see **Norton (1995)**, pp. 3-8 and **Alexander (2015)**. On the concept and necessity of introducing capital adequacy ratios, see indicatively **Kim and Santomero (1988)**, **Furlong and Keeley (1989)**, **Rochet (1992)**, **Berger, Herring and Szego (1995)**, **Kahane (1997)**, and **Basel Committee on Banking Supervision (2010a)**.

[202] On the concept and necessity of introducing liquidity ratios, see by mere indication **Basel Committee on Banking Supervision (2010b)**.

[203] 'Leverage' is the (non-risk based) ratio of a bank's total assets (including off-balance sheet items) to its regulatory capital. On the concept and necessity of introducing a leverage ratio, see **Hildebrand (2008)**.

In terms of definitions:

(a) **'Capital adequacy ratio'** means (in principle) the minimum amount of regulatory own funds as a percentage of total assets and off-balance sheet exposures weighted by specific risk factors ('risk-weighted assets' or 'RWAs').

(b) **'Leverage ratio'** means the minimum amount of regulatory own funds (usually core own funds) as a percentage of total assets and off-balance sheet exposures *without weighting.*

(c) There are two (main) liquidity ratios:

- the first is the **'liquidity coverage ratio'** ('LCR'), meaning the ratio of the stock of high-quality liquid assets to total net cash flows over a short period of time (e.g. the next 30 calendar days), and
- the second is the **'net stable funding ratio'** ('NSFR'), meaning the ratio of the *available* amount of stable funding to a *required* amount of stable funding.

2.4 Micro-prudential banking supervision

2.4.1 General remarks

Micro-prudential banking regulation can only be effective if coupled with micro-prudential supervision by competent authorities, with a view to assessing the quality of banks' portfolios, and ascertaining compliance with the applicable regulatory framework, in order to prevent banks' exposure to exceptional, unmanageable risk levels. Micro-prudential supervision is conducted by means of:

- regular and extraordinary examinations performed by supervisory authorities themselves, and
- the audit of annual accounts and other financial and organisational aspects by external auditors on behalf of supervisory authorities.[204]

2.4.2 Institutional aspects

There are three (3) alternative approaches to the institutional structure of micro-prudential banking (and, more generally, financial) supervision.[205] Irrespective of the approach opted for, the established authorities have the competence to supervise and impose sanctions, but also to regulate to a certain extent.[206] Hence, supervisory authorities are also regulatory authorities.

[204] Micro-prudential banking supervision and its close correlation with micro-prudential regulation are discussed in detail, by mere indication, in **Blumer (1996)**, **European Central Bank (2001)**, **Barth, Caprio and Levine (2006)**, pp. 110-132, **Arnone, Darbar and Gambini (2007)**, **Basel Committee on Banking Supervision (2012)** and **Thiele (2014)**, pp. 63-235 (as part of financial supervision).

[205] For an overview of these approaches, see **Lastra (2006)**, pp. 324-328, **Group of Thirty (2008)** and, more recently, **Central Bank Governance Group (2011)**. As regards the different governance practices of the financial regulatory and supervisory agencies in 103 IMF member states before the recent (2007-2009) international financial crisis, see **Seelig and Novoa (2009)**.

[206] Regulatory competence may be legislatively assigned to supervisory authorities on the basis of a general procurement or on an *ad hoc* basis.

(a) In accordance with the **'sectoral approach'**, a different supervisory authority is entrusted with the authorisation and micro-prudential supervision of financial firms for each of the three main sectors of the financial system (banking sector, capital markets, and private insurance sector). One of the three is also responsible for conducting ancillary micro-prudential supervision of financial conglomerates.[207] The task of checking compliance with rules on ensuring capital market efficiency is assigned to the supervisory authority responsible for the authorisation and micro-prudential supervision of investment firms. If the sectoral approach is adopted, an issue arises regarding the competence for the micro-prudential supervision of banks providing investment services in terms of their compliance with rules on ensuring capital market efficiency and investor protection, given that such supervision can be carried out either by the supervisory authority responsible for the micro-prudential supervision of banks or by the capital market supervisory authority.

As regards banks, the supervisory authority may be either the central bank, namely the monetary authority,[208] or an administrative authority. Under a **'modified sectoral approach'**, there may be only two supervisory authorities: the first for the two main sectors of the financial system (usually the banking sector and capital markets), and the second for the third sector.

(b) If the **'full integration approach'** is adopted, a single supervisory authority is exclusively competent for the micro-prudential supervision of financial firms operating in the three main sectors of the financial system. Usually, this supervisory authority is an administrative authority, even though in certain countries (such as Ireland) the task is assigned to the central bank.

(c) Finally, under the **'functional approach'**, responsibilities are allocated between two supervisory authorities, as follows: the first is competent for the authorisation and micro-prudential supervision of financial firms operating in the three main sectors of the financial system, as well as for ancillary supervision of financial conglomerates, and the second is competent for checking compliance with provisions on ensuring capital market efficiency and investor protection. In this case, the former may be either the central bank or an administrative authority, and the latter is always an administrative authority.

On the application of these approaches in the jurisdiction of the states represented in the Basel Committee on Banking Supervision, see **Table 5** just below.

[207] Typically, this competence is assigned to the supervisory authority responsible for the supervision of a group's parent company or, in the case of horizontal groups, the supervisory authority responsible for the micro-prudential supervision of the group's largest company.

[208] In the majority of economically developed states, central banks are independent authorities (in personal, institutional, financial, and operational terms). For more details on the concept and extent of central bank independence, see **Amtenbrink (1999)** and **Central Bank Governance Group (2009)**, Chapters 5 and 6.

Table 5

Classification of members of the Basel Committee on Banking Supervision according to their competences in micro-prudential banking (financial) supervision

		Members of Basel Committee (reference to the relevant state)	
		National central banks (14)	**National administrative authorities (14)**
Approaches to micro-prudential financial supervision	**Sectoral approach**	Argentina Brasil Hong Kong SAR India Italy Russia Saudi Arabia Singapore South Africa Spain (SSM: euro area) United Kingdom	**Only for banking:** China Turkey United States **Both for banking and capital markets:** Luxembourg Mexico
	Functional approach	Belgium Netherlands	France
	Full integration approach	–	Australia Canada Germany Indonesia Japan Korea Sweden Switzerland

2.4.3 Separation of monetary policy from banking supervisory tasks

(a) Although the safeguarding of financial stability has historically been a major objective of central banks and the micro-prudential supervision over credit institutions a main task of several thereof, an ever increasing number of countries around the world have assigned this supervision since the 1980s to independent authorities other than the central bank.[209]

The rationale behind this development was that the exercise of supervisory powers by the central bank may give rise to conflicts of interest that would undermine the efficient achievement of its monetary policy objectives (not least in terms of maintaining price stability).[210]

(b) However, this trend has tended to be reversed in the aftermath of the recent (2007-2009) international financial crisis as a result of the relevant failures attributed to independent supervisory authorities in many states all over the world.[211] In addition to the Bank of England since 1 April 2013,[212] the ECB has now become another striking example of this trend. Nevertheless, the creation of 'Chinese walls' within the central bank is an essential element to ensure the adequate separation of its monetary policy and other tasks from its (new) supervisory tasks.

