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Accounting for financial instruments: regulations and banks' behavior in light of IFRS 9

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Abstract

This paper provides an analysis of the principal differences between IAS 39 and IFRS 9 and examines the main impacts of the latter standard on banks' Regulatory Capital. It also undertakes a critical review of the main literature about the economic consequences of classification, measurement, and impairment of financial assets. We examine two broad streams of literature. While the former stream explores how different measurement bases for financial instruments affect the relevance and reliability of financial accounting information, the latter discusses the evidence related to the discretionary use of accounting provisions and its effects on the banks' financial statements. The main arguments of the accounting analysis correspond to i) the IFRS 9 treatment of FVTPL assets as a residual category, and ii) the introduction of Stage 2 for the impairment of financial assets which have experienced a significant deterioration in credit quality. Based on the empirical evidence of the aforementioned literature, we conclude the paper by offering some recommendations for future research.

Keywords: IAS 39; IFRS 9; classification; measurement; impairment test; expected loss model; bank supervision; financial stability.

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1. Introduction

In the aftermath of the financial crisis, the Basel Committee (Note 1), ECOFIN Council, Financial Stability Forum and other international organizations pressured the International Accounting Standard Board (IASB) to revise IAS 39 – *Financial instruments*. This was because of the standard complexity in the classification and measurement of financial instruments, concerns about the impairment of financial assets (e.g., the delayed recognition of credit losses on loans and the multiple impairment approaches) and the alleged responsibility of IAS 39 in enhancing the global financial crisis. The replacement process culminated in July 2014 with the release of IFRS 9 – Financial Instruments, which has been effective since January 2018 (Note 2).

The first main issue addressed by IASB was the classification and measurement of financial assets. In IFRS 9, financial instruments are classified, similar to IAS 39, according to a mixed-attribute model, in which some financial instruments are measured at fair value (FV), while others at amortized cost (AC). Yet, IFRS 9 has introduced two new classification criteria, the business model test and the solely payment of principal and interest (SPPI) test, which replace many of the complex IAS 39 requirements, adding further accounting options, which may result in a complex and ambitious use of IFRS 9 categories. Financial instruments can be classified in one of these three main categories: i) at amortized cost (AC); ii) at fair value through other comprehensive income (FVOCI); iii) at fair value through profit and loss. If the objective of the entity's model holds assets to

collect cash flows or sell, and secondly, if those cash flows are solely payments of principal and interest on the main amount outstanding, the financial assets are classified in the AC category. Differently, if the entity holds financial assets to both collect cash flows and selling them, the FVOCI model must be preferred. In all other cases FV through Profit and Loss is the default measurement basis.

Furthermore, IFRS 9 has introduced two exceptions to the above classification: i) the option to designate a financial asset to FV through Profit and Loss (FVO), and ii) the option to measure equity instruments at FV through OCI, without recycling (reclassification adjustments). The former option could be used only when the FV reduces or significantly eliminates a measurement inconsistency (an 'accounting mismatching'), whereas the FV-OCI election could be used for equity instruments, not held for trading. Under the latter option holding gains/losses from changes in value of these equity instruments are recorded as a capital reserve, without recycling from OCI to profit and loss upon realization.

This new classification and measurement model of financial assets has resulted in significant change in the extensiveness of FVTPL, with unknown consequences on the value relevance of financial assets for investors (EBA, 2017). For instance, the new requirements could result in relevant information for investors and in the reduction of earnings' volatility, since changes in the value of financial instruments measured at FV will be divided among the net income (NI) and OCI. Yet, extant accounting research (e.g., Khan & Bradbury, 2016) documents that OCI is more volatile than NI and has not examined whether the market is confused or misled by the incremental volatility of items of OCI (Barone & Gullkvist, 2019).

The second and most criticized aspect of IAS 39 was the impairment of financial assets, which was based mainly on an incurred losses model. The standard required that loan loss provisions had to be recognised on an individual basis only when objective evidence of impairment existed. Limited consideration had to be given to future losses expected on a portfolio basis. Empirical evidence (Laeven & Majnoni 2003; Gebhardt & Novotny-Farkas 2011; Acharya & Ryan 2016) reveals that the applications of this model resulted in a less timely recognition of losses and introduced a cliff-effect, which is an abrupt and significant increase in credit losses, with potential significant negative impact on banks' Regulatory Capital and a pro-cyclicality effect. These dangers will probably be limited under IFRS 9, which introduces a forward-looking impairment model based on the recognition of future expected credit losses for financial instruments that have undergone a significant increase in credit risk (Stage 2). It is expected that this impairment model may result in a significant improvement in both the extensiveness and the timeliness of credit losses recognition (Novotny-Farkas 2016).

