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The Impact of the IBORs reform on Hedge Accounting Evidence from European banks.

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A special thanks to my family, who have always been my point of reference. A thought to my aunt that always guided me to knowledge. To Monica, who has lived with me every step of this adventure.

Introduction

This report outlines the development of hedge accounting regulations, from IAS 39:" Financial *Instruments: Recognition and Measurement*", to the introduction of IFRS 9: *"Financial instruments"* and investigates the impact of the interest rate reform on hedge relationships.

The use of hedge accounting increased considerably in recent decades, companies are concerned about their operational risks and through the use of financial instruments can mitigate their exposures, profit volatility and unexpected market downturns.

In analysing the evolution of the regulations, will be examined in depth the path undertaken by the regulator in transforming the accounting of hedging instruments from "*principle based*" to a managerial activity of mitigation of risk exposures.

Hedge accounting as an operational tool, offers exceptions to the typical reporting of items, since two instruments, instead of being represented in different periods, can be recorded in the same time, to offset their variability.

The instrument designated as hedging instrument is expected to go in the opposite direction to the hedged item, to produce a zero effect on the income statement.

The International Accounting Standard Board (IASB) defines and regulates all the mechanisms of hedge accounting.

IFRS 9 officially replaced IAS 39 in 2018, but since hedge accounting is a voluntary option and the project is still incomplete, some entities still refer to IAS 39.

In design the main differences between the two accounting principles, reference will be made to the benchmark interest rates reform (IBORs) reform, which led the regulator to temporarily change some parameters of the hedging relationship.

The IBORs reform affected financial institutions from 2019 ahead and is expected to end in 2021.

Hedge accounting is not only seen as an operational tool, but also as a complex "*dynamic management activity*", administered by top management, referring to the main risk drivers of an entity.

The risks that a company wants to cover depend on the type of business model, the entity's exposure and the requirements of the regulatory authority.

According to Rampini et al. (2018):

"Financial constraints make financial institutions, and more generally companies, effectively risk-averse, giving them an incentive to Hedge". 1

In trying to understand the role played by hedge accounting, attention has been focused on financial institutions for two reasons:

¹ Rampini A., Viswanathan S., Vuillemey, G., (2018), Risk management in financial institutions, Journal of Finance.

- 1. financial institutions are the largest users of derivatives, both for speculative and hedging purposes.
- 2. the reform of benchmark interest rates will particularly affect the hedging model of banks, as they are the largest users of IBOR rates.

The Bank's business model, through its asset liability management (ALM) function, by its nature, it is exposed to interest rate risk, so the reform of the benchmark can be a serious concern for existing relationships and future hedge accounting strategies.

There is an extensive literature that described the bank business model and the correlation between the lending activities and the use of derivatives (Brewer et al. (2000), Rampini et al. (2018), Purnanandam (2007) ₂, however the recent IBORs reform opened a new trajectory of research that can be investigated.

Akhigbe et al. (2018) ³ collected data of derivatives used for hedging, demonstrating that 91% of nonspeculative derivatives are used for interest rate hedging functions. According to Purnanandam (2007) the interest rates hedging derivatives represent the 90% of the entire relationships.

Following the contribution of the literature and the analysis of the banks' balance sheets, the volumes and impact of the interest rate reform has been studied.

The IASB, in compliance with the benchmark rate reform, decided to propose a series of amendments in 2019, with the aim of facilitating the transition period.

The analysis is divided as follows:

The first chapter illustrates the evolution of risk management in financial institutions, following the financial crisis, examines how banks manage interest rate risk, describing the business model of a global bank, with some practical examples.

Finally, the process of benchmark rate reform and its inter-connection with hedge accounting relationships will be briefly explained.

The second chapter is focused on the theoretical framework of hedging transactions, the evolution of the practice from a "rule-based" standard in IAS 39 to a new "principle based" framework under IFRS 9. The study of the discipline of "*Dynamic Hedge Accounting*", adopted to a large extent by financial institutions, which cover their risks on a Portfolio basis, will also be studied in depth.

The third chapter introduces the key aspect of the IBORs reform and the main implications for hedge accounting relationships, following the exceptions provided by the IASB in the two sets of reliefs published in 2020.

² A. Purnanandam, (2007) Interest rate derivatives at cmmercial banks an empirical investigation, journal of Monetary Economics.

³ A. Akhigbe, S. Makar, L. Wang, A.M. Whyte, (2018), Interest rate derivatives use in banking: Market pricing implications of cash flow hedges, *Journal of Banking and Finace*.

In the final chapter, the impact of the IBORs reform on banks, both in quantitative and operational terms, is investigated empirically using a sample of 18 European banks.

Initially, an attempt was made to analyse whether hedging derivatives are also used primarily to mitigate interest rate exposures in the sample of banks.

Subsequently, the impact of the IBORs reform on existing hedge relationships has been examined by looking at companies' financial statement.

Finally, the mitigation to IAS 39 and IFRS 9 proposed by the IASB, which entered into force in 2019 has been examined by looking at the quantitative effect produced.

In the choice of the sample it was decided to use banks belonging to the "Domestic Systematic Important Banks (D-SIBs)"⁴ category, because of the high degree of comparability between institutions, operating in a global context and regulated by the same Basel framework.

For this purpose, the 2019 financial statement data provided by the companies and the additional information published in the notes have been taken into account, since offered useful details on the exposure of financial institutions to reference rates in hedge relationships.

The information delivered by banks in the notes to the financial statements has also been considered. The aim of the empirical analysis is to:

- 1. analyse the exposure to reference rates, in hedging relationships, in significant banks;
- 2. demonstrate the effectiveness of the hedge accounting amendments proposed by the IASB.

What emerged is that banks are heavily exposed to reference rates on hedge relationships and this reform may have some unforeseeable consequences in the coming years.

In particular, it can be seen from the tables proposed in the last chapter that 55% of total hedging exposures will be impacted in the coming years by the IBORs reform.

To arrive at this figure, banks' exposure to interest rates has been calculated, starting from the evidences provided by Bank for International Settlements (BIS) that estimated an average exposure of financial institutions to interest rates of 94% of the entire hedging instruments.

The results obtained from this analysis match with the 91% value provided by Akhigbe et al. (2018) for the use of non-trading derivatives and are also in line with Purnanandam (2007).

In addition, the size and importance of the two main reference rates used for commercial activity was highlighted: LIBOR and EURIBOR.

The values obtained from the analyses have been compared with those taken from sector research, in particular from the Financial Stability Board (FSB) and the NY FED (2018) report, which estimated that EURIBOR and LIBOR rates account for 95% of transactions with IBORs rate. Hoffmann et al. (2018) analysed the exposition

of European banks to interest rates, focusing on interest rate swaps (IRS) and provided the relevance of the EURIBOR and EONIA benchmarks in hedging transactions in the Eurozone.

Finally, it has been demonstrated that the exceptions proposed by the IASB managed to smooth the impact of the IBORs reform and the regulator succeeded on avoiding additional costs in the 2019 financial statements. It can be said that the mitigation process worked in the short term.

However, the impact on the income statement will have to wait until the end of the reform period, as the prospective implications on the hedge relationships cannot be established with certainty. This transition period will not end before 20225 and further outcomes will depend on the regulator's decisions and the ability of banks to switch to the new rates.

This study is only a starting point, in fact it is not intended to predict a future numerical effect, because the conclusion of the reform is uncertain as well as the decision of the IASB for the following periods. However, at the end of the analysis, after having summarized all the data and information available, a hypothesis will be developed with regards to the future expectations of the reform.

⁵ The IBORs reform has not yet provided clear guidelines, however for the ending period the 2022 has been mentioned by several technical reports (PWC, *how to approach your LIBOR transition program*). *However, the deadline also depends on the reform process and the decision of the Sub-Working Groups, EONIA will be completely replaced by 2021*.

1. Hedge accounting overview

1.1 Theories and principles behind Hedge Accounting

By hedging, an entity can modify the normal accounting records of the instruments, establishing a specific relationship, which makes it possible to offset (totally or partially) the change in the hedged item, with an opposite change in the hedging instrument.

Hedge accounting is a complex, highly regulated methodology that companies use to effectively manage their risks, with a forward-looking strategy.

According to Glaum and Klocker (2011) hedge accounting is a set of special rules designed to ensure that profits and losses on hedged items and hedging instruments are recognised in the same period, thus avoiding a volatility in profits that is not economically justified. (Glaum and Klocker, 2011)₆.

"With Hedging, companies strive to reduce exposure to financial risks by creating clearing positions, with the help of derivatives".

IFRS 9 provided a specific definition of hedge accounting:

"the objective of hedge accounting is to represent in the financial statements the effect of a risk management activity of an entity using financial instruments to manage exposures arising from particular risks that could affect the income statement". (IASB, 2014)7

For example, if an entity issues a floating rate bond (EURIBOR or LIBOR) and expects that there may be an increase in interest rates in the coming years, it may enter into an interest rate swap (IRS)⁸ to offset the risk it is facing.

Recent external events, the financial crisis of 2008 and the sovereign debt crisis of 2011, affected the way in which hedge accounting is implemented and the differences between IAS 39 and IFRS 9 reflect this evolution. There are two main components of hedge accounting:

- 1. *hedged item*: an asset, liability or irrevocable commitment that exposes the entity to a certain specific risk, which for risk management purposes must be hedged;
- 2. *hedging instrument*: normally derivatives, whose change in value offset wholly or partially changes in the related hedged item.

⁶ Glaum M., Klöcker A., (2011) Hedge accounting and its influence on financial hedging: when the tail wags the dog, *Accounting and Business Research*, 41:5, 459-489.

⁷ IASB, (2014), IFRS9 Financial Instruments, par. 6.1.1, A328.

⁸ According to the literature and regulatory reports IRS cover the largest part of the non-speculative derivative contracts in the banking system. Evidences have been provided by Rampiti et al. (2018), Purnanadam (2007), Akhigbe et al. (2018).

Hedge accounting can be classified according to three types of relationships:

1. Fair value hedge:

the objective of fair value hedges is to reduce exposure to changes in the fair value of an asset or liability already recognised in the financial statements, with a corresponding change in the fair value of a hedging instrument. 9

For example, if a company has a portfolio of loans in the financial statements whose fair value movements are unpredictable, it may enter into a hedge relationship in order to mitigate exposure to variability.

2. Cash flow hedges: 10

the Cash Flow Hedge relationship represents the variability of cash flows attributable to a particular risk with a recognised asset or liability or a highly probable irrevocable commitment.

For example, if an entity issues a debt instrument at a benchmark rate (e.g. LIBOR+ spread), it may decide to offset the uncertainty associated with future transactions by issuing a derivative contract that allows a variable rate to be exchanged for a fixed rate.

3. hedges of net investments in foreign operations: 11

the objective of the transaction is to hedge the entity against foreign operations with a counterparty domiciled in another currency.

For example, if an entity domiciled in Europe, whose reference currency is the EUR, obtained a contract in America, whose reference currency is the USD, it may decide to issue a derivative instrument to hedge the exchange rate exposure.

One aspect of the regulation that will be clarified later is its "*static nature*", since all the rules and regulatory constraints relate to the direct relationship between the hedged item and the hedging instrument.

The regulator defined these conditions to avoid excessive operational discretions but given the wide range of rules to be respected, applying hedge accounting to dynamic portfolios, particularly held by banks and financial institutions, is excessively complex.

Following criticism of accounting practices defined by IAS 39, the financial crisis and pressure from the G-2012, the regulator decided to move to a "principle based" approach, in which the activities of hedge accounting are linked to risk management.

In 2014, the IASB issued IFRS 9 which replaced the previous standard IAS 39, in particular for the loan loss provisions and for the discretionary classification of financial instruments.

⁹ IASB, (2006), IAS39 Financial Instruments: Recognition and Measurement; par. 86 (a)

¹⁰ IASB, (2006), IAS39 Financial Instruments: Recognition and Measurement; par. 86 (b)

¹¹ IASB, (2006), IAS39 Financial Instruments: Recognition and Measurement; par. 86 (c)

¹² The Group of G-20 is made up countries in the European Union, which discusses relevant topics and provide guidelines for regulator in several topics. The G-20 has for some time called for IASB converge process and reform

The new IFRS 9 developed new requirements for hedging documentation but also expanded the available instruments to be hedged, including non-financial items.

In order to ensure better alignment with risk management, the Board decided to extend the eligible hedging instruments with all financial instruments measured at FVPL. (Fabi, Bontempo,2017)₁₃

It is well known that financial institutions make the greatest use of derivatives, but the benefits of appropriate risk management have also been demonstrated in energy, manufacturing, agricultural and mining companies.¹⁴The new standard allows entities to apply hedge accounting more extensively to manage mismatches in profit or loss.

The amendment to hedge accounting removed the quantitative requirements of the previous IAS 39 and recognised the importance of the "*cascade effect*"15, in which any relationship must be consistent with a "top-down" strategy.

The concept of the cascade effect was addressed by the IASB on IFRS 916:

"The risk management strategy is established at the highest level at which an entity determines how it manages its risk. Risk management strategies typically identify the risks to which the entity is exposed and set out how the entity responds to them. A risk management strategy is typically in place for a longer period and may include some flexibility to react to changes in circumstances that occur while that strategy is in place (for example, different interest rate or commodity price levels that result in a different extent of hedging). This is normally set out in a general document that is cascaded down through an entity through policies containing more specific guidelines. "

Ahmed et al. (2013)17 compared IFRS accounting standards with the precedent GAAP18 national systems and found that the effects of the mandatory IFRS adoption depend on whether the standard have higher or lower quality than domestic principles.

To sum up, hedge accounting, if applied correctly, allows a proper risk mitigation and fluctuations in the income statement, which could result in distorted values, with respect to the company's business model. Financial hedging received little attention in literature before Demarzo and Duffie (1995)19, that provided evidences that the efficacy of hedging depends on the information delivered to shareholders.

Purnanandam (2007) focused on the interest rate derivatives in commercial banks and suggested that companies, that use derivatives to mitigate risks, are more willing to manage aggressively the asset liability management (ALM)₂₀. In the study was also reported that hedge accounting is also dependent from the size of the firm, larger entities are more willing to enter into hedge relationships.

16 IASB, (2014) IFRS9 Financial Instruments, July 2014, par. B6.5.24.

¹³ Fabi T., Bontempo F., (2017) Riflessi fiscali dell'IFRS9 Strumenti finanziari Novità in materia di strumenti finanziari derivati (riflessi fiscali), ODEC, ABI. 14 See, Jin and Jorion (2007), Haushalter (2000), Guay and Kothari (2003).

¹⁵ MNP, An overview of the new Hedging Requirements of IFRS 9 Financial Instruments, August 2017.

¹⁷Ahmed A. S., Kilic E., Lobo G. J. (2006), Does recognition versus disclosure matter? Evidence from value-relevance of bank's recognized and disclosed derivate financial instruments, *The Accounting Review*, 81(3), 567–588.

¹⁸ Generally Accepted Accounting Principles (GAAP) is the accounting standard officially adopted in the USA.

¹⁹DeMarzo, P., Duffie.D, (1995). Corporate incentives for hedging and hedge accounting. *Review of Financial Studies* 8 (3): 743–71.

²⁰ Asset Liability Management is one of the primary functions of the banks as demonstrated by Akhigbe et al. (2018), Ahmed et al. (1997).

According to Glaum and Klocker (2011)₂₁, large companies are more prepared to hedge, having more developed internal operating structures that allow them to correctly manage the use of derivatives.

By analysing a sample of German companies Glaum and Klocker (2011) established that hedge accounting activity decreases if excessively regulated and complex.

The IAS 39 for hedge accounting was criticized to be complex, however finding the best framework to regulate hedge relationships is not easy (Comiskey and Mulford, 2008)₂₂.

A survey provided by Comiskey and Mulford (2008) showed that 90% of the reference companies use derivatives to manage their risks, but only 72% apply hedge accounting, in fact managers are more willing to deal with revenue volatility instead of adopting complex hedging rules.

Haushalter (2000)₂₃collected data from 100 companies operating in the oil & gas sector from 1992 to 1994 and showed that companies with a greater operational leverage manage risk more extensively. Hedging is also related with economic of scale, thus larger companies are more willing to hedge.

Iatridis (2012)²⁴ exposed that hedge accounting generated a positive contribution to net worth, financial leverage and liquidity, in contrast with non-hedgers that demonstrated lower amounts overall. The study examined whether hedging activities is associated with higher or lower earning management, by analysing the accounting transition from UK GAAP to IFRS, with a period from 2005 to 2008.

The application of IFRS to hedge accounting generates an asymmetric cost of information, the need for transparency is offset by the operational difficulty of producing reports that comply with the reference standards.

This view has also been addressed by Naor (2006)₂₅ that showed that the aspiration for greater transparency could generate information asymmetries and managers are looking for alternative practices to mitigate earnings volatility (Naor, 2006).

1.2 Interactions between Risk Management and Hedge Accounting

Hedge accounting was created to prevent financial distress and was based on a series of one to one relationship but rapidly evolved into a risk management activity₂₆.

With hedge accounting an entity cannot expect to eliminate risks completely, but through this practice the cost of distress can be reduced, hence companies can use a higher level of leverage for its activities.

Each entity exposes itself to a certain degree of risk, so before entering into a hedging relationship the company is expected to recognise the level of risk exposure it is able to undertake.

The study provided evidences that eve within the same industry the hedging results may differ.

²² Comiskey E., Mulford, C. W. (2008), The non-designation of derivatives as hedges for accounting purposes, *The Journal of Applied Research in Accounting* and *Finance*.

²³ Haushalter D., (2000). Financing policy, basis risk, and corporate hedging: evidence from oil and gas producers., Journal of Finance, 55, 107–152.

²⁴ Iatridis G., (2012) Hedging and earnings management in the light of IFRS implementation: Evidence from the UK stock market, *The British accounting review*. Iatridis in his research used also the findings developed by (Haushalter, 2000) on the relationship between hedge accounting and leverage. Hedging contributed positively to equity for 55% of the sample.

²⁵ Naor N., (2006) Reporting on financial derivatives—A Law and Economics perspective, Eur J Law Econ.

²⁶ The relationship between hedge accounting and risk management was reinforced by IASB IFRS9: "IASB, IFRS9 Financial Instruments, July 2014". Was also addressed by scholars Vuillemey (2019), Kirti (2017), Glaum an Klocker (2011).

The degree of risk tolerated will affect the portion of exposures to be hedged and the ranges within which risk management activity will be maintained.

In the literature, hedge accounting is frequently associated with operational risk management, Ross (1997)₂₇ and Leland (1998)₂₈ argue that, through hedging, companies can reduce the probability of financial difficulties and thus increase their debt capacity. Their view was also anticipated by Stulz (1996) that emphasized the role of derivatives to reduce cash flow hedge exposures.

Stulz (1996) investigated that companies are covering "*selective portion of exposures*" rather than "*full portions*". Resuming the characteristics of the study, larger companies make greater use of derivatives as they can incur higher structural costs and have more sophisticated internal risk management models. 29

Tufano (1996)30 evidenced that managerial risk aversion may affect corporate risk management.

Companies do not practice hedge accounting for all their exposures, but only for a portion.

Rampini and Viswanathan (2013)³¹ demonstrated that in the airline industry the hedge component of Jet Fuel purchases represents 20% of the total.

Gebhardt et al. (2002)₃₂ verified that under IAS 39 a bank cannot obtain a zero net income even by hedging all the positions and the documentation and the operational conditions of hedge accounting under IAS 39 do not incentive hedging.

Determining the perfect degree of risk requires a deep understanding of the *business model* and complex internal models.

According to Coughlan (2004)₃₃, hedge accounting contributes only partially to the definition of risk strategy, which is a much more complex and varied set of instruments:

"Hedging is a vital element of corporate risk management that involves reducing the exposure of the company to particular risks. But it is important to note that risk management is much more than just hedging and risk reduction: it also involves ensuring that corporations are taking the right kinds of risks and that in general these risks are appropriately balanced within the company's risk profile. Hence risk management is a much broader activity than hedging. "(Coughlan, 2004)

Some risks can be only monitored (external risks), others can also be mitigated (internal risks). Financial risk can be mitigated by understanding its sources and implementing an appropriate response to the main exposure. Hedge accounting is a practice that is under the degree and constant monitoring of risk management, which must extend (or reduce) the degree of hedging compared to the expectations of market movements.

²⁷ Ross M.P., (1997), "Corporate Hedging: What, Why and How?", Working paper, University of California, Berkeley.

²⁸ Leland H.E., (1998). "Agency Costs, Risk Management and Capital Structure".

²⁹ Stulz R.M., (1996) Rethinking Risk Management", Journal of Applied Corporate Finance, 9, pp. 8–24.

³⁰ Tufano, P., (1996), Who manages risk? An empirical analysis of risk management practices in the gold mining industry, *Journal of Finance* 51, 1097-1137. The Paper studies the risk management activities in the North America mining industry using data from 1990 to 1993.

³¹ Rampini A., S. Viswanathan, (2013), Dynamic Risk Management, Journal of financial economics.

³² Gebhardt G. U., Novotny-Farkas, Z. (2011). Mandatory IFRS adoption and accounting quality of European banks, *Journal of business finance & accounting*, 38(3-4), 289-333.

³³ Coughlan G., (2004), Corporate risk management in IAS framework.

Entities, in perfect market conditions, do not need to hedge, since Holland (1993)₃₄ argued that, in the long run, hedging may not be necessary if the expected value of profits and losses over a long period is zero on average.

With a perfect capital market, corporate risk management and its functions (such as hedging) are irrelevant, since shareholders are able to diversify independently. Therefore, hedging is a strategy adopted by an entity under market imperfections.

Nevertheless, under current market conditions, banks and other financial institutions are exposed to short-term risks and uncertainties that require hedging strategies.

This practice produced several results on its real usefulness in managing risk and reducing fluctuations in earnings.

The IASB, with IFRS 9, attempted to redesign the role of hedge accounting by giving greater importance to the overall picture, applying the "*cascade effect*"₃₅, which is based on the adoption of a clear risk management strategy by companies that flows in every sub hedge relationship.

For example, if a financial institution decides to maintain a fixed rate loan-to-variable rate ratio of around 30%, it will proceed with a hedging relationship for each excess loan issued at a variable rate, since otherwise the designated threshold would not be maintained. The hedging activity represents a consequence of a precise management intention.

According to Rampini et al. (2018)₃₆, the presence of financial constraints makes companies more risk-averse, supporting risk protection activities.

The 2008 crisis increased the risk of financial distress and in terms of risk management for banks, the Basel³⁷ authority, in parallel with IASB₃₈, extended capital requirements and capital provisioning to avoid another systemic collapse.

The banking system was particularly damaged by the global financial crisis of 2007-2009, and this experience provided useful information and reference points for subsequent regulatory interventions (mainly by the Basel Committee and the Financial Stability Board).

As a result of the 2008 crisis, derivatives, that have contributed to enlarge the portion of the crisis, have been subject of a thorough reform.

Hedge accounting, risk management and derivatives are closely related in the post-crisis financial environment.³⁹

³⁴ Holland, J.B., (1993), International Financial Management, 2nd ed., Blackwell, Oxford.

³⁵ Cascade effect is a term adopted in the IASB to denote the relevance of the top down risk management activity on determining the proper hedge accounting strategy.

³⁶ Rampini et al., (2017) analyzed empirically the jet fuel purchases and the hedging activities provided by USA airlines. On their findings they evidenced a correlation between collateral consideration and risk management. Their theory is far from the common hedge accounting theories.

³⁷ The Basel Committee is considered the most authoritarian committee for Banking supervision and supervise regulation and jurisdictions in the financial sector worldwide. Basel introduced a process of reform of the banking system following the 2008 crisis.

³⁸ Basel III is a set of rules published by the Banking regulator after the 2007-2009 financial crisis. Most of the principles embedded in the framework have been received by the IASB that on IFRS 9 (2014) included some elements from Basel III requirement.

³⁹ The interaction between hedging, derivatives and risk management has been addressed frequently in literature, See Rampini et al. (2017), Purnanandam (2007), Hoffman et al. (2018), Vuillemey (2019).

The crisis highlighted the importance of providing a clear picture of the balance sheet of financial institutions and regulatory requirements, so before entering into hedge relationship, an entity should ask itself "*what to hedge*"?40

1.3 Banks, Derivatives and Hedge Accounting

The financial crisis not only generated an environment of default and financial stress but also provided opportunities to rethink the regulatory system of banks.

Derivatives play a crucial role in defining an appropriate hedging strategy, they serve to mitigate risk exposure. According to Rampini et al. (2018) financial institutions can manage the risk exposures deriving from lending and deposit activities, with the use of derivative financial instruments, banks are the major users of these instruments, measured in terms of gross notional exposures. 41

A study by the Bank for International Settlements (BIS)⁴² found that financial institutions account for over 97% of all gross derivative exposures. Thus, financial institutions play a crucial role in the derivatives market. Financial institutions' derivative positions for hedging purposes include, in addition to interest rate and exchange rate derivatives, equity (0.7%) and commodity derivatives (0.1%). Credit derivatives are not included in these calculations. (Rampini et al.,2017)

Purnanandam (2007) analysing a sample of U.S. banks found a relationship between hedging interest rates and share prices and demonstrated that derivatives can be useful to maintain a constant earnings policy, which is ultimately the market *karma* of every company.

Banks, as part of their hedging activities, focus mainly on interest rates, as their primary source of income is net interest income (NII).



Table1.1: Risk management of two client transactions within the universal bank (Gebhardt, Reichard, et al, European Accounting Review, 2002).

⁴¹ Rampini reported the data provided by the BIS (2014) in the report: BIS' Derivative Statistics (December 2014).

⁴⁰ Hedge accounting since is strictly connected with risk management shall provide a clear picture of the established relationships at each level and shall be supported by a strategy addressed by the Board.

⁴² Bank for International Settlements was established in 1930 and is currently owned by 62 central banks, that represent the 95% of the real GDP. The organization as a part of the monetary policy and stability, publish data and statistics largely adopted in the financial industry.

The above illustration developed by Gebhardt, Reichard (2002)₄₃ replicated the business model of a global bank, which has the size to adequately cover internally its operations.

The research of Gebhardt, Reichard, et al. (2002) confirmed that with the adoption of IAS 39, it's not possible to achieve the result of revenues offsetting, as most entities are less encouraged to hedge and the best practice of asst-liability management (ALM) is not achieved due to the complexity of the rules.

The distinguishing feature of the Universal Global Bank is that it issues loans and other securities by managing the liquidity from savings through commercial banking activity, while the investment bank provides more complex products for institutional investors and operates in the market.

Hoffman (2018)⁴⁴ proposed the interesting question of who is the ultimate risk holder in the banking model, the money lenders or debt holders?