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[209] See on this indicatively **Herring and Carmassi (2008)**, with extensive further references, and **Central Bank Governance Group (2011)**. On the trend towards integrating sectoral financial supervisory authorities (for banking, capital markets and insurance/reinsurance) into a single body, see **Hadjiemmanuil (2004)**, **Wymeersch (2006)** (specifically in Europe), **Filipova (2007)**, **Group of Thirty (2008)**, and **Seelig and Novoa (2009)**.

[210] For an overview of the debate on whether it is appropriate for a central bank, as a monetary authority, to also perform micro-prudential banking supervision tasks ('separation of monetary and supervisory tasks of central banks'), see the seminal paper by **Goodhart and Schoenmaker (1993)**, as well as **Haubrich (1996)**, **Di Noia and Di Giorgio (1999)**, **Goodhart (2000)**, **Gianviti (2010)**, pp. 480-482, **Eijffinger and Nijskens (2012)** and **Beck and Gros (2013)**.

[211] See **Davies and Green (2010)**, pp. 187-213.

[212] Under the UK Financial Services Act 2012, the Prudential Regulation Authority (the **'PRA'**) was established as a subsidiary of the Bank of England, responsible for the micro-prudential supervision of banks, building societies and credit unions, insurers and major investment firms. In addition, the above Act established the Financial Conduct Authority (**'FCA'**) as a conduct of business regulator. Finally, an independent Financial Policy Committee **('FPC'**) was also established, entrusted with the objective of financial stability and macro-prudential financial oversight. On the most recent work of the PRA, see **Bank of England (2014)**. Its publications are available at: http://www.bankofengland.co.uk/pra/Pages/ publications/default. aspx.

2.5 Macro-prudential policies[213]

2.5.1 Content

The term 'financial macro-prudential policies' includes the set of (mainly preventive) policies adopted and implemented to limit the financial system's exposure to 'systemic risk' arising from factors not associated with individual financial firms or individual markets and structures of the financial system, but of a more general nature.[214] Macro-prudential policies seek to address the two above-mentioned dimensions of systemic risk:[215]

(a) The first is the **'time dimension'**, namely the systemic risk's evolution through time. In this context, macro-prudential policies seek to strengthen the resilience of the financial system at times of economic downturn by limiting procyclicality, which can accentuate systemic risk because of the interactions developed either within the financial system, or between the financial system and the real sector of the economy.[216]

The objective is to **'lean against the financial cycle'**,[217] bearing in mind that it has been proven historically that failures caused by credit expansion are generated on the upside of the economic cycle, but become apparent on the downside, especially when the economic cycle is in a downturn. More specifically, on the upside of the economic cycle there is typically large credit expansion (with increased numbers of extended loans and credits), significant rises in real property, security and other asset prices, significant leveraging of banks and money and capital markets, as well as maturity mismatches of assets and liabilities in the balance sheet of banks.

In the absence of a proper protection of the financial system, when the economic cycle is in a downturn, problems may emerge for financial firms and they can be aggravated by the need for deleveraging. Usually, under such circumstances the capacity to extend loans and credits is limited, impacting negatively on the real sector of the economy.

(b) The second dimension is the **'cross-sectional dimension'**, namely allocation of risk in the financial system at any given point in time. In this case, macro-prudential policies are aimed at limiting systemic risk concentration, which could result:

- either from the concurrent exposure of multiple financial institutions to risks arising from similar exposures, or

[213] On this issue, which came to the forefront particularly in the wake of the recent (2007-2009) international financial crisis, see **Borio (2010)**, **Committee on the Global Financial System (2010)**, **Financial Stability Board, International Monetary Fund and Bank for International Settlements (2011)**, **Galati and Moessner (2011)**, section 5.1., **Gortsos (2012)**, pp. 94-98, and **Gluch, Skovranová and Stenström (2013)** (specifically on central banks' involvement).

[214] See **Financial Stability Board, International Monetary Fund and Bank for International Settlements (2011)**, section 2. On the relation between financial stability risks, monetary policy and macro-prudential policies, see **Constâncio (2015)**, with extensive further references.

[215] See **Committee on the Global Financial System (2010a)**, Annex 1, section 2, and **Financial Stability Board, International Monetary Fund and Bank for International Settlements (2011)**, section 2.

[216] For a detailed overview of contagion channels between the financial system and the real sector of the economy, see, in the secondary sources, **Basel Committee on Banking Supervision (2011)**, and **Galati and Moessner (2011)**, section 5.2.

[217] See **Committee on the Global Financial System (2010a)**, section 2.1.

- from the interconnectedness of such institutions (and the contagion of problems among them), especially if they are systemically important financial institutions (the **'SIFIs'**).

2.5.2 Policy instruments

2.5.2.1 Introductory remarks

A mix of instruments is adopted in order to meet the objective for addressing these two dimensions of systemic risk. Specifically:

(a) First of all, it is necessary to set up institutions and procedures for ensuring 'macro-prudential financial oversight', thus enabling the identification, measurement and assessment of systemic risk.[218] Macro-prudential oversight of the financial system by central banks is gradually becoming a common instrument for achieving financial stability. The objective of macro-prudential oversight is to limit the distress of the financial system as a whole in order to protect the overall economy against significant losses in real output.

While risks to the financial system may in principle stem from the failure of an individual financial institution – if it is large enough in relation to the state concerned and/or if it has multiple branches/subsidiaries in other states – the much more important international systemic risk arises from exposure of several financial institutions to the same risk factors.[219] Macro-prudential analysis must therefore pay particular attention to common or correlated shocks and shocks to those segments of the financial system that trigger spillover effects.

Macro-prudential oversight cannot be meaningful, unless it can somehow impact on supervision at the micro-level, whilst micro-prudential regulation and supervision cannot effectively safeguard financial stability without adequately taking account of macro-level developments.