On the basis of the relevance of changes introduced by IFRS 9, this study undertakes a comprehensive analysis of IAS 39 and IFRS 9 in the financial industry. After reviewing and comparing Basel Pillar I regulation with IFRS 9 impairment loss model, it investigates two broad streams of literature on financial instruments in order to shed light on the economic consequences of IFRS 9 for investment strategies of both investors and banks. To this end, we examine two of the most relevant academic streams of the empirical research about the accounting of financial instruments. The first stream explores how different measurement bases for financial instruments affect the relevance and reliability of financial accounting information, while the second discusses the evidence related to the discretionary use of accounting provisions and its effects on banks' financial statements and the stability of financial systems.

Such analysis contributes to the extant literature in three main ways. Firstly, we add to old traditional studies on the impairment test under IAS 39 and IFRS 9 (Novotny-Farkas, 2016; Gebhardt, 2016) by covering also the main issues that arise from IFRS 8 classification model. Secondly, the study offers a base for dismantling the similarities between the accounting and regulatory credit risk models and the impact of IFRS 9 on Regulatory Capital. Thirdly, the literature review sheds some lights on possible future studies that can help assess the economic consequences of the new requirements of credit institutions and users of banks' financial statements.

The remainder of the paper is organized as follows. Section 2 provides a detailed analysis of the main differences between IAS 39 and IFRS 9. Section 3 explains the mechanism through which impairment affect banks' Regulatory Capital, together with a comparative analysis of regulatory and credit risk models. Section 4 offers a review of the main studies on the value relevance of FV on banks financial statements and on loan loss provisions and their impacts on Regulatory Capitals. Section 5 concludes by offering some suggestions for future research.

2. Accounting for financial assets

2.1 Classification and measurement

In this section, an overview of IAS 39 will be proposed in order to better understand the main changes that IFRS 9 has introduced in classifying and measuring financial assets. Given the extensive nature of IASB standards and the objective and scope of this study, only the classification and measurement of financial assets will be examined, focusing on the topic most relevant for the banking sector.

2.1.1. IAS 39

IAS 39 classified financial assets under five different categories (IASB, 2008) (Note 3): i) assets held for trading (HfT), ii) assets designated at fair value through profit and loss, upon initial recognition, the so-called fair value option (FVO), iii) assets held to maturity (HtM), iv) loans and receivables (L&R), and v) assets available for sale (AfS). This classification played a key role in the accounting treatment for financial instruments, as it determined the measurement method following their initial recognition. Fair value through profit and loss was required for the first (HfT) and second category (FVO). Amortised cost, calculated by using the effective interest method, was the accounting model for third (HtM) and fourth category (L&R), whereas fair value with gains and loss recognized in Other Comprehensive Income (OCI) was used for the last category (AfS). The analysis to be performed, in order to identify the appropriate classification of a single asset, was based on a mix of objective and subjective criteria (Gaetano, 2006). The objective criteria related to the financial asset's characteristics, i.e. its nature and structure (e.g., determinable payments, fixed maturity, quotation in active markets etc..), whereas the subjective criteria related to the destination that the entity intended to give to the asset (e.g., holding it until maturity or selling it in the near-term). The available for sale, however, did not have its own characteristics, since it was either a residual category, which contained the assets that did not fit in the other four categories, or was a designation category based on the entity's choices (IASB, 2008) (Note 4).

As a first step of this process the bank had to test whether the asset was held for trading (Cfr. Fig. 1).