Gomez et al. (2020)⁴⁵ found that the allocation of interest rates across agents (banks, households, firms, government) is relevant to understand the monetary policy.

The innate risk exposition of banks to interest rates was also addressed by Freixas and Rochet (2008)₄₆, they provided relevance on the maturity transformation function of banks.

According to Drechsler et. al (2017)47: "A defining function of banks is maturity transformation—borrowing short term and lending long term. This function is important because it supplies firms with long-term credit and households with short-term, liquid deposits".

Banks, in this business context, are defined as "*maturity transformers*" and "*variation in exposures is greater* across countries than across business models". (Hoffman, 2018)

According to the common view, this conception of the banking business is associated with an *intrinsic riskiness*, determined by the asset liability mismatch, can be mitigated in different ways and depends on macroeconomic variables.

The risk is organized according to:

- 1. interest rate risk;
- 2. credit risk;
- 3. liquidity risk;
- 4. market risk.

Market and liquidity risks are typically linked to investment banking activities, while interest rate risks arise from the primary function of banks' lending activity.

⁴³ Gebhardt G., Reichardt R., Wittenbrink C., (2002) Accounting for financial instruments in the banking industry: conclusions from a simulation model, *European Accounting Review*, 13:2, 341-371,

⁴⁴ Hoffmann P., Langfield S., Pierobon F., Vuillemey G., (2018) Who bears interest rate risk? *Working paper*, European Central Bank, Frankfurt, Germany. The research provides also relevance on the study of the interest rate risk exposures and the use of benchmark rate in the Euro Zone.

⁴⁵Gomez M., Landier A., Sraer D., David Thesmar D., (2020), Banks' exposure to interest-rate risk and the transmission of monetary policy, Working paper.. 46 Freixas X., Rochet J.C, (2008). *Microeconomics of banking*. MIT Press.

⁴⁷Drechsler A., Savov, P. Schnab, (2017) Banking on Deposits: Maturity transformation without interest rate risk, *The Quarterly Journal of Economics*, Volume 132, Issue 4,1819–1876.

Thus, due to the mismatch between deposits and the liquidity provided through lending activity, which is both an economic and social function, banks model their exposures to achieve a sustainable level of risk.

According to Vuilemey (2019) banks expose themselves to interest rate risk by investing in long-term assets from short-term liabilities and the risk containment is achieved by several activities, of which hedging is certainly one.

The way in which interest rate risk (IRR) can be hedged is through Micro Hedging (one-to-one transactions) or Dynamic Macro Hedge (hedging a portfolio of assets, loans or a mix).

Banks manage IRR using derivative financial instruments (mainly swaps) to lock interest rate fluctuations.

Hoffman (2018) estimated that in the sample of European banks considered 65% of the assets were loans, thus implicitly having a proper interest rate management strategy may help to prevent income fluctuations. However, banks eliminate only 25% of their risk by Hedging interest rate risks. Hence, risk mitigation cannot be only based on Hedge accounting. (Hoffman, 2018).

Begenau et al. (2015) estimated the interest rate exposure of USA banks and Gomez et al., (2020) demonstrated that banks interest rate exposures influence the monetary policy and provided evidence on the use of derivatives to neutralize the interest rate risk, by analysing a sample of USA Bank Holding Companies (BHC) (from 1986 to 2013).

In all the studies a great relevance on the risk management is given to hedge accounting, especially for the IRR smoothing process.

In the current OTC derivative market, great importance is reserved to Interest Rate Derivatives (IRD).

According to International Swap and Derivatives association (ISDA)₄₈ statistics, the notional value of IRDs traded in 2017 amounted to 197 trillion, representing the largest share of the derivatives market, about 88% of total transactions traded in 2017.



Graph 1.1:(ISDA, Actual Cleared Volumes vs. Mandated Cleared Volumes: Analysing the US Derivatives Market).

⁴⁸ International Swap and Derivatives association (ISDA), provides useful research for derivatives estimation, monetary policies and interest rates. ISDA is actively contributing to IBORs reform. ISDA contributes also directly to the derivative market by acting as a central counterparty, provide standard and legal definitions for derivatives. For example, an entity issuing a floating rate bond, at (EURIBOR + spread), mitigates the exposure by issuing an interest rate swap (IRS), for the same notional amount and with the same maturity, paying fixed rates and receiving variable rates, offsetting movements in the interest rate of the hedged item. In this specific scenario, an entity hedges the variable rate from excessive market fluctuations by executing a cash flow hedge transaction.

According to Kirti (2017)⁴⁹, firms differ in their interest rate exposures, some of them have a greater portion of variable interest rates, while others prefer to keep greater positions on fixed rates. In presence of financial frictions (as in the current market environment), the choice of interest rate exposure matter.

To summarize, the table by Gebhardt and Reichard (2002) shows that the use of derivatives is a fundamental component of a global bank business model.

The following paragraph will examine the main derivative instruments, which are widely adopted by banks, both for hedging and trading purposes.

1.4 Derivatives Market overview

A derivative can be defined as a financial instrument whose value depends on the value of other underlying instruments such as shares, bonds, interest rates, commodities. (Hull, 2006) 50

The financial crisis led to an enormous loss of economic production, Atkinson et al. (2013)⁵¹ estimated this damage in almost 6-14 trillion, bringing the system close to collapse. This value represents the 40-90% of the entire USA output of one year.

The estimate compared all the information on expected future growth, inventory reduction and declines in macroeconomic indicators.

Derivative instruments can be traded:

1. in organised markets (exchange market)⁵², where a specific clearing house regulates the transactions and guarantees the creditworthiness of the counterparty.

2. in over the counter market (OTC) ⁵³where transactions are not secured by a clearing house and the transaction is provided by two independent parties. The main advantage of the OTC market is that most contracts are standardised and tailored to the financial needs of each participant.

⁴⁹ Kirti D., (2017), Why do bank-dependent firms bear interest-rate risk?, IMF Working Paper.

⁵⁰ Hull J.C., 2006. Option, Futures, and Other Derivatives, sixth ed. Prentice Hall, New York.

⁵¹ Atkinson T., Luttrell D., and Rosenblum H., (2013). How bad was it? The costs and consequences of the 2007–09 financial crisis. Federal Reserve Bank of Dallas Staff Papers No. 20.

⁵² A derivatives exchange is a market where individuals trade standardized contracts that have been defined by exchange. The Chc ago Board of Trade (CBOT) and the Chicago Mercantile Exchange (CME) are the largest exchange markets in the USA for derivatives. The Chicago Board Options Exchange (CBOE) now trades over 2500 stocks and indices.

⁵³ The OTC market offer the possibility of trading bilaterally or through central counter parties (CCP). The OTC market has been reformed after the financial crisis and the Financial Stability Board (FSB) is working to redesign the market, the role of the intermediaries, the transparency of the transactions and the margin required to ensure the liquidity of the transaction. The last report of the FSB has been published in October 2019.

Figure 1.1 Size of over-the-counter and exchange-traded derivatives markets.



Graph 1.2: Size of over the counter (OTC) and exchange traded derivatives (Hull, 2015)

The size of the OTC is largely more relevant than the exchange contract, however as noted from the graph there was a flexion of the notional amount after the financial crisis, since the intervention of the regulation prevented other market abuse.

Derivatives can be used for three main purposes:

- 1. hedging derivatives: used to reduce risks and to mitigate an entity's exposure to a specific base risk;
- 2. arbitrage opportunities: derivatives are used to unblock certain positions and earn without taking risks, through the exchange of instruments;
- 3. speculation: contracts used to bid in a specific market movement.54

At the beginning of 2000' the market grew enormously, reaching values of 632 trillion, in OTC transactions (over the counter instruments) and 52.6 trillion derivatives traded on the exchange.

The opportunities offered by the OTC market have been widely exploited by financial operators and before the crisis, the OTC market developed considerably in terms of size and contracts traded. (Hull, 2006) 55

To explain the reason behind crisis, the quotation by Alan Greenspan⁵⁶ become popular. He spoke about *"irrational exuberance"* to describe the investors behaviour during 1995, however this statement remained applicable also for the 2008 financial crisis.

The contribution of the derivatives market to the global financial crisis was a discussed topic, Banks' capital eroded during the crisis period and all the fallacies in the accounting treatment of loans and securities emerged. The dual role of the real estate bubble crisis and the amplification of losses due to the use of derivatives increased the effect of financial distress.

⁵⁴ Hull J.C., (2006), Option, Futures, and Other Derivatives, sixth ed. Prentice Hall, New York, cap.1.

⁵⁶ Remarks by Chairman Alan Greenspan. At the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research, Washington, D.C. December 5, 1996

According to Hull (2007)₅₇ in 2008 there was no awareness of the derivatives that were underwritten, information asymmetry amplified the collapse, as instruments rated "AAA" by rating agencies did not reflect real financial characteristics.

Derivatives markets, both for speculation and hedging, have been reformulated in terms of policies and disclosure.

At that time, Financial Times58 (2007), in a famous article, stated:

"European nations are to draw up radical proposals to improve transparency in financial markets and to change the way credit rating agencies operate in an attempt to prevent any recurrence of the financial turmoil arising from the credit squeeze."

The 2008 generated the "*perfect storm*", incentivizing massive actions by regulator to reform derivatives market modelling and reporting.

The capital requirements reform was identified as a solution by Kashyap et al. (2002)₅₉, that stressed the importance of having enough capital requirements available to prevent financial distress.

Boot (2010) 60demonstrated the strong correlation between the lack of regulation of the OTC market with the information asymmetry of stakeholders. The lack of transparency, the leverage effect of derivatives boosted the effect of the crisis and required a deep regulator's intervention.

In the aftermath of the crisis there was a considerable intervention by the "public sector", which tried to regulate the financial market more efficiently through coordinated actions.

Type of instrument	Description	
	Forward exchange contracts are derivative	
Forward	agreements to buy or sell an asset at a certain	
	future time for a certain price. Forward	
	contracts are traded in the OTC market,	
	normally between financial institutions or	
	financial institutions and clients.	
	The payoff from the forward contract is given	
	by the difference between the delivery price	
	and the spot price (in case of long position):	

The table shows the characteristics of the main derivatives instruments currently in place:

58 FT, EU plans market reforms to avert crisis, 8 October,2007.

⁵⁷ Hull, (2008), The Credit Crunch of 2007: What Went Wrong? Why? What Lessons Can Be Learned?, Joseph L. Rotman School of Management University of Toronto.

⁵⁹ Kashyap A. K., Rajan R., Stein, J. C., (2002), 'Banks as liquidity providers: An explanation for the coexistence of lending and deposit-taking', *Journal of Finance* 57(1), 33–73.

⁶⁰ Boot A. W. A., Thakor, A. V. (2010). The accelerating integration of banks and markets and its implications for regulation In A. Berger, P. Molyneux & J. Wilson (Eds.), *The Oxford Handbook of Banking* (pp. 58–90): Oxford: Oxford University Press.

Futures	Futures contracts are very similar to forward
	contracts, in fact are agreements to buy or sell
	an asset at a certain future date and price.
	Normally are traded on exchange platforms
	(hence regulated by a cleaning house).
Options	Options are agreements between two parties
	to exchange something with the right but not
	the obligation to do.
	Options are traded both in exchange market
	and OTC market. There are two types of
	options:
	1. call option gives the right to buy the
	underlying asset at a certain date;
	2. put option, gives the right to sell at a
	certain future date.
	Options require up-front payments (initial
	premium).
	premium).
Swaps	premium). Swap is a contract agreement between two
Swaps	premium). Swap is a contract agreement between two counterparties that agreed to exchange future
Swaps	premium). Swap is a contract agreement between two counterparties that agreed to exchange future cash flows usually involving an interest rate,
Swaps	premium). Swap is a contract agreement between two counterparties that agreed to exchange future cash flows usually involving an interest rate, an exchange rate or other variables.
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Swaps	premium). Swap is a contract agreement between two counterparties that agreed to exchange future cash flows usually involving an interest rate, an exchange rate or other variables. Interest rates swaps are the most popular category, that involves an exchange of interest rate, at a predeterminate fixed rate, in exchange of floating interest rates in the
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Structured products	Financial instruments, where returns are
	related to interest rates, stock, currencies and
	are more complex products than the normal
	agreements.
	Examples of structured products are callable
	notes, equity linked notes, credit linked
	notes, credit default swaps (CDS).

Table 1.2: self-elaboration.

1.5 Hedging Interest Rate Risks

Banks are exposed to adverse movements of interest rate risks and their primary concern is to lock the potential downturn generated by interest rates fluctuations. 61

The preceding paragraphs lead to the following statements:

- 1. The bank's business model focuses on net interest income (NII);
- 2. The risk management activity aims to reduce interest rate risk (IRR) by the use of hedge accounting.

Therefore, hedging IRR decisions are related to the core risk that the bank faces with its business. This finding has been already demonstrated by Rampini et al. (2018), that analysed the role of the interest rates management in the hedging strategy of financial institutions.

Banks' exposure to interest rates was also studied by Begenau et al. (2015), that evidenced the interest rate positions in terms of simple factor portfolios. Thus, given the large exposures, banks increased their positions on interest rate derivatives. (Akhigbe, et al., 2018)₆₂

Having said that and reiterating the concept that financial institutions are the main users of derivatives, it can be expected that the market for financial instruments will be largely dominated by interest rate derivatives.

Dhanai et al. (2007)₆₃ proposed a questionnaire to a sample of UK companies trying to answer the question of why companies practice hedge accounting to protect themselves from IRR.

What emerged is that from the sample the first reason to hedge is to smooth earnings volatility and financial distress.

Brewer, Minton et al. (2000)⁶⁴ described the relationship between hedging and intermediation, banks that use derivatives had grater results on their loan commercial activity. Empirically was demonstrated that the lending growth is positively correlated with the adoption of derivatives (such as interest rate swaps).

⁶¹ The Asset Liability Management (ALM) have been highly investigated in literature, See: Begenau et al. (2015), Purnanadam (2007), Gomez et al. (2016). 62 Akhigbe A., Makar S., L. Wang L., A.M. Whyte A.M., (2018) Interest rate derivatives use in banking: Market pricing implications of cash flow hedges, *Journal of Banking and Finace*, 2018.

⁶³ Dhahani A., Fifield S., Helliar C., Stevenson L, (2007), Why UK companies hedge interest rate risk, *Studies in Economics and Fiance*, Vol 24 No.1 pp 72-90.
⁶⁴ Brewer E., Minton A., Moser T., (2000), Inerest rate derivatives and bank lending, *Journal of Banking and finace*.

Drechsler et al. (2017) evidenced that banks earn low margins with high leverage, thus hedging permit to stabilize the NII.

According to the Bank for International Settlements (BIS)65, the number of OTC derivatives at the end of 2019 was 640 trillion and interest rate derivatives (IRD) were 82% (524 trillion).



Graph 1.3 BIS OTC derivatives statistics (2019), (data in trillion).

Another report by International Swaps and Derivative Association (ISDA), shows that the notional amount of IRD interest rate derivatives increased significantly, the report confirmed that banks mainly hedge two different risks:

1 interest rate risk (the largest part)

2 exchange rate risks (especially for banks operating globally).

The decision on what type of hedge depends on the fixed-floating exposure and the risk management decision. An interest rate swap is the most commonly used instrument to hedge interest rate risk, they are often used to change the interest rate profile from fixed to variables or vice versa.

All the fixed payments are grouped together to form the "fixed leg", while the floating payments are grouped to form the "floating leg" of the payment. (Ramirez, 2014)₆₆

For example, by transforming a fixed rate into a floating rate exposure, a bank allows rates to fluctuate.

The table summarises the type of IRR management operations:

⁶⁵ BIS' Derivative Statistics (December 2014).

⁶⁶ Ramirez J., (2015). Accounting for derivatives. Chichester, England: Wiley.

Hedged Item	Risk	Type of Hedge	Hedging Strategy
Hedging a fixed debt	Variability in fair value	Fair Value Hedge	Entering into swap
			contract to transform
			the exposure by paying
			fixed and receiving
			variable.
Hedging floating rate	Variability from	Cash Flow Hedge of a	Convert the rate into
debt	interest payments	recognized instrument	fixed by entering into a
			swap, paying variable
			receiving fixed.
Hedging a highly	Variability of interest	Cash flow Hedge of a	Entering into a swan
incoging a inginy	variability of interest		Entering into a swap
expected firm	rates payments	high-probable	contract to lock the
commitment		transactions	future interest rate.

Table 1.3: self-elaboration.

The following example aims to illustrate how an IRS is accounted, to transform a fixed rate bond into a variable rate bond through fair value hedge.

Company A decides to issue a bond on 1/1/20X0 and, with the expectation that the EURIBOR rate may be lower over time and also decides to issue an interest rate swap (IRS), to exchange the bond from a fixed rate to a variable rate. In the documentation an entity shall include the reasons why it enters into a hedge relationship, the hedged item, hedging instrument and the expectations on the effectiveness of the relationship.

20x0	Fixed rate loans	Interest rate swap
Starting Date	31.12.20x0	31.12.20x0
Maturity	31.12.20x10	31.12.20x10
Nominal amount	100000 CU	100000 CU
fixed rate	4%	4%
variable rate		EURIBOR 6M (3.5%)
frequency	annual	annual
fair value 31/12/20x0	97000 CU	3000 CU

Fiscal Year	Debit	Credit
31/12/20x0		
cash (asset)	100000 CU	
financial debt		100000 CU
31/12/20x1		
interest (exp)	4000 CU	
cash (asset)		4000 CU
31/12/20x1		
cash	500 CU	
Δ IRS		500 CU
31/12/20x1		
Receivables for IRS valuation	3000 CU	
Financial income		3000 CU
31/12/20x1		
Other financial charges	3000 CU	
Loans payable		3000 CU

Table 1.4: self-elaboration.

On 31/12/20x0 the entity issues the contract which will be measured at fair value (as an exception to hedge accounting) as the corresponding swap, used as a hedging instrument that replicate the hedged risk.

On 31/12/20x1 the interest expense of the loan and the IRS differential are recorded.

This value is derived from the difference between the fixed-rate and variable-rate flows:

$$100000 * (4\% - 3.5\%) = 500$$

The total cost of the operation will be equal to (fixed rate loan - Δ IRS):

4000-500= 3500

At 31/12/20x1 the differential of the fair value of the derivative and the differential of the bond will also be recorded, which in this case for simplicity match perfectly.

The company succeeded in lowering the cost of the loan by using a derivative instrument to convert a fixed rate transaction into a variable rate transaction, by expecting that the benchmark rate interest would decrease.

1.6 Hedge Accounting and IBORs reform

Reference interest rates are rates that link payments in a financial contract to standard money market interest rates.

The IBORs reform was proposed to switch market transactions from the current benchmark rates adopted by financial institutions.

The IASB, decided to publish updates in order to comply with the problems caused by the reform of interest rates in 2019: "*Interest Rate Benchmark Reform Proposed Amendments to IFRS 9 and IAS 39*." 67 68

The IASB made exceptions to the rules, both for IAS 39 and IFRS 9, as most institutions still refer to the previous standard. The purpose is to offer a limited period of exceptions to allow entities to move to the new benchmark rate without being affected by existing IASB rules.

The reform of the reference rates (IBORs) is having an impact on the hedging relationship.

IASB requires extensive documentation of the relationship when entering into an agreement and the use of a 'forward-looking' scenario to predict its development and if the reference rate is embedded in the relationship, a change in the standard would require termination of the contract (under standard conditions).

For instance, if an entity issues a loan for 10 CU at a LIBOR + spread interest rate with a maturity of 10 years, it enters into a swap contract with the same maturity to hedge the change in the interest rate. If the two relationships coincide, there is an expectation that the agreement will decrease the profit volatility.

The variable rates used for most contracts are the reference rates (in this example LIBOR), so a potential change in these rates may result in the termination of existing hedge accounting relationships.

When an entity is interested to borrow money from banks, the primary rate applied on the loan is generally a benchmark rate (LIBOR or EURIBOR as a glance). (Fletcher, 2007)

In the previous paragraph it was underlined the importance of the interest rate management, thus can be affirmed that the benchmark reform plays a crucial role in the bank lending activity and in the hedge relationships.

The IBORs reform was proposed to switch market transactions from the current benchmark rates adopted by financial institutions, to new rates more reliable with current market conditions.

Interbank Offering Rates (IBORs) serve as a reference for most cash variable rate instruments, such as: loans, bonds and structured products.

The interest rates to which banks and other market participants are mainly exposed are:

- 1. LIBOR, London Interbank Offering Rate;
- 2. EURIBOR, Euro Interbank Offering Rate;
- 3. TIBOR, Tokyo Interbank Offering Rate.

⁶⁷ IASB, (2019) Interest Rate Benchmark Reform.

⁶⁸ IASB, (2020), Interest Rate Benchmark Reform – Phase 2.

The debate on the manipulation of interest rates began in 2012 and was also fuelled by market developments, as operators, especially for derivative transactions, started asking for nearly risk-free rates, while reference rates are typically calculated with a bank spread.

The outstanding amount of these contracts is difficult to calculate, since most of the agreements are negotiated in the OTC market. However, a recent BIS study indicates that the amount of reference interest rate derivatives is 489.7 trillion. (a large portion of the entire OTC contracts)

The International Monetary Fund (IMF)⁶⁹ in 2012, tried to estimate the share of floating rate loans over the entire outstanding loans and was find out that LIBOR and EURIBOR represent the main floating rates adopted by financial institutions on international markets.

The Financial Stability Board (FSB) decided to launch a comprehensive reform of the main reference rates in 2014, after the evident manipulations and the decline in liquidity. The FSB made several recommendations regarding the possibility of changing the way the Benchmark is calculated and defined a new set of rates closer to the current market scenario.

Hoffmann et al. (2018) reported that most of IRS contracts in the Euro Zone are indexed with a EURIBOR 3M or EURIBOR 6M, in the research by analysing a sample of 104 banks controlled by European Central Bank (ECB), that manage €32.4 trillion of IRS derivatives.⁷⁰

According to Burgess (2003) interest rate benchmarks play an important role in the global financial market, indexing billions of dollars of financial products worldwide, ranging from derivatives to residential mortgages. (Nicholas Burgess,2003).71

Banks have already included the modification of benchmarks in their risk management strategy, as their business model is mostly characterized by interest margin (NII).

The third chapter analyses in detail the choices made by the regulator to mitigate the change in interest rates and will specifically highlight the accounting rules that made it necessary to publish a series of exceptional rules, compared to the reference standard.

 $^{{\}scriptstyle 69}$ The data from International Monetary Fund was used by the Bank of Italy statistics.

⁷⁰ The estimated overall amount of IRS derivatives in 2018 was USD\$84.7 trillion, thus the value analyzed correspond to 40% of the overall gross value. ⁷¹ Burgess S., Ratto M., (2003). The role of incentives in the public sector: Issues and evidence. *Oxford Review of Economic Policy*, *19*, 285–300. Accounting in Europe, 13(2), 169-196.

2. Hedge Accounting from IAS 39 to IFR S9

2.1 General Overview of the Framework

2.1.1 Introduction to IAS 39

IAS 39 came into force for financial statements after January 1, 2005₇₂ with the objective to establish principles for recognising and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. The standard has been developed since 1988, but the complexity of the subject and its scope, made it effective only from 2005.

However, the standard has been constantly updated following the course of action of IAS32: "*Presentation of Financial Instruments*"73 and IFRS7:"*Financial Instruments Disclosure*"74, since these frameworks are interconnected.

IAS 39 is made up of complex rules and has been revised several times by the regulator, since the financial crisis and other recent significant economic showed that static nature of the standard.

IAS 39 consists of three different components:

1) Recognition and measurement of financial instruments:75

an entity recognises a financial asset or a financial liability when it becomes party to a contractual agreement of the instrument. At the date of initial recognition, the instruments are measured at fair value.

According to IAS 39, financial assets were divided into four categories:

- 1. financial assets at fair value through profit or loss;
- 2. investments held to maturity;
- 3. loans and receivables;
- 4. available-for-sale financial assets.

2) Impairment test: 76

the complex accounting rules of IAS39, provided for the recognition of a credit impairment, only after the presence of a "triggering event".

In *paragraph 59* of IAS 39 the regulator highlighted the term: "*objective evidence*", defining the moment when a loan loss provision must be accounted, as a result of a credit loss.

⁷² The IASB published a series of updates to the initial prince accountant. The application of the prince became mandatory from 1 January 2005. However, there were already versions available from 2001.

⁷³ IAS32:"*Presentation of Financial Instruments*" outlines the accounting requirements for financial instruments particularly for the classification of such instruments as financial assets or financial liabilities and equity instruments.

⁷⁴ IFRS7:"*Financial Instruments Disclosure*" the principle is often associated to IAS 39 and then to IFRS 9 since provide guidance for disclose of financial instruments in quantitative and qualitative terms.

⁷⁵ IASB, IAS39, (2006), Financial Instruments: Recognition and Measurement; par.43.

It will continue to be seen in the course of the analysis that the greatest impact between IFRS 9 and IAS 39, in terms of financial statements, is given by the reform of the "impairment test", with the new Expected Credit Loss (ECL) model, that trace better expected cash flows from counterparties.

3) Hedge accounting 77

IAS 39 defines also the range in which companies may apply hedge accounting, the main components are the type of relationships, the items and the instrument eligible and the supporting documentation. IAS 39 and IFRS9 recognise three types of relationships:

- 1. fair value hedge;
- 2. cash flow hedge;
- 3. net investment hedge.

According to IAS39 a quantitative approach was required to measure the effectiveness of the hedge, which generated difficulties especially in the presence of high market volatility. Moreover, the standard refers almost exclusively to risks of a financial nature (interest, credit, liquidity), but excludes non-financial components, which are the basis of many risk strategies of companies operating in non-financial sectors.

According to Sforza et al. (2015)₇₈ despite the acknowledged difficulties of interpretation, the IAS 39 classification model had a positive effect on investment strategies, as many become familiar with IASB classifications.

IAS 39 contains a separate accounting treatment for "*Dynamic Hedge Accounting*" 79and developed a set of rules, which banks are still applying to overcome some issues related to the general principles of hedge accounting (designating to be one to one hedge).

2.1.2. IFRS 9 Presentation

Following an intensive consultation process, the IASB published IFRS 9 as a new standard in 2014, making it mandatory from 1 January 201880.

The IASB, after a reform process initiated as a result of the crisis and specific requests from the G-20 countries, decided to reform the 3 categories of the previous IAS 39.

The amendments concerned:

- 1. classification and measurement;
- 2. *impairment;*
- 3. hedge Accounting.