(b) Moreover, it is necessary to adopt macro-prudential regulations, which are:

- addressed to banks and/or other financial firms, as well as money and capital markets, and
- differentiated depending on the systemic risk dimension they are called upon to address.[220]

(c) Finally, it should be noted that oversight of payment and settlement systems has now been formally established as a necessary instrument for addressing the systemic risk's cross-sectional dimension.[221]

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[218] See **Financial Stability Board, International Monetary Fund and Bank for International Settlements (2011)**, section 3.

[219] On the content of macro-prudential financial oversight see, *inter alia*, **Borio (2003)** and **Clement (2010).**

[220] See **Committee on the Global Financial System (2010a)**, section 3, and **Galati and Moessner (2011)**, section 4. For an overall review of how these measures were adopted, both at a national and international level, see **Financial Stability Board, International Monetary Fund and Bank for International Settlements (2011)**, pp. 5-9.

[221] See **Committee on Payment and Settlement Systems (2005)** "Central bank oversight of payment and settlement systems", May (available at: http://www.bis.org/publ/cpss68.htm).

2.5.2.2 Macro-prudential regulations to address the systemic risk's time dimension

The policy instruments used in order to achieve the objective of addressing the systemic risk's time dimension, and notably the financial system's procyclicality issue, mainly include the following macro-prudential regulations:

First of all, it is necessary to adopt rules imposing an obligation on banks to set 'capital conservation buffers' and 'countercyclical buffers', and take 'forward-looking provisions'.[222]

'Capital conservation buffers' must be created outside periods of stress (namely during times of economic growth and credit expansion) in order to absorb losses generated in times of stress of the economic cycle. These buffers, calculated as a percentage of banks' total risk-weighted assets (according to provisions on the capital adequacy ratio, see above **under 2.3.3**) may be used to avoid recourse to other regulatory capital elements for absorbing losses.

'Countercyclical capital buffers' must be created in order to ensure that capital requirements take into account the macro-financial environment in which banks operate. Such a buffer requirement must be put in place when national supervisory authorities consider that excess aggregate credit growth is deemed to be associated with a build-up of systemic risk. In this context, authorities are called upon to monitor credit growth and other indicators that may signal a build-up of systemic risk, and assess whether (and to what extent) credit growth is excessive and is leading to the build-up of systemic risk.

(b) The second, ancillary measure, concerns the development of appropriate micro-prudential regulations such as requiring banks to maintain leverage and liquidity ratios (as mentioned **under 2.3.3** above), thus making it possible to address the systemic risk's time dimension.

(c) Included are also other prudential measures which:

- either affect the prices of services provided by banks ('price-based prudential tools') such as introducing, when the economic cycle is on the upside, stricter risk weights for calculating the capital adequacy ratio on specific exposures (e.g. loans denominated in foreign exchange, mortgage loans or loans for the purchase of securities and positions in derivatives), or
- affect the quantity of services provided ('quantity-based prudential tools'), such as time-variation, depending on the phase of the economic cycle, the loan-to-value ratios of mortgage loans, and the debt-to-income ratios in mortgage and consumer loans.

(d) Finally, the systemic risk's time dimension (and notably the procyclicality caused by leveraging capital markets) can be addressed by stricter rules imposing margins and haircuts on positions in securities and derivatives during economic upturns.[223]

2.5.2.3 Macro-prudential regulations to address the systemic risk's cross-sectional dimension

The policy instruments used in order to achieve the objective of addressing the systemic risk's cross-sectional dimension mainly include the following macro-prudential regulations:

[222] See **Brunnenmeier et al. (2009)**, chapter 4.

[223] See **Committee on the Global Financial System (2010b)**.

(a) The key measure is to adopt rules on the resolution of systemically important banks (and other category of financial firms) exposed to insolvency that will enable (in part or in whole) the suspension of their operations without jeopardising the stability of the banking (and, more generally, the financial) system, or making state intervention necessary for their bailout, invoking the argument that they are too-big-to-fail.

(b) The second measure is ancillary and consists in adopting appropriate specific micro-prudential regulations (such as rules to cover banks against exposure to credit risk from specific portfolio items, included within the regulatory framework on capital adequacy), thus making it possible to address the cross-sectional dimension.

(c) Measures are also taken to strengthen infrastructures in relation to over-the-counter (OTC) derivatives, notably the obligation for clearing OTC transactions through central counterparties.[224]

(d) Finally, addressing the systemic risk's cross-sectional dimension can also be achieved with the introduction of restrictions on the range of services provided by systemically important financial institutions (especially banks).[225]

2.6 Specific crisis prevention measures

(a) In light of the above analysis, the key difference between the banking sector and other sectors of the financial system (as well as other sectors of the economy), which renders imperative the adoption of measures on micro- and macro-prudential regulation of bank operation, lies in the fact that an individual bank's insolvency may, under certain circumstances associated with depositor behaviour, the economic conjuncture, banks' financial structure, and government involvement in the banking system:

- lead to the default of other banks (through various channels, as mentioned above) and, as a result,
- destabilise the banking system and thus have a serious negative impact on the functioning of the real economy.

(b) In this context, there is firstly a need for 'specific crisis prevention' policies and measures.[226] These include:

- 'alternative' measures within the framework of the assessment of recovery plans,

[224] See the report of the **Financial Stability Board (2010)** "Implementing OTC Derivatives Market Reforms", October (available at: http://www.financialstabilityboard.org/publications/r_101025.pdf).

[225] See **Financial Stability Board, International Monetary Fund and Bank for International Settlements (2011)**, p. 9, paragraph 5(iv).

[226] The author uses the term 'specific' crisis prevention measures in order to distinguish them from the 'general' crisis prevention measures, which include all the above components of the bank safety net (conditions for the authorisation of banks, micro- and macro-prudential regulation of banks and their micro-prudential supervision by competent supervisory authorities, the macro-prudential oversight of the financial system as a whole, as well as the assessment of bank recovery plans by supervisory authorities).

On the specific crisis prevention measures, see **Claessens, Herring and Schoenmaker (2010)**, as well as the individual contributions to **Lastra (2011, editor)**, both with further references.

- measures relating to the assessment of the resolvability of credit institutions, including the exercise of powers to direct removal of deficiencies or impediments to recoverability,
- early intervention measures in the operation of credit institutions, *inter alia*, through the appointment of a temporary administrator,
- other reorganisation measures for banks exposed to insolvency arranging mergers with healthy banks (such as increasing on a mandatory basis their own funds (subject to limitations set by company law with regard to the rights of existing shareholders), and
- the writing-down in the nominal value and/or conversion of a bank's capital instruments into ordinary shares (prior to its resolution).

