

CHAPTER 5

Financial instruments, financial markets and financial market infrastructures

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To be well understood, the place and role of financial market infrastructures must be seen in the broader perspective of the financial ecosystem. Financial market infrastructures, such as payment systems, central counterparties (CCPs) or central securities depositories (CSDs) and securities settlement systems (SSS), play a key role in the exchange of the financial instruments that support the financing of the economy. Specifically, financial market infrastructures process not only payment flows, but also securities flows, in combinations that vary depending on the financial instrument.

After describing elements relating to money and payments in the first four chapters, in this chapter we examine the main concepts relating to financial instruments and the market infrastructures that process them, as an introduction to Chapters 6 to 16, in which we look at how the infrastructures are organised and operate.

In this chapter we provide an overview of the main financial instruments and the market environment in which they are traded, and analyse the various stages of the processing of financial instruments, from issuance to settlement. We also explore the main concepts relating to financial market infrastructures, the actors of the infrastructures and the legal principles underlying the functioning of these entities. The infrastructures in charge of processing financial instruments are discussed in detail in Chapters 11 (CCP), 12 (CSD), 13 (SSS) and 14 (TARGET2 Securities - T2S).

1. Financial instruments and markets

1.1. The main financial instruments¹

A financial market makes it possible to bring together economic agents who need financing and economic agents who can offer financing. It is also intended to help manage financial risk by redistributing it among the market participants. The financial system thus makes it possible to allocate

resources while also making allowance for profitability and risks. Financial instruments are created and traded in these markets.

According to Article L. 211-1 of the French Monetary and Financial Code, financial instruments can be grouped into two categories: financial securities, which are instruments for immediate delivery, and futures² (also known as “financial contracts”), which include derivative financial instruments.

1.1.1. Financial instruments for immediate delivery

A spot market is a market in which assets are typically exchanged for cash at prices reflecting the state of the market³ at the time the transactions are made. The purchase and sale of financial assets in a cash/spot market are subject to settlement terms providing for an immediate delivery, i.e. on the “settlement day defined by the rules of said market”. The immediacy of the cash market is indeed relative since the settlement must allow for the processing times of so-called post-trade services. In fact, settlement often takes place on T+1 or T+2, i.e. one or two days after the transaction date, depending on the type of market or instrument. For organised exchanges, in Europe, the CSDR regulation⁴ requires settlement on T+2 maximum, whereas the rule is generally T+3 in the rest of the world. In contrast, for OTC trades, this time frame can be much longer (several months or even years), or shorter (settlement on the day of the trade, often referred to as “T+0” or “same-day settlement”). The different markets (organised/OTC, etc.) and their characteristics are presented later in this chapter.

In a spot market, for the transaction to take place, the seller must therefore possess, on the settlement date, the assets required to settle any orders placed. If the assets are not held when entering into the transaction – which would in that case be called a “short sale” – the seller could also borrow said assets, for example through a securities

1 As this chapter is only intended to provide a general overview of financial instruments and markets to facilitate the understanding of the role of the related infrastructures, we invite readers to refer to specialised literature for a more exhaustive presentation of these instruments and markets.

2 A financial futures instrument is generally a contract that commits a market participant to selling or buying specific assets on a specific date and at a set price. The contract may relate to the security itself, or to a derivative instrument related to that security.

3 Both the overall market parameters and those related more specifically to the issuer of the financial instrument being traded.

4 Regulation No 909/2014/EU on improving securities settlement in the European Union and on central securities depositories, known as “CSDR” (Central Securities Depository Regulation). It is available on the website of the Official Journal of the European Union at the following address: <http://eur-lex.europa.eu/legal-content/>

Box 1: Issuance and circulation of securities - primary & secondary market

Securities markets fall into two categories: the primary market and the secondary market.

The **primary market** is where new securities are issued, in particular in the form of initial public offerings (IPOs), capital increases or bond issues. It is therefore the place where the issuers of securities, e.g. companies or governments, offer these securities to investors in return for the funding that the securities are representative of (debt or capital). It is the market for “new” securities, as opposed to the secondary market, which can be viewed as a market for “second-hand” securities. A capital increase, the placement of a bond issue and the issuance of any new security are carried out in the primary market. In France for example, regarding the debt of the French government, *Spécialistes en Valeurs de Trésor* (SVT) are primary dealers¹ responsible for buying government securities directly from the government and placing them in the markets with end investors or other financial intermediaries. They must participate in all auctions and syndications, in other words all issues of government securities. They also play an advisory role for *Agence France Trésor* - which manages the French state’s cash requirements - in the design and implementation of the financing programme before and after issues.

The **secondary market** is where securities are exchanged after having been issued on the primary market. The existence of a secondary market means, firstly, that the security is transferable and negotiable, and secondly that it benefits from some liquidity, which means that an investor who buys it can resell it to a third party. The more the secondary market is active, the more the security is liquid and the price range between purchases and sales is narrow. The gap between the buying price and the selling price (bid-ask spread) can be quite significant for a very illiquid security because of the small number of market participants. Market liquidity is therefore important to encourage end investors to invest in a security. Lastly, note that new securities are not created in the secondary market and that the original issuer is not a party to any transaction in this market, except in the case of a share repurchase or the redemption of debt before maturity.

¹ Primary dealers are financial intermediaries who have been authorised by the Treasury to process securities issued by the government and who must meet specific requirements to do so.

loan or a repurchase agreement (a “repo”). In such a scenario, a repurchase agreement indeed also allows securities to be received against cash, which securities must be returned on the due date.⁵

There are two basic types of securities that allow companies or governments to raise funds in financial markets: **shares** (equity securities) and **bonds** (debt securities).

A **share** (or stock) is a deed of ownership representing a fraction of a company’s equity. A share may give the holder various rights such as:

- annual dividends depending on the company’s pay-out policy;

- the right to vote;
- preferential subscription rights in the event of a capital increase to avoid dilution of the shareholder’s voting rights.

This security may be:

- unlisted, if the company places its shares directly with investors who provide funds in exchange;
- listed on a stock exchange when there has been a public offering.

A **bond** is a debt security representing debt owed by the issuer (company, government), the nominal amount (face value) of which

⁵ See Chapter 15.

Box 2: Eurobonds

A Eurobond is a bond denominated in a different currency from that of the country of the issuer of the security. The prefix “euro” in “Eurobond” is unrelated to the name of the single European currency, which was launched in 1999, in other words several decades after the emergence of these securities. The first Eurobonds were issued by the Italian company Autostrade in 1963, and were denominated in US dollars. Their volume really expanded in the 1980s, and they have since become a major component of the international financial system.

Eurobonds are attractive for debt issuers because of the flexibility they offer in the choice of the country of issue and the related tax optimisation opportunities.¹ Eurobonds are usually not subject to the taxes and regulations of the country of issue, which can make the Eurobond market more accessible than other bond markets. However, as they are denominated in foreign currencies, Eurobonds usually expose the issuer and/or the investor to currency risk.