⁸⁰ The first part of IFRS 9 was initially issued in 2009 with regards to the classification of financial assets and financial liabilities. The final version was issued in July 2014 and become available from 2005, but mandatory only from 2018.

⁷⁷ IASB, (2006), IAS39: Financial Instruments: Recognition and Measurement, par.71.

⁷⁸ Sforza V., Cimini R., (2015), The relevance and reliability of IAS 39 financial instrument category, *Italian Journal of Accounting and Economia Aziendale*.

^{79 &}quot;Dynamic Hedge Accounting", refers to "Fair value hedge accounting for a portfolio hedge of interest rate risk" par. BC 173- BC 220.

Some of the new features of the principle became mandatory from 2018 (classification and measurement, impairment), others were made only voluntary (hedge accounting).

According to Ariante et al. (2016) the objective of IFRS 9 was to make the valuation of items more rational and objective, so it was decided to reduce the classification categories of financial assets. 81

1) Classification and measurement:82

the choice of classification is based on a reported business model and the solely payments of principal and interests test (SPPI), which assess the purpose and objective of retaining the asset.

The model produced greater simplification in the items, eliminating much of the discretionary nature of IAS 39. The classifications "Held to Maturity (HTM)" and "Available for Sale (AFS)" have been eliminated. The categories into which financial assets can be classified have been reduced to:

- 1. amortised cost;
- 2. fair value through other comprehensive income (FVOCI);
- 3. fair value through profit and loss (FVPL).

The FVTPL category remained residual with respect to "Amortized Cost" and "FVOCI" and is accounted when the SPPI is not exceeded. As regards the recognition of financial liabilities, the regulations remained virtually unchanged.

2) Impairment Test:83

the impairment model is based on a "forward looking" logic, which allows an immediate recognition of the expected loss on the credit. The presence of a "triggering event" is no more required to account a loss provision, thus the framework is able to anticipate credit shortfall of the counterparty. The credit risk recognition model shifted from an "incurred loss" to an "expected loss" logic.

3) Hedge accounting: 84

the changes introduced to the discipline of hedge accounting concerned theoretical/conceptual mechanisms, rather than accounting formulations. The regulator extended the practice to previously excluded items, but also required more robust documentation of the report.

The main changes adopted are:

1. simplification of the effectiveness test on hedging relationships, with elimination of the quantitative component;

⁸¹ Ariante P., De Rosa C., Sica C., IFRS 9: cosa cambia e quali sono gli impatti del nuovo standard contabile internazionale per le banche, IPE Working Paper, Settembre 2016.

⁸² IASB, (2014), IFRS 9 Financial Instruments, par. 4.1. 83 IASB, (2014), IFRS 9 Financial Instruments, par. 5.5.

⁸⁴ IASB, (2014), IFRS 9 Financial Instruments, par. 6.1.

- 2. option to use non-financial instruments as hedged risk by providing a reasonable documentation of risk;
- 3. increase in disclosure requests to facilitate the understanding of hedge accounting to external stakeholders.

According to IFRS 9, in addition to the reliability (current and prospective) of the existence of the relationship, each transaction must be consistent with the risk management strategy.

The entry into force in 2018 of IFRS 9 did not result in an immediate conversion of hedge accounting rules, as the adoption of these standards remained voluntary.

One of the greatest limitations of the two standards is the anchorage to "one to one" relationships, which in practical terms makes it difficult to apply them in more "*dynamic contexts*", such as hedging portfolios.

2.1.3 Recognition and measurement

The following paragraph illustrates the methods of recognition and classification in accordance with IAS 39 and IFRS 9. The two standards are equivalent for the initial recognition of a financial instrument, therefore greater importance will be given to the differences in terms of measurement of the instruments.

1) Initial recognition:85

an entity should classify an asset only when it becomes a contractual requirement of the instrument or when it acquires the rights or obligations to collect or pay for the contractual performance of the instrument. An enterprise should recognise an asset only when the rights to the instrument are acquired, or there is a commitment to purchase the asset.

The derecognition process is more complex than the recognition process and is applied differently from assets and liabilities.

An entity generally derecognised an asset when:

- 1. the contractual rights to the asset expire;
- 2. when the transfer of the asset is qualified for derecognition.

IFRS 9 incorporated without subsequent amendment the concept of recognition and derecognition of financial assets and financial liabilities, provided by IAS 39.

The standard also maintains the fair value measurement characteristics of the financial instrument at the date of initial classification.

The *fair value* initially represents the price of the transaction, which corresponds to its market value, while if there are no market values available the initial estimate is recognised through a valuation process.

For instruments that do not have a quoted market price an entity shall use a widely accepted valuation techniques6and all available inputs from an active market, such as: credit risk, share prices, foreign exchange, volatility.

The fair value accounting of financial instruments is governed by IFRS 13:"*Fair Value Measurement*"₈₇, but this topic is rooted in most of the frameworks of the IASB. In literature some studies questioned if fair value measurement is the most objective way to measure a financial instrument has been discussed.

According to Nissim and Penman (2003) fair value is both "*a plus and a minus*"⁸⁸, as it allows the value of equity to be derived directly from the balance sheet and offers high comparability between entities. However, the measurement method is affected by internal valuations (thus is not completely objective, as it seems).

The excessive dependence on fair value, exposes companies to the pro-cyclical effect of the market, for a correct valuation of instruments, there should be a large, liquid and sufficiently developed market.

In a period of crisis or financial difficulty these conditions are not guaranteed. Sforza et al. (2015) confirmed that fair value method reduces opportunistic behaviour and highlights the intrinsic characteristics of the instrument. The analysis is in line with those of (Bosch, 2012)89, and those of (Ohlson, 1995).

Another relevant contribution was provided by Laux and Leuz (2010)90, that studied the fair value accounting in the 2008 financial crisis with a sample of US banks and argued that the fair value accounting may enhance the severity of crisis, due to the pro-cyclicity of the market.

2) Classification methods

The methods for classifying financial instruments according to IAS 39 are as follows:

⁸⁶ Valuation technique represent the second stage model, in which not all the information is directly taken from active market, but also from internal valuations. The notes and the supporting documents of banks used as sample for the final case study provided extensive explanations on the fair value measurement. ⁸⁷ IFRS 13: "*Fair Value Measurement*" distinguish three level inputs framework for financial instruments classification. The first stage (stage 1) is more reliable with market valuations, while the others use other sources of valuation. An extensive part in the notes of banks financial statement is reserved to fair value determinants.

ssNissim D., Penman, S., (2003), The Association between Changes in Interest Rates, Earnings, and Equity Values, *Contemporary Accounting Research*, pp. 775–804.

⁸⁹ Bosch P., (2012), Value Relevance of the Fair Value Hierarchy of IFRS 7 in Europe - How reliable are mark-to-model Fair Values? Working Papers SES 439, Faculty of Economics and Social Sciences, *University of Fribourg*.

⁹⁰ Laux C., Leuz C., (2010), Did fair-value accounting contribute to the financial crisis, Journal of Economics Perspectives.

Instrument Type	Features
Fair value	The asset is recognised at fair value through profit or loss if this eliminates the potential
through profit or	accounting mismatch, so it represents a policy choice to align the value of the instrument
loss	with an effective measurement method. More reliable information shall be provided in
	the disclosure.
	The fair value option is also exercised when the entity assesses the performance of
	assets and liabilities and in doing so eliminates accounting inconsistency and reduces
	volatility of profit.
	A financial asset or financial liability is also designated as at fair value through profit
	or loss (FVPL) if the instrument is held for trading, so the entity expects to hold the
	asset for a limited period. Derivative instruments are generally classified as FVPL.
Investments held	The primary intention of the company is to hold the asset for an undefined period and
to maturity	the commercial purpose is not the entity's intention for such an asset. Therefore, the
	entity will have a reasonably medium to long-term view of the instruments. The asset
	is measured at amortised cost.
loans and	Loans and receivables represent a residual category, represented by instruments that do
receivables	not have a quoted market price and are not allocated to other categories.
	For assets with a quoted market price, the regulator specified that the appropriate
	valuation category is "Held to Maturity (HTM)", so "Loans and receivables" are limited
	to assets with a long-term view without a quoted price.
available-for-sale	This residual category is appropriate for instruments that are not accounted for as fair
financial assets	value thought profit and loss or as instruments held for trading.
Financial liability	Financial liabilities, as well as financial assets, are initially measured at fair value. The
	subsequent accounting treatment for financial liabilities is amortised cost, using the
	effective interest method.

Table 2.1: self-elaboration. Definition taken from IAS 39. par. 45.

IFRS 9 reports the initial measurement of assets and liabilities at fair value at the beginning of the relationship, without changing the terms provided by IAS 3991.

However, the subsequent classification of the asset is made on the basis of the entity's business model and the SPPI92 test. The valuation of the instrument requires special judgement and must comply with the company's business expectations.

The SPPI test considers whether an asset is held in order to collect the contractual cash flows, or whether it is also intended for sale. At the date of classification, an entity must determine the correct classification of the financial instrument, considering the business objective. (Ballarin, 2016).93



Table 2.2: SPPI test model (Credit Agricole Financial Report, 2019)

According to Fabi and Bontempo (2017), the business model is a "fact", which can be observed in the way the company manages its operations.

The assessment takes a holistic model into account:

- 1. how the business is evaluated by management;
- 2. how managers are remunerated;
- 3. the frequency and volume of sales.

In order to define the business model a company must evaluate the general strategy applied at the highest leel of aggregation, therefore the method is not a "case by case" tool.

Several authors stressed that the "business model" is both: a "static" and an "evolutionary" concept. (Michael Page,2014)94, since contracts are updated according to decisions taken at the beginning, but also adapting the strategy to new market opportunities.

According to Page (2014), the term business model is ambiguous and difficult to conceptualize.

The concept of a business model is highly related to the classification of items, because an entity must demonstrate whether the asset meets the criteria to be classified at amortised cost (AC) or FVOCI. According to this formulation the FVPL category is only residual. (because it is applied only if the other categories are not met).95

⁹² The IASB indicated the solely principal and payment model under the business model explanations par. B.4.1.1

⁹³ Ballarin F., (2016), Transizione al nuovo IFRS 9: effetti ed esempi pratici, Amministrazione & Finanza n. 10.

⁹⁴ Page M., (2014), "Business Models as a Basis for Regulation of Financial Reporting.", Journal of management & governance.

⁹⁵ An instrument is accounted only if the SPPI criteria is not met.

The three categories identified by the regulator are:

Category	Business Model characteristics	Objective and measurement
Amortized Cost	Held to collect: The objective of	Financial assets and liabilities measured
	the asset is to hold the asset to	at amortized cost are initially
	receive contractual cash flows.	recognized on the balance sheet at fair
	Sales only in limited circumstances	value, while subsequently the
		instruments within this category are
		measured at amortized cost. Interests
		are recorded in the P&L, using the (EIR)
		rate.
FVOCI	The Objective of the asset is	1 FVOCI (loans and receivables) are
	reached both by collecting cash	recognized at fair value and the relative
	flows and to sale the sale, under	changes are initially accounted in other
	favourable market conditions.	comprehensive income (OCI), and then
		reclassified in profit or loss when the
		asset is derecognized.
		2 For Equity instruments accounted at
		FVOCI, dividends are recognized in
		profit or loss, while the changes in the
		fair value of the instrument in OCI and
		is never reclassified in profit or loss,
		neither when is sold.
FVPL	The asset is detained for sale and	FVPL: All the assets that do not meet
	short-term maturities.	the requirements for the classification at
	The collection of the cash flows is	amortized cost or FVOCI, are classified
	incidental.	and subsequently measured at fair
		value, and subsequent changes are
		directly accounted in profit or loss.

Table 2.3: self-elaboration.

IAS 39 requirements have been confirmed for financial liabilities⁹⁶ under IFRS 9, therefore are measured at amortised cost, with the exception of certain specific instruments, which are accounted under FVPL, only if this way reduces the "accounting mismatch".

2.1.4 The impact of the reclassification in the Banking industry

The new business model requirement made many changes that had an immediate impact on the balance sheet, resulting in greater volatility and, in the first year of application, different balance sheet values for some reformulated assets.

The model eliminated complexity, giving greater relevance to the entities' business model and using the SPPI test to verify whether assets are managed in accordance with the business objective formulated for that category.

Armstrong et al. (2010)97 defined IAS 39: "controversial, difficult to interpret and based on many rules". (Armstrong, 2010).

Some studies tried to determine the positive or negative effect of the IFRS 9 reform on the market and investors' expectations. According to Onali and Ginesti (2014)98 there was a positive market reaction after the introduction of IFRS9. The evidences suggest that the introduction has made easier to analyse companies using objective data.

Amstrong (2010) found a positive market reaction especially for companies with high information asymmetry and low quality of report prior to the adoption of IFRS9.

The introduction of business model criteria for the valuation of assets made it more difficult for entities to adopt subjective classifications for accounting reason, therefore a higher level of transparency was provided and made it easier for stakeholders to read and understand the official financial statements.

In 2018 the European Banking Authority (EBA) studied the impact of the application of IFRS 9 by a group of 54 banks (from 20 Member States). 99

The research offered evidences on the consequences of the IFRS 9 introduction on banking industry, by analysing a series of effects both quantitative and qualitative.

According to the report, the impact of the reform, in terms of reclassification effect, is difficult to estimate due to the lack of disclosure and the decision to classify items according to the internal business model.

The business model is characterized by qualitative and quantitative criteria and the information from financial institutions are relatively limited in terms of the purpose of the business model and forward-looking expectations.

The report concluded that on average, the impact has been relatively small, and most items are classified in the same way.

The EBA observed that almost 80% of financial assets are classified at amortised cost (AC), 11% at FVPL and 9% at FVOCI.100

 ⁹⁷ Armstrong C. S., Barth, M. E., Jagolinzer, A. D, Riedl E. J. (2010). Market reaction to the adoption of IFRS in Europe. *The accounting review*, 85(1), 31-61.
 98 Onali E., Ginesti G., (2014), Pre-adoption market reaction to IFRS 9: A cross-country event- study, *Journal of Accounting and Public Policy* 33:6, 628-637.
 99 EBA Report, First observations on the impact and implementation of IFRS 9 by EU Institutions, 20 December 2018.

The European Banking Authority (EBA) is an independent EU authority to ensure effective and consistent prudential regulation and supervision across the European banking sector.

¹⁰⁰ EBA Report, First observations on the impact and implementation of IFRS 9 by EU Institutions, 20 December 2018 par. 40.
The most significant effect was found on the transition from amortised cost to FVPL, (for 64% of banks), due to the introduction of the SPPI test.



Table 2.4: EBA 2018, share of financial assets by category

The table summarises the reclassification method applied by the banks that began to adopt IFRS 9 on 1 January 2018:

Classification	Classification	Accounting procedure
under IAS39	under IFRS9	
Amortized Cost	FVOCI	The Fair Value becomes the
		new carrying amount of the
		asset.
FVOCI	A mortized cost	The gain and losses
	Amortized cost	realized at the
		reclassification date are
		applied to the new carrying
		amount (the ex fair value of
		the instrument).
FVPL	FVOCI	Subsequent values recorded
		in OCI, the asset is still
		measured at fair value.
FVOCI	FVPL	Previous gain and losses are
		reclassified in P&L. The
		asset is still measured at fair
		value
		vulue.

Table 2.5: self-elaboration.

2.2 Impairment

2.2.1 The Impairment test evolution and the ECL model

IAS 39 states of "*objective evidence*" to proceed with the recognition of an impairment loss and losses from expected future events (forward looking scenario) are not accounted.

According to Camfferman (2015)101, the "incurred loss model" contributed to the intensification of the financial crisis, as the balance sheets of financial institutions were unable to capture the future cash flows that the counterparty expected, by placing tight restrictions on recognition of loan loss provisions. He stressed that the European banks underprovided the loan loss provisions, this aspect was confirmed by the Asset Quality Review (AQR) promoted by the ECB in 2013-2014. (Cafferman, 2015).

Gebhard (2016)¹⁰² reported that both IFRS and US GAAP impairment rules delay credit loss recognition and result in insufficient allowances "*too big too late*"¹⁰³. Gebhardt (2016) extended the impairment process in its definition by linking it to a corporate decision-making process.

Since the financial crisis, the impairment approach of IAS 39 has been subject to severe criticism, due to the low level of prudence in the recognition of credit losses. (Camfferman and Wielhouwer, 2019)104.

The definition of "incurred loss" was one of the most criticised parts of IAS 39 as it demonstrated fallacies in capturing the true riskiness of an entity.

Criticism to the "incurred loss method" arrived also from the General Director of the "European Financial Reporting Advisory Group (EFRAG)"¹⁰⁵, that on September 2015 declared:

"The implementation of IFRS 9 will undoubtedly trigger significant implementation costs. We have however concluded that the benefits derived from the improvements summarised above would outweigh the costs".106 The absence of forward-looking information and the presence of the definition of "objective evidence" led to a difficult loss forecasting mechanism.

The most significant innovation of IFRS 9 (in terms of impact on banks' balance sheets) was the introduction of the ECL model, with the aim of preventing counterparty credit risk.

According to IFRS 9 entities must recognise risks before they become actual, and this has a direct influence on the capital held for impairment. The capital strength required by the new IFRS 9 derives from the need to prevent future triggering events that were not previously accounted.

¹⁰¹ Camfferman K., (2015), The emergence of the 'incurred-loss' model for credit losses in IAS 39, Accounting in Europe, 12(1), 1-35.

¹⁰² Gebhardt G., (2016), Impairments of Greek government bonds under IAS 39 and IFRS 9:

¹⁰³ too big too late is a term that refer to the incurred loss portion, taken from the quotation "too big to fail".

¹⁰⁴ Camfferman k., Jacco, L., Wielhouwer, (2019), 21 st century scandals: towards a risk approach to financial reporting scandals, Accounting and Business Research 49:5, 503-535.

¹⁰⁵ EFRAG is a private association established in 2001 with the encouragement of the European Commission to serve the public interest. The EFRAG mission is to provide advice to the IASB regulation.

¹⁰⁶ Guersent O., Endorsement Advice on IFRS 9 Financial Instruments, 15 September 2015.

Through-the-Cycle versus Point-in-Time PD



Graph 2.1: The significance of IFRS9 for Financial Stability and Supervisory Rules (Farkas, 2015)

The IASB, after the evolution of the financial crisis started a complete revision of the impairment test, changing from an "incurred loss" to an "expected loss" method. 107

According to Farkas (2015)¹⁰⁸ the expected credit loss model enhances financial stability, by requiring larger loss allowances, that limited the profit distributions and dividends that do not coincide with real accounting figures. The study stressed that the impact of the ECL may decrease the impact of procyclicality in the market. The impairment loss of a financial asset is defined as:

"the difference between the carrying amount and the present value of the estimated future cash flows of the asset". (IASB, 2014) 109

The impairment is valid for instruments measured at amortised cost (AC) or FVOCI and may be applied for a single item or even for a group of items.

If the valuation is made for groups, it is required to determine the similar characteristics that led to such a valuation: type of sector, guarantee, geographical location or credit risk.110The loss estimate is made using available historical transactions or, if not feasible, using groups of assets sharing similar characteristics.

The introduction of IFRS 9 fundamentally changed the impairment model, as entities are now required to recognise provisions for losses at the beginning of the report.

The purpose of expected credit loss (ECL) is to prevent potential losses that could arise from receivables or loans and will be determined by discounting potential losses to present value.

The guiding principle of the ECL model is to reflect the improvement in the credit quality of financial instruments.

¹⁰⁷ IASB, (2014), IFRS 9 Financial Instruments, par. 5.5

¹⁰⁸ Novotny-Farkas Z., (2016), The Interaction of the IFRS 9 Expected Loss Approach with Supervisory Rules and Implications for Financial Stability, *Accounting in Europe*.

¹⁰⁹ IASB (2014), IFRS 9 Financial Instruments, par. 5.5.17

¹¹⁰ The IASB suggested some methods to evaluate the impact of external factors, however each entity can use the set of information it considers most useful for estimating the potential loss of credit.



Table 2.6: Recognition of credit losses under alternative accounting, Gebrhant and Novotny-Farkas (2011)111.

IFRS 9 now requires a three-step model based on counterparty risk expectations:

Stage 1: includes all financial instruments that do not significantly increased credit risk from inception. For these instruments the ECL is calculated over 12 months;

Stage 2: instruments that provided significant deterioration from inception after initial recognition. Losses are calculated for the entire remaining life of the instrument;

Stage 3: Items whose credit risk significantly decreased, so the instrument is considered impaired. Is required to recognise an expected loss provision over the entire life of the instrument. (Ariante, 2016)

ochematic presentation of n	105			
	Stage 1	Stage 2	Stage 3	
Introduced by IFRS 9	Yes		No	
Financial instrument quality	Performing	Deteriorated	Non-performing	
Credit risk increase	Not significant		Significant	
			Objective evidence	of impairment
Impairment recognition	12-month expected credit losses		Lifetime expected credit losses	
Effective interest	Gross	s book value	Net book value	
Table 1				Source: BNP Paribas

2.7: The impacts of IFRS9 first-time adoption on Southern European banks, November 2018.

There are two measurement approaches for ECL, which depend on the severity of the cash deficit expected by customers:

- 1. 12-month ECL, applied to all items when there is little or no risk of deterioration;
- 2. ECL though the life, applied for a significant decrease in the credit standard, so the expected loss is calculated for the entire life of the agreement.¹¹²

Schematic presentation of IERS 9

Expected lifetime credit loss is defined as:

"expected credit losses that result from all possible default events over the expected life of the financial instrument". (IASB) 113

Information to support the assessment of an entity's increased credit risk is the 30-day maturity.

The regulator clarified that the definition of expected credit loss may arise even before the 30 days past due, which is an indicator of delay, but not an absolute threshold.

The ECL is quantitatively calculated using three parameters: PD, LGD, EAD:

- 1. Probability of Default (PD), represents the probability of default assessed on the basis of the economic conditions prevailing at the balance sheet date;
- 2. Loss Given Default (LGD), is a current assessment of the amount that will be recovered in the event of default;
- 3. Exposure at Default (EAD), is the measure of the exposure at the time of the default event.

Discount rate (r), is the rate used to discount an expected loss at the balance sheet date, macroeconomic indicators, which reflect future market expectations are also included.

The formula below shows how the ECL is calculated:

PD X LGD X EAD

(1+r)t114

According to Curcio et al. (2016)115, the accounting of "Loan Loss Provision (LLP)" has a very strong relationship with market trends. Under adverse conditions, financial institutions will tend to provide less credit, while under favourable market conditions they will be easier to issue. This is because, if market expectations are negative, the related potential losses will be higher.

Gebhardt and Farkas (2011) recognised an interesting correlation between the credit loss provisions introduced by IFRS 9 and companies that gain quality. However, the research highlighted the risk of a strong dependence between profit management and loss provisions (Gebhardt, Farkas 2011).

This view indicates that the forward-looking, countercyclical approach may favour entities with certain business models or earnings characteristics.

To summarize what emerged is that ECL model provided a better capital adequacy and if correctly applied by entities, it could generate less tendency to bankruptcy and risk scenarios.

¹¹³ IASB, (2014), IFRS 9 Financial Instruments, July 2014; pp. A353.

¹¹⁴ EY, Applying IFRS- Impairment of financial instruments under IFRS9, April 2018; pag30.

¹¹⁵ Curcio D., De Simone A., Gallo A., (2016), Financial crisis and international supervision: New evidence on the discretionary use of loan loss provisions at Euro Area commercial banks 2016, *The British Accounting Review*.

2.2.2 The impact of the ECL in the banking system

To understand the quantitative impact of the reform of the impairment test, reference should be made to a study published by the European Banking Authority (EBA)116, which conducted research on a panel of 54 banks in 2018, verifying the effect of the new directives on loan loss provisions (LLP) on the balance sheets of banking institutions.

In 2018, the EBA statistics monitored the avoidance of expected losses on receivables and the related impact on the financial statements following the introduction of IFRS 9.

The objective of the work was to better understand the impact of IFRS 9 from the date of mandatory application, 1 January 2018.

The sample of banks provided by the EBA is large but is subject to differences in terms of exposures, activities and business model. The size of banks varies from EUR 12 billion to EUR 2200 billion.117

Only two parameters will be mentioned for the purpose of this analysis:

- 1. the Δ loss provisions in 2018 (compared to 2017), as an effect of the new ECL model;
- 2. the negative impact of IFRS 9 on the capital requirement CET1 ratio.

The EBA report proposed numerous findings, referring not only to the effect of the loss provision, but also to the impact of the ECL model on the capital buffers required by Basel authority. 118

The research result that he impairment test contributed to lowering the CET1 ratio and other capital requirements.

CET1 ratio is computed by the ratio between the common equity capital (Tier 1) and the Risk Weighted Activities. Thus, the increase in the loan loss provision is expected to determine a decrease in the CET1 ratio. The average negative amount analysed was -51 basis points (bps), mainly due to the increase in provisions for credit risks (LLP).



Graph 2.2: EBA Report bps effect of the IFRS9 transition on ECL.

¹¹⁶ EBA Report, First observations on the impact and implementation of IFRS 9 by EU Institutions, 20 December 2018.

¹¹⁷ The size of the banks influences the results in absolute terms and the highest banks apply more robust internal model to compute the loan loss provisions (LLP). The correlation between size and risk management has been addressed several times.

¹¹⁸ Basel Committee on Banking Supervision, Minimum capital requirements for market risk, January 2019.

The weighted average, taking into account the differences in assets, produced a value of -27 bps. This is because many of the banks use Internal Base Approach (IRB)119 credit analysis, which produced different results than the Standardized Approach (SA)120 models.

Research shows that entities that have applied the IRB approach suffered a significantly lower losses on simple average -19 (bps), while those that have applied the SA approach -157 (bps).

The moderate impact on capital requirements for IRB banks was also tested by Farkas (2015) by demonstrating that internal ratings would provide less impact than SA approach. 121

The Internal Based approach (IRB) refers to a sophisticated internal calculation model, which is normally adopted by larger institutions, while the Standardized Approach (SA) model uses external capital requirements estimation parameters.

The reduction of CET1 at the first date of adoption was influenced from the requirements for loss provisions introduced by IFRS 9.

The increase in loan adjustments is mainly due to increases in reserves on stage 1 and stage 2, which were not included in the IAS 39.

The allocation by stage shows that on average 85% of exposures are valued at stage 1, while the remaining portion is divided between stage 2 and stage 3 (8% to stage 2, 7% to stage 3).

In terms of loss provisions, the research shows that 79% of these relate to capital reserves for provisions due to stage 3, 14% for accruals to stage 2 and 7% for accruals to stage 1. The portion of provisions is strongly influenced by stage 3 credit, rather than stage 1 and stage 2.