(c) It has been rightfully argued that supervisory or other competent authorities are chronically unable to restructure banks before their net worth has been depleted. **Guttentag and Herring (1987b)** identify three reasons for this slow response of authorities:[227]

(i) Firstly, there is a lag between the time the bank has become unviable and the authorities recognise this (the 'recognition lag').

(ii) There is a second lag (the 'reaction lag'), extending from the time the authorities recognise the non-viability of the bank until they decide to terminate it.

(iii) Finally, the 'implementation lag' is the period between the time the authorities initiate the procedure on closing down an unviable bank and the moment when the bank actually terminates its operations.

3. Management of liquidity crises: last-resort lending by the central bank[228]

3.1 Definition, functions and delimitation

3.1.1 Definition

(a) In accordance with the (predominant) traditional approach,[229] last-resort lending[230] means the provision of liquidity by a monetary authority, *i.e.* a central bank,

[227] See **Guttentag and Herring (1987b**), pp. 48-50.

[228] For an overview of the functions of the lender of last resort in the banking system and the related extensive literature, see **Guttentag and Herring (1983)**, **(1986a)** and **(1987a)**, the various contributions in **Goodhart (2000)**, the various contributions in **Bank for International Settlements (2014)**, and **Gortsos (2015)**, Section 1. In addition, for a historical analysis of the role of central banks as lenders of last resort, see **Gorton and Metrick (2013)** and **Bordo (2014)**, and for a more detailed account of divergences in the efficiency of last-resort lending depending on the structure of the financial system, the extremely interesting (but quite technical) paper by **Fecht and Tyrell (2004)**.

[229] This approach is based on the seminal work by **Bagehot**, written already in 1873 (which **Tucker** calls the "classic" Bagehot view, see **(2014)**, p. 16). For more details on the other three (3) alternative approaches (the "free banking school", the "Richmond Fed view" and the "New York view") see *ibid*., pp. 16-19.

[230] It should be pointed out that the same term is also used for the provision of financial support to independent states faced with financing of public expenditure and public debt refinancing problems. This role is assumed on an international level, by the International Monetary Fund, and on an EU level, by the European Stability Mechanism (see on this **Gros and Mayer**

to individual solvent banks in exceptional circumstances and on a temporary basis.[231] This power is typically associated with the business of central banks given the synergies existing between the provision of liquidity to the banking system, safeguarding the stability of payments systems, and ensuring financial system stability.[232] In this sense, the close relationship between the monetary and financial systems is highlighted.

It should be pointed out that at times of liquidity crisis, alternatively to the 'central bank money solution', i.e. central banks acting as lenders of last resort, there are three (3) other options:

- financing of a troubled bank through coordinated actions of the private banking sector ('private money solution'),[233]
- intervention of administrative authorities as market-makers of last resort,[234] and
- emergency, non-standard monetary policy measures taken by a central bank (in this case, for the banking system as a whole).[235]

(b) As a result, last-resort lending is incorporated in the instruments used to satisfy the policy demand for safeguarding the stability of the banking system, which comprise the bank safety net and each of which plays a particular role either in crisis prevention or management.[236]

(2011a) and **(2011b)**, **Stephanou (2013)**, as well as individual contributions in **Wyplosz, Collignon, Gros and Belke (2011**, editors)). Of particular interest is the paper by **Winkler (2014)**, which examines the question whether the ECB's non-standard monetary policy measures render it a quasi-lender of last resort for euro area Member States.

[231] Consequently, such liquidity is not provided to the banking system as a whole (without exception), as in the case of monetary policy operations. As to whether last-resort lending should also be provided to financial undertakings other than credit institutions, see **Tucker (2014)**, pp. 27-28. This question was particularly relevant in the case of the US investment bank *Lehman Brothers* (which was not a credit institution) in September 2008, when the Federal Reserve declined to act as a lender of last resort given that it lacked the statutory authority to do so. See indicatively **Posner (2010)**, pp. 63-67.

With regard to the Fed's general interventions during the recent (2007-2009) international financial crisis, see **Baxter and Gross (2010)**, **Oganesyan (2013)**, **Goton and Metrick (2013)**, pp. 58-60, and **Nelson (2014)**.

[232] See **European Central Bank (2007)**, pp. 80-81.

[233] On this, see **Padoa-Schioppa (2000)**, pp. 24-26.

[234] On this, see **Tucker (2014)**, pp. 28-32.

[235] On this, see **Borio and Disyatat (2009)**, and **Lenza, Pill and Reichlin (2010)**. See also **Domanski, Moessner and Nelson (2014)**, who use the term 'emergency liquidity assistance' as equivalent to the term 'last-resort lending', actually to describe all forms of central bank intervention at times of liquidity crisis. The term 'ELA' is also the standard term used for last-resort lending in the euro area (see on this **Gortsos (2015)**.

[236] For a historical analysis of the role of central banks as lenders of last resort, see **Gorton and Metrick (2013)** and **Bordo (2014)**. For a more detailed account of divergences in the efficiency of last-resort lending depending on the structure of the financial system, see the extremely interesting (and quite technical) paper by **Fecht and Tyrell (2004)**.

3.1.2 Functions

A central bank's intervention in the capacity of lender of last resort is driven by the need to meet one or more (solvent) banks' emergency liquidity needs, should they arise. Last-resort lending thus performs two functions:

(a) The first function (at the level of specific prevention) consists in enabling solvent banks to address their exposure to exceptional liquidity risk and prevent illiquidity-caused solvency problems.

(b) The second function (at the level of general prevention) consists in the emergence of circumstances that would lead banks with exceptional liquidity problems to become insolvent immediately, in order to prevent a generalised banking crisis as a result of the simultaneous or successive exposure of several banks to insolvency, and avoid the relevant negative effects on the real sector of the economy.[237]

3.1.3 Delimitation

(a) Last-resort lending as an instrument of liquidity crisis management should be distinguished, at least as a concept, from measures undertaken at the level of solvency crisis management.[238] Of course, central banks play an active role in the resolution and withdrawal of the authorisation of insolvent banks:

- in the former case, provided that they are the competent resolution authorities,[239] and
- in the latter case, if they are the competent supervisory authorities.[240]

Nevertheless, such powers should not be confused with their power to act as lenders of last resort. In addition, it should be pointed out that deposits are by no means guaranteed by central banks, despite the fact that national law usually provides for the latter's active (even decisive) participation in the management of deposit guarantee schemes, which are mainly funded by member banks.[241]

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[237] For a general overview, see **Guttentag and Herring (1983)**, **(1986a)** and **(1987a)**, individual contributions in **Goodhart (2000)**, **Gortsos (2012)**, pp. 104-106, as well as **Tucker (2014)** and various other contributions in **Bank for International Settlements (2014)**.