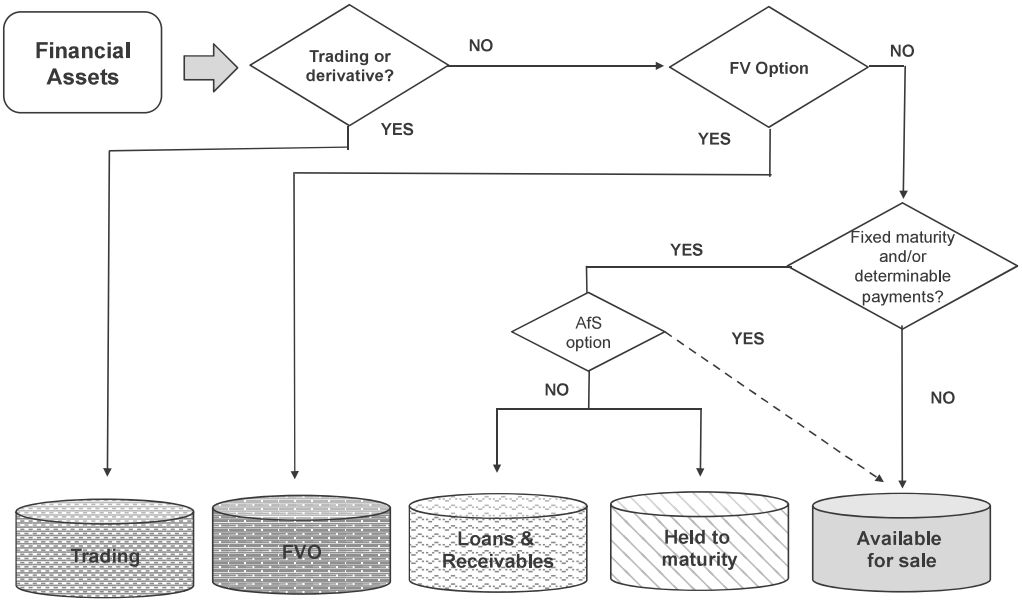

Figure 1. Classification of financial assets under IAS 39

Source: our elaboration

A financial asset acquired or obtained with the aim of taking advantage of short-term price fluctuations, by

selling or repurchasing it, had to be classified as HfT (IASB, 2008) (Note 5). This category covered debt and equity securities, within the scope of IAS 39, loans and receivables and securities held under repurchase agreements (PwC, 2009). Similarly, a portfolio of financial assets managed as a single asset for which there was objective evidence that all the underlying items, included in the portfolio, earned short-term profits might have been the case. Finally, all the derivatives had to be classified as HfT, unless they were accounted for as effective hedging instruments (IASB, 2008) (Note 6).

After the trading test, IAS 39 allowed banks to exercise the FVO. In other words, it was possible to designate, at the time of initial recognition, any financial asset to fair value through profit and loss (FVTPL). This option could be used only under three specific circumstances. Firstly, it could be used when the FVO reduced or significantly eliminated a measurement inconsistency (an 'accounting mismatching') arising from the measurement of economically related assets and liabilities on a different basis. Thus, for instance, a fixed-rate loan offset by a related derivative, if it was not designated to FVTPL, would have been measured at amortised cost, whereas the derivative would have been recorded at FVTPL. In this case the bank could have used the FVO to reduce this 'accounting mismatching', by also measuring the loan at FVTPL (PWC, 2009). The second circumstance under which the FVO option could be exercised was with financial assets managed on a fair value basis, as documented by a risk management or investment strategy. For these assets the FVO would have led to an accounting treatment more aligned with the way banks manage credit and investment risk. In fact, the measurement of financial assets on a fair value basis entails looking at their entire changes in value, attributable to interest rate risk, but also to credit risk and investment risk.

The third circumstance allowing for the FVO arose when banks decided not to separate embedded derivatives. IAS 39 prescribed, as general treatment, to measure derivative assets embedded in non-trading financial assets separately at FVTPL, if the economic characteristics and risks of the derivatives were not closely related to those of the host contract (PWC, 2017). Instead of measuring the embedded derivative at FVTPL separately and the host contract on a different basis (e.g., at amortised cost), the FVO allowed to measure the entire hybrid contract at FVTPL (Note 7).

The next step in the IAS 39 classification model was based on the characteristics and structure of the financial asset. Financial assets that generated fixed or determinable interest and coupon payments could be classified as either HtM or L&R. Namely, Held-to-Maturity assets had to meet three conditions: i) they should have a fixed maturity, ii) they needed to generate fixed or determinable interest and coupon payments and iii) there had to be objective evidence that the entity had the positive intention and ability to detain the asset until its maturity (IASB, 2008) (Note 8).

The first and the second condition were objective requirements verifiable in a rather simple way. For instance, given that instruments included in this category had to have a maturity date, it was impossible that equity instruments could be classified as Held-to-Maturity, since they have an indefinite life and the payments they generate can vary randomly. Similarly, perpetual debt instruments, giving rise to indefinite determinable interest payments, could not be classified as HtM, since they do not have a maturity date. For this reason, perpetual debt instruments should have been classified as L&R, expected that they met the definition of this category (IASB, 2008).