2.3 Hedge Accounting

2.3.1 Hedge Accounting under IAS 39

The objective of this analysis is to discuss the main changes in the hedge accounting model, moving from IAS 39 defined as "rule based" to the "principle based" approach of IFRS 9. (Gornjack, 2017)₁₂₂

Hedge Accounting is a model in which entities change the normal criteria for recognising gains and losses to prevent misalignments and reduce volatility, using derivatives as "hedging instrument".

Companies are exposed to many risks in their daily activities and entities implement different management strategies to avoid them, according to Coughlan (2004): "*Hedging is a vital element of corporate risk management*".123

¹¹⁹ IRB approach is the identification of internal measure of risks, adopted by large banks. The Probability of Default (PD) is internally provided. See. Basel Committee on Banking Supervision, The Internal Rating-Based Approach, 2001.

¹²⁰ Standardized approach (SA) is a model that provide data for PD, EAD and LGD externally and is normally adopted by smaller firms. See. Angelini et al. (2016).

¹²¹ Zoltan Novotny-Farkas, (2016) The Interaction of the IFRS 9 Expected Loss Approach with Supervisory Rules and Implications for Financial Stability, *Accounting in Europe*.

¹²² Gornjack M, (2017) Comparison of IAS 39 and IFRS 9: The Analysis of replacement, International Journal of Management, pp. 115-130

Three agreements are recognized as hedge relationships:

- 1. *Fair Value Hedge*, which mitigates the exposure of assets, liabilities and irrevocable commitments to changes in the fair value of a particular risk, which could affect the income statement;
- 2. *Cash Flow Hedge*, which protects against exposures to expected future cash flows that could affect the income statement;
- 3. *Hedging of a net investment in foreign operations*, which hedges changes arising from foreign currency transactions with overseas entities.¹²⁴

At the date of the hedging report it is required to document the transaction, theuse of derivatives (for hedging) and the effort to mitigate risks.

At the beginning of the report, the entity should provide a formal designation of the report and appropriate documentation, including the risk management objective, the strategy to hedge, the identification of the hedging instrument and the nature of the hedged risk. (IASB) 125

Implicitly, a better assessment of risk exposure and more disclosure was required, as the hedge relationship needs to be fully documented.

The hedge effectiveness requirements, to be measured around a threshold of 80-125%, made the hedge accounting strategy difficult to sustain over time.

In periods of low volatility, the range between the hedged item and the hedging instrument is easier to achieve, while in periods of high volatility it is difficult to maintain.

A study by Coughlan (2004) pointed out that companies reduced the number of instruments hedged by the introduction of IAS 39 as the increase in complexity and documentation requirements decreased the number of eligible reports. As a result, the volatility of earnings increases after the introduction of IAS 39, compared to the best hedge strategy.

An interesting research question has been proposed by Panaretou, et al. (2013)₁₂₆, whether the IFRS accounting treatment provided grater or less tendency to hedge. In their research it has been analysed a sample of UK firms, and the result was a positive contribution of IFRS standards on hedge accounting. (their research was mainly focused on information asymmetry between countries).

With the extensive definition of hedge accounting not only related to the activity of smoothing earnings volatility, but also a risk management strategy, Glaum and Klocker (2011)127defined that the incentive of IAS 39 has only partially contributed to a definition of the risk management strategy, since the costs of implementation and regulation must be considered.

In the hedge accounting model provided by IAS 39, in the case of non-derivative instruments, accounting for the instrument as a hedging element is only possible for investments in foreign currency.

¹²⁴ IASB, IFRS 9 Financial Instruments, July 2014; par.6.5

¹²⁵ IASB, IFRS 9 Financial Instruments, July 2014; par.6.4

¹²⁶ Panaretou A., Shackleton, M. and Taylor, P.A. (2013), Corporate risk management and hedge accounting, *Contemporary Accounting Research*, Spring 2013, vol. 30, no. 1, pp. 116-139

¹²⁷ Glaum M., Klöcker A., (2011) Hedge accounting and its influence on financial hedging: when the tail wags the dog, *Accounting and Business Research*, 41:5, 459-489,

Although most of the accounting relationships have been confirmed, the IASB decided to revise the standard by modifying some of the issues that have been raised by market participants. In July 2014 the new hedge accounting document was published as part of the revision of IFRS 9.

2.3.2 Hedge accounting under IFRS 9

The new hedge accounting model was introduced to improve IAS 39, following these three main drivers:

- 1. aligning hedge accounting more closely with risk management;
- 2. establish a more "principle-based" approach by removing quantitative effectiveness test;
- 3. extending adoption to non-financial risk components.

Hedge accounting is a process that requires a depth knowledge of the entity's business model, a forward-looking approach and better management of hedging instruments.

The term business model is relatively recent on accounting standard and Page (2014)₁₂₈ questioned the reasons why such "*ambiguity*" term has been enclosed in the accounting standard, since the notion of business model is open to a wide range of interpretations.

Therefore, it needs to be demonstrated that:

- 1. management doesn't have discretion on applying the model;
- 2. it is possible to find relevance of the business model from transactions;
- 3. business model is stable and is not constantly modified.

This strategy typically involves longer periods, and is determined by management, based on internal and external factors.

Changes in risk management strategy may result in a change in some of the transactions at a lower level.

For example, for an entity the decision to maintain 40% of its financial debt at variable interest rates is a risk management strategy that is decided by the Board and will influence subsequent individual transactions.

Based on this initial requirement, an entity will compose the hedging strategy based on "target indices" of fixed variable funding and decide how to modulate this exposure.

IFRS 9, by extending the risks that can be formally designated as hedged items, increased the scope of the standard to those entities whose risk is "non-financial".

Airlines, manufacturing companies, raw materials industries benefited from the introduction of the new hedge accounting mechanism. 129

For financial intermediaries, the introduction of the new requirements did not change the "*status quo*", as most hedging policies are implemented using "Macro Hedge accounting".

The table summarises the main changes adopted by the IASB:

Principle	IAS 39 Requirements	IFRS 9 Requirements
Hedge effectiveness	Retrospective effectiveness required with a quantitative analysis (80-125% threshold).	 Analysis provided qualitatively under standard conditions. Criteria to adopt the transaction: economic relationship between hedged item and hedging instrument the credit risk does not dominate the transaction.
Rebalancing	If the quantitative criteria are not meet the relationship is mandatorily discontinued.	The hedge relationship is rebalanced in order to meet the new specifications of the agreement. The process of rebalancing is adopted for continuation of the relationship under critical terms.
Discontinuation	An entity may voluntarily discontinue the relationship.	Discontinuation not permitted, preference for rebalancing and for the maintenance of the relationship.
Own Use contracts	Own use contracts not included in the relationship.	Accounting of own use contracts under FVPL.
Aggregated Exposure	Derivatives are excluded from the possibility to be designated as hedged item.	The aggregated exposure can be designated as hedged item.
Dynamic Risk Management	Entities can hedge portfolio of assets, liabilities or a mix that is constantly modified.	The IFRS 9 didn't updated the Dynamic Risk Management, therefore companies are still referring to IAS39.
Equity Investments FVOCI	Equity investments are not designated in FVOCI.	Equity investments are designated at FVOCI and the portion of ineffectiveness is recorded in OCI

		and will never be translated into
		P&L.
Non-Financial instruments	The only exceptions to derivatives	Cash instruments measured at
	as hedging instrument is the net	FVPL are eligible as Hedging
	investment hedging.	instruments.
Documentation and Risk	The documentation shall specify	The documentation shall include
Management Requirements	extensively the objective of the	additional requirements of the risk
	relationship and in particular the	management of the entity, and the
	expected offsetting between the	purpose of the relationship rather
	hedged item and hedging	than the simple effectiveness
	instrument.	expectation.

Table 2.8: self-elaboration.

2.3.3 Hedged Items

A hedged item is an asset or liability, an unrecognised firm commitment, a highly probable forecasted transaction or a net investment in a foreign operation.130A hedged item can be a single asset, a group of assets or a portion of them.

For example, an entity is allowed to recognise only the reference interest rate portion of a debt instrument, instead of the entire amount of the instrument.

This condition extents the adoption of the hedging relationship and decreases the risk of derecognition. For non-financial hedged items, under IAS 39, an entity is legitimated to recognise only foreign currency risks, because for other risks only financial items are eligible.

This aspect was criticised, these restrictions were removed by IFRS 9 which extended the adoption of the hedging relationship to non-financial items.

For hedge accounting, only assets, liabilities and net investments involving external parties can be designated as hedged items. Therefore, internal transactions are not qualified to be accounted as hedged items, apart from foreign currency investments.

The new IFRS 9 expanded the available items to be recognised as hedged assets:

1) risk component of non-financial items131

entities exposed to non-financial risks shall assess whether the risk component is "measurable and reliably identifiable".

¹³⁰ IASB, (2014), IFRS 9: Financial Instruments; par.6.3.

¹³¹ KPMG, First Impression: IFRS9(2013)- Hedge Accounting and transition, December 2013; par 6.2

The concept of being reliably identifiable and measurable requires judgement and a thorough understanding of the business model. The risk component may be specified both contractually and non-contractually. For example, a contractually specified risk component is the future contract used to purchase the material from a coffee supplier within the next year.

Instead, a non-contractual risk component is the jet fuel designated as the hedged risk for the purchase of crude oil.¹³²The second definition shows the importance of knowing the business model correctly, since airlines are interested in buying oil to block the price of jet fuel, even if not directly specified in the agreement. ¹³³

Exceptions are also reserved for equity investments, which according to IFRS 9 can be qualified as hedged items, even if changes in fair value are reflected in the OCI.

The changes will never be reflected in the P&L, so both the actual and the ineffective part of the relationship will remain in OCI. The table summarises the hedged items eligible for designation under IFRS9 and the differences with respect to IAS 39:

Item	IAS 39	IFRS9
Single Financial item	Eligible	Eligible
Group of financial items	Eligible	Eligible
Non-Financial risk components	Only foreign exchange	Eligible
	risks	
Net positions	Not eligible	Eligible
Aggregated exposures	Not eligible	Eligible

Table 2.9: self-elaboration.

2.3.4 Hedging instruments

Hedging instruments are derivative instruments, measured at fair value, whose value offsets the fair value or expected cash flows of the hedged item.

The hedging instrument is designated in its entirety or, exceptionally, a part of it can be designated as a hedging instrument (for instance the 50% of the notional amount). However, the general rule remains the adoption of "one to one" relationships.

Under IFRS 9 an entity may separate the intrinsic value and time value of a purchased option by designating only the intrinsic value as hedging instrument. ¹³⁴

¹³² See Rampini et al. (2013).

¹³³ KPMG, First Impression: IFRS9(2013)- Hedge Accounting and transition, December 2013; par. 6.5

From the standard prospective a reliable exception can be an option contracts, indeed designating the time value of the option would mean being constantly dependent on market fluctuations, since the time value will tend to increase with the maturity of the instrument, so only the intrinsic component will be accounted.

Briefly, the time value of an option represents the premium that the acquirer is prepared to pay, provided the option price increases in value before the expiration date. The time value of an option will be accounted in the OCI under IFRS 9 to decrease the volatility of earnings, while changes in intrinsic value will be recognised in the income statement. ¹³⁵

For exchange rate risks, the regulator maintained the adoption of IAS 39, which already authorised the designation of the exchange rate risk component of a non-derivative financial asset or non-derivative financial liability as a hedging instrument.

The table summarises the items that qualify as hedging instruments and the main differences from IAS 39:

Instruments	IAS 39	IFRS 9
Derivatives	Eligible	Eligible
Non derivative financial	Eligible	Eligible
instruments for hedging FX		
risks		
Non derivative financial	Not eligible	Eligible
instruments measured at		
FVTPL		
Written option as Hedging	Not eligible	Eligible
instrument		
Proportion of the instrument	Eligible	Eligible
designated as Hedging		
instrument		
Embedded derivative on their	Eligible	Not Eligible
own		
Purchased option	Both Time value and intrinsic	Time value recognized in OCI
	value recognized in P&L	and intrinsic value recognized
		in P&L
Forward element	Hedging using either the spot	Hedging using either the spot
	or the forward rates	or the forward rates

Table 2.10: self-elaboration.

¹³⁵ KPMG, (2013), First Impression: IFRS9(2013)- Hedge Accounting and transition, par. 5.3

2.3.5 Hedging Relationships

Hedging documentation is formally required by IAS 39 to initiate the relationship and to comply with risk management requirements.

The formal and minimum requirements of the hedging documentation are:

- 1. the characteristics of the hedge relationship;
- 2. the objective of risk management;
- 3. the identification of the hedged item;
- 4. the identification of the hedging instrument. 136

The documentation also includes a prospective assessment of how the entity will ensure the effectiveness of the relationship and whether the risk management strategy is consistent with the future scenario.

"*Good economic reasons*" and "*good risk reasons*" are not sufficient to enter into a hedging relationship, but adequate and robust written initial documentation is required to maintain the hedging relationship models.

The IFRS 9 in accordance with the theory of increasing the importance of the risk management strategy with *"cascade"* effect, increased the requirements for the documentation. An entity must include the reason behind the relationship and other qualitative factor that contributed to increase the informativeness.

Documentation may be challenging when an entity has to provide information for future expected transactions, or when, with the approval of risk management, an entity decides to hedge only a portion of the instrument. (Coughlan, 2004).

Small and medium-sized enterprises normally use a risk management strategy based on unwritten guidelines, providing general rules that must be followed, while large companies publish guidelines that demonstrate the importance of aligning each hedging relationship with the company's risk management strategy. 137

2.3.5.1 Fair Value Hedge

Fair value hedges are used to manage exposure to changes in the fair value of an asset or liability that could affect the income statement.

The IASB decided to maintain the information provided by IAS 39, if a particular instrument meets the requirements to be classified as fair value hedge, the gains and losses arising from the measurement of the hedging instrument must be recognised directly in the income statement, while the hedged item will be remeasured, with the differences reported on the income statement in the same period.

For example, a commercial bank may be interested in entering into a hedging relationship for a fixed rate loan, the interest on which is exchanged for a variable rate, through the adoption of an Interest Rate Swap (IRS).

^{136.} IASB, (2014), IFRS 9 Financial Instruments, par.6.4.137 The relationship of the size of the firm and the risk management rules have been addressed several times in literature. See. Stulz (1996).

If an entity at 20x0 decides to borrow 20 million CU, from which it pays interest at a fixed rate of 5%, the maturity of the loan is at 20x10.

The entity believes that interest may be reduced in subsequent years, so it decides to enter into an IRS to transform the exposure from fixed to floating.

Other significant fair value hedges are used to offset changes in commodity prices and for foreign exchange transactions. 138

A fair value hedge relationship is discontinued when the criteria are no longer met or if:

- 1. the hedging instrument expires or is discontinued;
- 2. the relationship no longer meets the criteria to be qualified;
- 3. the entity revokes the designation.

Example:

If an entity holds a portfolio of 4% interest-bearing assets, accounted at amortised cost, it decides to transform the interest rate exposure from fixed to floating rate and enters into a pay fixed receive variable rate swap contract with a notional amount corresponding to the hedged loan portfolio.

If the reference interest rate (LIBOR for instance) decreases by 0.25% during the following year, the purpose of the derivative is to offset the change in the reference rate.

If the hedging transaction was not applied, the transactions would be accounted in two different years. The derivative is recognized at FVPL and any changes are reported in the income statement, while the loan is recognized at amortized cost (AC) and the gain/loss on the portfolio of loan would not be reported in the same year. By applying hedge accounting an entity reduce the earnings variability generated by the transaction

	Without Hedging		With I	Hedging
	Period 20x	Period 20x1	Period 20x	Period 20x1
Loss on derivative	(x)		(x)	
Gain in Fair Value	-	х	х	
TOTAL	(x)	Х	-	-

Table 2.11: Self-elaboration.

2.3.5.2 Cash Flow Hedge

A cash flow hedge is a risk attributable to the variability in the cash flows of the recognised asset or liability or to a highly probable future transaction that could affect the income statement.

¹³⁸ BDO, Hedge Accounting, IFRS 9: Financial Instruments.

Future cash flows could be related to the variability of interest rates on existing assets, sales or purchases in foreign currencies. In addition, the entity may enter into a cash flow hedge in advance to compensate for potential volatility by providing sufficient documentation of the transaction's expectation.

For example, an entity receives a loan on 1 January 20x0 with a maturity of 10 years for 1,000 CU, at a variable interest rate of 6M EURIBOR + spread.

The entity believes that rates could rise in the next period, so it decides to hedge the variability in interest rates by entering into an interest rate swap (IRS). The hedging instrument should compensate for future rate variability in transactions by lock in potential cost increases for the entity.

The IASB has not changed the requirements of IAS 39 for cash flow hedges, the lower of the two will be recorded in a cash flow hedge reserve:

- 1. gain or loss on the hedging instrument;
- 2. the change in the fair value of the hedged item.

The effective part of the relationship will be measured at OCI, while the ineffective component will be measured in the P&L. The ineffectiveness portion arise when the change in the hedging instrument do not perfectly match the changes in the hedged item.

If the relationship is terminated or the expected cash arise, the amount accumulated in the OCI will be recognised in the income statement to avoid accounting mismatches.

Cash Flow Hedge derecognition has some specific indications, as the transactions are expected to have an impact on the company only in the future. The primary source of disposal is the expectation that the planned transaction will no longer occur. Other sources of discontinuity are recognized when the hedging instrument is sold or expires.

Example:

If a lender holds a portfolio of floating rate assets based on the LIBOR rate, it may decide to hedge against adverse fluctuations that may arise from rate movements.

To block oscillations in the primary rate (from which interest on the portfolio is calculated), the entity enters into a pay variable receive fixed interest rate swap, with a notional settled amount equal to the value of the hedged loan portfolio.

If the hedging relationship were not applied, the variability of the hedged transaction and the variability of the hedged instrument would be accounted in different periods, generating volatility in the income statement. The derivative is classified at FVPL and any changes would be reported in the income statement, to offset this change the interest rate variability of the cash flow will be reported in the same year.

	Without Hedging		With Hedging	
	Period 20x	Period 20x1	Period 20x	Period 20x1
Loss on derivative	(x)			(x)
increase in revenues	-	х		х
TOTAL	(x)	х	-	-

Table 2.12: Self-elaboration.

2.3.5.3 Hedging a net investment in a foreign transaction

International companies are largely exposed to exchange rate fluctuations from transactions involving subsidiaries, joint ventures, associates or foreign investments. Under IAS 39, the Board regulated foreign and intra-company transactions, with gains and losses on the hedging instrument deferred in OCI, to the extent that the hedge is effective.

Foreign investment relationships, including monetary transactions, normally regulated by IAS 21: "*The Effects of Changes in Foreign Exchange Rates*"¹³⁹, are accounted in a similar way to cash flow hedges, so any actual gain or loss on the hedging instrument is recognised in other comprehensive income (OCI), and any ineffective portion is recognised in the income statement. Only on the date of disposal, the amount accumulated in the OCI is transferred to the income statement.

Example:

if a company denominated in EUR decides to sell 10m CU of primary products on the American market, decides to hedge against currency fluctuations that could affect the sale. To hedge the foreign currency risk, the company enters into a six-month "FX Forward" contract to deliver USD and receive EUR, in order to hedge the currency fluctuations defined in the transaction. The settlement date of the amount is established on the same day but considering past transactions an entity can determine with reasonable certainty that the transaction will take place.

2.3.6 The evolution of Hedge effectiveness

Hedge effectiveness under IAS 39 is a quantitatively designated parameter with the objective of measuring the offsetting outcome between hedging instrument and hedged item.

IAS 39 defined a highly effective hedge in the 80-125% range140, this upper and lower limit must be maintained throughout the life of the relationship, regardless of market movements. This standard was considered very complex and expensive, due to the high effort to test the numerical effectiveness of the relationships.

According to Di Clemente (2015), IAS39, with the "*quantitative proxies*" applied to Hedging rules created restrictions on the adoption of the relationships (Di Clemente, 2015). ¹⁴¹

The IASB suggested to use statistical techniques to measure the level of ineffectiveness, and only recommended the adoption of "hypothetical derivative".

The hypothetical derivative replicates the best scenario of the relationship, between the hedged item and the hedging instrument, and when an entity recognises a distance between the best scenario and the current state of the relationship, it must assess the level of ineffectiveness.

The hypothetical derivative is able to perfectly match the hedging instrument, the difference is captured by the fair value of the hedged item and the fair value of the hypothetical derivative. This is only a "*numerical expedient*" used to replicate the optimal hedging scenario but is not expressly required by the regulator.

According to Di Clemente, the IASB provided only some guidance on hedge effectiveness test, most entities are in the process of defining their internal methodologies consistent with risk management. (Di Clemente, 2015).

According to Naor (2006), a degree of ineffectiveness in hedging relationships is unavoidable, as no derivative is able to perfectly offset the underlying. Therefore, a component of ineffectiveness is inevitable in a hedging relationship. Any potential exogenous factor can produce sub-optimal hedging.

The perfect hedging relationship is obtained with a ratio of 1:1, so if, for example, the profit attributable to the hedged item is 100 CU, the relative loss of the hedging instrument should be 100 CU to obtain the best effectiveness. However, under real market conditions, achieving this perfect result is very difficult, so the Board asked to recognize the ineffective part of the relationship in P&L.142

According to Singh (2004)143, the existence of a statistical correlation between two elements is not in itself a condition of a hedge accounting relationship, but there shall be a reflection of risk management on the individual transaction.

Effectiveness is measured at least once a year or on all occasions where it is presumed, from internal or external conditions, that the minimum requirement has been exceeded.

The effectiveness test must be carried out:

- 1. on a prospective basis, through forward-looking expectations;
- 2. retrospectively, mainly using regression analysis and historical data.

¹⁴⁰ IASB, IAS 39, Financial Instruments: Recognition and Measurement; December 2006, AG105.

¹⁴¹ Di Clemente A., Hedge Accounting and Risk Management: An Advanced Prospective Model for Testing Hedge Effectiveness, Economic Notes by Banca Monte Dei Paschi di Siena SPA, vol. 44, no. 1-2015: pp. 29–55.

¹⁴² IASB, IAS39 Financial Instruments: Recognition and Measurement; December 2006, AG107.

¹⁴³ Singh, A., (2004), The effects of SFAS 133 on the corporate use of derivatives, volatility, and earnings management. Dissertation, Pennsylvania State University.

The test at the beginning is only prospective, as it is linked to the exception that the report adopted is able to meet the effectiveness criteria, while in subsequent periods will be retrospective and prospective.

If the Hedge effectiveness is not satisfied, the entity shall discontinue the relationship from the last operating date on which effectiveness has been demonstrated.

The test result may provide three scenarios:

Matched terms	Closely matched terms	Significantly mismatched terms	
For prospective assessment the	A quantitative analysis is	Mandatory quantitative analysis	
requirements of the credit risk are	required for both	required for prospective and	
sufficient for determining the key	retrospective and	retrospective discontinuation.	
effectiveness.	prospective analysis.	The statistical correlation must be	
For retrospective effectiveness 80-	For the retrospective	carefully examined, and if the	
125% test is required.	analysis the adoption of the	relationship is not below 80-125%	
	regression model or	the association must be broken.	
	advanced statistical		
	methods may be required.		

Table 2.13: self-elaboration.

A valid way to qualitatively measure effectiveness is the use of the Ideal Risk Hedge (IDRH), which is configured as a "*procedural proxy*" that allows an entity to trace the guidelines for a proper relationship strategy, to prevent ineffectiveness that may require a discontinuation.



Table 2.14: Corporate Risk Management in an IAS39 framework (Guy Coughlan, 2004).

IDRH is a 5-step method that starts from the identification of the risk target, the risk class, the amount of risk covered and the desired result to be achieved. The second step (2) involves the selection of the appropriate hedging instrument, then the value of the instrument is expected to offset the hedged risk. The objective is to completely eliminate gain volatility, or to try to reduce, as far as possible, price fluctuations that are not fully offset. The third step (3) concerns the effectiveness methodology, both qualitative and quantitative, to estimate the losses that may arise during the life of the relationship, so that an entity establishes the number of effectiveness measurements for each fiscal year, as well as the quantitative method to be adopted (regression test, risk reduction test, etc.).

The last step (5) is the interpretation of the result, which under standard conditions should lead to the continuation of the hedging relationship and the recognition of ineffectiveness.

The use of thresholds, rather than those specified by the standard, may help to focus more on the relationship that revealed a weak ability to offset each other.

There are certain requirements that a hedge relationship must meet in order to be qualified. The Board reiterated the importance of having documentation and evidence of a relationship between the hedged item and the hedging instrument.

The formal documentation, other than including the suitability requirements of the two components (hedged item and hedging instrument), asked for guidance on the actual alignment of the transaction with the company's risk management strategy.

In terms of the relationship, the regulator imposed to be compliant with these parameters:

- 1. there is an economic relationship between the hedged item and the hedging instrument;
- 2. changes in credit risk do not dominate the relationship.

The impact and magnitude of changes in credit risk must not dominate changes in value (a condition also available under IAS 39), so even if there is an economic relationship between the two instruments, the offsetting principle cannot be strongly influenced by the credit risk of a single item. Each entity must assess risk tolerance, so the Board has not prescribed any threshold in IFRS 9. 144

Under IFRS 9 greater importance was reserved to certain qualitative factors that may be related to the risk management of entities by removing the 80-125% threshold.

The elimination of the mandatory quantitative threshold helped to avoid the cyclicality of the relationship in the event of a market crisis, however, qualitative information is closely linked to the judgements of its management and therefore less uniform.

To demonstrate that the reporting criteria are met, the required assessment may be qualitative, but also quantitative, depending on the type of correspondence between the elements.

¹⁴⁴ KPMG, First Impression: IFRS9(2013)- Hedge Accounting and transition, December 2013; par. 3.

A quantitative valuation is strongly suggested only in limited circumstances, when for example the relationship under a qualitative analysis appears to be deteriorated.

The figure below presents the situations in which a quantitative assessment for the relationship is required under IFRS 9:



Table 2.15: Ramirez J., (2015), Accounting for derivatives, Wiley, pp.47.

The Board requested to use only the model that best captures the current economic scenario in accordance with the company's risk management strategy.

The main sources of hedge ineffectiveness depend on the type of transaction (fair value, cash flow, macro hedge). 145

The table summarises the sources of hedge ineffectiveness:

145 Ramirez, J. (2015), Accounting for derivatives. Chichester, England, Wiley.

Type of transaction	Source of ineffectiveness
Fair Value Hedge	1. counterparty credit risk and own credit
	risk;
	2. difference in discounting between the
	hedged item and hedging instrument;
	3. differences in maturities between the
	hedged item and the hedging instrument.
Macro Fair Value Hedge	Differences between the expected and the actual
	volumes of prepayment for mortgages
	portfolios.
Cash Flow Hedge	1. the effect of the counterparty and the
	own credit risk on the fair value of the
	interest rate swap;
	2. potential differences in maturities of the
	interest rate swap and the loans.