[238] See below **under 4**. For the linkage between these two types of measures, see **Freixas and Parigi (2009)**.

[239] This is common practice, although it is not ruled out for relevant powers to be concurrently conferred on another independent administrative authority. If the central bank is appointed both as competent supervisory authority and as competent resolution authority, Chinese walls are created between competent departments in order to avoid conflicts of interest.

[240] For a detailed look into the debate on whether it is appropriate for a central bank, as a monetary authority, to also perform micro-prudential banking supervision tasks ('separation of monetary and supervisory tasks of central banks'), see the seminal paper by **Goodhart and Schoenmaker (1993)**, as well as **Haubrich (1996)**, **Di Noia and Di Giorgio (1999)**, **Goodhart (2000)**, **Gianviti (2010)**, pp. 480-482 and **Beck and Gros (2013)**.

[241] For more details on the relationship between micro-prudential banking supervision, last-resort lending, and deposit guarantee, see the particularly interesting (albeit very technical) paper by **Kahn and Santos** (**2001)**.

(b) Last-resort lending as a liquidity crisis management instrument should also be distinguished from monetary policy measures implemented by central banks. In both cases, the central bank provides liquidity to the banking system, but in the case of monetary policy actions:

- the objective is not to ensure the stability of the financial system, but (primarily or secondarily) to maintain price stability,[242]
- the liquidity granted is not of an emergency nature, but rather permanent, and
- the liquidity is provided to the banking system as a whole (without exception), rather than to individual banks.[243]

3.2 The principles governing the implementation of last-resort lending

(a) According to theory, a bank's solvency is a prerequisite for its ability to have recourse to lending of last resort.[244] Relevant information must be provided to the central bank by the competent supervisory authority.[245] In any event, there are past examples of last-resort lending to insolvent banks as well, depending on a central bank's evaluation of the probability of risk for a generalised crisis producing a domino effect across the entire banking system.[246]

(b) Always according to theory, last-resort lending should be provided against adequate collateral,[247] and at a rate higher than that of monetary policy operations.[248] In this respect, the following two (2) remarks are of use:

(i) As a rule, collateral provided in such cases by counterparty banks include assets (securities), which are not eligible, given their low credit rating, in the context of open market operations (as part of a central bank's conduct of monetary policy). This is particularly the case if a bank:

- has lost the ability to raise liquidity on money and capital markets,
- does not have assets on its balance sheet that are eligible in the context of central bank monetary policy operations,
- is hence excluded from access to open market operations as a counterparty, and
- is finally forced to have recourse to last-resort lending in order to raise liquidity.

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[242] For a look into the differences between these two key objectives of central banks, see **Central Bank Governance Group (2009)**, pp. 21-28.

[243] For a brief presentation of the main elements of monetary policy, see indicatively **European Central Bank (2011)**, pp. 55-62.

[244] See on this **Guttentag and Herring (1987a)**, pp. 163-165, and **Tucker (2014)**, pp. 19-23.

[245] This authority may be an independent administrative authority or the central bank itself. In the latter case, information is internalised.

[246] **Guttentag and Herring (1987a**, p. 164) cite many relevant examples.

[247] On this see **Tucker (2014)**, pp. 26-27.

[248] *Ibid.*, pp. 23-24, directly citing **Bagehot** (1873).

(ii) The reasoning behind charging significantly higher rates than those applied to monetary policy operations[249] (thus causing a proportionate burden on the financial accounts of counterparty banks) is based on the premise that this rate should be of a punitive nature and, thus, act in a way to discourage banks. But in reality, it has mainly to do with the preceding remark about the (lower) quality of the collateral provided, not eligible for any other use (not only in *a priori* assessments).

(c) The terms for exercising the power of central banks to act as lenders of last resort are not usually set out explicitly in legislative or regulatory provisions.[250] This is attributed to the fact that, according to the principle of **'constructive ambiguity'**[251] relating to the conditions that must be met in order for the central bank to intervene in the capacity of lender of last resort, the central bank must have the highest discretion possible to this end in order to be in a position to appropriately weigh the risks and act accordingly to each case. More specifically, it is argued that the existence of an explicit legislative or regulatory provision:

- would put the stability of the financial system at a higher risk as a result of a greater exposure of banks to moral hazard and hence ultimately to insolvency,[252] and, as a result,
- would render necessary the imposition of stricter micro-prudential regulations than generally required, in view of preventing banks' exposure to risks undertaken in their conduct of business.

4. Management of solvency crises

4.1 General overview

If insolvency problems arise, and banks cannot meet capital shotfalls by resort to private sector ecapitalisation solutions, competent authorities are faced with a 'trilemma':

- to bail-out undercapitalised (usually systemically significant) banks by using taxpayers' money, judging that a withdrawal of their authorisation would have significant systemic consequences,[253]

[249] For more details on central bank collateral frameworks and practices as part of the implementation of monetary policy, see the study of the **Markets Committee (2013)**.

[250] A different issue is related with the fact that certain central banks have a statutory authority to act as lenders of last resort.

[251] According to **Herring and Littan (1995)**, pp. 126-131, the 'constructive ambiguity' policy has significant negative side-effects, as it leads in reality to unequal treatment of big (usually systemically important) and small banks. For a detailed overview of this topic, and notably whether constructive ambiguity is necessary or not ('explicit last-resort lending function'), see **Guttentag and Herring (1987a)**, pp. 167-172.

[252] Last-resort lending at a rate higher than monetary policy operations rates, as argued above, is deemed to partly resolve the issue of moral hazard (see **Tucker (2014)**, p. 23).

[253] On this, see **Padoa-Schioppa (2000)**, pp. 24-26, as well as **Nijskens and Eijffinger (2010)** with regard to the link between bail-outs and last-resort lending.

- to resolve insolvent banks through the competent resolution authorities,[254] or
- to withdraw their authorisation and subsequently activate deposit guarantee schemes.[255]

It is worth mentioning in this respect that resort to the bail-out option, which constitutes a state-aid and is thus subject to approval by competition authorities, tends to be (especially after the recent (2007-2009) international financial crisis) the exception and is usually granted under very strict conditions.