Nowadays, the Eurobond market mainly involves large international firms, as well as international organisations, e.g. the World Bank, the European Investment Bank or the European Financial Stability Facility.

Please note: the Eurobonds described here should not be confused with the Euro-bonds project, which has been under discussion for several years in the euro area and would consist in issuing “pooled” sovereign debt instruments of euro area Member States.

¹ When they were created, Eurobonds were seen as a way to circumvent the US Interest Equalization Tax set up in 1963, which had far-reaching consequences for non-US investors in the United States.

is repaid by the issuer at maturity. It bears interest over a term set when it is issued. The key differentiating features of a bond are the interest rate, the issue and redemption terms, the coupon (interest) payment method and the issuer’s rating. There are some variants:

- convertible bonds: bonds that can be converted into shares at any time or during predetermined periods (as provided for in the issue contract);
- bonds redeemable in securities: these bonds are not redeemed in cash but in shares or other securities.

Other more specific securities are also traded in the markets. These include:

Negotiable debt securities, which are short- or medium-term financial instruments traded in the money market. Negotiable debt securities are transferable securities,

the legal form of which is applied to a category of means of payment, specifically promissory notes.

Following an opinion of the European Central Bank dated 30 March 2016,⁶ the reform of the market for negotiable debt securities entered into force in French law following the issuance of the Ministerial Order of 30 May 2016.⁷

Negotiable debt securities fall into three main categories:

- treasury bills;
- short-term negotiable debt securities, which are a combination of the commercial paper issued by companies and of the certificates of deposit issued by credit institutions. The new commercial name chosen by the French market for this category of instruments is “Negotiable European Commercial Paper”;

⁶ https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2016_20_f_sign.pdf

⁷ <https://www.legifrance.gouv.fr>

- medium-term negotiable securities, formerly negotiable medium-term notes.

The **shares and units of Undertakings for Collective Investment in Transferable Securities (UCITS) and collective debt investment funds** are also financial instruments.

UCITS are financial vehicles that allow the collection and investment of savings. They give their subscribers the opportunity to invest in financial markets that would otherwise be difficult for investors to access, for example foreign financial and monetary markets, unlisted equities, etc. The main business of UCITS is to raise funds by issuing securities to various agents, e.g. individuals or companies, in order to acquire financial assets. While attempting to strike the best trade-off between the appropriate risk profile and the expected return, UCITS issue units that can be either dedicated to a single class of instruments or, on the contrary, combine classes of shares and bonds – including along geographical criteria, for example France, Europe or World – as well as convertible bonds or money market funds.⁸ **UCITS** may take two legal forms:

- **Open-ended investment company (OEIC):** a public limited company – with legal personality; its sole purpose is the management of transferable securities. It issues shares as and when requested by subscribers at a subscription and redemption price that must be published daily, and which corresponds to the value of its assets;
- **Unit trust:** co-ownership of transferable securities; unlike OEICs, unit trusts have no legal personality. Their units are issued or redeemed at the request of the unitholders. The number of units increases by the subscription of new units and decreases via the redemptions made by the fund at the request of unitholders.

Collective debt investment funds are Special Purpose Vehicles (SPV) which

result from the securitisation of loans from credit institutions. They issue units that are representative of loans. These units are securities.

The units issued by a unit trust or collective debt investment fund, unlike those of an OEIC, are not transferable (negotiable), but can only be redeemed by the fund concerned.

Exchange Traded Funds (ETFs), also known as “trackers”, are investment funds whose purpose is to replicate the performance of an index, e.g. a stock index.

1.1.2. Derivatives

1.1.2.1. What is a derivative?

A derivative is an instrument or a contract between two counterparties, the value of which is linked to (derived from) the characteristics of an underlying asset or element, such as a share, an interest rate or a commodity. These instruments enable the transfer of the risk related to the underlying asset from one market participant to another. Derivatives are a large and heterogeneous family, as they can take simple or more complex forms (see box below). They can be traded either on organised markets when they are sufficiently standardised or over-the-counter to meet the specific needs of the two counterparties involved.

Derivative instruments were first created in the 19th century in the United States, in the Chicago area. These first instruments were in fact derivatives on agricultural products traded on the Chicago Board of Trade (CBOT). They played a very important role in enabling producers to hedge the price of agricultural products by selling their harvest forward at a firm and known price. A wheat producer, for example, is faced with two constraints: determining the price at which the crop can be sold and ensuring that it is sold. The derivatives market allows the producer to sell the crop forward and to secure this forward sale at a price that has been set in advance.

⁸ Which aim to serve a rate of return related to the ECB's key interest rate.

Derivatives thus offer financial protection to economic agents who buy them and therefore have beneficial effects on the financial markets, even though the 2007 financial crisis highlighted the systemic risks they can cause or compound.⁹ Although these instruments have a stabilising effect by allowing some market participants to dispel uncertainty and mitigate risks by hedging them, the possibility for other actors to use them for speculative purposes, e.g. short sellers or buyers, increases the risk of destabilisation.

1.1.2.2. The different types of derivatives

The main types of contracts

The three main types of financial derivative instruments are futures, options and swaps.

A **futures contract** is an agreement to buy or sell an asset at a future date and at a price set in advance in the contract.

Forwards are non-standardised futures traded over the counter (OTC). Unlike forwards, futures are contracts with standardised amounts and maturity dates that are traded on organised markets.

Negotiable options are contracts that give the holder the right (and not the obligation) to buy (known as a call) or to sell (put) an underlying asset at a price set in advance (exercise price or strike) regardless of the market price at maturity. The price of an option (also known as the premium) represents the fixed cost to pay in return for this flexibility. Options are traded either over the counter or on organised markets; the Chicago Board Options Exchange was created in 1973 to trade options.

An option can be exercised on a stated date (it is then referred to as a *European* option), or at any time during the period prior to the expiry date (*American* option). Whether an option is exercised or not depends on the relationship between

⁹ Complex derivatives, in particular CDS (Credit Default Swaps), were highlighted as one of the causes of the 2007-2008 crisis.

Box 3: “Plain vanilla” instruments, “exotic” instruments and structured products

The term plain vanilla describes the least sophisticated standard derivatives, as opposed to non-standard “exotic” derivatives based on more complex financial techniques.

The so-called “**plain vanilla**” financial instrument is the simplest or most standardised version of a financial instrument. These are usually simple options, futures, forwards or swaps. Plain vanilla instruments are those that are the easiest to price because their characteristics are standardised and known to all market participants.

The so-called “**exotic**” financial instruments, in contrast, are more complex than the plain vanilla instruments commonly used in the markets. They usually have several sophisticated parameters for defining the payoff of the instrument, i.e. the formula that determines the gain or loss for the instrument holder.

An exotic product may also include non-standardised underlying instruments developed for a specific client or market. These are then called **structured products**.