Table 2.16: Self-elaboration.

Example:

To test the effectiveness of the relationship, a real case has been considered where an entity decides to issue a floating rate bond on 1 April 20x0, with a principal of 1000 CU, paying interest annually and maturing 20x10. The reference interest rate is 12M LIBOR +150 basis points (bps).

	Bond terms
Issue date	1 April 20x0
Maturity	1 April 20x10
Notional	1000 CU
Coupon	LIBOR 12M + 1.50% spread
Payment dates	Annually

The entity's Risk Management policy is to mitigate exposure through the use of Interest rate swaps (IRS) to reduce the volatility of profits from interest rate fluctuations, with the following conditions:

	Interest rate swaps
trade Date	1 January 20x0
effective date	1 April 20x0
maturity date	1 April 20x10
notional	1000 CU
Рау	3% (300 bps) annually
Receive	12M LIBOR
Payment dates	Annually

To verify the effectiveness of the relationship, the entity must look at the critical terms and whether the characteristics of the hedging instrument match the hedged item.

In this example, the effective date, maturity and interest payments coincide perfectly. The overall risk exposure is 4.5% (3%+1.5%), as a result of the spread rates and LIBOR embedded in the relationship.

Since the terms of reference of the hedge in this cash flow transaction correspond perfectly, it is possible to opt for the adoption of the "*critical terms hedge*" which allows the items to be verified, observing the actual association between the components, without the use of quantitative analysis.

2.3.7 Rebalancing and discontinuation

Another important change to the principle is the elimination of the voluntary interruption of relations.

According to IAS 39 an entity could freely terminate relationships, whereas with the introduction of IFRS 9 this practice is no longer permitted.¹⁴⁶

Voluntary discontinuation could cause accounting problems and less consistency in the valuation process, so the Board stressed that discontinuation is permitted only if mandatory under IFRS 9.147

The regulator decided to extend the possibility of rebalancing in order to maintain the relationship and avoid the interruption process.

To apply the rebalancing, the entity must demonstrate that the hedging relationship is changed and by modifying the terms, a relationship can be realigned with the effectiveness criteria described by the regulator. If an entity, under the conditions described above, decides to use rebalancing, it may act in different ways:

- 1. increasing or decreasing the volume of the hedged item;
- 2. increasing or decreasing the volume of the hedging instrument.

¹⁴⁶ IASB, (2006), IAS 39, Financial Instruments: Recognition and Measurement; December 2006, par. 91.

¹⁴⁷ IASB, (2014), IFRS 9, Financial Instruments, par. B6.5.22

Generally, adding quantities to the hedged item is more complex than decreasing the value of the hedging instrument, since the new amount will only enter into the transaction for a limited time.

Finally, as a last attempt to preserve the stability of the relationship, the regulator determined that only the ineffective part can be interrupted, allowing the relationship between the two parts of elements that still meet the conditions to continue. This process is called "partial discontinuation".

The table analyses some scenarios where the discontinuation is total or partial:

Type of scenario	Full or Partial discontinuation				
The risk management objective changed	Full or Partial				
There is no longer an economic relationship	Full				
The effect of credit risk dominates the	Full				
relationship					
The Hedging instrument expires, or the hedged	Full				
item is sold					
The volume of the hedged item is reduced	Partial				
The volume of the hedging instrument is	Partial				
reduced					

Table 2.17: self-elaboration.

2.3.8 Advanced Hedging Relationships under IFRS 9

In addition to defining procedures for standard reports, the regulator determined the accounting of more complex transactions, where the terms described above are expanded.

The following examples describe the structure of some alternative scenarios:

1) Using a single hedging instrument to hedge multiple risks:

if an entity denominated in Japanese Yen (JPY) has a floating rate liability in US dollar (\$) and another with the same maturity date in GBP (£), it may decide to hedge the foreign currency exposure by designating a forward foreign exchange contract as a cash flow hedge to manage the exposure in both currencies. The risk hedged can be clearly identified and the entity could mitigate both risks by using a contractual instrument to hedge USD/JPY and JPY/GBP.



Table 2.18: (PWC, Achieving Hedge accounting in practice, 2017)148

2) Aggregated exposure:

IFRS 9 also added the possibility for entities to designate the aggregate exposure as a hedging item.

Aggregate exposure is a combination of a derivative and a non-derivative that can be jointly designated as a hedged item.

Such a combination may create a different exposure, but the entity can manage it collectively, providing great benefits for some transactions that previously required a longer and more difficult process to be recognised. For example, if an entity issues a bond denominated in another currency at a floating rate, it will be exposed mainly to the foreign exchange risk of the transaction and interest rate risk. (The underlying of the Bond is the LIBOR rate + spread)

According to IAS 39, the company must enter in two different transactions:

- 1. currency swap to mitigate the exposure of the bond-loan;
- 2. interest rate swap (IRS), to mitigate the exposure to the floating rate.

Under IFRS 9 an entity is permitted to enter into a cross currency interest rate swap, designating the aggregate exposure as a hedged item.

This convention was established to eliminate the complexity of defining two different relationships within the same transaction.¹⁴⁹

3) Hedging a Layer Component

IFRS 9 allows an entity that manages risk by defining a level component from a nominal amount, indeed the asset perceived as a risk may not be the entire instrument but only a part of it.

A layer component may include part of the monetary transaction, part of the physical volume and part of the transaction volume.

¹⁴⁸ PWC, (2017), Achieving Hedge accounting in practice under IFRS9; pag.45.

¹⁴⁹ KPMG, (2013), First Impression: IFRS9(2013)- Hedge Accounting and transition; par. 6.4.

The layer component identifies the hedged component and the unhedged part of the relationship.

The accounting rules used for hedge accounting relationships will be valid only for the hedged portion of the instrument. ¹⁵⁰

An entity has issued a 100M CU bond, consisting of 20000 fixed rate bonds with a nominal value of 5000 CU each.

If the entity expects part of the entire obligation to be repurchased (ex. EUR 10 m of the obligation) it decides to hedge only the specific component of the entire item, which is likely to generate unexpected fluctuations.

2.3.9 Corporate Hedging

The use of derivatives is often associated with financial institutions, for their systemic importance and their ability to operate in the markets, however in the literature some studies highlighted the importance of the hedge relationships also in the non-financial industry.

According to Bartram et al. (2009)151, non-financial companies mainly hedge foreign exchange risks, commodity risks and interest rate risks.

The introduction of the non-financial component allowed entities to increase the potential instruments in which to apply such relationships.

Choi (2001)¹⁵² analysed a panel of biotech and pharmaceutical companies and showed that the use of hedge accounting determines an increase in value, which becomes even larger when there was a large "information asymmetry".

Haushalter (2000) demonstrated the importance of hedge accounting to reduce the risk of financial distress in Oil & Gas companies. The study also tested that, the component of transactions increases with the size of the company and exposure to unfavourable exchange rates.

The degree of size has its own relevance in the operational management of derivatives and in the ability to bear the costs of hedge relationships.

Allayasin and Weston (2001) 153analysing a panel of 720 large U.S. companies showed that those who adopt hedging relationships have greater market advantages. The market premium for those companies that adopt an exchange rate hedging policy, was 5%.

According to Yanbo and Jorion (2007)¹⁵⁴ there is no evidence in the mining industry that hedge accounting can increase corporate value.

The contribution of the literature shows in an almost unitary way, that also non-financial companies can receive benefits from hedge relationships.

Therefore, it can be said that the benefits of hedge accounting, despite the difference in business models, is present in both financial and non-financial companies, even though the risk covered are different.

¹⁵⁰ KPMG, (2013) First Impression: IFRS9(2013)- Hedge Accounting and transition; par. 6.3.

¹⁵¹ Bartram, S.M., Brown, G.W., Fehle, F.R., (2009), International evidence on financial derivatives usage, *Financial management*, 38 (1), 185–206.

¹⁵² Choi U.J., Mao C.X., Uphaday A.D., (2013), Corporate Risk Management under Information Asymmetry, Journal of Business Finance & Accounting.

¹⁵³ Allayannis G, Weston J.P., (2001), The Use of Foreign Currency Derivatives and Firm Market Value, *Review of Financial Studies*, pp. 243-76. ¹⁵⁴ Yanbo J., Jorion P., (2006), "Firm Value and Hedging: Evidence from the U.S. Oil and Gas Producers." *Journal of Finance* 61:2, pp. 893-919.

The regulator, with the introduction of IFRS 9 enlarged the number of transactions available for hedging, to facilitate the management of risk of "non-financial" nature.

2.3.10 Macro Hedge Accounting

For most entities, risk management is a "*multidimensional activity*"¹⁵⁵ involving risk identification and analysis. The principle is defined to regulate individual transactions, but in reality, entities are engaged in a number of variabilities that require a continuous revaluation of the portion hedged.

The real case scenario often differs from the "one to one" principles embedded in the framework and recently entities have been forced to adapt the standard regulatory requirements for more complex scenarios. Most of the entities manage risk such as interest rates on a portfolio basis, with a dynamic process that involve a continues reassessment of the net risk positions. The type of risks that can be managed on a portfolio include foreign exchange (FX), commodity price risk, but most of all interest rate risk.

To reflect this need, in 2003 the IASB published an exposure draft called:

"Fair Value Hedge Accounting for a Portfolio Hedge of Interest Rate Risk".156

Applying the general guidelines of the Open Portfolio relationship in practice is difficult, since the framework incorporated all the rules embedded in the static hedging, treating the portfolio exposure as a series of one to one agreement.

This document provided general guidelines for the management of Open Portfolios. The IASB, with the introduction of IFRS 9, focused only on "*one to one*" relationships, excluding a review of dynamic hedges.

Banks and other financial institutions often manage exposure of assets or liabilities on a portfolio basis by covering part of it from unexpected fluctuations.

The Portfolio can be a set of assets, liabilities or both and has the characteristic of changing frequently, due to new contracts originated, contractual reimbursements or prepayments.

In 2014 an exposure draft was published by the IASB with the aim of recommending a new approach for dynamic risk management activities. The rules applied under IAS 39 are generally constructed for an individual hedging relationship, while these rules are not effective for the designation of "*Open Portfolio*" strategy.

To cover open exposures, an entity enters into a dynamic hedge accounting in which the portfolio is constantly modified, therefore the designation and re-designation of items is more frequent than in a "*static relationship*". The reader may note that the effectiveness test and the perfect relationship between the hedged risk and the hedging instrument is a "static condition", that under Dynamic Portfolios cannot be easily replicated. The accounting treatment of "Macro Hedge Accounting"¹⁵⁷ is similar to that of static hedge:

¹⁵⁵ The "cascade effect" determine a strong collaboration among different entities from top down to bottom up activities. See. Rampini et al. (2018). 156 IASB, IAS 39 Financial Instruments: Recognition and Measurement; December 2006; par. AG114

¹⁵⁷ IASB, (2014), Accounting for Dynamic Risk Management: A Portfolio Revaluation Approach to Macro Hedging.

1) Macro Fair Value Hedge

changes in the fair value of the underlying instrument are showed in a separate line (instead of adjusting the carrying amount as of one to one hedging).

The differences between the change in the fair value of the hedged portfolio and the hedging instrument are recorded in the income statement.

2) Macro Cash Flow Hedge

If an entity applies the "Macro Cash Flow Hedge Accounting", it decides to protect itself from the variability in the cash flows of a Hedged item (as with static hedge accounting).

The effective component of the hedging relationship is recognised in OCI (and will be translated into P&L only at the end of the relationship or upon termination), while the ineffective part will be recognised directly in P&L.

At the operational level, two main sources of complexity have been identified:

- 1. most of the exposure on a portfolio basis is payable in advance, the counterparty has the right to exit the contract before the expected date, with the so called "prepayment option";
- 2. group hedge relationships are treated as a series of "individual agreements".

Banks are using a simplified approach in agreement with regulators called "*carve out option*" which removed some of the limits of IAS 39, in terms of determining future items and prepayment.

The current Macro Hedge method, adapted as an exception, does not align an entity's risk management strategy with hedging relationships, since with the constant rebalancing process it is not possible to provide a clear view of the balance sheet.

The IASB is still working to replace the standard, but issues of implementation and adaptation of "*static standards*" to a "*Dynamic Portfolio*" are creating issues with the replacement.

Under IAS 39 a company is allowed to recognize the next exposure and to hedge the remaining portion of the portfolio that create uncertainty.

2.3.11 Portfolio Revaluation Approach (PRA)

The management of the Macro Hedge requires continuous modification of parameters, as exposures are frequently added and removed. The limitations of the Dynamic Hedge Accounting made difficult for financial institutions to faithfully represent the result of their hedging strategy in the financial statement. In October 2014, the IASB issued a significant proposal entitled:

"Accounting for Dynamic Risk Management: A Portfolio Revaluation Approach to Macro Hedging", in which explained its views on the adoption of an alternative methodology for Dynamic Hedge Accounting.

The proposal incorporated in the document has not yet been authorised, so until the data available (2019 financial statements), entities still refer to the "*carve out*" option of IAS 39 in accordance with the ECB.

The objective of the proposal was to overcome the problems recognized by IAS 39, as the treatment of the Open Portfolio has been documented only as an exception to "Micro Hedge" and not as "*per se*" rule.

The IASB considered a new approach to represent the definition and risk management strategy for dynamic hedging, with the primary purpose of representing the asset in the financial statements and avoiding profit volatility.

Banks and other financial institutions asked for a set of reforms on Open Portfolio calculation, as their complex business model requires constant revaluation of portfolio risk and the consideration that some pre-payers may exit earlier, while some risks may need to be mitigated in advance (such as expected interest rate exposures). The PRA is not a "*full fair value*" 158 model, but only re-evaluate the portfolio for the modification of the risk exposure.

The model has been specifically designed to be applied for interest rate risks but can be extended for other risks that entities expect to manage at group level (mainly exchange rate risks).

The change in the fair value of interest rates is expected to be offset by the hedging instrument (100% ineffective). The ineffective portion of the hedged exposures and the hedging instrument is recognised in the income statement (ineffectiveness).

The expected result of the proposed amendments is not only to simplify the accounting treatment, but also to provide more transparent information on risk management.

The Board recognised in the discussion the adoption of a "*behaviouralisation*"¹⁵⁹ approach, as entities often refer to prospective cash flow exposure, although not yet certain. Another exception to the standard accounting treatments is reserved to deposits, in which an entity, considering judgment and past experience, should be able to identify the part of the deposits that will not be withdrawn¹⁶⁰.

The following table summarises the advantages of the method:

159 The concept was addressed by the IASB in the proposal 2014. Given the constant variability of deposits, an entity using historical data, customer information and a deep knowledge of the business model can estimate the prepayment component, as well as the stable component, even if it does not have specific numerical evidence to support it.

¹⁵⁸ IASB, (2014), Accounting for Dynamic Risk Management: A Portfolio Revaluation Approach to Macro Hedging; par. 1.

¹⁶⁰ Although deposits can be withdrawn at any time, the Board accepted the market participants' proposal to consider expectations on fixed deposits rather than actual cash flows. Future cash flow expectations and deposits include a concept of forward-looking analysis.

Changes proposed	Benefits
One to one matching not required	Would reduce the complexities associated with
	one-to-one designations required under current
	hedge accounting.
Use of data for risk management purpose	There is a great opportunity to use existing
	dynamic risk management data for accounting
	purposes.
Behavioural methodology for assessing risk	The core demand of deposit as a stable income
	even though can be withdrawn at any time.

Table 2.19: self-elaboration.

Example:

Assuming that a Bank has a series of assets and liabilities that it manages at group level, on the basis of fixed and variable rates, it is exposed to the variability of interest rates, since the portion of variable rates is greater than the variable portion received.

To compensate for the variability of interest rates, a bank enters into a swap contract (as hedging instrument) to fully offset the hedged risk position. The swap will be designated as a fixed-paying receiving variable.

The PRA is not a full fair value, since the risk is remeasured only as a result of a change in the hedged risk. The loans will only be remeasured as a result of a change in the value of the benchmark, which is the basis of the hedging strategy (e.g. LIBOR). Any other changes of the reference portfolio would not determine a reclassification of the hedged risk and will be accounted on accrual basis.



Table 2.20: IASB, (2014), Accounting for Dynamic Risk Management: A Portfolio Revaluation Approach to Macro Hedging; par. 1.32.

The PRA approach also has the advantage that it does not require a static designation of the hedged and hedged items, and only changes these instruments in the event of a change in the hedged risk portfolio maintained a clear risk management framework, which is reflected in the financial statement.

PRA would present a clearer picture of the risk management strategy of an entity and reduce the complexities associated to the Macro Hedge Accounting under IAS 39.

2.3.12 Disclosures

The disclosure requirements are regulated under IFRS 7: *"Financial instrument: Disclosures"*, but the Board decided to enforce the importance of disclosures for hedge relationships, to give a clear picture to external stakeholders of how an entity is managing its exposures.

Disclosure of information has been strengthened for two main reasons:

- 1. to enhance the degree of comparability between entities;
- 2. to give external readers a clearer picture of the firm's work.

According to Panaretou et al. (2013)161: "Hedging disclosures essentially turn private information into public information".

The purpose is to provide information on:

- 1. the risk management strategy;
- 2. the effect that hedge accounting on the balance sheet.

The decision strength disclosures is linked to the recent economic crisis, in fact according to Hull (2007) "*the lack of transparency*" contributed to the financial distress and demonstrated that having a high level of disclosure can help to assess the differences between the entities.

Marshall and Weetman (2007)₁₆₂ contributed to the discussion by providing a survey of UK and USA firms, modelling the degree of disclosures of foreign exchange (FX) risk management. Their findings supported the theory of DeMarzo and Duffie (1995) that stressed that the disclosure mandatory requirements leave a great portion of non-disclosure compared to the information known by managers.

Gigler et al. (2006)¹⁶³ described the importance of mark to market transactions on derivatives to send early warning signals to investors and to prevent financial distress, however they found out that on cash flow hedge

¹⁶¹ Panaretou A., Shackleton M., Taylor, P.A. (2013), Corporate risk management and hedge accounting, *Contemporary Accounting Research*, Spring vol. 30, no. 1, pp. 116-139.

¹⁶² Marshall A., Weetman P., (2007), Modelling Transparency in Disclosure: The Case of Foreign Exchange Risk Management, Journal of Business Finance & Accounting, 2007.

¹⁶³ Gigler F., Kanodia, C., Venugopalan, R., (2007), Assessing the information content of mark-to- market accounting with mixed attributes: the case of cash flow hedges. *Journal of Accounting Res*earch 45, 257–287.

is unclear how outsiders would interpret gain and losses from derivatives, since in their model the exposure was undisclosed until realized.

With the increased role of risk management and the elimination of quantitative thresholds the application of disclosure requirements become more relevant, managers must explain the choices made to achieve the objective of risk management.

The complexity of hedge accounting stimulated the regulation of derivatives, since the treatment of the hedging relationship is not always easy for an external reader.

A mismatch in presentation formats makes two sets of information less comparable and less easy to integrate into the decision-making process, for an external investor, a good comparability between companies, can help in deciding on the best investment opportunities. ¹⁶⁴

In order to answer to these three macro-areas, the company must also report some detailed information regarding the type of hedging instrument used, the overall composition of the financial and non-financial instruments used to hedge exposures, but also how the economic relationship is settled.

An entity shall provide even more detailed information for future transactions that are expected to occur and provide a brief description of what the ineffectiveness of the hedge might look like in the years ahead. The following table describes:

- 1. disclosure requirements for hedging instruments;
- 2. disclosure requirements for hedged items.

The tables summarize the reporting rules prescribed by the regulator for hedge accounting relationships:

		Carrying amoun instru	t of the hedging Iment	Line item in the statement	Changes in fair value used for calculating hedge ineffectiveness for 20X1				
	Nominal amount of the hedging instrument	Assets	Liabilities	of financial position where the hedging instrument is located					
Cash flow hedges									
Commodity price risk									
• Forward sales contracts	XX	XX	XX	Line item xx	xx				
Fair value hedges									
Interest rate risk									
• Interest rate swaps	xx	XX	xx	Line item xx	xx				
Foreign exchange risk									
• Foreign currency loan	xx	XX	xx	Line item xx	xx				

Table 2.21: Hedge accounting and transition (KPMG, IFRS 9 Financial instruments)165, hedging instrument disclosure.

164 See. Viswanathan and Childers (1996); Jaffe-Katz et al. (1989); Viswanathan and Narayanan (1994).

165 KPMG, First Impression: IFRS9(2013)- Hedge Accounting and transition, December 2013 par.11.4.1.

	Carrying amount of the hedged item		Accumulated amount of fair value hedge adjustments on the hedged item included in the carrying amount of the hedged item		Line item in the statement of financial position in which the hedged	Change in value used for calculating hedge ineffective- ness for	Cash flow hedge reserve	Foreign currency translation reserve
	Assets	Liabilities	Assets	Liabilities	included	20X1		
Fair value hedges								
Interest rate risk								
 Loan payable 	-	xx	-	xx	Line item xx	xx	N/A	N/A
 Discontinued hedges (loan payable) 	-	xx	-	xx	Line item xx	xx	N/A	N/A
Foreign exchange risk								
Firm commitment	xx	xx	xx	xx	Line item xx	xx	N/A	N/A
Cash flow hedges								
Commodity price risk								
 Forecast sales 	N/A	N/A	N/A	N/A	N/A	xx	xx	N/A
 Discontinued hedges (forecast sales) 	N/A	N/A	N/A	N/A	N/A	N/A	xx	N/A
Hedges of net investment in a foreign operation								
Foreign exchange risk								
 Long-term receivable from subsidiary 	N/A	N/A	N/A	N/A	N/A	xx	N/A	хх
 Discontinued hedges (long-term receivable from subsidiary) 	N/A	N/A	N/A	N/A	N/A	N/A	N/A	xx

Table 2.22: Hedge accounting and transition (KPMG, IFRS 9 Financial instruments)166, hedged item disclosure.

According to Scannella and Polizzi (2019)₁₆₇ disclosure is strategically important for the efficiency of financial markets and overall stability and disclosure could be a useful tool for "*screening and monitoring*".

The result of the study showed that on hedge accounting, disclosures are greater over time rather than space. Thus, even with a broad reform, it will be easier to compare the same entity in two different financial statements, rather than two entities in the same year.

According to Bernini, D'Onza and Gonnella (2011)¹⁶⁸ examined the regulations of Italian banks by comparing the entities listed in the "FTSE All Share" segment of "Borsa Italiana" and found that disclosure is only mandatory, while it is less extensive for non-compulsory disclosure.

- 166 KPMG, First Impression: IFRS9(2013)- Hedge Accounting and transition, December 2013. Par. 11.4.2.
- 167 Scannella E., Polizzi S., (2019), Do Large European Banks Differ in their Derivative Disclosure Practices? A Cross-Country Empirical Study, *The Journal of Corporate Accounting & Finance*.
- 168 Bernini F, D'Onza G., Gonnella E., L'informativa sui rischi nelle banche italiane quotate al FTSE All Share: Analisi empirica della *disclosure* nel triennio 2006-2008, *Economia Aziendale Online*, 2011.

3.IBORs Reform

3.1 Introduction

Benchmark interest rates play an important role in global financial markets, indexing billions of dollars of financial products worldwide, ranging from derivatives to residential mortgages.

The most influential benchmarks in the financial sector are the Interbank Offered Rates (IBORs), which are a set of rates published daily.

The events of false manipulation, incorrect reporting and the liquidity crisis of overnight interest rate benchmarks, deteriorated their role and importance.

In 2012 Barclays was fined €453 million by regulatory authorities for market manipulation, this was the trigger event that led the G-20 countries to demand a process of substantial reform. 169

Benchmark rates are largely used by financial institutions (as well as being provided directly by them), for the definition of contracts, the pricing of derivatives, risk management and hedge accounting.

The table summarises the value of the most relevant benchmarks in terms of contracts notional values:



Graph 3.1: self-elaborated from FSB report 2014, (data in trillion).

The notional of rates: LIBOR, EURIBOR and USD LIBOR account for 95% 1700f the entire market, so this analysis will follow in particular the reform work and actions taken by the Euro Working Group on the transition from the EONIA to the ESTER and relevance will also be given to the LIBOR rates, as these are the benchmarks that have the greatest influence on the accounting system.

¹⁷⁰ Financial Stability Board, Reforming Major Interest Rate Benchmarks, July 2014; pag.9 tab.5

The integrity of the benchmark is crucial for the fairness of contracts and more generally for the stability of the financial system, as trillion of dollars are indexed to current benchmarks and the increased vulnerability of these instruments is considered a serious concern by regulators.

The G-20 asked the Financial Stability Board (FSB) to take responsibility for a major reform of the benchmarks, as key interest rates are widely used in the global financial system in a wide range of products. The first proposal was to set an investigation commission for the two most representative reference rates: LIBOR and EURIBOR.

After the start of the investigation, it was decided to set new benchmarks less anchored to bank lending rates. The Financial Stability Board (FSB) published the report in 2014: "*Reforming major interest rate benchmarks*", which contains a set of recommendations to strengthen existing benchmarks and to develop new risk-free rates (RFRs):

- 1. strengthening IBOR and improving the process of monitoring and anchoring rates to market transactions;
- 2. identify alternative risk-free rates (RFRs) that will change the benchmark in market operations in the following period. 171

According to Duffie and Stein (2015):

"Remember, the "I" in IBOR stands for "interbank". The daily setting of LIBOR should be an estimate of the rate at which major banks can borrow from each other".

The relationship between banks and benchmarks is bilateral, which caused many concerns about how to reform the benchmark rates and at what cost.

The move to IBORs creates the so-called "*coordination problem*", the greater the concentration, the greater the interdependence that rates generate. In fact, anyone involved in the market will avoid being the first to activate the new benchmark.

The FSB assigned the Official Sector Steering Group (OSSG)172 to monitor the coherence and evolution of the reform, as each benchmark will present different issues and the transformation should include regulators, participants and market makers.

The benchmark rates are managed differently according to country-specific regulations, the OSSG decided to divide the transition program between different jurisdictions, taking into account the different legal concerns incorporated in each benchmark.

¹⁷¹ Financial Stability Board, (2014), Reforming Major Interest Rate Benchmarks, pag.2.

¹⁷² In July 203 the FSB proposed the foundation of the Official Sector Steering Group (OSSG) whose members are officials of central banks and regulatory authorities. The OSSG the FSB's operational group has given a mandate to manage the benchmark reform process and to monitor progress in the different jurisdictions involved.