4.2 Banking resolution

(a) In order to ward off the moral hazard in case of 'too-big-to-fail' or 'systemically important' banks,[256] the failure/closing down of which would endanger the stability of the banking (and, more generally, financial) system (and in addition to prevent resort to a government bailout) 'crisis management measures' in the form resolution actions may be put in place.[257]

The 'resolution objectives' are the following:

(i) Ensure the continuity of critical functions of the bank under resolution. In EU law, the term 'critical functions' is defined to mean activities, services or operations the discontinuance of which is likely to lead to the disruption of services that are essential to the real economy or to disrupt financial stability due to the size, market share, external and internal interconnectedness, complexity or cross-border activities of an institution or group, with particular regard to the substitutability of those activities, services or operations.

(ii) Avoid significant adverse effects on financial stability, in particular by preventing their contagion, including to market infrastructures (i.e. payment systems and payment clearing and settlement systems), and by maintaining market discipline.

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[254] For more on this form of regulatory intervention, see indicatively **Avgouleas, Goodhart and Schoenmaker (2009)**, **Claessens, Herring, and Schoenmaker (2010)**, and **Financial Stability Board (2011)**: "Key Attributes of Effective Resolution Regimes for Financial Institutions", November (available at: http://www.financialstabilityboard.org/publications/r_111104cc.htm).

[255] It should be noted that following the withdrawal of authorisation and activation of a deposit guarantee scheme, a credit institution is placed under liquidation. For more on the operation of deposit guarantee schemes, see just below, **under 4.3**.

[256] The issue of the operation of systemically important financial institutions (also known as SIFIs), including banks, adequate micro-prudential supervision and micro-and macro-prudential regulation of their business activities, as well as management of liquidity and solvency crisis involving such institutions (mainly with regard to their resolution) has been at the heart of academic and political debates on regulatory intervention in the financial system. By way of indication only, (from a most extensive literature) see **Rajan (2010)**, pp. 169-176, **European Central Bank (2010b)**, **Huertas and Lastra (2011)**, **Hofer (2014)**, as well as various reports of the **Financial Stability Board**.

[257] On the concept(s) of 'resolution' ('Abwicklung' in German, 'résolution des défaillances' in French), see **Huertas and Lastra (2011)**, pp. 258-267, **Binder (2015c)** and **White and Yorulmazer (2014)**. On resolution powers and instruments see indicatively (out of a vast existing literature) **Avgouleas, Goodhart and Schoenmaker (2009)**, **Cihák and Nier (2009)**, **Amorello and Huber (2010)**, **Claessens, Herring and Schoenmaker (2010)**, **Noussia (2010)**, **Attinger (2011)**, individual contributions to the collective volume **Lastra (2011a**, editor**)**, **Financial Stability Board (2011)**, **Babis (2012)**, **Dewatripont and Freixas (2012)**, **Grünewald (2014)**, **Hadjiemmanuil (2014)**, and **White and Yorulmazer (2014)**.

(iii) Protect public funds by *minimising reliance* on extraordinary public financial support. Consequently, the provision of such a support must be restrictive both in terms of having recourse to it and in terms of the amounts provided.

(iv) Protect depositors and investors covered by deposit and investment guarantee schemes respectively.

(v) Protect client funds and client assets, which are considered off-balance sheet items.

(b) For this purpose, four (4) 'resolution tools' are available: the sale of business tool, the bridge institution tool, the asset separation tool, and the bail-in tool:

(i) The term 'sale of business tool' is defined as meaning the mechanism for effecting a transfer by a resolution authority of instruments of ownership issued by a bank under resolution, or assets, rights or liabilities of an institution under resolution, to another bank that is not a bridge institution.

(ii) The term 'bridge institution tool' is defined as meaning the mechanism for transferring instruments of ownership issued by a bank under resolution, or assets, rights or liabilities of an institution under resolution, to a bridge institution.

In both these cases, the authorisation of the bank under resolution is withdrawn and the bank is placed under liquidation. Nevertheless, its deposits up to the level of their coverage under the deposit guarantee scheme are previously transferred either to another bank or to the bridge institution. Hence, the deposit guarantee scheme does not need to be activated.

(iii) The term 'asset separation tool' is defined as meaning the mechanism for effecting a transfer of assets, rights or liabilities of a bank under resolution to an 'asset management vehicle'.

(iv) Finally, the term 'bail-in tool' is defined as meaning the mechanism for effecting the exercise of the write-down and conversion powers in relation to liabilities (including deposits up to the level of their coverage under the deposit guarantee scheme) of a bank under resolution.[258]

(c) The resolution fund, necessary in this case in order to provide funding, may be the deposit guarantee scheme or a separate entity funded, in principle, by the banking sector.[259]

[258] On the bail-in instrument see **Coffee (2010)**, **Huertas (2012)**, **Goodhart and Avgouleas (2014)**, **Hadjiemmanuil (2014)** and **(2015)**, and **Avgouleas and Goodhart (2015)**. Specifically on the resolution by deposit guarantee schemes see **Beck and Leaven (2006)** and on the cross-border resolution of global banks **Hüpkes and Devos (2010)**, **Davies (2014)**, and **Faia and Mauro (2015)**.

[259] On resolution financing, see **Goodhart (2012)**, and **Nieto and Garcia (2012)**.

4.3 Deposit guarantee

4.3.1 Functions of deposit guarantee schemes

4.3.1.1 The 'paybox' function

4.3.1.1.1 General considerations

If bank insolvency problems arise,[260] and provided that no 'private money solution' can be achieved, governments and competent authorities are faced with a 'trilemma' with regard to the crisis management instrument to be applied:

- to bail-out undercapitalised (usually systemically significant) banks by using taxpayers' money, judging that a withdrawal of their authorisation would have significant systemic consequences,[261]
- to resolve insolvent banks through the competent resolution authorities,[262] provided that the relevant resolution conditions are met, or
- to withdraw their authorisation and subsequently activate the deposit guarantee scheme.[263]

The primary function of deposit guarantee schemes (the **'DGSs'**) is thus considered that of the 'paybox' for depositors. In that respect, DGSs follow two (2) objectives:

- the protection of small depositors (see below, under 2.6.1.1.2), and
- acting as buffer mechanisms in the event of a banking crisis and contributing to ensuring the stability of the banking system (being part of the 'bank safety net') (see below, under 2.6.1.1.3).

DGSs guarantee the default-free character of deposits in the event of bank failure.

4.3.1.1.2 Protection of small depositors

The establishment of a DGS is firstly required for the protection of small depositors.[264] The concept of 'small depositor' refers to those categories of savers who, given their limited knowledge, are insufficiently informed in order to be in a position to assess the solvency of the banks entrusted with their savings.

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[260] A bank becomes insolvent when either its liquidity is so low that it cannot repay its outstanding debt or the market value of its non-equity liabilities exceeds that of its assets.