Exotic instruments are also more difficult to price than plain vanilla instruments with standardised characteristics and usually require ad-hoc pricing tools. These products are also mostly traded over the counter.

the price of the underlying and the exercise price:

- in the case of a *call* (purchase option): the option will be exercised by the buyer if the price of the underlying asset is higher than the exercise price on the expiry date;
- in the case of a *put*: the option will be exercised if the price of the underlying asset is lower than the exercise price.

A **swap** is a contract for the temporary exchange of financial flows between two parties during a given period and defined in advance. Typically, the calculation of the cash flows is based on the future value of an interest rate, exchange rate or some other market variable.

The most common swaps are:

- the interest rate swap, which allows market participants to “swap” a floating rate against a fixed rate;
- the cross-currency interest rate swap between interest rates denominated in different currencies (also called “cross-currency swap”);
- the Credit Default Swap (CDS), which allows you to purchase protection (insurance) against the credit risk of a bond issuer in exchange for periodic regular payments called premiums;
- the commodity swap, which allows the exchange of a fixed price against a variable price on contracts for raw materials.

Main underlying assets

The main categories of underlyings on which the derivatives market is based are, in descending order of volumes: interest rates, currencies, credit, shares and commodities (see table below).

The largest category of underlyings in the derivatives market is **interest rates**.

There are different classes of interest rate derivatives, the main ones being interest rate swaps, options, futures and forward rate agreements. Interest rate derivatives are widely used by market participants to hedge the risks associated with interest rate fluctuations. They represent the main market of OTC derivatives trading.

Currency derivatives consist primarily of outright forwards,¹⁰ swaps and options. Forwards and swaps alone account for more than half of the currency derivatives market. At the end of 2016,¹¹ three currencies accounted for more than 78% of all underlyings in the interest rate swap market, which represents more than three quarters of the total notional amounts: the US dollar, the euro and the yen.

The main **credit derivatives** are credit default swaps (CDS), whereby a party undertakes periodically to pay a premium through which it buys protection, in return for which the protection seller bears the credit risk on the reference entity for an agreed period in the event of the latter’s default.

Equity derivatives are mainly options, swaps and forwards. Equity options account for nearly 75% of this market. The underlying may be a share or a stock index.

Lastly, **commodity derivatives** represent only a small proportion of the derivatives market, but can be very diverse. There are derivatives on energy products, metals and agricultural products. The corresponding contracts are also very diverse (options, forwards, futures, swaps) and may in some cases be very standardised, or conversely only over-the-counter.

1.2. Financial instrument markets

1.2.1. Organised markets and OTC markets

When two parties, i.e. a buyer and a seller, wish to enter into a transaction, they can do so in two types of markets: (1) an organised market (also called a regulated market),

10 Outright forward: forward exchange transaction of two currencies at a price agreed on the date of the contract for settlement or delivery in the future (more than two business days). This category also includes forward foreign exchange agreement transactions (FXA), non-deliverable forwards, and forward contracts for differences.

11 Source: BIS Triennial Central Bank Survey of derivatives https://www.bis.org/statistics/d12_3.pdf

i.e. a trading platform or (2) an over-the-counter market (OTC). In the over-the-counter market, the transaction is entered into bilaterally, i.e. between the two parties, on terms determined by them, whereas in a regulated market, the parties do not negotiate bilaterally but send buy and sell orders via an exchange, or a trading platform. This distinction has many consequences regarding the risk and the transparency of transactions in the derivatives market.

The organised market is operated by a market operator. A market undertaking is a trading company whose business is to set operating and market admission rules, while complying with the regulations of the authority in charge of regulating the operations of regulated markets. Participation in an organised market is not open to all. It is restricted to authorised members, or participants, who are allowed to trade on the trading platform. Market members are responsible for transmitting the orders of their individual or institutional clients. Only standardised financial instruments are traded in organised markets, i.e. instruments with common and widely used characteristics, such as product features, place of delivery or settlement, contract expiry date, etc. These financial instruments are usually liquid, which means that there is an active market of sellers and buyers for these instruments.

For example, the Paris Stock Exchange is managed by the market undertaking Euronext Paris SA, a member of the Euronext NV group, which currently comprises the French, Dutch, Belgian, Portuguese and Irish stock markets (since the acquisition of the Dublin Stock Exchange by Euronext in 2018). As a market undertaking, Euronext Paris SA is subject to the supervision of the *Autorité des marchés financiers* (AMF – French Financial Markets Authority).

In an over-the-counter market, by contrast, the two parties negotiate the terms of the transaction between themselves. Over-the-counter instruments may therefore

T1 : OTC traded volumes in the derivatives market

(Distribution of over-the-counter derivatives by type of underlying)

Underlyings	Notional (open position) (USD billions) 1st half of 2017	%
Interest rates	415,914	77
Foreign exchange	76,980	14
Credit	9,868	2
Equities	6,836	1
Commodities	1,401	–
Not allocated	31,436	6
Total	542,435	100

Source: BIS semi-annual OTC derivatives statistics (end of June 2017)

be less standardised (especially in the case of derivatives) and the applicable regulatory framework is more flexible. For example, the parties are free to set the terms of the contract that will bind them, in particular the amount (or notional amount)¹² and the end date. The 2007-2008 crisis highlighted the importance of OTC derivatives markets in terms of financial stability, given (i) the bilateral nature of these transactions, which in principle precludes the existence of a central location where transactions are recorded and processed, making controls more difficult; (ii) their specific parameters, which makes their unique risk profile and system-wide risk distribution difficult to grasp, and lastly (iii) the volume of trading in these markets, which grew exponentially in the 2000s.

To make OTC derivatives transactions safer and increase their transparency, the G20 made the following commitments at the Pittsburgh Summit in 2009:

- All standardised OTC derivative contracts should be cleared through central counterparties (see Chapter 11);
- All standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms;
- OTC derivative contracts should be reported to central trade repositories (see Chapter 16);

¹² The face value of the contract, which is not exchanged, but is used to calculate the payment flows, for example the amount of interest in an interest rate swap.

- Non-standardised and non-centrally cleared OTC contracts should be subject to specific capital requirements.

In the European Union and the United States these commitments have led to the implementation of the EMIR Regulation and the Dodd-Frank Act, respectively.

As a result, regulatory developments have gradually subjected OTC derivatives to more rules: for example, even for non-standardised OTC contracts that do not have to be centrally cleared, counterparties are now required to exchange margins to cover their exposures.

1.2.2. The different types of trading platforms

1.2.2.1. The context: from MIF to MIF 2

Until the mid-2000s, European markets were characterised by the existence of domestic trading platforms, each enjoying a quasi-monopoly position.

The Markets in Financial Instruments Directive (MIF), adopted in 2004 and implemented on 1 November 2007, laid down a new organisation for equity markets in Europe. This was aimed at promoting competition by allowing “alternative” trading methods alongside the traditional

platforms (the “stock exchanges”). In addition, to ensure the quality of the price discovery mechanism in a market that had become fragmented, MIF introduced new rules on pre- and post-trade transparency and instituted the “best execution” principle for better investor protection, based on the search for the trading system offering the best price to the client.