Since 2018, the European Monetary Market Institute (EMMI)173 made significant progress in implementing a hybrid methodology to replace EURIBOR and EONIA, which are the most widely used rates provided by the Eurozone.

The FSB asked, with regard to Euro benchmarks, to investigate current market scenarios, developing a new set of rates, in accordance with the guidelines expressed at international level and to identify alternative RFRs. Entities and market participants in general expressed the need to strengthen bank credit risks, reflecting financing costs and almost risk-free rates related to daily market operations.

EONIA is the effective rate for the Eurozone calculated as the average of all unsecured financing transactions and is widely used for derivative transactions, collateral arrangements and cash products. The Euro Working group identified Euro Short Term Rate (ESTER) as the perfect candidate to replace EONIA.



EONIA volume and panel bank concentration

Graph 3.2: EONIA volume, Report by the working group on euro risk-free rates.

The table provides the decrease in the transaction volumes of EONIA, from the first year of publication 1999 till 2017.

EONIA will continue to be published until January 2022, to allow a gradual adoption of the ESTER and to ensure that the amendments provided by the IASB for accounting valuations have been applied.

The EONIA rate is linked to the new ESTER rate plus a fixed spread of 8.5 basis points (bps)174, this correlation facilitates the transition of the instrument from the old benchmark to the new one.

EURIBOR represents the unsecured interbank rates offered in the Eurozone, derived by a panel of banks on a daily basis and is administered by the European Monetary Market Institute (EMMI). The rate started to be

¹⁷³ EMMI is operatively coordinating the process of reform. EMMI was founded in 1999 and is currently responsible for the publication and the administration of EURIBOR and EONIA rate. See. European Money Market Institute, Consultation Paper on a Hybrid Methodology for EURIBOR, March 2018;
published in January 1999 and is widely used as a benchmark in contracts with customers or less sophisticated counterparties.

In recent years, institutions worked to replace EURIBOR with a new rate, taking into account the proposal of different market participants, regulators and working groups to develop a hybrid determination method, less anchored to the banking panel.

However, the right candidate to replace EURIBOR in the Euro area has not been found yet, so the regulator decided to propose fallback provisions for existing contracts.

3.1.2. LIBOR Reform

In July 2019, the Chief Executive Officer of the Financial Conduct Authority (FCA) stated that "*the LIBOR transition is happening*". 175

LIBOR is the London Interbank Offered Rate (LIBOR) and is widely used in global financial markets for contracts such as derivatives, bonds, loans, securitizations, deposits and other products.

LIBOR emerged at the end of 1960' as the reference rate for loans and mortgages in the United Kingdom and since then the British Bankers Associations (BBA) decided to publish daily at 11.00 a.m., market quotations for interbank rates offered by a panel of banks, reflecting the rates at which banks can borrow funds.

As pointed out by Stenfors and Lindo (2018)176:

"academics treated the terms [LIBOR and money market] as if they were synonymous. Policy makers acted as if LIBOR was an objective reflection of the money market rate. Body and household rates entered into financial contracts indexed with LIBOR as if the money market was the underlying benchmark."

LIBOR is used in financial products denominated in different currencies and is published in GBP (British pound), USD (US dollar), EUR (euro), JPY (Japanese yen) and CHF (Swiss franc).

Jurisdiction	Working Group Sponsor	LIBOR currencies	Replacement RFR
United States	Federal Reserve Bank of New York	USD LIBOR	Secured Overnight Financing Rate (SOFR)
United Kingdom	Bank of England	GBP LIBOR	Reformed Sterling Overnight Index Average (SONIA)
Switzerland	Swiss National Bank	CHF LIBOR	Swiss Average Rate Overnight (SARON)
Japan	Bank of Japan	JPY LIBOR	Tokyo Overnight Average Rate (TONA)
European Union	European Central Bank	EUR LIBOR	Euro Short-Term Rate (ESTER) available as of October 2010

Graph 3.3: Acceleration of LIBOR transition (PWC, August 2018).

175 Bank of England, (2018), Preparing for 2022: What you need to know about LIBOR transition.

176 Stenfors A., Lindo D., (2018), Libor 1986–2021: the making and unmaking of 'the world's most important price', Journal of Social Theory, 19:2, 170-192.

According to the data available from a study by NY FED (2018)177 reported also in a recent survey of PWC, in 2016 LIBOR reference contracts accounted for 72% of the OTC derivatives market, 71% of syndicated loans and 82% of floating rate bonds.

In July 2017 the President of the Bank of England Sir. Chris Salmon said:

"The financial system has a dependency on LIBOR". 178

The LIBOR reform started in 2014, but the regulator decided to avoid publishing a new rate due to liquidity problems and it was decided to maintain the existing LIBOR rate, at least until appropriate alternatives were developed.

In the UK, the Bank of England has taken a big step towards a transition by developing SONIA (Sterling Overnight Interest Average), which will completely replace LIBOR for GBP transactions from 2021.

SONIA₁₇₉ has similar characteristics to the European EONIA rate and appears to be aligned with the overnight RFRs perspective. However, LIBOR is published in 5 jurisdictions and the replacement is far from be completed.

3.1.3 Financial accounting transition

In September 2017 the European Central Bank (ECB) in close cooperation with the other market authorities that regulate benchmarks, started working on the transition process and decided to create an Accounting Subgroup focused on the main accounting implication of the IBORs reform.

The report focused mainly on the transition from EONIA to ESTER, but the implications and the Euro Working Group's point of view can be extended to other benchmarks with similar transition characteristics.¹⁸⁰ The ECB working document focused on a number of key considerations that could affect the existing hedging relationship:

1) Modification of contracts:

under the general framework an entity is required to document at the inception of the relationship the type of the hedged item, the hedging instrument and reasons of the relationships.

According to general guidelines, a modification of the initial documentation would determine the discontinuation of the relationship, but the Euro Working Group proposed a transition period.

The first operational issue for an entity is whether the changes to the contract represent a substantial or nonsubstantial change, because for a non-substantial change, an entity may not need to terminate the relationship. Under IAS 39 and IFRS 9 a change in the benchmark is a reason for discontinuity, therefore the IASB should include an exception for the reporting period.

¹⁷⁷ NY FED, (2018), Alternative Rates committee.

¹⁷⁸ Salmon C., (2017), The Bank and Benchmark Reform, Bank of England.

¹⁷⁹ Bank of England, (2018), Preparing for 2022: What you need to know about LIBOR transition.

¹⁸⁰ European Central Bank, (2019), Report by the Working group on euro risk free rates.

The Euro Working Group suggested that the replacement of the benchmark is not a change in risk management, so the common view is simply to change the existing risk hedged, without applying the discontinuation.

2) Impact on effectiveness:

another key point is whether a hedging relationship will continue to be effective after the transition from EONIA to ESTER, especially for the quantitative effectiveness test required under IAS 39.

Both IAS 39 and IFRS 9 established that at the inception and during the entire life of the relationship, the hedged item and hedging instrument shall move in opposite directions and provide effectiveness in achieving the offsetting changes.

The change in the benchmark may damage the effectiveness test, due to the expected volatility of rates in the first period of application.

The Euro working group proposed to consider exceptions to the effectiveness test for the transitional period and to avoid this leading to discontinuation of the report. Strong volatility in market rates is to be expected during the reform period.

3) Accounting for hedging transactions on EURIBOR:

A crucial difference between EONIA and EURIBOR is that EURIBOR will continue to be published in the next period, thus the Working Group decided to propose fallback provisions on EURIBOR contracts. The Euro Working Group believes that the impact of EURIBOR will be less pronounced than other rates and appropriate fallback language could help the continuation of the contract.

4) Potential impact of the reform at operational level:

The IBORs reform affects many internal operations, the table summarises the impact of the IBORs reform:

Categories	Description
Market adoption of alternative RFRs	The adoption of new interest rate requires
	effort and entities shall enter into contracts
	with the new benchmark rates to ensure the
	process of transition.
Liquidity	Liquidity in the derivatives market is crucial
	for the development of new hedge relationship
	for pricing and risk management activities.

Legal	Contract amendments can determine transition
	costs and operational risks, a significant
	administrative effort is expected.
Risk Management	Most of the risk model (VAR) are depended
	from historical data available from benchmark
	rates.
Governance and Compliance	Institutions will face a lot of compliance
	expenses to reform the offer and to develop
	new internal procedures.
Regulatory	Current margins, capital ratios, as well as loss
	provisions may be triggered by the presence of
	a RFRs reform.

Table 3.1: self-elaboration.

3.2 IASB amendments on Hedge Accounting

3.2.1 IBORs reform phase 1

The documentation provided by the Euro Working Group₁₈₁ and briefly described in the previous paragraph has been interpreted by the IASB, which published a set of observations for IFRS 9 and IAS 39 to facilitate the benchmark reform.

The IASB₁₈₂ actively participated in the Euro Working Group to ensure business continuity, knowing that the reform of IBORs can potentially damage the financial statements of entities, especially where reference rate contracts are widely used.

Following the analysis of the Euro Working Group, the IASB divided the work project into two phases:

Phase 1: issues relating to financial reporting before the replacement;

Phase 2: issues that could affect financial reporting after the completion of the benchmark review.183

The Board opted to amend both IFRS 9 and IAS 39, since most of the financial institutions are still linked to IAS 39 for hedge accounting.

The IASB on May 2019 published: "Interest rate benchmark reform: Proposed amendments to IFRS 9 and IAS 39".

¹⁸¹ In September 2017 The European Central Bank (ECB) launched a set of reforms coordinated with the other jurisdictions. The mandate was assigned by the FSB. The Group worked on three main areas: legal actions, accounting implications and risk management issues.

¹⁸² The IASB on the first and second set of amendments receipted the suggestions of the document: European Central Bank, Report by the Working group on euro risk free rates, November 2019;

¹⁸³ IASB, (2019), Interest Rate Benchmark Reform – Phase 2, April 2020; IASB, Interest Rate Benchmark Reform.

The proposed exceptions, during the period of uncertainty, aims to reduce the volatility of the income statement and to ensure that during the reform period, the hedging relationship are maintained and the new are correctly issued.

The draft amendments are divided in the following areas:

1) Highly probable requirements: 184

one of the most important conditions for establishing a cash flow hedge relationship is that an entity can expect, with relative certainty, that the transaction will occur in the identified period.

To verify the highly probable requirements, paragraphs "*F.3.10 and F.3.11*" of the implementation guide states that: "*an entity should identify and document a planned transaction with sufficient specificity so that, when the transaction occurs, the entity is able to determine whether the transaction is hedged*".

The prospective approach is even more pronounced for cash flow requirements, since to recognize the hedge accounting relationship, the transaction must be "highly probable".

For example, in a cash flow hedge relationship whose benchmark is an IBOR rates, a change in the benchmark may no longer meet the high likely requirements because the underlying contracts are expected to be modified with cash flows based on an alternative rate.

Considering the effects of the IBORs reform, it might be challenging to demonstrate the *'high probable requirement'* standard, in the context of certain transactions, whose reference rate is still indefinite or not enough liquid.

The entity, according to the standard rules, should discontinue the relationship but the Board decided to provide amendments for the period of uncertainty, as the termination of the relationship (only for the IBORs reform) would not provide useful information to external readers and would not lead to any change in the strategic target .To prevent the discontinuation process an entity will consider the interest rate initially settled, without assessing the change provided by the reference rate. The benchmark will not affect the prospective expectations of the relationship.

If the relationship is discontinued for other reasons, the entity shall reclassify any remaining amount, not arising from the benchmark reform, to profit or loss.

2) Prospective and retrospective assessment: 185

under IAS 39 and IFRS 9 the hedged item and the hedging instrument must move in the opposite direction and there could be the expectations that the relationship would be effective in the following periods. The prospective valuation is demonstrated by predicting the potential evolution of the contract and a change in the reference rate may result in the fallacy of the prospective relationship and the termination of the agreement.

¹⁸⁴ IASB, (2019), Interest Rate Benchmark Reform, pag.18.

¹⁸⁵ IASB, (2019), Interest Rate Benchmark Reform, pag.20.



Graph 3.4: IASB, (2019), Interest Rate Benchmark Reform.

The entity must demonstrate that, even if the benchmark affected the contractual characteristics of the company, the agreement is still in place.

According to the common rules of the IFRS 9:

"the Hedge is expected to be highly effective in offsetting changes in fair value or cash flows attributable to the hedged risk". 186

Under IAS 39 the requirements for the prospective assessment of the relationship are even more pronounced, since at the inception and in subsequent periods an entity shall determine the effectiveness of the relationship under a threshold of 80-125%.

During the life of the relationship the tests to perform are both prospective and retrospective.

If an entity fails to determine the outlook, the discontinuation process requires that:

- 1. for fair value hedges, the fair value adjustment will be amortised to profit or loss;
- 2. for cash flow hedges, the amount accumulated in the cash flow reserve will be reclassified to the income statement.

The Board decided to maintain the quantitative analysis in accordance with IAS 39, thus the project will only be temporary to avoid discontinuation and the rules embedded in the principle haven't been changed.

According to the IASB's exceptions a change in the benchmark will not directly affect the relationship and is not a condition for determining ineffectiveness.

To avoid the risk of interruption, the Board proposed to consider the interest rate initially identified in the report, without considering the impact of the benchmark reform.

3) Identification of risk components:

if an entity is entering into a relationship with a counterparty and issued a floating rate debt indexed to LIBOR, it may decide to hedge the entire risk of the relationship or only the specific risk component.

It has been questioned whether a specific risk component, affected by the IBORs reform, is still reliable to be *"separable and identifiable"*.

If an entity enters into a relationship to cover the variability of the floating rate debt that bears interests at EURIBOR+ spread, it may decide to hedge the entire debt or the interest rate that generate such fluctuations. Thus, it has been questioned whether the IBORs reform, would allow to determine the component of risk in the first application period.

If the new rate does not bear enough liquidity and importance in the financial scenario, an entity may be required to terminate the relationship because there is no evidence of the hedged risk.

However, the Board agreed for the transition period that ineffectiveness relating to the rate change would not preclude the existence of the relationship in the future and would not qualify as ineffective.

The entity shall expect that the new rate will bear enough liquidity and robustness in a limited period of time, this aspect will be qualified better in the second set of amendments.

At this stage the Board made clear that an entity may not enter into new contracts using the reformed benchmark rate if the risk component is not separately identifiable and sufficiently liquid.

4) Hedge group of items 187

for portfolio relationships, the reform may affect the instruments at different times and the "*collective analysis*" of the effectiveness (normally adopted by IAS 39 and IFRS 9) is no longer a supporting element for the portfolio valuation.

The measure should be applied on a case-by-case basis or by defining sub-groups of elements that bear the same benchmark rate.

The Board established that the risk initially settled in the relationship would be used to determine the effectiveness of the relationships in the subsequent periods.

If an entity has a portfolio of mortgage loans and designates a fair value hedge and decides to adopt a dynamic strategy in the portfolio where the elements are consistently de-designed and re-designated, for the transition period, an entity would determine the effectiveness of the reference rate as a *'distinct and identifiable risk component*' only at the beginning of the relationship, giving an advantage for the subsequent assessment of the selected elements.

5) Date of entry into force and disclosure 188

entities should follow the requirements of IFRS 7: "*Disclosure of Financial Instruments*" and should include additional information in the hedge accounting disclosures.

The Board introduced the condition of "*not excessive cost or effort*", the information to be provided must not be surrounded by excessive expenses or granularity.

The Board asked to provide information regarding:

- 1. the significant interest rate expositions;
- 2. the rate exposition that will be affected by the IBORs reform;

¹⁸⁷ PWC, (2019), A look at current financial reporting issues, pag.10.

¹⁸⁸ IASB, (2019), Interest Rate Benchmark Reform, pag.28.

- 3. how the company is dealing with the process of transition;
- 4. the assumptions used for applying the exceptions proposed by the IASB.

The "management commentary" 189part of the disclosure is not mandatory, but the regulator strongly suggested describing how an entity is facing the different challenges of reform and the impact of the benchmark transition on risk management.

The increased correlation between risk management and entities made disclosure a key part of hedge accounting, as managers have the opportunity to explain the degree of risk hedged and the overall strategy adopted by the company.

The IASB considered 1 January 2020 as the effective date of the amendments, with early application allowed. Voluntary application is not possible, as the regulator wants to maintain uniformity on the reform process, with the objective of maintaining equality between entities.

3.2.2 IBORs reform Phase 2

The second phase of the exceptions was published in 2020, with the aim of being fully effective from 2022 onwards190. Unlike the Phase 1 reform, the second refers to the resolution of problems that may arise in the coming reporting periods. 191

The second phase of amendments focuses on the effect of the reform on the financial statements when a designated interest rate in a hedging relationship is replaced and assist entities on actions to implement when the benchmark is changed. The regulator tried to anticipate the expected negative downturn in the IBORs reform by working with market participants to a new set of rules available until the end of the uncertain period. While the first amendments are in the direction of avoiding a hedging accounting impact from the extraordinary event of the reform process, the second amendments go much further:

- 1. It offers a mitigation of the accounting treatment, assuming that the reference rate cannot be easily replaced in financial markets;
- 2. provides option for the continuation of the relationships.

The Board developed the following proposals:

1) Prospective assessment: 192

the practical expedient will allow an entity to make the required changes without breaking the relationship, demonstrating the connection between the replaced rate and the new rate introduced.

¹⁸⁹ PWC, (2019), A look at current financial reporting issues, November 2019; Appendix 2.

^{190 2022} is the date indicated for the termination of the transition period for the benchmark reform.

¹⁹¹ IASB, (2020), Interest Rate Benchmark Reform – Phase 2. The second phase cover several topics: modification of financial assets and financial liabilities, hedge accounting disclosure.

¹⁹² IASB, (2020), Interest Rate Benchmark Reform – Phase 2, par. BC55.

For example, as detailed in the *'Euro Currency Report'* paragraph the new ESTER rate will be linked to the existing EONIA (EONIA is calculated from ESTER +8.5bps), in this way, the company will be able to change the patterns of the contract without interrupting the entire relationship.

The prospective assessment confirmed the view that a change in the benchmark rate would not provide the termination of the relationship, however the ineffective portion of the hedge transaction will be recorded in the P&L as prescribed by IAS 39 and IFRS 9. The prospective assessment will be assessed in accordance with the new defined rate as soon as the uncertainty of the reform terminate.

2) Implications on effectiveness: 193

the Board confirmed its view that part of the transition period will not be changed under IAS 39 and IFRS 9, hence both qualitative and quantitative retrospective assessment would continue to be provided.

For the reform period, the Board decided to propose a specific change for the quantitative assessment test under IAS 39, prescribing that for the limited period of the reform the relationships that fail the effectiveness test would not be discontinued (if the reason is the benchmark reform). However, any ineffective part of the report will be calculated and accounted in accordance with IAS 39 and IFRS 9.

The 80-125% threshold defined under IAS 39 would not determine the discontinuation of the relationship, but the test must be provided on a quantitative way and the differences between the hedged item and the hedging instrument are reported in the P&L.

3) Group of items: 194

IAS 39 and IFRS 9 require "*proportionality test*" for group hedges, the hedged risk of a single item is expected to be approximately similar to the overall group risk and the use of hypothetical derivative may help to track the variation of the single item compared to the whole portfolio.

The IASB pointed out that during the reform of the benchmark the items may be impacted differently, so the proportionality test may not be passed for the entire portfolio combined.

If items within the same group share different risks, an entity must define subgroups based on the benchmark and the proportionality test must be applied in different periods for each group of items.

Entities will incur additional costs to measure each subgroup separately, but the costs will not outweigh the discontinuation risk.

4) Separately identifiable risk components and effective date: 195

In Step 1, an entity may identify as hedged risk a certain benchmark that may not meet the condition of an 'identifiable risk component'.

¹⁹³ IASB, (2020), Interest Rate Benchmark Reform – Phase 2, par. BC53.

¹⁹⁴ IASB, (2020) Interest Rate Benchmark Reform – Phase 2, par. BC71.

¹⁹⁵ IASB, (2020), Interest Rate Benchmark Reform – Phase 2, par. BC80-98.

The Board decided in the phase 2 to give a response on the termination of the proposed amendments for the identification of the risk component, since the objective of the amendments was to provide only 'temporary exceptions'.

In view of the interest rate liquidity issues, it was considered to allow entities to recognize the reference rate as a risk component when it is expected that, within 24 months of designation, the rate will be a separate component. At this early stage, any recognition or liquidity problems will be tolerated by the regulator. If in the future the company no longer has this expectation, the relationship will have to be terminated. Some institutions already pointed out that, given the development of reforms in some jurisdictions and the wide range of rates included, a 24-month period is not sufficient to provide liquidity at the new rates. The Board didn't propose any date for the implementation of Phase 2 of the reform, as it is associated with the benchmark transition.

3.3 Conclusion and further developments

Since 1990, reference interest rates assumed a dominant position, for their primary role of providing conventional financing rates.

Despite the scandals and manipulations, the reference rates are deep-rooted in financial institutions and the launch of a reform required a regulatory coordination effort to overcome the operational issues of the replacement.

The economic crisis re-emerged the unresolved debate on information asymmetry in a financial market environment.

The use of benchmarks, generated and then adopted by market participants, is a risky delegation that can generate "*moral hazard*" 1960n the part of market participants. The reform aims to reduce the interconnection between these two systems.

Because of the enormous value of these benchmarks and their presence on daily transactions, the replacement of interest rates in the short term is a challenge.

The potential implications from an accounting perspective are mainly two (one internal and one external):

- 1. the ability of the internal model to replace reference rates in product offering, risk management and accounting;
- 2. the ability of the reference regulatory authorities to provide sufficiently liquid rates to be sustainable in the short term.

With regard to mitigating the transition, the IASB provided a wide range of amendments for existing hedge accounting transactions, but these are limited in time and space.

Frunza M., (2013), Market manipulation and moral hazard: Can the Libor be fixed?, Working Paper.

In time as they only cover the transition period, in space as the rules of IAS 39 and IFRS 9 have been extended, but the general standard rules (also for the transition period) are still valid.

In the second phase of the reform, the exceptions have not yet outlined their application effects, but the IASB already pointed out that the misalignment between different jurisdictions is the worst-case scenario.

This could be costly and potentially detrimental to hedge accounting since most of the transitions would not have a clear and identified risk component within 24 months, as the rate has not yet been reformed.

If, on the other hand, the timeline is respected and the parallel work of the sub-groups is carried out with sufficient cohesion, the set of exceptions proposed could guarantee protection for the whole period, so the impact can be cushioned.

To be ready to meet the challenges, entities need to identify internal exposure to the IBORs and the potential impact on financial reporting.

Each entity should have a clear roadmap of transactions and make progress to develop a new hedge accounting system able to solve the issues of the pre-existing impacted relationship and to enter into new relationships with the reformed rates.

The next chapter will analyse the effects of the reform on a panel of 18 reference banks, considering the effective interconnection between benchmark rates and hedging relationships.

4. Empirical evidence on the effect of IBORs reform on Hedge Accounting

4.1 Objective of the Empirical Analysis and Methodological procedures

The objective of the following analysis is to examine the banks' exposure to benchmark rates and to verify the effect of the IASB's exceptions to the existing hedging relationships in 2019 Financial Statements.

For this purpose, it was considered a panel of 18 European banks under the group of "*Systematically Domestic Important Banks (D-SIBs*)" classified according to the amount of their assets and their global size, leading them to be widely exposed to a reform of IBORs rates.

There is extensive literature demonstrating that financial institutions hedge primarily to reduce interest rate exposure, but there are still no studies on the relationship between IBORs rate and hedge accounting.

However, some research mentioned in this work can be stretched to be used as a reference point for the analysis.

Kirti (2017)¹⁹⁷ explained the use of interest rate swap to increase the portion of floating rates in the banking system, while Rampini et al. (2018) highlighted the correlation between risk management and hedging transactions, by demonstrating that institutions with higher net worth, hedge more.

Akhigbe et al. (2018)¹⁹⁸ demonstrated, by selecting a sample of banks, the distribution of hedging derivatives by risk factor, emphasising the interest rate hedging role corresponding to 91% of the total.

This study refers also to the findings of Purnanandam (2007) 199 for the use of non-trading derivatives to cover interest rates that account for the 90% of the entire set of hedge relationships.

Another point of reference are also the data provided by Bank for International Settlement (BIS) which clearly showed that interest rate risk had the highest levels of hedging.

From this condition and from the theory that hedge accounting is connected to risk management strategy, an analysis was made to demonstrate that in the sample considered, the interest rate risk (IRR) is the main risk hedged.

This starting point is fundamental, since benchmark rates are expected to be a subset of the entire amount of IRR and the estimation of the interest rate hedge, will then help to understand the relationships impacted by the IBORs reform.

Compared to the available data, the percentage of hedging instruments adopted by banks that is directly impacted by the IBORs reform will be calculated, using the information sources published in the 2019 Annual Reports of the banks.

The FSB estimated that LIBOR rate is the most widely adopted by financial institutions, while a NY FED (2018) report (PWC, IBOR Transition the reference rate reform) displayed that 72% of OTC derivatives

199 Purnanandam A., (2007), Interest rate derivatives at commercial banks an empirical investigation, journal of Monetary Economics, Tab.1.

¹⁹⁷ Kirti D., (2017). Why do bank-dependent firms bear interest-rate risk? IMF Working Paper.

¹⁹⁸Akhigbe S., Makar L., Wang A.M. Whyte (2018), Interest rate derivatives use in banking: Market pricing implications of cash flow hedges, *Journal of Banking and Finance*.

transactions had a LIBOR rate as notional, while 71% of loans were indexed to LIBOR. The analysis was also provided by Hoffmann et al. (2018)₂₀₀ by measuring the hedge activities of a sample of European banks.

In examining these amounts, it was observed whether the exposition to the two relevant reference rates EURIBOR and LIBOR, as regards hedging transactions. These transactions are used in particular to reduce the maturity mismatch.

The assumption is that the data in the FSB and NY FED reports may coincide with the values found in the hedging transactions, given the interconnection between customer exposures and hedging instruments²⁰¹.

Finally, after understanding the amount and importance of the reference rates and estimating their impact on hedging relationships, the results of the exceptions provided by the IASB on smoothing the impact in the financial statement 2019, will be evaluated. However, the reform is still ongoing, thus other than analysing the quantitative impact of the reform, other elements will be provided on the company expectations for the following years, based on the information in the notes of the financial statement.

The following studies will be illustrated:

(i) analysis of the gross amount of interest rate hedging instruments;
(ii) Hedging exposures affected by the IBORs reform;
(iii) the relevance of the EURIBOR and LIBOR rates;
(IV) the effects of the amendments provided by the IASB.