The third condition (the intention to hold the instrument until maturity) was a subjective requirement more difficult to detect. Evidence about a positive intention to hold the asset until maturity could be found in the fact that the entity had positively defined the holding period, and not simply declared the intention to hold the asset for and undefined time. Further evidence could be found in the fact that the entity was not ready to sell it in response to fluctuations in market interest rates or other market and firm-specific events, and in the circumstances that the issuer had the right to settle the financial asset at an amount significantly below its amortized cost (IASB, 2008). In addition to the intention of retaining the asset until maturity, an entity had to have an adequate amount of financial resources to commit to the investment and could not be subject to regulatory or environmental pressure that could have eroded the willingness to hold the asset (IASB, 2008).

It is also important to point out that financial assets could still classify as Held-to-Maturity investments even if some sales occurred before the date of maturity. More specifically, IAS 39 prescribed a tainting rule according to which an entity was not allowed to classify any instrument in the HtM if it had, in the previous two financial years, sold or reclassified a significant amount of financial assets before maturity. Yet, sales close to the maturity date (e.g., less than 3 months before maturity) or after the bank had essentially collected the financial asset's entire original principal were allowed (IASB, 2008). Sales were also permitted if driven by non-recurring events, not dictated by the entity's intentions. Examples of these circumstances could have been the deterioration of the

issuers' creditworthiness, changes in tax laws or regulatory requirements, or substantial, unforeseeable increases in the riskiness of the HtM assets (IASB, 2008). In practical terms, banks did not often use this category. Given their concerns about the possibility of incurring in the sanctions of the tainting rule, they preferred to classify debt instruments in the AfS category.

The alternative category to HtM was L&R, which corresponded to non-derivative financial assets with fixed or determinable interest and coupon payments. They were not quoted in active markets, and they could not have a maturity date (IASB, 2008). It is reasonable to consider this category as the most relevant in the banking industry, as typically it includes loan assets, originated by the bank business (either directly or by syndication) or purchased in a secondary market without quoted prices. Yet, financial institutions, especially those operating in more sophisticated and developed financial markets, could classify some loans in other IAS 39 categories, if the characteristics of the financial instrument made the classification most appropriate. For instance, loans that were quoted in an active market and held for short-term intentions could be classified as HfT, similarly loans that were part of portfolios of financial instruments, managed together with the expectation of realization in the short term, could be classified upon initial recognition as HfT. Furthermore, loans not held for trading, that the entity intended to sell before the maturity (e.g., pool loans that the lead bank of the pool aimed to relocate to others banks) or those activities for which the bank could not recover the initial investment (e.g., loans securitized) could be included in AfS.

Conversely, the possibility of finding lending agreements in HtM was rather remote, since IAS 39 prevented the classification of loans as HtM (IASB, 2008), if they met the definition of L&R (IASB, 2008). On the other hand, it was possible to include bonds (not quoted in an active market), that the entity intended to sell at favorable conditions, in the L&R category. In this way, banks could avoid the tainting rule sanctions, linked to the classification of debt instruments, hold for sale, as HtM instruments.

The last category of IAS 39 classification, the AfS, was not just a residual class. In fact, it included not only assets that did not fit in the other four categories (e.g., shares not traded by banks), but also financial assets designated to AfS by the bank. Namely, banks could designate bonds to AfS to avoid the tainting prescriptions or simply because they did not intend to classify them as HtM. Similarly, loans that the bank planned to sell before its maturity could have been designated to AfS. This category was also mandatory for those loans that the holder could not recover for its initial investment, because of the structure of the financial instrument, such as a loan with a prepayment option (IASB, 2008).

A further characteristic of IAS 39 model was the accounting treatment prescribed for shares. These were only implicitly mentioned in the definition of AfS and could be classified either as trading or AfS. In both cases they were measured at fair value but gains and losses were subject to a different treatment. Shares held for trading recorded changes in value directly in the profit and loss, whereas gains and loss on AfS assets were recognised first in the OCI and after in profit and loss when realised. IAS 39 set an exception for this accounting. If equity securities were not traded in an active market and could not be reliable measured at FV they had to be recorded at cost (IASB, 2008).

In sum, the IAS 39 established a classification system of financial assets in five categories, based on the nature of the financial assets, arbitrary bright line criteria, accommodations and abuse prevention measures (PwC, 2017). It also provided entities with the option to voluntarily designate financial assets at FVTPL and classify financial assets as AfS under general circumstances. The final output was a complex classification system that led to the bifurcation of financial assets into different mixed categories based on criteria not always grounded on the economic substance of banks' operations.