MIF has achieved two of its objectives: lower transaction costs in the stock market and the emergence of truly pan-European trading systems. However, its impact on liquidity and market transparency has not been as conclusive.

The review of MIF (MIF 2) began at the end of 2009,¹³ with the primary objective of addressing the identified weaknesses of MIF but also in the context of the 2008 financial crisis and the G20 “road map”. Following a public consultation launched in December 2010, the Commission presented its proposals in October 2011. After an intense and complex debate, MIF 2 (consisting of a directive and a regulation) was adopted in May 2014 and came into effect on 3 January 2018. It aims to restore a level playing field in the competition between regulated markets and alternative trading platforms, enhance transparency and improve investor protection (see box below).

¹³ See the “Fleuriot” report (report to the Minister of the Economy, Industry and Employment on the revision of the Markets in Financial Instruments Directive - February 2010: <https://www.tresor.economie.gouv.fr/Ressources/File/333690>)

Box 4: MIF 2

MIF 2 consists of a directive (MiFID 2) and a regulation (MiFIR). However, beyond these two “level 1” texts, MIF 2 also contains more than 40 “level 2” texts (delegated regulations and implementing regulations) adopted by the Commission on the basis of technical standards developed by the European Securities and Markets Authority (ESMA), as well as a series of “Level 3” documents (Guidelines and Questions/Answers) published by the ESMA.

MiFID 2 has two main components: market organisation and investor protection.

Market organisation

- Extension of the scope of the relevant financial instruments (which, under MIF, was limited to equities) to equity equivalent securities and non-equity instruments: bonds, derivatives, structured products and carbon quotas;

.../...

- Creation of a new category of organised platform (limited to the trading of non-equity instruments): Organised Trading Facilities (OTF);
- Restriction of the scope of over-the-counter trading (compulsory trading of equities and certain derivatives), strengthening of the systematic internaliser regime, prohibition of broker crossing networks;
- Establishment of the principle of non-discriminatory access (“open access”) from trading platforms to central counterparties (CCPs) and vice versa, as well as to benchmark indices;
- Enhanced pre-trade transparency requirements (with possible exemptions calibrated to the liquidity of the instrument and/or the transaction size): publication of bid and ask prices and the size of positions posted at these prices;
- Strengthened post-trade transparency requirements (possible postponements calibrated depending on the same criteria as above), with the establishment of the Consolidated Tape Provider (CTP) and the Approved Publication Authority (APA);
- Increased reporting of transactions to the regulator and implementation of Approved Reporting Mechanism (ARM);
- Establishment of a set of rules for algorithmic trading and high frequency trading to prevent the risk of market malfunction and manipulation;
- Establishment of a set of rules for commodity derivatives markets (position limits and reporting).

Investor protection

- Strengthening product governance through a more detailed definition of the respective responsibilities of the originator (who defines the product characteristics, the target market and the distribution channels) and the distributor (who understands the product characteristics, also determines the target market and ensures its consistency with its own clientele);
- Increased transparency vis-à-vis investors: pre- and possibly post-trade communication of costs and charges relating to services and products;
- Introduction of the concept of “independent” advice, with an obligation for investment firms providing advice to specify whether it is independent or not;
- Strengthening the framework of remuneration and inducements: their receipt is prohibited as part of the provision of an independent advisory service or discretionary portfolio management; it is authorised for other services, provided that its purpose is to improve the quality of the service and that the client is clearly informed of their nature, amount or method of calculation, prior to the provision of the service;
- Establishment of a new regime for the financing of financial analysis;
- Strengthening transparency obligations for “best execution” purposes: transaction execution information must be more detailed and easily understood by the client.

1.2.2.2. Regulated markets

MiFID 2 defines a regulated market as “a multilateral system operated and/or managed by a market operator, which

brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments – in the system and in accordance with its non-discretionary rules – in a way

that results in a contract, in respect of the financial instruments admitted to trading under its rules and/or systems, and which is authorised and functions regularly and in accordance with Title III [of the Directive].”

A regulated market is therefore characterised by the non-discretionary execution of transactions: an order placed on the order book cannot be removed and must be automatically matched with the orders available in the system.

1.2.2.3. *Alternative trading facilities*

Multilateral trading facilities (MTFs)

MTFs, which already existed under MIF, are defined in MIF 2 as “a multilateral system, operated by an investment firm or a market operator, which brings together multiple third-party buying and selling interests in financial instruments – in the system and in accordance with non-discretionary rules – in a way that results in a contract in accordance with Title II [of the Directive]”;

On an MTF, as on a regulated market, transactions are executed in a non-discretionary manner. MTFs usually offer cheaper access than regulated markets, but this access is limited to the more liquid securities, which have the highest volumes processed.

A regulated market operator may also simultaneously manage MTFs to meet specific needs of market participants: Euronext, for example, also manages two Multilateral Trading Facilities (MTFs): **Alternext** (for SMEs and midcaps) and **BondMatch** (for bonds denominated in euros).

Organised trading facilities (OTFs)

OTFs are a new category of organised platform introduced by MIF 2, which defines them as “a multilateral system which is not a regulated market or an MTF and in which multiple third-party

buying and selling interests in bonds, structured finance products, emission allowances or derivatives are able to interact in the system in a way that results in a contract in accordance with Title II [of the Directive].”

Unlike for regulated markets and MTFs, the operator of an OTF has discretion over how transactions are executed: the operator may decide to place or withdraw an order on the OTF, or decide not to match a specific order with the orders available in the system at a given time, which may in particular allow the best execution of client orders. However, the operator of an OTF cannot deal on own account.

Systematic internalisers (SIs)

SIs, which already existed under MIF, are defined in MIF 2 as “an investment firm which, on an organised, frequent systematic and substantial basis, deals on own account when executing client orders outside a regulated market, an MTF or an OTF”.

Unlike an OTF, a systematic internaliser executes the orders of its clients by committing its own capital. However, OTFs are subject to stricter prudential requirements.