[261] On this, see **Padoa-Schioppa (2000)**, pp. 24-26, as well as **Nijskens and Eijffinger (2010)** with regard to the link between bail-outs and last-resort lending.

[262] For more on this form of regulatory intervention, see indicatively **Avgouleas, Goodhart and Schoenmaker (2009)**, **Claessens, Herring, and Schoenmaker (2010)**, and **Financial Stability Board (2011)**: "Key Attributes of Effective Resolution Regimes for Financial Institutions", November (available at: http://www.financialstabilityboard.org/publications/r_111104cc.htm).

[263] It should be noted that following the withdrawal of authorisation and activation of a deposit guarantee scheme, a credit institution is usually placed under liquidation.

[264] It is considered that small depositors should have access to safe financial instruments for their payments and savings. Taking into account that banks – just like all other enterprises operating in accordance with market rules – are exposed to insolvency risk, it is only through regulatory intervention, i.e. the establishment of DGSs, that bank deposits become the relatively safer financial instrument.

This category of savers, usually hold a significant share of their total savings in their bank accounts (*inter alia*, for conducting payments), and they cannot be expected to discipline the market by behaving as 'investors'.

4.3.1.1.3 Contribution to the stability of the banking system

(a) DGSs also act as buffer mechanisms in the event of a banking crisis, contributing to ensuring the stability of the banking system. They protect the banking system from massive withdrawals by panic-stricken depositors. Depositor panic results in mass deposit withdrawals. Under such circumstances, even the most solvent bank is not in a position to meet its obligations, but only either by borrowing funds on money and capital markets or from its central bank at particularly high rates (last resort lending), or by liquidating its assets at unfavourably low prices. The failure of coordination among depositors under adverse market conditions, leading to runs and panics, can be addressed:

- either by suspending the convertibility of deposits into cash (including by the imposition of capital controls), or
- by the establishment of DGSs.

(b) The establishment of DGSs is aimed at eliminating the incentive for massive withdrawals from individual banks or, in the worst-case scenario, the entire banking system. Thus, DGSs alleviate some of the inherent problems leading to runs and panics. DGSs assure small and unsophisticated depositors that the guarantee fund will compensate them if their bank is unable to convert their deposits into cash.[265]

As a component of the bank safety net, DGSs seek to curb incentives for depositor involvement in banking runs and panics by guaranteeing the transformation of illiquid bank assets into cash and maintaining public confidence in the banking system. Accordingly, the contribution of DGSs to the stability of the banking system is that they act as a buffer against the spreading of panic across the entire banking system through indiscriminate cash withdrawals from most banks, which result in the depletion of banks' net worth.

This is achieved by guaranteeing depositor coverage across all banks and preventing solvent banks from becoming unviable due to their objective inability to meet the widespread demand for deposits' withdrawal. If a bank cannot meet depositor claims, the incentive for such withdrawals is reduced by the existence of an entity (the DGS) responsible for reimbursing each depositor to an amount equal to his/her deposit (normally up to a certain ceiling, known as the 'coverage level').

(c) The existence, therefore, of a DGS reduces the incentive for the manifestation of depositor panic after the spreading of news on the financial condition of individual banks. A DGS's effectiveness is, however, contingent upon its credibility to meet its obligations and is definitely lower under conditions of a generalised economic crisis in a jurisdiction, leading to a situation of several banks (including large ones) being simultaneously exposed to insolvency. In that sense, DGSs are not designed to perform the above-mentioned function in case of a systemic crisis (as they are also not designed to compensate depositors of large banks in general).

[265] See **Carisano (1992)**, p. 17.

4.3.1.2 Other functions

DGSs may also be called upon to serve one or more of the following additional three (3) functions:

(a) Their financial means may be used in order to contribute to the financing of the resolution of credit institutions, where the conditions for resolution are met. Usually, it is up to the resolution authorities to determine, after consulting the DGS, the amount by which the latter will be liable.[266]

(b) DGSs may also be required to use their financial means for the adoption of 'alternative measures' in order to prevent the failure of a credit institution (*e.g.*, liquidity provisions, guarantees) and hence reduce the likelihood of future claims against DGSs. Those measures must be compliant with State aid rules.

(c) Finally, legislation may provide that the available financial means can be used to finance measures to preserve the access of depositors to covered deposits, including transfer of assets and liabilities and deposit book transfer, in the context of national insolvency proceedings.

4.3.2 Problems arising from the operation of deposit guarantee schemes

4.3.2.1 General overview

The obviously positive contribution of a DGS in terms of safeguarding public confidence in the banking system may be mitigated, in reality, by the adverse effects of its operation. The setting up of DGSs has been linked to two main negative effects:

- banks' exposure to moral hazard (see below, under 4.3.2.2), and
- the 'too-big-to-fail' problem (under 4.3.2.3).[267]

These two negative effects of DGSs are significantly mitigated through the interaction of deposit guarantee with a (credible) resolution framework. The minimization of banks' exposure to moral hazard, as well as the solution to the 'too-big-to-fail' problem, are two of the main goals for the setting up of resolution regimes and, as such, it could be argued that a credible resolution framework, especially through the design and application of the 'bail-in' tool, balances out the weaknesses inherent in DGSs.

4.3.2.2 Exposure to moral hazard

(a) Participation in a DGS enables a bank to finance risky assets with partially insured liabilities. Excessive risk-taking is also made possible by the fact that insured depositors lack the incentive to monitor and control their bank. For these reasons it is claimed that the existence of deposit guarantee undermines the safety of banks and creates the need *per se* for enhanced prudential supervision.[268]

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[266] This is currently the situation in the EU according to the provisions of EU banking law. See on this below, **under 3.3 (c)(i)**.

[267] On the relation between deposit guarantee, bank risk and systemic fragility in the years leading up to and during the recent (2007-2009) international financial crisis, see **Anginer, Demirguc-Kunt and Zhu (2013)**.

[268] Alternative means for encouraging proper portfolio management in the presence of deposit guarantee are market-value accounting, risk-based deposit insurance premiums and radical structural solutions. For an overview of these alternatives, see **Carisano (1992)**, pp. 128-151.

Hence, the first adverse effect is that participation in a DGS gives banks an incentive to take greater risks than they would otherwise have, if their depositors were uninsured. Such behaviour on the part of banks, also known as exposure to moral hazard, is a rational reaction to the behaviour of uninsured depositors who seek protection from the DGS rather than the bank. This also applies to uninsured depositors who consider that they would be compensated by the DGS *ex post*, once the payment procedure is put into effect.[269]

(b) The second adverse effect of DGSs regards exposure to moral hazard of participating banks in terms of the level of their own funds. Since insured depositors do not have an incentive to control their bank, the latter may be tempted to reduce its capital adequacy ratio (which supposedly contributes to increasing its solvency and, hence, the level of public confidence) at the minimum required by the regulatory framework, whilst reducing its 'antibodies' for absorbing losses in the event of risk emergence. In this case, a spillover mechanism may be set in motion. The smaller a bank's capital base the greater its tendency to take extensive risks, as the profits from higher returns stay with shareholders, whereas losses are rolled over to the DGS.