4.2 Sample Description and Data Gathering

The sample of banks for the study includes 18 financial institutions, part of the "Systematically Domestic Important Banks (D-SIBs)" group.

The sample of banks considered is 18, of which 16 are also part of the "*Global Significant Important Banks* (*G-SIBS*)" group, while 2 banks²⁰² are only part of the D-SIBs category.

The sample of 18 financial institutions has been chosen based on the information provided in the notes of the Financial Statements, since not all the banks delivered extensive documentation about the IBORs reform, making the comparison and the analysis difficult to estimate.

The group of banks must have higher capital requirements, a higher degree of control and enhanced transparency of operations. These conditions are established by the Basel regulatory authority, which defines minimum capital requirements and verifies their stability, in response to the recent events of the financial crisis.

²⁰⁰ Hoffmann P, Langfield S, Pierobon F, Vuillemey G (2018), Who bears interest rate risk? *Working paper*, European Central Bank, Frankfurt, Germany. Tab.3. 201 The derivatives used as hedges are mainly swaps that replicate the hedged risk. The risk hedged in banks is usually a portfolio of instruments with benchmark rates of reference.

²⁰² From the last classification of G-SIBs institutions, Intesa San Paolo and Monte Dei Paschi di Siena are not included in the list. They are only included in the D-SIBs category.

The aim is to make the whole financial system more stable, with *a priori* superior control action that can prevent financial distress scenarios.

The additional capital buffers required from banks are calibrated according to a score and weighted to certain levels; when each level is exceeded, there will be a higher additional capital buffer. 203

The analysis of the D-SIB banks included in the sample comes from the latest 2019 financial statements, so as to facilitate the understanding of the data and their comparison.

The year 2019 is the only period available in which banks produced documentation on their exposure to reference rates, since the IASB reform become applicable at that time.

The following parameters were therefore taken into account when picking the selected banks:

- 1. adoption of IASB accounting standards;
- 2. indication of hedged items and hedging instruments in the notes to the financial statements;
- 3. detailed information on the IBORs reform.

The Banks selected differ in the value of assets under management and their business model, some operate in a purely European scenario, while others operate in a more international context.

However, in this specific research their different market exposure can only be relevant in the analysis of the adopted reference rates (III), whereas for the other proposed studies it is not a significant parameter.

List of Panels	Country204	Tot Assets 2019205
BNP PARIBAS	France	2,164,713
CREDIT AGRCIOLE	France	2,010,966
SOCIETE GENERAL	France	1,356,303
DEUTESCHE BANK	Germany	1,297,674
COMMERZBANK	Germany	463,636
ABN AMRO	Netherland	375,054
UNICREDIT GROUP	Italy	855,647
INTESA SAN PAOLO	Italy	816,102
MPS	Italy	132,196
ING BANK	Netherland	891,744
NORDEA BANK	Finland	554,848
SANTANDER	Spain	1,508,167
BBVA	Spain	102,688

²⁰³ The measurement mechanism adopted is called: "*Indicator-based measurement approach*", which evaluates the impact of a possible downturn scenario of a financial institution on the basis of 5 parameters, each of which weighs 20% of the total: size, interconnectedness, service provided global activity, complexity. ²⁰⁴ The Country refers to the international domiciliation of the banks, based on regulator classification.

²⁰⁵ Tot. Assets refer to the value of assets available from the balance sheet data. All the information is taken from the balance sheet sources.

HSBC	Uk	2,715,152
BARCLAYS	Uk	1,140,229
STANDARD CHARTERED	Uk	
BANK		720,398
LLYODS BANKING GROUP	Uk	833,893
ROYAL BANK OF	Uk	
SCOTLAND		723,039
AVERAGE		1,036,802
ТОТ		18,662,449

Table 4.1: self-elaboration (data in millions).

The table below shows the sample distribution across countries:



Graph 4.1: self-elaboration, country distribution of the 18 banks of the sample.

List of Panels	Hedge Accounting principle206
BNP PARIBAS	IAS39
CREDIT AGRCIOLE	IAS39
SOCIETE GENERAL	IAS39
DEUTESCHE BANK	IAS 39
Commerzbank	IAS39
ABN AMRO	IAS39
UNICREDIT GROUP	IAS39
INTESA SAN PAOLO	IAS39
MPS	IAS39
ING BANK	IAS39
NORDEA BANK	IAS39
SANTANDER	IAS39
BBVA	IAS39
HSBC	IAS39
BARCLAYS	IAS39
STANDARDCHARTERED	IAS 39
BANK	
LLYODS BANKING GROUP	IAS39
ROYAL BANK OF	IAS39
SCOTLAND	
TOT IAS 39 ADOPTERS	100%

Table 4.2: self-elaboration.

All banks, starting from January 1, 2018, refer to IFRS 9 for the classification of financial instruments and the impairment test, while to IAS 39 for the hedge accounting (adopting the "*carve out*" option₂₀₇).

As the reader will note, there is a substantial difference in assets under administration, but the accounting standards that entities apply, as well as the documentation, are highly comparable.

In this sense, the analysis does not aim to identify values of an absolute nature, which could be affected by the assets under management, but rather to measure, in percentual terms, the degree of hedge transactions affected by the reform compared to their total, avoiding the asset misalignment.

Higher values in absolute terms will therefore be expected for entities with larger assets and lower values for smaller banks. The use of the percentage calculation made the analysis more comparable, since the reporting standards of the entities are not completely comparable.

The sources used for the research are the most authoritative, for the accuracy of the data and information:

- 1. the financial statements for 2019;
- 2. additional risk management and disclosure documents for regulators.

The examination may be influenced by some disagreements in terms of reporting. The word "not available" $(N/A)_{208}$ indicates cases where data has not been reported or the degree of accuracy was too limited.

Under certain circumstances the values were obtained by calculation or rounding, as there was no complete availability of the data in the balance sheet. For banks in the United Kingdom, exchange rates were not taken into account, while for Nordea Bank values in Euro were available.

The granularity of disclosures depends more on internal decisions of transparency towards stakeholders than on the country of reference.

As discussed during chapter 2, the level of disclosure provided by financial institutions depend on many factors, thus a perfect matching of data is not straightforward.

According to Scannella and Polizzi (2019) derivatives disclosure is essential for bank's stakeholders to evaluate risk exposures, thus the entities shall provide the highest possible level of information. Their work confirmed also the positive evidences from Ahmed, Kilic and al. (2006)²⁰⁹ that demonstrated that the introduction of regulation increased derivatives transparency.

4.3 Data Analysis

4.3.1 (i) analysis of the gross amount of interest rate hedging instruments

There is extensive literature which proved that financial institutions hedge mainly interest rate risk. The study proposed by Rampini et al. (2018)₂₁₀ estimated the interest rate hedge, known as "Gross exposure", using the formula:

Gross notional of interest rate derivatives for hedgingit

Gross IR Hedging=

Assetsit

This formula only includes derivatives for hedging purposes, and not trading derivatives.

The gross hedging measure as also defined by Rampini et al. (2018) is an imperfect result, since depends on numerous factors and the level of disclosure proposed.

210 Rampini A, Viswanathan S, Vuillemey G (2017) Risk management in financial institutions, Working paper, Duke University, Durham. pp.9 (1).

 $_{208}$ There are some data not mandatory that have not been disclosed by entities, thus (N/A) refers to situation in which the information cannot be provided by official sources.

²⁰⁹ Ahmed, A. S., Kilic, E., Lobo, G. J. (2006). Does recognition versus disclosure matter? Evidence from value-relevance of bank's recognized and disclosed derivate financial instruments, *The Accounting Review*, 81(3), 567–588.

Akhigbe et al. (2018) collected data from 2001 to 2012 and provided relevance on the increase of derivatives usage for non-trading activities. In their findings the 91% of non-trading derivatives (hence for hedging) was used to cover interest rate fluctuations. They also provided results for the remaining portion of hedging derivatives (foreign exchange, commodity and equity).

Another relevant contribution has been given by Purnanandam (2007) that provided a value of 90% of hedging derivatives used for IRR.

Under Akhigbe et al. (2018)211 the following formula was used to determine the risk hedged by derivatives:

N. hedging Int Rate Contracts

Contracts to Hedge IRR=

All hedging contracts

In order to understand the potential impact of the benchmark interest rate reform, it is important to first comprehend how significant the interest rate management activity can be in relation to the total amount of hedging transactions by banks.

In analysing the portion of hedging derivatives used for IRR, the BIS found values of 94%, with the remaining part divided between hedges for exchange rate fluctuations and other residual items (foreign currency, equity, inflation, gold, commodities).

To confirm the results previously found in the literature and sector research, the derivatives used to hedge interest rates should account for the majority. The following formula was used to estimate the benchmark:

Interest rates hedging instruments

Hedging instruments for IRR (%) = _____

Tot. hedging instruments

²¹¹ Akhigbe S., Makar L., Wang A.M. Whyte (2018), Interest rate derivatives use in banking: Market pricing implications of cash flow hedges, *Journal of Banking and Finance*.

The table summarises the results obtained:

List of Panels	Interest rate instruments
BNP PARIBAS	86%
CREDIT AGRCIOLE	96%
SOCIETE GENERAL	99%
DEUTESCHE BANK	72%
COMMERZBANK	86%
ABN AMRO	100%
UNICREDIT GROUP	96%
INTESA SAN PAOLO	97%
MPS	99%
ING BANK	88%
NORDEA BANK	81%
SANTANDER	91%
BBVA	71%
HSBC	89%
BARCLAYS	89%
STANDARD CHARTERED BANK	80%
LLYODS BANKING GROUP	98%
ROYAL BANK OF SCOTLAND	95%
AVERAGE	90%

Table 4.3: self-elaboration.



Graph 4.2: self-elaboration, percentage of hedging interest rates compared to the total.

From the data of the panel of banks, it could be seen that banks adopt hedge accounting mainly to hedge interest rate fluctuations and the 90% of the entire nominal amount of the hedging risk is hedged by interest rate instruments. (interest rate swaps, options, futures and forwards).

The data provided in the notes to the financial statements are not perfectly homogeneous, so the use of percentage values made it possible to avoid differences in terms of absolute values, deriving mainly from the volume of assets under administration.

The sample of banks showed results in line with Akhigbe et al. (2018), indeed the 90% of hedging derivatives is used to manage interest rate risk.

The data provided by Akhigbe et al. (2018) from 245 bank holding companies (BHC) and from 2001 to 2012 cover a more extensive number of observations, a wider sample and offer the sensitivity of the relevance of the hedging instruments for interest rate risks (IRR).

The data are in line with BIS research, and it appears that IRR is the most widely risk covered, which seek to control interest rate fluctuations.

There are some institutions that hedge almost exclusively interest rates, while there are others that are protecting themselves against other potential downturns.

Most of the values found are in line with BIS values, while Deutesche Bank reported values of a 72% of their Hedging activities to hedge IRR.

BBVA and HSBC amounts are also under the value computed by BIS, while Societè General and ABN AMRO reported values of nearly 100%.

4.3.2 (ii) Hedging relationships affected by the IBORs reform

During the discussion it was pointed out that by convention many contracts issued by a banking institution are based on IBORs, for instance a loan or mortgage issued at a LIBOR+ spread rate.

The analysis is based on two reference assumptions:

- the IBOR rates index many of the commercial activities with customers, as indicated by the FSB report and the (NY FED; 2016 data);
- 2. banks adopt hedging strategies to mitigate the IRR risk, as demonstrated in the analysis (i).

The survey examines the hedge transactions exposed to IBORs rate, compared to the total of the hedge transactions. In this case both the percentage and the absolute number have been provided, since almost all the banks from the sample provided both results.

As stated initially, even if entities follow the same regulatory rules, there are differences in assets under management, so they would deliver non-homogeneous information.

The value was computed by applying the following formula:

Hedge Relationships impacted by IBORs

IBORs Impact (%) =

Hedge Relationships

List of Panels	Hedge Relationships	Hedge Relationships	%
	impacted by IBORs		
BNP PARIBAS	799,826	925,747	86%
CREDIT			
AGRCIOLE	975,000	988,903	99%
SOCIETE			
GENERAL	N/A	N/A	N/A
DEUTESCHE			
BANK	35,820	118,125	30%
COMMERZBANK	N/A	N/A	N/A
ABN AMRCO	89,600	128,500	70%
UNICREDIT			
GROUP	45,196	92,319	49%
INTESA SAN			
PAOLO	69,589	173,973	40%
MPS	43,647	73,003	60%

ING BANK	50,915	146,238	35%
NORDEA BANK	121,379	210,158	58%
SANTANDER	135,819	362,264	37%
BBVA	N/A	N/A	N/A
HSBC	123,667	177,006	70%
BARCLAYS	79,493	181,375	44%
STANDARD			
CHARTERED			
BANK	71,050	97,449	73%
LLYODS BANKING			
GROUP	194,466	619,812	31%
ROYAL BANK OF			
SCOTLAND (RBS)	102,500	223,096	46%
AVERAGE	195,864	301,198	55%
SUM	2,937,967	4,517,968	

Table 4.4: self-elaboration (data in millions).



Graph 4.3: self-elaboration, IBORs reform impact on existing hedge relationships.

The table shows that contracts indexed at a reference rate represent on average 55% of all derivative contracts used for hedging. This amount shows the potential impact of the reform of reference rates on hedge accounting relationships.

The total value of the notional hedge transactions exceeds 4.5 trillion, while the total value of the notional contracts indexed to the IBORs rate is approximately 2.9 trillion. This number is highly dependent on the assets under management, because as it was pointed out during the first chapter banks hedge only a portion of their exposure, due to the operational cost and the availability of maintaining a portion of risk. (Hoffman, 2018).212

The complexity of this reform required the regulator to take immediate measures to facilitate the transition period, otherwise banks would have had to bear considerable operational costs.

Even if not expressly reported, following the reform process and analysing the notes, it can be seen that some entities are already validating some alternative benchmarks, to comply with the degree of uncertainty that will be determined by IBORs replacement, otherwise the impact of the benchmark rates compared to the total of the hedge transaction might be even higher.

4.3.3 (iii) The relevance of the EURIBOR and LIBOR rates

After having provided the relevance of the reform for hedge transaction, the aim of this research is to demonstrate the systemic importance of the two major rates: EURIBOR and LIBOR.

The report published by the FSB showed that the exposure to the EURIBOR and LIBOR reference rates represents 95% of all derivative contracts currently on the financial market.

This value was also confirmed by the NY FED that by estimating the value of the LIBOR USA data provided useful hints on the benchmark composition of contracts worldwide.

According to the results produced by FSB 40% of the exposures had a EURIBOR rate, while LIBOR rates covered about 55% of the total. (FSB, 2014).

In order to verify the above conditions, the breakdown of the hedge transactions with respect to the benchmark was analysed.

The data entered refer to the information produced by the entity in their notes, but not all the banks from the sample decided to make available this amount.

The exposure to interest rates also depends on the country in which the company operates, as stated in previous discussions, the hedging strategy is strongly linked to the company's business model and risk management strategy.

Nordea Bank offers an example, the bank's business model is concentrated almost exclusively in Northern Europe.

Referring to the information proposed in Nordea's report, the following data have been provided:

Total nominal amount
7,972
18,299
12,788
54,831
16,098
1,146
111,134

Table 4.5: Nordea Bank Financial Report 2019 page. 251(data in millions '000) .213

Nordea Bank has a high level of exposure to rates such as (CIBOR₂₁₄, STIBOR₂₁₅ and NIBOR₂₁₆) which refer to benchmarks calculated by the Danish, Swedish and Norwegian central banks. Banks operating globally will be less affected by the business model in product indexing.

The data, once again, are affected by the model adopted by each bank in presenting the information and in this case may also depend on the operations in the various countries.

LIST OF PANELS	GBP LIBOR	USD LIBOR	EURO RATES	JPY LIBOR	AUD LIBO	I CHF LIBO	OTHERS	CIBOR	STIBOR	NIBOR	LIBOR	SGD SOR	SONIA	тот
BNP PARIBAS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
CREDIT AGRCIOLE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
SOCIETE GENERAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
DEUTESCHE BANK	1.437	31.992	-	1.189	-	1.202	-	-	-	-	-	-	-	35.820
Commerzbank	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
ABN AMRO	900	8.300	89.600	-	-	700	0	-	-	-	-	-	-	99.500
UNICREDIT GROUP	5.364	28.725	288	-	-	-	5.364	-	-	-	-	-	-	39.741
INTESA SAN PAOLO	-	10.492	59.019	-	-	-	-	-	-	-	622	-	-	70.133
MPS	-	524	43.080	-	-	-	-	-	-	-	-	-	-	43.604
ING BANK	2.184	45.496	-	2.922	-	313	-	-	-	-	-	-	-	50.915
NORDEA BANK	-	-	56.964	-	-	-	22	9.122	17.810	12.767	24.694	-	-	121.379
SANTANDER	92.706	37.652	-	-	-	-	5.461	-	-	-	-	-	-	135.819
BBVA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
HSBC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
BARCLAYS	14.733	57.941	3.009	1.428	1.183	0	1.199	-	-	-	-	-	-	79.493
STANDARD CHARTERED BANK	4.662	63.695	-	1.998	-	-	-	-	-	-	-	695	-	71.050
LLYODS BANKING GROUP	186.011	-	-	-	-	-	-	-	-	-	-	-	-	186.011
ROYAL BANK OF SCOTLAND	34.700	-	16.100	-	-	-	-	-	-	-	51.600	-	100	102.500
тот	342.697	284.817	268.060	7.537	1.183	2.215	12.046	9.122	17.810	12.767	76.916	695	100	1.035.965
%	33%	27%	26%	1%	0%	0%	1%	1%	2%	1%	7%	0%	0%	100%

Table 4.6: self-elaboration (data in millions).

²¹³ Nordea Bank Financial Report 2019 page. 251Data provided in Euro.

²¹⁴ Denmark Short Term Interest Rate

²¹⁵ Sweden Short Term Interest Rate

²¹⁶ Norwegian Interbank Offered Rate

In order to determine the systemic importance of EURIBOR and LIBOR, the data reported in the sample have been divided into three categories:

- 1. EURIBOR rates (including all rates indexed to published benchmark rates in the Euro area);217
- 2. LIBOR rates, including all rates indexed by a LIBOR rate;218
- 3. OTHER, represent rates not indexed to the two reference rates described above.219



Graph 4.4: self-elaborated, relationships indexed at EURIBOR and LIBOR.

The results obtained show a majority presence of hedging relationships whose underlying is a LIBOR rate 69% of the total, while 26% of the relationships are indexed to a EURIBOR rate. The remaining rates include only 5% of the total.

The data collected represent a sub-sample of the panel, since not all the entities provided disclosure regarding the benchmarks in which the hedging relationships are underwritten. Precisely the number of the entities from the sample that provided these values are 12 over 18.

The data analysed by the sample partially confirm the evidences of the FSB report, which estimated a higher LIBOR presence than the others, but with lower values.

However, the sample used in the following study is limited, so there may be some deviations from the values provided by the FSB. Moreover, FSB on the report considered the notional of the OTC derivatives and not only the instruments adopted for hedging purposes.

The values provided by the NY FED and used by PWC (2018) in a recent analysis estimated a presence of LIBOR at about 72% of commercial transactions, in line with the data provided in this study. 220

²¹⁷ Euro Rate classification include all the rates in the Area Euro provided by banks.

²¹⁸ LIBOR value is derived from (GBP LIBOR, USD LIBOR, JPY LIBOR, AUD LIBOR, CHF LIBOR, LIBOR).

²¹⁹ OTHERS involve all the rates not included under EURIBOR RATES and LIBOR.

²²⁰ PWC, (2018), IBOR Transition. Data source NY FED (2018).

The factors that may have implied a different distribution of the reference rates are related to the number of observations considered and the period in which this evidence was reported. (The FSB report refers to 2014). To summarize the results obtained with the study it can be said that the reform of the benchmark will be highly dependent on the timing and decisions regarding the EURIBOR and LIBOR rates. The uncertainty of the process is identified as a source of risk for almost all entities, as they operate globally, and each jurisdiction adopted different timing for the IBORs reform.

In Europe, for example, the regulator decided to continue to publish EURIBOR rate and to add fallback clauses, as the main use of this benchmark is for commercial activity.

All entities are aware of these potential impacts, in particular companies highly exposed to the LIBOR rates are considering how to replace their hedging relationships.

Banks expect that the remodulation of hedge relationships will be particularly difficult when the benchmark reform is completed, since the banking system is too dependent on the benchmark rate and the concept of the *"coordination"* problem in moving from one rate to another may generate some issues.

4.3.4 (IV) The Effect of the amendments provided by the IASB

Following the previous analyses and the results achieved, it was observed whether the exceptions provided by the IASB made it possible to mitigate the quantitative effects in the financial statements.

The results produced in the previous paragraphs and the studies mentioned above confirmed a very high notional impact on hedge relationships. However, the regulator with the introduction of the amendments to the 2019 Annual Report tried to prevent impacts on the income statement from the interest rate reform.

To assess this condition, it will be first briefly referring to the hedging rules of IFRS 9 and IAS 39, which have been temporarily amended by the regulator, and then it will be explain the economic impact, following these exceptions.

The Board's proposals focused on four key aspects:

1)The highly probable requirements:

according to IAS 39 and IFRS 9 a forecast transaction designated as a hedged item must be highly probable in the future. If expectations about IBOR rates remain uncertain, the conditions for defining a highly probable transaction are no longer met.

The regulator decided, for the transition period, to propose exceptions to these valuations (for reference rates only).

2) Prospective valuation:

with the interest rate reform, the prospective assessment of the relationship between the hedged item and the hedging instrument may not be maintained due to the uncertainty of future cash flows.

The regulator proposed to use the initial reference rate to calibrate the future perspective of the relationship.

3) IAS 39 retrospective measurement:

according to IAS 39, the retrospective effectiveness of the relationship must be calculated on a quantitative basis, so the relationship between the hedged item and the hedging instrument must be maintained within a range of 80-125%.

If the relationship is outside the range, it must be discontinued, and the ineffectiveness portion must be translated into P&L.

However, for the transition period, the regulator determined that the effectiveness threshold will not be a reason to discontinue relationships affected by the IBORs reform.

4) Separately identifiable risk component:

the risk component of a given relationship must be separately identifiable in order to qualify as a hedging relationship.

In order to assess the effect of "amendments", it was therefore considered a qualitative parameter:

"The description of the impact of the IBORs reform in the financial statements described in the notes".

Each entity in the required disclosures provided information on the effect of the IBORs reform on the financial statement and referred to the IASB mitigation phase.

Since this parameter offer only a static view it was also qualitatively provided the degree of risk perceived by each institution with regards to the IBORs reform.

In view of the mandatory nature of the information to be provided in the "*accounting policies*" section, it was investigated whether the IBORs reform is described in the appropriate risk section.

For risk management, the Basel committee in its directives on risk management stressed that:

"Within the risk frameworks defined by the Board of Directors, the Management of the Bank has established risk management policies designed to ensure that risks are identified, appropriately measured and controlled as well as monitored and reported."221

Meanwhile the degree of information in the balance sheet is influenced by many factors, the fact that entities produced additional documentation has been taken into account.

The parameters of the analysis were:

- 1. economic impact of the IBORs reform;
- 2. IBORs presented only as "accounting policy";
- 3. IBORs reform presented in the portion dedicated to risk management;
- 4. supporting documentation of IBORs reform.

221 BIS, (2018), Annual Report 2018/2019, pp.152.

The table provides the following findings:

List of Panels	Economic Impact	IBORs included in	IBORs only	Supporting
	2019 222	the risk section	included in the	documents224
			accounting notes 223	
BNP PARIBAS	-		Accounting policy	Provided
CREDIT	-		Accounting policy	Provided
AGRCIOLE				
SOCIETE	-		Accounting policy	Provided
GENERAL				
DEUTESCHE	-	Risk management		Provided
BANK				
ABN AMRO	-		Accounting policy	Provided
COMMERZBANK	-		Accounting policy	Provided
UNICREDIT	-		Accounting policy	Provided
GROUP				
INTESASAN	-	Risk management		Not provided
PAOLO				
MPS	-	Risk management		Not provided
ING BANK	-	Risk management		Provided
NORDEA BANK	-		Accounting policy	Provided
SANTANDER	-	Risk management		Provided
BBVA	-	Risk management		Provided
HSBC	-	Risk management		Provided
BARCLAYS	-	Risk management		Provided
STANDARD	-	Risk management		Provided
CHARTERED				
BANK				
LLYODS	-	Risk management		Provided
BANKING GROUP				
ROYAL BANK OF	-	Risk management		Provided
SCOTLAND				
ТОТ	-	11	7	89%

Table 4.7: self-elaboration.

224 Documentation provided in the corporate web site.

²²² Under the note to the classification statement, in the accounting policy section all the entities disclosed if the benchmark reform had measurable effects on the balance sheet.

²²³ Data taken from the mandatory section of the Financial Report. Entities classified under this section do not report the benchmark reform in the specific risk section. The accounting information of the benchmark rate was mandatory in 2019.



Graph 4.5: self-elaboration, banks that mentioned IBORs in the risk section.

It appears that banks did not suffer any losses on their balance sheet in 2019, thus the amendments proposed by the regulator avoided an economic impact.

The fact that the Banks have not yet revealed any quantifiable effects on hedging relationships may lead to confirm that the results of the exceptions provided by the IASB completely worked.

However, some considerations need to be clarified to better understand the result:

- the first set of amendments entered into force in 2020, but already applied by some Banks from 2019 onwards, was provided to facilitate the transition process and proposed a limited time exception without specific mentions on the economic impact of the reform;
- the second phase of exceptions: "Interest Rate Benchmark Reform-Phase 2" refers to the process of replacing the underlying asset in the hedge reform and could generate impacts on the income statement. However, it is expected to be implemented in 2021;
- 3. the effect of the reform is still partial, even though the FSB and other regulatory authorities decided to propose alternative rates, the benchmark rates are still published in this period of uncertainty;
- 4. the quantitative effect of the reform will depend very much on the new reference rates and their degree of deviation from those already in use.

To complete the analysis, it was evidenced how the banks present the reform in their balance sheets and other official documents.

What was found is that 11 out of 18 entities consider the IBORs reform as a risk to be addressed in subsequent years for hedging relationships, since the IBORs reform is included in the section dedicated to risk management. The relevance of the subject is strongly perceived by most entities.