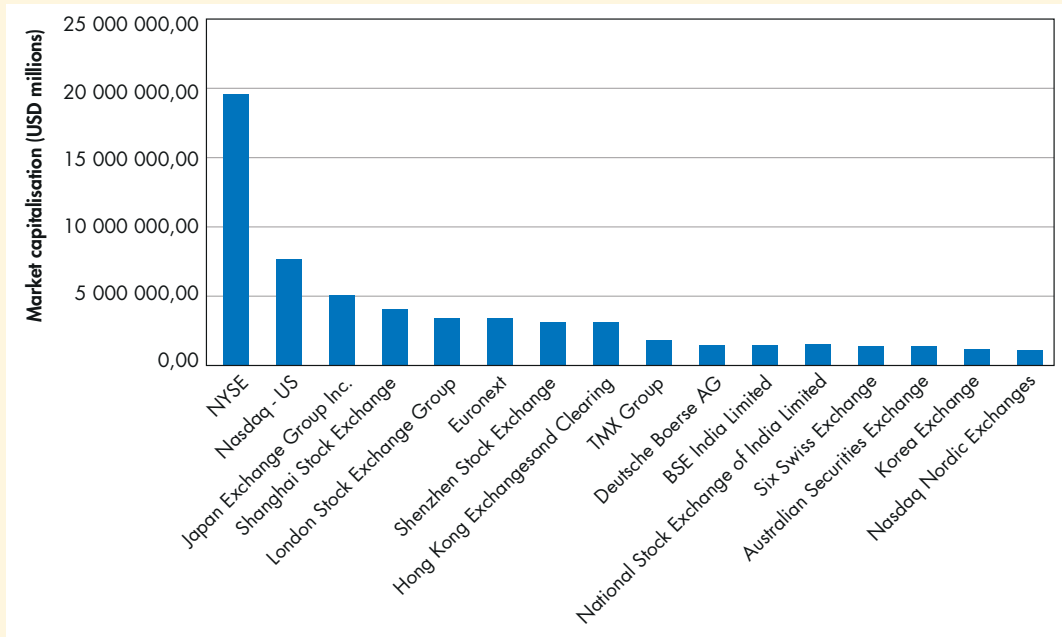
Dark pools

Dark pools are trading systems where there is no pre-trade transparency of orders: due to a regulatory exemption, an order can be placed in the trading system without the pre-trade reporting obligation, i.e. without being disclosed before being executed. The operator of a regulated market can also manage a dark pool. For example, Euronext manages a dark pool called **SmartPool**.

1.2.3. Statistical data: trading platforms

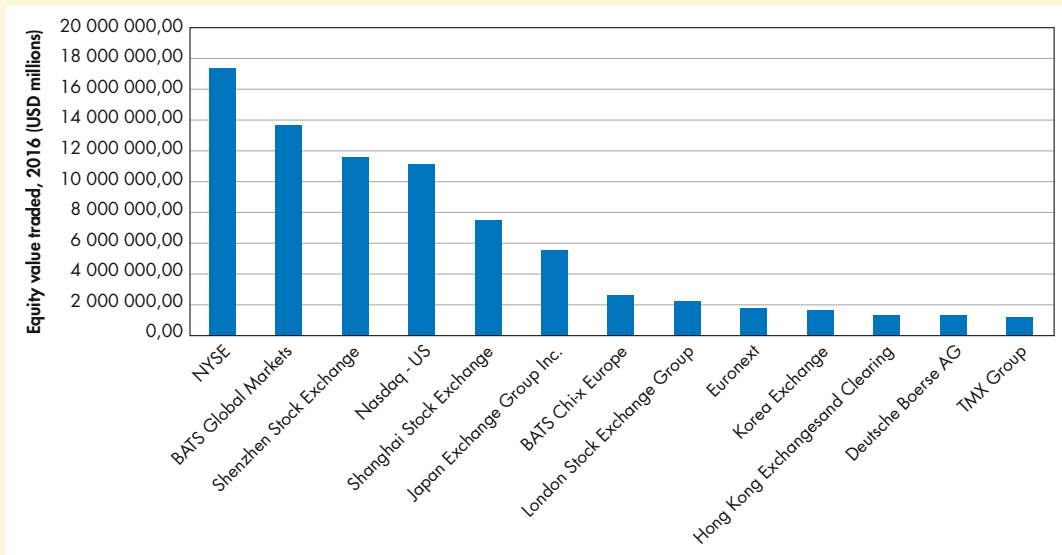
The charts below illustrate the respective positions of the world’s global trading venues, in terms of market capitalisation (Chart 1), and equity value traded (Chart 2).

C1 : Total market capitalisation of the world's main regulated markets (as at 31/12/2016)



Source: World Federation of Exchanges.

C2 : Value traded on equity markets, January to December 2016



Source: World Federation of Exchanges.

2. The life cycle of a financial transaction

2.1. Description of the life cycle of a financial instrument transaction

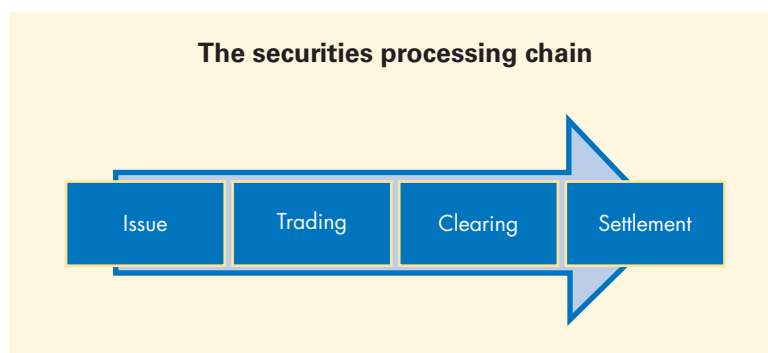
This section details the transaction cycle for financial instruments, which gives rise to cash flows and to securities flows. However, other financial transactions, such as unsecured loans (with no delivery of collateral securities) only give rise to cash flows. As mentioned above, derivative transactions will also most often result in cash flows only.

The processing chain of a security refers to all the tasks implemented to guarantee the successful completion of transactions entered into on a financial market. The processing tasks may vary depending on the nature of the security and/or the type of market (centralised vs OTC), however, they can be grouped into four stages: the issuance when it comes to a security and the first placing on the market of the instrument in question, trading, clearing and settlement.

2.1.1. Issuing

The first step in the life cycle of a security is its issue, which corresponds to the creation of a new security, e.g. a share or a bond. Historically, the creation of a security was materialised by a printed certificate entrusted to the investor, against the simultaneous delivery of funds by the latter. This certificate, which actually represented the investor's claim, was usually deposited in the investor's bank vault. In France securities have been totally dematerialised since 1984. These securities are now issued, safekept and exchanged electronically, via book entries in the accounts opened with a CSD (see Chapter 12) by the issuer and the financial intermediaries (who buy the securities issued either for their own account or on behalf of their clients).

For companies or governments, the issuance of securities is critical for the financing of their funding requirements by



the markets. The issuance of new securities usually occurs in the primary market (see earlier in this chapter):

- for shares: in the context of an IPO (Initial Public Offer) when a company raises funds in the market for the first time, or, more often, in the form of capital increases;
- for bond issues: issuance usually takes the form of competitive bidding between market makers, such as banks dealing on own account or acting on behalf of their clients;
- for sovereign debt issues: government debt securities are issued in France via an auction process managed by *Agence France Trésor*¹⁴ (AFT). The auction takes place in the form of Dutch auctions (or multiple-priced bids and sealed bids auctions) open to a limited number of participants called primary dealers. Before each auction, the AFT sets the amounts it wants to borrow and the desired maturities. Then the primary dealers state the amount of debt they want to buy and the price they are willing to pay. The received bids are then ranked and allocated in descending order of price until the total desired by the AFT has been reached. At the end of 2017, there were 16 primary dealers authorised to participate in the auctions. For the other participants, the bonds are therefore necessarily traded in the secondary market.