4.3.2.3 Differential treatment of banks deemed 'too big (to be left) to fail'

The *ex post* treatment of small and large banks participating in a DGS can be unequal under given circumstances. In particular:

(a) In the absence of a credible and adequately designed regime for bank resolution, governments may feel urged to bailout large failing banks, especially if these are considered 'too big to fail' (or, more accurately, 'too-big-to-be-left-to-fail'), due to the extent of the losses they would cause to their creditors and the economy as a whole (i.e. the 'public interest criterion' would be met).[270] In such a case, depositors of large banks are covered *ex post* comprehensively. The same may apply in the (rare) cases where the decision is taken to withdraw a large bank's authorisation and activate the payout mechanism of the DGS.[271]

(b) By contrast, depositors in small banks fully assume the losses incurred as a result of an insolvency decision on the part of competent authorities, since, as a rule, small banks are not being bailed out and, if the decision is taken to withdraw their authorisation, depositors are compensated only up to the 'coverage level'. Such behaviour by the competent authorities can be explained by the fact that if a small bank's authorisation were to be withdrawn, the risk of spillover effects in the banking market would not be severe, since the 'public interest criterion' would not be met.

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[269] Inadequate market discipline can be explained by the fact that depositors – either explicitly insured or expecting to be compensated *ex post* after their bank's authorisation is withdrawn, do not have an incentive to monitor the development of their bank's financial condition. Therefore, depositors do not request (as would normally happen in a market without deposit guarantees) higher interest rates from a bank with relatively lower solvency.

[270] On the definition of this category of banks and the policy issues arising from their operation, see, by mere indication, **Carmassi, Luchetti and Micossi (2010)** and **Hofer (2014)**.

[271] For instance, this was the case of depositors with two big failed US banking institutions, Continental Illinois Bank (defunct in 1984) and the Bank of New England (closed in 1991), who received compensation for the entirety of their deposits.

4.3.3 Attributes of deposit guarantee schemes

Taking into account the above-mentioned, explicit DGSs are characterised by six (6) main attributes:[272]

(a) In principle, they are activated only if a bank's authorisation has been withdrawn (without resolution), i.e. its *deposits have become unavailable* to the public.

(b) They assume an *explicit obligation*; upon the withdrawal of a bank's authorisation (without resolution), they are required to compensate, within a pre-specified (short) period, its depositors to the extent that their deposits are covered.

(c) The guarantee they provide is *non-discretionary*; once a bank's authorisation has been withdrawn (without resolution), depositors have in principle a direct claim for compensation against DGSs,[273] irrespective of the conditions underlying the bank failure.

(d) Deposit guarantee is an *ex-ante 'safe device'* for depositors; it makes them certain of compensation, thus curbing the incentives for bank runs and panics.

(e) The *level of protection* offered by a DGS is usually *limited*; the amount of the compensation has a ceiling ('coverage level') mainly for the mitigation of the above-mentioned moral hazard problem.[274]

(f) Finally, the cost of bank failures is incurred by the banking system ('no taxpayers' money solution'). DGSs are typically *funded exclusively by contributions of the participating banks* (without any contribution by the government and/or the central bank, which may be participating in their administration[275]). These contributions include the (usually annual) contributions, which may be either *ex ante* or *ex post* (as regards payment of the amounts required for depositors' compensation), as well as various *ex post* financing arrangements (including borrowing between DGSs).[276]

4.3.4 Deposit guarantee vs. last resort lending

When comparing the last-resort lending function to DGSs, the following differences manifest themselves:[277]

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[272] See **Carisano (1992)**, pp. 22-29.

[273] As an exception, in the case of the Swiss DGS ('esisuisse'), the claim is not on the DGS but on the bank's liquidator.

[274] This coverage level is also of importance if, in a resolution procedure, the bail-in instrument is applied, since in most jurisdictions deposits covered by the DGS may not be bailed-in. On this resolution tool see, by mere indication, **Coffee (2010)**, **Huertas (2012)** and **Goodhart and Avgouleas (2014)**.

[275] It should be pointed out that the body responsible for the management of a DGS may also have supervisory competencies on banks, the deposits of which are guaranteed by it, as in the case of the Federal Deposit Insurance Corporation (FDIC) in the United States. See **Carisano (1992)**, pp. 156-161.

[276] A typical example of *ex post* contributions is the Swiss DGS ('esisuisse'). In the EU, several Member States' DGSs also used to operate with *ex post* contributions, but this has been ruled out under the new DGS Directive 2014/49/EU.

On the Swiss legal framework governing deposit guarantee, see indicatively **Zulauf and Eggen (2013)**, pp. 103-104. On the esisuisse, see at: http://www.eilagensicherung.ch.

[277] See **Carisano (1992)**, pp. 22-29.

(i) Since the liquidity provided by the central bank to a bank experiencing liquidity strains is not contingent, this function is discretionary; it depends, in principle at least, on the central bank's assessment of the solvency of that bank.

(ii) The position of depositors is ambiguous, since they are not certain *a priori* whether the central bank will intervene or not.

(iii) The liquidity provided by the central bank in its function as lender of last resort has no constraints; *in extremis*, it can be limitless.

Table 6

Institutional aspects with regard to the preservation of the stability of the banking sector

Policy instruments	Competent institution	Attributes of the institution
Bank authorisation	Supervisory authority	Central bank or other administrative authority
Micro-prudential and macro-prudential regulation of banks	• Legislator (including the Parliament) • Supervisory authority (in regulatory capacity)	• General regulator • upon delegation
Micro-prudential supervision of banks	Supervisory authority	Central bank or other administrative authority
Macro-prudential oversight of the financial system (including the banking sector)	Central bank or monetary authority/agency (in most cases)	
Specific crisis prevention and resolution of banks	• Supervisory or judicial authority • Resolution authority and resolution fund	On a case-by-case basis
Deposit guarantee	Deposit guarantee scheme	Entity of private or public law
Last-resort lending	Central bank or monetary authority/agency	
Provision of state subsidies to banks (government 'bailout') in form of equity participation and/or liquidity guarantees	National Ministry of Finance or other delegated governmental agency	

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