The reform project initiated by the Barclays Group is an example of this:

"Barclays established a LIBOR transition program at group level, supervised by the group's Chief Financial Officer and with governance to support business lines and functions. The Transition Program follows a risk management approach, based on recognized "change delivery" control standards, to guide strategic execution and identify, manage and resolve key risks and issues as they arise".225

These conditions are useful to understand the expectations of European Banks on the impact of the reform on their business model, customers and hedging relationships.

In analysing the supporting documentation what was discovered is that 16 out of 18 banks²²⁶ produced a separate official document in which they briefly explained the reform of benchmark rates and how it will change the hedging relationships and the related business model in the coming years.



Graph 4.6: self-elaboration, banks that provided supportive documentation.

However, the reasons why an entity decided to include quantitative information in the risk section depends on many factors. This parameter can only support the assessment of the different processes implemented by each bank and the approach developed for the transition but are not sufficient to estimate a quantitative impact or to predict future scenarios.

To concretely measure the impact of this reform on the financial statements, the reader shall consider the evolution of interest rates and how the IASB will try to mitigate the exposure.

But, considering the current data collected and looking at the proposals embedded in the phase 2 of the amendments, an impact on the income statement cannot be excluded.

The following hypothesis can be proposed for the coming years:

H: If interest rates would not bear enough liquidity in the short term, entities will be forced to account for a greater degree of ineffectiveness from the relationship.

This hypothesis is surrogated by the condition that benchmark rates are strongly rooted in the financial market and their immediate replacement, in terms of effectiveness and liquidity is challenging.

Conclusion

The objective of this analysis was to highlight the relationship between hedge accounting and IBOR rates, analysing the impact of the reform on the hedging relationships currently in use and evaluating the results of the exceptions proposed by the IASB.

The results obtained confirmed that financial institutions adopt hedging policies mainly to mitigate interest rate fluctuations, for almost the 90% of transactions.

Rampini et al. (2018), taking up the results proposed by the BIS, highlighted that interest rate hedging ratios account for 94% of the total hedge relationship by banks.

Akghibe et al. (2018) found a value of 91%, while Purnanandam (2007) found a value of 90%.

This study produced results close to 90%, broadly in line with previous evidence, meaning that the panel of banks in the vast majority of their hedging relationships, hedge IRR.

The IBORs reform will impact the 55% of the entire amount of relationships which in quantitative terms is equivalent to 2.9 trillion.

The study also confirmed that of the total exposures indexed to a benchmark rate, included in the reform process, a majority component is made up of EURIBOR and LIBOR rates (of all 5 jurisdictions). In this work, LIBOR rates represent 69%, while EURIBOR represent 26% of the entire amount of transactions with IBOR rates.

Finally, it was found that despite the amount of impact in terms of notional and the close relationship between hedge accounting and IBOR rates, the regulator prevented the reform of benchmark rates from having an impact on the income statement in 2019, with the adoption of the special reliefs documents.

Depending on institution's business model and its exposure to rates the impact will vary, Monte Dei Paschi di Siena (MPS) stated in the explanatory notes that it is almost exclusively exposed to EURIBOR, this will lead to a smoother transition to the new interest rates. (since EURIBOR will continue to be published in the following years).227

For Barclays and the other banks operating mainly with LIBOR rates, the transition period may be more difficult, since finding a substitute for LIBOR will take time and a series of agreements between the 5 jurisdictions involved.

The size and volume of the contracts is a factor that slowed down the benchmark reform process, LIBOR and EURIBOR are clear examples of rates widely used as proxies in the financial environment, which are experiencing difficulties in the reform process.

However, the results are still partial, the transition period will end in 2022 and the entities have included this possible factor in their future risk expectations.

Given the constant updating of the legislation, this research focused on current data and has not aimed to estimate future scenarios, which are still uncertain.

The IASB positively addressed the first challenge raised in existing contracts, but as banks are proceeding with alternative benchmarks, the regulator must be prepared to sustain a high level of uncertainty in the final stage of the process.

The reform of interest rates, due to the current language of IAS 39 and IFRS 9, and the profound use of these "conventional rates" in commercial dynamics, will replace the current market framework.

Entities need to take a step forward in a significant reform by reviewing their internal operations, customer relationships and hedging strategy.

The internal dynamics of hedge accounting changed as a result of the financial crisis for two reasons:

- 1. risk management function become more relevant;
- 2. derivatives market experienced changes and are subject to more stringent regulation.

With the transition to IFRS 9 the regulator tried to "maximise" the use of hedging relationships by eliminating many of the quantitative aspects of the previous IAS 39.

As seen so far, hedge accounting produced significant benefits for its users, and from simple accounting practice, the discipline is evolving into a dynamic activity, directly dependent on risk management policies and the market current needs.

This evolution benefited from the introduction of IFRS 9, which led operators to a new and more conscious use of hedging instruments.

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Summary

Hedge accounting is a technique widely used to mitigate potential unexpected future events, that offer exceptions to the typical recording of items, since two instruments, instead of being represented in different periods, can be recorded at the same time, to compensate earnings variability.

There are two main components to hedge accounting:

- 1. *hedged item*: an asset, liability or irrevocable commitment that exposes the entity to a certain specific risk, which for risk management purposes must be hedged;
- 2. *hedging instrument*: derivatives whose change in value offset wholly or partially changes in the related hedged item. The instrument designated as hedging instrument is expected to go in the opposite direction to the hedged item, to produce a zero effect on the income statement.

Hedge accounting can be classified according to three types of relationships:

1)Fair value hedge:

the aim of Fair Value Hedges is to reduce exposure to changes in the fair value of an asset or liability already recognised in the financial statements, with a change in the fair value of a hedging instrument. Gains and losses arising from the measurement of the hedging instrument must be recognised directly in the income statement and the revaluation of the hedged item, which will have an opposite effect, shall adjust the hedged risk and will be reported in the income statement in the same period.

2) Cash flow hedges:

Cash Flow Hedge relationships represent the variability of cash flows attributable to a particular risk with a recognised asset or liability or a highly probable commitment.

When entered in a cash flow hedge relationship, the lower of the two will be recorded in a cash flow hedge reserve:

- 1. gain or loss on the hedging instrument;
- 2. the change in the fair value of the hedged item.

The effective part of the relationship will be measured in the other comprehensive income (OCI), while the ineffective component will be measured in the P&L. The ineffectiveness portion arise when the change in the hedging instrument do not perfectly match the changes in the hedged item.

If the relationship is terminated or the expected cash flows affect the income statement, the amount accumulated in the OCI will be recognised in the income statement to avoid accounting mismatches.

3) hedges of net investments in foreign operations:

the objective of the transaction is to hedge the entity against foreign operations with a counterparty domiciled in another currency. The accounting requirements are similar to the cash flow hedge, gains or losses on the hedging instrument are reported in OCI, to the extent that the hedge is effective, while the ineffective portion is directly recorded in the profit and loss.

Hedge accounting is regulated by IFRS 9, which came into force in 2018 replacing the previous principle in force IAS 39.

IAS 39 has been defined "*rule based*", mechanical and limited in terms of possible applications. According to Walton (2004)₂₂₈ banks were very concerned on the first application of IAS 39, since the rules appeared too stringent.

IAS 39 has been objective of criticism after the financial crisis for not been able to fairly represent the future risks from potential counterparties shortfall. (Camfferman ,2015)229

Conversely the IASB on issuing IFRS 9 decided to give more emphasis to an entity's business model and not to consider the static application of accounting rules, but to adapt them to risk management strategies.

The transition from IAS 39 to IFRS 9 focused on 3 main aspects:

- 1. classification and measurement;
- 2. *impairment;*
- 3. hedge accounting.

IFRS 9 reduced the items available for asset classification by eliminating the residual categories:

- 1. held to maturity (HTM);
- 2. available for sale (AFS).

The choice of classification is based on a reported business model and the "solely payments of principal and interests test (SPPI)", which will evaluate the purpose and objective of the asset.



Table 1: SPPI test model (Credit Agricole Financial Report, 2019).

228 Walton P., (2004), IAS 39: Where different accounting models collide, *Accounting in Europe*, 1:1, 5-16. 229 Camfferman k., (2015), The Emergence of the 'Incurred-Loss' Model for Credit Losses in IAS 39, *Accounting in Europe*, 12:1, 1-35. Contractual cash flows are considered to be under SPPI test if the purpose of the instrument is to hold the asset to collect the principal and the interests. The decision to sell the asset is only an option, related to certain market circumstances and exercised not as a primary purpose.

The FVTPL category remained residual with respect to "Amortized Cost" and "FVOCI", consequently will only be accounted when the SPPI is not exceeded. As regards the recognition of financial liabilities, the regulations remained unchanged.

In 2018 the European Banking Authority (EBA)₂₃₀ reviewed the impact of the application of IFRS 9 by a group of 54 banks (from 20 Member States). The research presented evidences on the effect of the IFRS 9 on banking industry, by analysing a series of results both quantitative and qualitative.

According to the report, the impact of the reform, in terms of reclassification, is difficult to estimate due to lack of information and the decision to classify items according to the internal business model, however the quantitative outcome of the reclassification of instruments seems limited.

IAS 39 provided for the recognition of an impairment loss of the receivable only in the presence of a "*triggering event*".

The impairment model was modified by the regulator following the 2008 financial crisis, which highlighted all the application limits of the "incurred loss" accounting process.

According to IFRS 9 entities must recognise risks before they become evident, and this has a direct bearing on the capital reserve for impairment. The capital strength required by the new IFRS 9 derives from the need to prevent future triggering events that were not previously accounted.

The credit loss is the difference between all contractual cash flows and the expected cash flows from the counterparty (cash shortfall). Gebhardt (2016)₂₃₁ reported that impairment rules under IFRS and US GAAP₂₃₂ delay credit loss recognition and result in insufficient allowances "*too big too late*"₂₃₃.



Table 2: The significance of IFRS9 for Financial Stability and Supervisory Rules (Farkas, 2015).

²³⁰ EBA Report, (2018), First observations on the impact and implementation of IFRS 9 by EU Institutions.

²³¹ Gebhardt, G. (2016). Impairments of Greek government bonds under IAS 39 and IFRS 9:

²³² Generally Accepted Accounting Principles (GAAP) is the accounting standard officially adopted in the USA

²³³ too big too late is a term that refer to the incurred loss portion, taken from the quotation "too big to fail".

The most significant innovation of IFRS 9 (in terms of impact on banks' balance sheets) was the introduction of the expected credit loss (ECL) model, with the aim of preventing counterparty credit risk.

The new ECL mechanism divides the assets classified as amortized cost (AC) and fair value through other comprehensive income (FVOCI) into three stages, according to the degree of deterioration, and can be computed, depending on the severity of the expected cash shortfall, over a time horizon of 12 months or thought the entire life of the relationship.

The ECL is calculated according to the following formula:

$$PD X LGD X EAD$$

$$ECL= (1+r) t$$

The EBA in a report published in 2018 identified a CET1 ratio reduction of -51 basis points (bps), comparing the values as at 31.12.2017 with those related to the mandatory introduction of IFRS 9 on 01.01.2018. The reduction was attributed to the introduction of the new impairment model.

In terms of Hedge accounting the introduction IFRS 9 hasn't required the mandatory application of rules, since the changes only concerned "one to one" relationships.

The changes in the discipline of hedge accounting concerned a more conceptual rather than technical operational dynamic. The most significant interventions are related to:

- 1. aligning hedge accounting more closely with risk management;
- 2. establish a more "principle-based" approach by removing quantitative effectiveness test;
- 3. extending adoption to non-financial risk components.

Non-financial companies benefited the most from the reform, as the applicability of the hedge accounting rules has been extended to non-financial risks.

Allayannis and Weston (2001)²³⁴ by analysing a panel of 720 large U.S. companies showed that those who adopt hedging relationships have greater market advantages. The market premium for those companies that adopt an exchange rate hedging policy was 5%.

According to Bartram et al. (2009)235 non-financial companies mainly hedge foreign exchange risks, commodity risks and interest rate risks.

The reference literature highlighted the benefits of applying hedge accounting in non-financial companies, confirming that the accounting discipline, if correctly aligned with the business model of the entity, allows a reduction in the risk of financial distress.

The theory that hedge accounting tends to reduce the risk of financial distress has been also pointed out by Stulz (1996)₂₃₆.

Hedge effectiveness under IAS 39 was a quantitatively parameter with the objective of measuring the offsetting outcome between hedging instrument and hedged item.

IAS 39 defined a highly effective hedge in the 80-125% range, the upper and lower limits must be maintained throughout the life of the relationship, regardless of market movements.

This standard was considered very complex and expensive, due to the high effort to test the numerical effectiveness of the relationships.

According to Di Clemente (2015), the "*quantitative proxies*" applied to hedging rules created restrictions on the adoption of the relationships under IAS 39 (Di Clemente, 2015). 237

The IASB recommended to use statistical techniques to measure the level of ineffectiveness and suggested only recommended the adoption of "hypothetical derivative".

The hypothetical derivative replicates the best scenario of the relationship, between the hedged item and the hedging instrument, and when an entity recognises a distance between the best scenario and the current state of the relationship, it must assess the level of ineffectiveness.

IFRS 9 eliminated the 80-125% threshold, giving greater importance to certain qualitative factors that may be related to the risk management of entities, eliminating the mandatory quantitative verification.

Another relevant condition is the documentation that must report information regarding the hedged item, the hedging instrument and expectations on a "*forward looking*" basis of the relationship.

IFRS 9 regarding the discipline of hedge accounting is considered to be more aligned with the top down strategies of risk management.

This condition has been verified in the banking industry for two main reasons:

- 1. banks are the largest users of derivative instruments;
- 2. the process of interest rate reform (IBORs reform) required exceptions to the reference standards of hedge accounting.

Rampini et al. (2018)₂₃₈ provided a close correlation between risk management and hedge accounting, identifying the risks requires a thorough knowledge of the business model, the analysis of the adverse scenarios that could occur and the ability to use derivatives as hedging instrument.

The derivative used as a hedging instrument must replicate the trend of the hedged risk, therefore a correct risk management strategy implies an ability to use derivatives.

Banks are the major users of derivative instruments, moreover according to a report by the Bank of International Settlement (BIS), 97% of derivative instruments are held by banks, both for speculative and hedging purposes.

²³⁶ Stulz R., (1996), Rethinking risk management, Journal of Applied Corporate Finance, 8-24.

²³⁷Di Clemente A., Hedge Accounting and Risk Management: An Advanced Prospective Model for Testing Hedge Effectiveness, Economic Notes by Banca Monte Dei Paschi di Siena SPA, vol. 44, no. 1-2015: pp. 29–55.

²³⁸ Rampini A., Viswanathan S., Vuillemey, G., (2018), Risk management in financial institutions, Journal of Finace.

The reference literature covered the way in which banks manage hedge relationships, Rampini et al. (2018) using data from the BIS estimated the value of the gross hedge in financial institutions, while Akhigbe et al. (2018)₂₃₉ assessed that 91% of the hedges are for interest rate risk.

According to Purnanandam (2007)₂₄₀, banks use 90 % of non-speculative derivatives to hedge interest rate risk.

The values found by the different studies, although using different methodologies, are homogeneous and demonstrate how the banks use hedge accounting to mitigate interest rate fluctuations.

Gebhardt et al. (2002) replicated the business model of a global bank, which has the size to adequately cover internally its operations.



Table 3: Risk management of two client transactions within the universal bank (Gebhardt, Reichard, et al, European Accounting Review, 2002).

Banks are exposed to changes in interest rates, which is why they are referred to as "*maturity transformers*", they finance long-term loans with short-term deposits (Hoffmann et al., 2018).241

According to Drechsler et. al (2017)²⁴² a specific function of banks is maturity transformation, this function is important because it supplies firms with long-term credit and households with short-term, liquid deposits.

This business model, which produces most of the banks' revenues, generate an innate exposure to interest rates, which is offset through hedging strategies, mainly by Interest rate swaps (IRS).

In terms of risk management, banks have been involved in a series of reforms that have profoundly changed the dynamics of hedge accounting.

²³⁹Akhigbe S., Makar L., Wang A.M. Whyte (2018), Interest rate derivatives use in banking: Market pricing implications of cash flow hedges, *Journal of Banking and Finance*.

²⁴⁰ Purnanandam A., (2007), Interest rate derivatives at commercial banks an empirical investigation, journal of Monetary Economics.

²⁴¹ Hoffmann P., Langfield S., Pierobon F., Vuillemey G., (2018) Who bears interest rate risk? *Working paper*, European Central Bank, Frankfurt, Germany. 242Drechsler A., Savov, P. Schnab, (2017) Banking on Deposits: Maturity transformation without interest rate risk, *The Quarterly Journal of Economics*, Volume 132, Issue 4,1819–1876.

Given that interest rates are the most heavily hedged risks, the benchmark rates reform (IBORs reform)₂₄₃ will have a substantial impact on financial institutions.

Following the scandals related to the manipulation of reference rates and pressure from regulators, the Financial Stability Board (FSB) started a reform process in 2014 with the objective of changing reference rates (also defined benchmark rates), giving mandate to the various jurisdictions to form subgroups with the aim of proposing operational solutions.

The Financial Stability Board (FSB) published the report in 2014: "*Reforming major interest rate benchmarks*", which contains a set of recommendations to strengthen existing benchmarks and to develop new risk-free rates (RFRs).

So far, most of the benchmarks are anchored to a bank spread, which does not reflect the current low level of interest rates.

In 2014, in response to the continuous manipulations, and after some evidences of weakness of daily transactions, the FSB issued some preliminary recommendations:

- 1. strengthening IBOR and improving the process of monitoring and anchoring rates to market transactions;
- 2. identify alternative risk-free rates (RFRs) that will change the benchmark in market operations in the following period. 244

Benchmark rates are largely used by financial institutions (as well as being provided directly by them), for the definition of contracts, the pricing of derivatives, risk management and hedge accounting.

EURIBOR and LIBOR are the most widely used reference rates in commercial activities.

The FSB₂₄₅ in a 2014 report estimated that 95% of the benchmark rates are EURIBOR and LIBOR.

LIBOR, in particular, is the rate conventionally used globally for commercial activities and is published by 5 different jurisdictions.

In July 2017 the President of the Bank of England Sir. Chris Salmon said:

"The financial system depends on LIBOR".246

The financial system's strong interdependence with reference rates is creating difficulties in implementing the reform process, as strong coordination is needed to ensure liquidity and soundness at the new reference rates. The Euro Working Group identified the Euro Short Term Rate (ESTER)²⁴⁷ to become the new nearly risk-free rate in the Euro Area, while an ideal candidate has not yet been found for EURIBOR, since a bank credit spread is embedded in the calculation of the value.

In the UK, the Bank of England has taken a big step towards transition by developing the Sterling Overnight Interest Average (SONIA), which will completely replace LIBOR for GBP transactions from 2021 onwards.

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²⁴⁴ Financial Stability Board (2014), Reforming Major Interest Rate Benchmarks, pag.2.

²⁴⁵ Financial Stability Board, (2014), Reforming Major Interest Rate Benchmarks- Progress Report.

²⁴⁶ Salmon C, (2017) The Bank and Benchmark Reform, Bank of England, London.

²⁴⁷ The ECB published the ESTER for the first time in October 2019, the rate reflects the wholesale unsecured borrowing costs for euro area.

The IASB, in agreement with European regulators, considering the suggestions of the Euro Working Group and proposed a number of "amendments" to IAS 39 and IFRS 9.

The exceptions to the accounting standards have been issued with a double objective:

- 1. to maintain the current ratio and to avoid that a change in the reference rate could lead to the termination of the hedge relationships currently in place.
- 2. to make suggestions for hedging relationships following changes in interest rates.

The conditions set out in point (1) required prompt action by the IASB, which issued the standard: "*Reference Interest Rate Reform: Proposed Amendments to IFRS 9 and IAS 39*". The exceptions proposed by the regulator to the hedge accounting rules are:

1) The highly probable requirement:

according to IAS 39 and IFRS 9 a planned transaction designated as a hedged item must be highly probable in the future. If expectations about IBOR rates remain uncertain, the conditions for defining a highly probable transaction are no longer met.

The regulator decided, for the transition period, to propose exceptions to these valuations (for reference rates only).

2) Prospective valuation:

with the interest rate reform, the prospective effectiveness of the relationship may not be maintained due to the uncertainty of future cash flows.

The regulator proposed to use the initial reference rate to calibrate the future outlook of the agreement.

3) IAS 39: Retrospective effectiveness:

according to IAS 39, the retrospective effectiveness of the report must be calculated on a quantitative basis, so a range of 80-125% must be maintained.

If the relationship is outside the range, it should be discontinued, the ineffectiveness part should be translated into P&L.

However, for the transition period, the regulator determined that the effectiveness threshold will not be a reason to discontinue the reports affected by the IBOR reform.

4) Separately identifiable risk component:

the risk component of a given relationship must be separately identifiable in order to qualify as a hedging relationship.

As regards the second phase of the reform, the IASB has not yet implemented the proposed exceptions, but identified 1 January 2021 as the available date for the application of the rules contained in the document published in April 2020: "*Interest Rate Benchmark Reform - Phase 2*".248

The second phase of the reform defined the principles according to which institutions will have to replace the reference rates previously applied with the new ones.

In particular, the general rules of the IASB, such as the verification of the effectiveness of the relationship, a prospective approach and the possibility of determining the risk "separately identifiable and reliable".

In view of the interest rate liquidity problems, it was decided to allow entities to recognise the reference rate as a risk component when it is expected that, within 24 months of its designation, the rate will be a separately identifiable component. At this early stage, any recognition problems or liquidity problems are tolerated by the regulator. This period of exceptions has already been considered too limited by market participants.

The potential implications from an accounting perspective are mainly two (one internal and one external):

- 1. the ability of the internal model to replace reference rates in product offering, risk management and accounting;
- 2. the capacity of the regulatory authorities to provide sufficiently liquid rates to be sustainable in the short term.

To be ready to meet the challenges, entities need to identify internal exposure to the IBORs and the impacts on financial reporting. Each entity should have a clear roadmap of transactions and make progress to develop a new hedge accounting system able to solve the issues of the impact on pre-existing relationships and to enter into new agreements with the reformed rates.

Finally, was proposed an analysis of a sample of 18 banks in the "*Systematically Domestic Important Banks* (*D-SIBs*)" to identify the impact of the IBORs reform on existing relationships and the results of the exceptions proposed by the IASB.

The sample of banks represent uniformly the European banking system and the choice was made in accordance to the documentation proposed and the granularity of the information provided in the notes.

²⁴⁸ IASB, (2020), Interest Rate Benchmark Reform – Phase 2.



Graph 1: Self-elaboration, country distribution of the 18 banks of the sample.

The following parameters were taken into account on the bank's selection:

- 1. adoption of IASB accounting standards;
- 2. indication of hedged items and hedging instruments in the notes to the financial statements;
- 3. detailed information on the IBORs reform.

Rampini et al. (2018), taking up the results proposed by the BIS, showed that interest rate hedging account for 94% of banks' total hedging transactions.

Akghibe et al. (2018) reported 91%, while Purnanandam (2007) provided 90%.

From the data collected in the study, the values are close to 90%, broadly in line with previous evidence, which means that the panel of banks in the vast majority of their hedging relationships cover interest rate risk (IRR).



Graph 2: self-elaboration, percentage of hedging interest rates compared to the total.

Banks by convention issue loans to customers with benchmark rates and since the hedge relationship shall replicate the risk hedged, it could be expected that the current hedge transactions are broadly anchored to benchmark rates.

It was verified that the IBOR reform will have an average impact on 55% of the total amount of the existing hedge relationships, which in quantitative terms is equivalent to 2.9 trillion.



Graph 3: self-elaboration, IBORs reform impact on existing hedge relationships.

The report published by the FSB showed that the exposure to the EURIBOR and LIBOR reference rates represents 95% 249 of all derivative contracts currently on the financial market.

This value was also confirmed by the NY FED₂₅₀ that by estimating the value of the LIBOR USA data provided useful hints on the benchmark composition of contracts worldwide.

Using the reference panel, an attempt was made to derive the value of transactions embedded into the two reference rates.

The analysis confirmed that of the exposures indexed to a reference rate, included in the reform process, a major component is the EURIBOR and LIBOR rates. Hedging ratios at LIBOR represent 69%, while those at EURIBOR represent 26%. The remaining part is constituted by other rates for 5%.

The overall composition of the benchmark rates confirms the previous data from FSB and NY FED, the percentage distribution is different, due to the sample selected.

250 NY FED, (2018), Alternative Rates committee.



Graph 4: self-elaboration, relationships indexed at EURIBOR and LIBOR.

Finally, it was verified if the IASB was able to mitigate the effect of the IBORs reform on the financial statements with the exception proposed for hedge accounting.

It was found that, despite the magnitude of the impact and the close relationship between hedge accounting and IBOR rates, the regulator prevented the benchmark rate reform from having an impact on the income statement in 2019.

The effect on the 2019 financial statement was nil, but the transition process is still ongoing, so impacts could occur in the coming years.

It was therefore examined whether the banks in the sample consider the effect of these potential future impacts as a risk or whether the IBORs reform is treated only as an accounting policy.

What emerged was that 11 out of 18 banks included the IBORs reform in the risk section of the 2019 financial statements, while in the remaining banks the benchmark rate reform is only mentioned in the accounting policy section, as required in the disclosure section of the IASB reliefs document.



Graph 5: self-elaboration, banks that mentioned IBORs in the risk section.

The transaction at the new benchmark rates may have an impact in the coming years, so the entities have included this reform in their perceived risks for the next period, and 16 out of 18 banks have produced additional documentation to the financial statements, setting out the ongoing reform process and the group's strategies for mitigating the effects on internal operations and customer relations.



Graph 6: self-elaboration, banks that provided supportive documentation.

Based on the data collected, previous literature research and market participants considerations, the following hypothesis was made:

H: If interest rates would not bear enough liquidity in the short term, entities will be forced to account for a greater degree of ineffectiveness from the relationship.

The IASB addressed positively the first challenge raised in existing contracts, but as banks are proceeding with alternative benchmarks, the regulator must be prepared to sustain a high level of uncertainty in the next stages of the process.

Entities need to take a step forward in a significant reform by reviewing their internal operations, customer relationships and hedging strategy.

The internal dynamics of hedge accounting changed as a result of the financial crisis for two reasons:

- 1. risk management function become more relevant;
- 2. derivatives market experienced changes and are subject to more stringent regulation.

With the transition to IFRS 9 the regulator tried to "maximise" the use of hedging relationships by eliminating many of the quantitative aspects of the previous IAS 39.

As seen so far, hedge accounting produced significant benefits for its users, and from simple accounting practice, the discipline is evolving into a dynamic activity, directly dependent on risk management policies and the market current needs.

This evolution benefited from the introduction of IFRS 9, which led operators to a new and more conscious use of hedging instrument.

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