¹⁴ Agence France Trésor is a French national authority responsible for managing the State's cash and debt.

2.1.2. Trading

As stated earlier, securities and financial instruments may be traded on organised or over-the-counter markets. In addition, an investor can deal on own account directly in these markets (in which case the investor would be called a dealer), but many investors tend to go through intermediaries (referred to as brokers). **Trading** is the first step of the transaction. During this phase, in over-the-counter markets, the buyer and the seller agree on the terms of the contract.

The step immediately following the agreement of both parties is the **verification** of the details of the transaction. This step is necessary in the securities processing chain as well as for risk management. For transactions on a regulated market, it is the latter which will carry out the verification, since it brings together the purchase and sale orders. In the case of over-the-counter transactions, the two counterparties verify the details of the transaction via their internal systems.

The **confirmation** is the procedure whereby a record of the transaction that both parties have agreed on is created. This is done by one of the two counterparties sending the details of the transaction to the other, who checks the details and signifies agreement. This process can also be done by involving a third party to which both counterparties submit their records.

After the confirmation, the two records are then reconciled via a procedure called **matching** (usually by the central depository - see Chapters 12, 13 and 14).

2.1.3. Clearing

When it exists, the third stage of trade processing is **clearing**. This step is indeed not mandatory for all instruments nor in all markets. As a rule, products traded on organised platforms are cleared. Moreover, since 2012 and reforms such as EMIR or the Dodd-Frank Act, OTC derivatives are increasingly subject to mandatory

From the trade to the confirmation



clearing by a central counterparty. The operation of clearing houses acting as central counterparties (CCPs) is detailed in Chapter 11.

2.1.4. Settlement

The last step in the securities processing chain is **settlement**. This includes the settlement of the reciprocal commitments of the buyer and the seller and the recognition of the transaction in the books to record the definitive nature of the transaction, i.e. the delivery of securities to the buyer, and the payment of funds to the seller, when appropriate.

The management of settlement systems is handled by central depositories (see Chapters 12, 13 and 14).

2.2. Specificities of the regulation of derivatives

Derivatives usually do not give rise to an initial settlement phase but to intermediate flows. Whether listed or traded over the counter, derivatives are settled in two ways on the expiry date:

- **cash settlement**, which involves an exchange of cash flows corresponding to the value of the contract when it expires. This method is used for most derivative contracts. Following the netting process, settlement usually results in net cash exchanges between debtors and creditors;
- **physical settlement**, with the delivery of the underlying asset in exchange for the payment of the price determined in the contract. If the underlying asset is a security, settlement is done via a CSD.

However, the market practice is to avoid physical settlement, so market participants tend to close (offset) their positions before the expiry of the derivatives contract, i.e. before the settlement date, usually by taking an opposite position on the same derivative. Netting these positions allows cash settlements and avoids having to exchange the underlying.

3. Common features of financial market infrastructures

Financial market infrastructures intervene either to settle interbank payments or after a financial transaction has been entered into in the market, whether it be a regulated market or an over-the-counter market. In addition to the settlement of interbank payments, they provide clearing (where applicable), the settlement and delivery of commitments and/or contracts traded on the market. They therefore intervene in the “post-trade” sphere of the life of a financial transaction, and do not include the trading platforms, which are the exchanges.

While safe and efficient financial market infrastructures contribute to preserving and promoting financial stability and economic growth, they also concentrate the risks, albeit in different forms depending on the type of infrastructure (see Chapter 17). If they fail, financial market infrastructures could be the source of financial shocks, such as liquidity disruptions and even losses, or could be a major relay of shocks between domestic and international financial markets. The effects of such a disruption could propagate far beyond infrastructures and their participants, and threaten the stability of domestic and international financial markets and the wider economy. Conversely, robust infrastructures are an asset for the financial markets in that they allow market participants to confidently fulfil their obligations in a timely manner, even in times of stress. For example, during the financial crisis of 2008, financial market infrastructures demonstrated strong resilience and effectively implemented

their risk management mechanisms, thus avoiding contagion to all financial players. With regard to central counterparties (CCPs), the safety and efficiency objectives are even more relevant because national and international authorities have required or proposed, or even demanded in some cases, the mandatory use of a centralised clearing system in a growing number of financial markets.¹⁵

These are the reasons why market infrastructures are considered as “systemically important”.

3.1. Definition of “financial market infrastructures”

The report published by the CPMI¹⁶ and the IOSCO¹⁷ in April 2012 sets out a set of “Principles for Financial Market Infrastructures” (PFMI). A financial market infrastructure is a new concept, defined as “*a multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling, or recording payments, securities, derivatives, or other financial transactions*”.

This definition emphasises the functions an infrastructure performs, without focusing on the status of the different entities that are involved in the infrastructure. What is important is therefore the service delivered by the infrastructure, which is understandable in an approach aimed at coping with the risks generated by an activity, as the status of the person who carries it out is not relevant.

As will be seen in more detail in Chapter 18, the first international recommendations adopted by the G10 central banks in 1990 (Lamfalussy report)¹⁸ and then in 2001 (Core Principles for Systemically Important Payment Systems), related solely to payment systems. They then expanded rapidly to securities settlement systems (SSS) in 2001¹⁹ and then to central counterparties (CCPs) in 2004.²⁰ The PFMI of 2012 drew the consequences of the observation of

15 Source, PFMI, point 1.15, https://www.bis.org/cpmi/publ/d101_fr.pdf

16 Committee on Payments and Market Infrastructures.

17 International Organization of Securities Commission.

18 Report of the Committee on Interbank Netting Schemes of the central banks of the Group of Ten countries.

19 Because of their multilateral role at the end of the securities processing chain to ensure the effective settlement of transactions.

20 Because of their multilateral role in the middle of the securities processing chain where they assume the financial risks of the transaction and ensure the multilateral clearing of transactions.

the strong interrelationships between these different infrastructures, and of their common points, to define a common framework. As a result, financial market infrastructures include payment systems, securities settlement systems, central securities depositories, central counterparties (CCPs) and trade repositories²¹ (see also Chapter 18 for details).

Lastly, this definition includes the different stakeholders, i.e. the participants and the system operator. The inclusion of the latter is a new element since the PFMI, which makes it possible to impose specific obligations, particularly in terms of governance, on the system operator.

3.2. The actors of financial market infrastructures

As the definition of financial market infrastructures underlines, the actors are the operator - or manager of the system - and the participants.

3.2.1. The operator and its governance

The operator is responsible for the proper functioning of the system. It is the legal entity that manages the system, ensures its governance, defines the rules for participation and risk management, and is accountable for its compliance with the relevant domestic oversight authorities.

With the publication and implementation of the PFMI, the requirements for operators of financial market infrastructures have been strengthened. This is especially the case in the area of governance. In particular, operators must have the explicit objective of ensuring the safety and efficiency of the infrastructure they manage and must explicitly focus their efforts on ensuring financial stability.

Governance differs, especially for ensuring financial stability, depending on whether the infrastructure is organised as a private enterprise with a growth and profit objective, or as a public utility

owned by its participants, or is managed by a central bank. In any case, supporting financial stability must remain an ultimate objective of the infrastructure, which requires different types of effort depending on the organisation chosen to meet this requirement. For example, where the infrastructure has an objective of economic profitability, the generation of profit must not be met to the detriment of financial stability, infrastructure security and efficiency. It is the responsibility of the infrastructure operator to ensure the preservation of this order of priority. The operator cannot in any way diminish the security of the infrastructure (requirement of lower margins for a CCP, or insufficient or absent backup site for a CSD or a payment system, for example), to increase its profitability or reduce the rates charged for its services. In addition, where the infrastructure is owned by its participants, usually direct participants, the interests of the indirect participants must be given due allowance.

When managed by a central bank - which may be the case for payment systems in particular - and if the latter also has a mandate to oversee the security and proper functioning of payment systems, particular attention must be paid to the prevention of any potential or perceived conflict of interest between these two roles. In other words, the PFMI are applicable to all FMIs, whether they are operated by central banks or private sector entities. However, there are some exceptions, i.e. situations in which the PFMI have to be applied in a different way to the FMIs operated by central banks because of legal or regulatory requirements, such as those relating to monetary policy. For example, the principle of governance should not have the effect of constraining the composition of the governance bodies of a central bank. Similarly, the requirements of the PFMI to prepare for a recovery or an orderly unwinding of the business do not apply to a central bank, which is able to ensure the continuity of the operations of a financial market infrastructure irrespective of the financial circumstances.²²

21 Because of their role of repository centralising all the transactions and making it possible to measure the global exposures on the different types of financial activities.

22 <http://www.bis.org/cpmi/pub/d130.pdf>

In addition, the board of directors (or an equivalent body) of an infrastructure must have clear and direct lines of accountability, and the organisation of its governance must be communicated to the shareholders, relevant authorities, participants, and more generally, to the public. The role and responsibilities of the operator's board of directors must be clear, its operation must be described, in particular the ways of identifying and dealing with any conflicts of interest. The performance of the board of directors must be assessed regularly. Its members must have the appropriate skills, and must be given appropriate incentives to fulfil the tasks entrusted to them. This implies in particular the inclusion of independent members on the board of directors. The board of directors should define the system's risk management framework, its risk tolerance, the distribution of responsibilities and crisis management mechanisms. In addition, the roles and responsibilities of management must also be clearly described, and they must have the required skills. Lastly, the board of directors must ensure that the system architecture, its rules, its strategy and the major decisions that are made properly reflect the legitimate interests of all direct and indirect participants and other relevant stakeholders.

3.2.2. Settlement agents

In the context of the FMI, the settlement agent is the institution in whose books the accounts of the direct participants are credited and debited to ensure the final settlement of payment orders. The settlement agent of FMI is either the central bank, which provides a settlement in central bank money, or a commercial bank, which provides settlement in commercial currency.

In the case of payment systems, the payer's bank and the beneficiary's bank, direct participants (or indirect, see Box 5) in the payment system, hold an account in the books of the settlement agent,

and the payment is made in the books of the settlement agent by the debit of the account of the payer's bank and the credit of the beneficiary's account. The payment may be funded either by funds already in the bank account making the payment or by a credit extended by the settlement agent. This example illustrates the crucial role played by the settlement agent, and its relationship with the participating banks in the payment system. Banks are dependent on the operational soundness of the settlement agent but also on its risk policy with respect to the credits it may grant to them, and are exposed to a credit risk regarding the settlement agent. The larger the transaction volumes and values processed by the settlement agent, the more critical its operational reliability and credit quality become.²³

The settlement agent also plays a central role in the smooth functioning of a payment system by providing intraday (or daylight) credit. This is the credit made by the system's settlement agent and repaid by the borrower during a single business day. The provision of intraday credit is intended to ensure a smooth settlement process and to prevent the system from experiencing blocking situations; it is essential for payment systems, especially for large-value payment systems. It helps to mitigate the impact of any disruption in the flow of payments within the system. The repayment of borrowed funds must occur before the end of the day²⁴. This ability to provide intraday credit has become all the more crucial since, with a view to reducing financial risks, the number of infrastructures providing real-time gross settlement (see Chapter 6) and delivery versus payment (see Chapters 12 and 13) has grown significantly.

Given the central role of the settlement agent for the smooth functioning of payment systems and hence of other infrastructures - which ultimately rely on the payment system to ensure the settlement of the transactions they process - its operational

²³ See "The role of central bank money in payment systems, report from the CPSS", August 2003.

²⁴ As regards Eurosystem refinancing operations, in the event of non-repayment, the credit is converted into an overnight credit.

robustness and financial risk profile are essential. This is why Principle 9 of the PFMI recommends that infrastructures should make their payments in central bank money, where possible. Indeed, central banks carry the lowest credit risk, and they are the ultimate source of liquidity for their currency.

3.2.3. Participants

Principle 18 of the PFMI states that infrastructures must have participation criteria that are objective, risk-based, and publicly disclosed. They must also permit fair and open access to the infrastructure. By allowing the selection of participants depending on their risk profile, such participation criteria constitute the first line of defence of the infrastructure against the various financial and operational risks;²⁵ whereas the requirement for fair and open access must ensure the widest access possible to the infrastructure for financial actors. This latter aspect is especially important because regulators can make the use of infrastructures (be it CCPs, central securities depositories or trade repositories) compulsory. This translates, for example, into the fact that infrastructures must use, or at least be able to accept and implement, internationally recognised communication procedures and standards, in contrast to “proprietary” standards that could constitute a barrier to entry for actors who do not use them.

Taking into account the interests of the participants is paramount, since the role of a financial market infrastructure is to serve the markets efficiently and safely. Achieving these goals means that participants should be closely associated with the strategic decisions of the infrastructure, so that their interests are aligned. The terms of this association of participants, including indirect participants, vary depending on the characteristics of each infrastructure. Nevertheless, they must be involved in the decision-making process of the board of directors, for example through the representation of direct and indirect participants on the board, or by setting up user committees, or through a consultation mechanism.

Taking the example of TARGET2 (see Chapter 7), each national central bank operating a national component of T2 implements a consultation procedure and takes into consideration the needs and responses of its participants through a local market group. The views of the participants are then pooled within the Eurosystem, and guide the Eurosystem in its decisions on changes to the payment system.

Similarly, STET, the operator of the CORE(FR) retail payment system (see Chapter 10) organizes the consultation of its participants and the recognition of their opinions and needs via one of its governance bodies, the “client committee”. It is made up of all the direct participants and the representatives of the indirect participants. Its mandate is to validate, in particular, changes to CORE(FR)’s services, its rules, and its annual strategic plan. It is also informed of tariff changes or the suspension or exclusion of a direct participant.

3.2.4. Critical service providers

To run their operations continuously and adequately, financial market infrastructures often rely on various service providers, such as providers of messaging and connectivity, or technology services. One example is SWIFT, which provides a messaging service to the vast majority of infrastructures (see box on SWIFT in Chapter 18).

In view of the criticality for the continuous and adequate functioning of FMIs of the services they provide, the PFMI considers these service providers as critical and has listed specific recommendations for them.²⁶ This ensures that the operations of a critical service provider are held to the same standards as if the FMI provided the service itself. These recommendations address risk identification and management, robust information security management, an appropriate level of reliability and resilience, effective lifecycle management of the technologies used, and seamless communication with users.

²⁵ In this regard, it should be noted that as long as a participant meets the set participation criteria, it remains a participant in the infrastructure, even if it is subject to a recovery or resolution process.

²⁶ <https://www.bis.org/cpmi/pub/d/101a.pdf>, see annex F pp.170 and 171.

Box 5: Indirect participants

Indirect participants are financial actors who access an infrastructure through direct participants. These are clients of the direct participant - in principle banking and financial institutions - who could have had been direct participants themselves but have chosen otherwise (for economic or technical reasons). As a result, they are indirect participants from the point of view of the infrastructure.¹

Direct participants therefore have a contractual relationship with the infrastructure and must comply with its operating rules, whereas indirect participants usually only have a contractual relationship with the direct participant who represents them in the infrastructure. The dependencies and risk exposures (including credit, liquidity and operational risk) inherent in these indirect participation relationships may pose risks to the infrastructure, to participants and more broadly to financial stability. In other words, if an infrastructure has few direct participants and many indirect participants, with large volumes and high-value transactions, a large portion of the transactions processed by the infrastructure will actually come from indirect participants. If the value of transactions from indirect participants is significant in relation to the ability of direct participants to manage their risks, this may increase the latter's risk of default and thereby jeopardize the stability of the infrastructure.

Normally, the identification, monitoring and management of these risks occurs in the relationship between the direct participant and the indirect participant, with the direct participant taking over these oversight and risk management functions. However, there are situations in which relationships with indirect participants are complex, involving a long string of financial intermediaries, which may require the infrastructure to focus on this activity beyond the direct participant and the latter's immediate client.

There is obviously a limit to the ability of the infrastructure to influence the business relationships of its direct participants with their clients. However, an infrastructure often has access to information about transactions made on behalf of indirect participants, and it may also set criteria in its operating rules on how direct participants manage their relationship with their indirect participants, to the extent that these criteria are justified by risk management considerations.²

As a result, PFMI Principle 19 recommends that infrastructures should ensure that their rules, procedures and contracts allow them to collect basic information on indirect participants to identify, monitor and manage any potential material risk.

¹ The European Directive 98/26/EC on settlement finality in payment and securities settlement systems defines an indirect participant as "an institution, a central counterparty, a settlement agent, a clearing house or a system operator with a contractual relationship with an institution participating in a system executing transfer orders which enables the indirect participant to pass transfer orders through the system, on condition that the indirect participant is known to the system operator."

² <https://www.bis.org/cpmi/publ/d101a.pdf>, p 105 and 106.

3.3. The legal framework applicable to settlement risk

A major risk for financial market infrastructures is the settlement risk, which is the risk that the settlement of a transaction will not proceed as planned.²⁷ If such a risk materializes, it could jeopardize some transfer orders and pose significant credit and liquidity risks to the FMI and its other participants, and possibly generate systemic risk.²⁸ It is therefore essential, for the proper functioning of

the infrastructures, that any settlement or transfer (of securities or cash) or clearing or any other obligation settling in a system should be "final" as soon as possible. For this purpose, the transfer of securities or cash should not be subject to any condition that could prevent (or revoke) its execution: the transfer must be "irrevocable" and "unconditional" to become "final". The objective is to establish a legal mechanism to protect against the default of a participant in a payment or securities settlement system.

²⁷ <https://www.bis.org/cpmi/publ/d101a.pdf>, see principle 8 p.64 and following.

²⁸ For example, in the case of net payment systems, the participant who benefited from non-settled transactions may see its original credit balance become a debit balance, which it may not be able to cover, and this could in turn put other financial actors under pressure.

“Final settlement” or “settlement finality” is a legal concept²⁹ intended to minimize the disruption to an infrastructure caused by insolvency proceedings against one of its participants. This concept was adopted in the 1990s to improve the security and efficiency of payment and settlement systems, and to provide special protection against the occurrence of such insolvency proceedings, which prevent the execution of settlements, with a view to financial stability.

In Europe, this legal concept is defined by Directive 98/26 of 19 May 1998, which has been transposed in France by Article L. 330-1 of the Monetary and Financial Code. For a transfer order to become “final” in an infrastructure, two moments must be defined in the operating rules of the infrastructure:

- the moment of submission to the system: determines when the transfer becomes enforceable against third parties, which allows transfer orders to become unconditional; third parties, including the bankruptcy judge, can no longer challenge the transfer order, even if an insolvency proceeding is opened against a paying participant;
- the moment of irrevocability: this is the moment from which the transfer order can no longer be revoked by the party who issued it.

When these two moments have been defined, a transfer order “entered” into a system before the opening of collective insolvency proceedings can no longer be

called into question by the bankruptcy judge. Moreover, when an order has become irrevocable, it must be executed. The transfer order can no longer be challenged during or after its execution, even on the grounds of a legal provision such as the suspension of payments in case of collective proceedings. The “finality” resulting from the definition of these two moments means the transfer becomes enforceable against the decisions of a bankruptcy judge.

This protection is legal. It protects transfer orders that have entered the system and become irrevocable against any challenge by the creditors of the sender or the payer and any claim by the administrator or the judge of the insolvency proceedings.

However, Directive 98/26 does not specify when the cash is effectively paid, or the securities effectively transferred. And yet this is necessary for the transfer order to be executed finally and for the reciprocal obligations to be definitively extinguished. This situation (or “moment”), referred to as the “settlement finality”, is evidenced by debiting the payer’s account and crediting the beneficiary’s account, or in a securities transaction, when the transfer of the securities is effective (usually by the credit of the buyer’s securities account and the debit of the seller’s securities account). In their operating rules, European infrastructures thus provide for three moments: settlement, the submission to the system and irrevocability. These three moments are commonly referred to as “SF1” (submission to the system), “SF2” (irrevocability) and “SF3” (settlement).

²⁹ <https://www.bis.org/cpmi/publ/d101a.pdf>, see principle 8 p64 and following.