2.1.2. IFRS 9

IFRS 9 introduces a new classification system with five categories: i) financial assets measured at amortized cost (AC), ii) financial assets (debt instruments) measured at fair value through Other Comprehensive Income (FVOCI), iii) financial assets measured at fair value through profit and loss (FVTPL); iv) financial assets designated to FV through Profit and Loss (FVO), and v) equity instruments at FV through OCI, without recycling. Although these categories look quite similar to those provided by IAS 39, the classification criteria of IFRS 9 are different. In fact, the analysis to be undertaken to identify the appropriate classification of financial assets is based on the business model used by banks for managing financial assets, and the inherent characteristics of the contractual cash flows, arising over the life of the financial instruments (SPPI Test) (IASB, 2014) (Note 9).

According to IFRS 9, financial assets can be classified and subsequently measured at:

a) AC if the financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows, and if the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding (IASB 2014) (Note 10).

b) FVOCI if the financial asset is held within a business model whose objective is to hold the asset for collecting contractual cash flows and selling financial assets, and if the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest (IASB 2014) (Note 11).

c) FVTPL if the financial asset does not fit in either of the two previous categories. Furthermore, IFRS 9 allows banks to elect certain equity investments to the measurement at fair value with the changes in value presented in OCI. The exercise of this option must be made at the date of initial recognition and will be irrevocable (IASB, 2014) (Note 12).

Under the election option, equity instruments follow an accounting treatment that differs from the one prescribed for the category sub b) – FVOCI for debt instruments. Under the election option, gains and loss recognized in OCI will never be recycled to the income statement, not even at their sale or de-recognition.

Only dividends will be recorded in the profit and loss. Moreover, the impairment tests of IFRS 9 will not be applicable. Given these differences it could be appropriate to regard equity instruments elected to FVOCI as a distinct category from the FVOCI, and not just an exception of the FVTPL.

Similarly, to IAS 39 the first step of the new classification process is the FVO option; the possibility to elect financial asset, other than derivatives, and trading instruments, at FVTPL, upon its initial recognition (see Figure 2). Nevertheless, important differences between the two standards can be immediately highlighted at this stage. The designation of a financial asset to FVTPL is possible, under IFRS 9, only to eliminate or significantly reduce an accounting mismatch, whereas the other two circumstances specified by IAS 39 (the designation to FVTPL for a group of assets managed on a fair value basis and for embedded derivatives) have been eliminated since they are no longer necessary. In fact, according to the business model test, financial activities that are managed on a fair value basis are mandatorily measured at FVTPL, whereas embedded derivatives are not separated from the host contract and the entire contract is measured at FVTPL, since it will not pass the SPPI test (see the below sections for further analysis).

After the FVO, banks shall undertake the SPPI test to assess the characteristics of the contractual cash flows, arising from its financial assets, and afterward determine the business model within which the asset is hold. The other way around, first the business model test and then the SPPI test, is also possible, yet this reversed order will not change the final outcome (PwC, 2017).

The SPPI test determines whether a financial asset gives rise to cash flows that are solely payments of principal and interest on the principal amount outstanding. Specifically, the objective of this test is to decide if the financial instrument is a ‘basic’ or ‘plain vanilla’ lending agreement that may be accounted at AC/FVOCI. The rationale for this test and the following accounting treatment of basic lending agreements is that AC/FVOCI are the only meaningful measurements for such contracts, whereas equity instruments and those leveraged must be recorded at FVTPL. Moreover, the standard specifies that the SPPI test should consider the economic substance of the financial instrument, regardless of its legal form.

Principal is defined in IFRS 9 as the fair value of the financial asset at initial recognition. It may change over the life of the asset, for example because the principal is repaid in advance. Interest, instead, is the consideration for the time value of money and credit risk. However, depending on the circumstances, liquidity risk and the opportunity cost of holding the financial asset may also be relevant factors in determining interest (IASB, 2014) (Note 13). The simplest example of instruments with contractual cash flows that are solely payments of principal and interest on the principal amount outstanding are bonds with a stated maturity, whose coupon payments are based on a fixed or variable interest rate, as long as the interest rate reflects the time value of money, and the credit risk. Differently, financial instruments that provide compensations inconsistent with the market interest rates will fail the SPPI test.

In order to test whether the interest payments provide consideration only for the time value of money and credit risk, the bank should consider (Note 14) whether the period for which the interest is set is consistent with the interest rate that is used and any other clauses that modifies the frequency and amount of cash flows. Table 1offers some examples of financial assets failing the SPPI test.

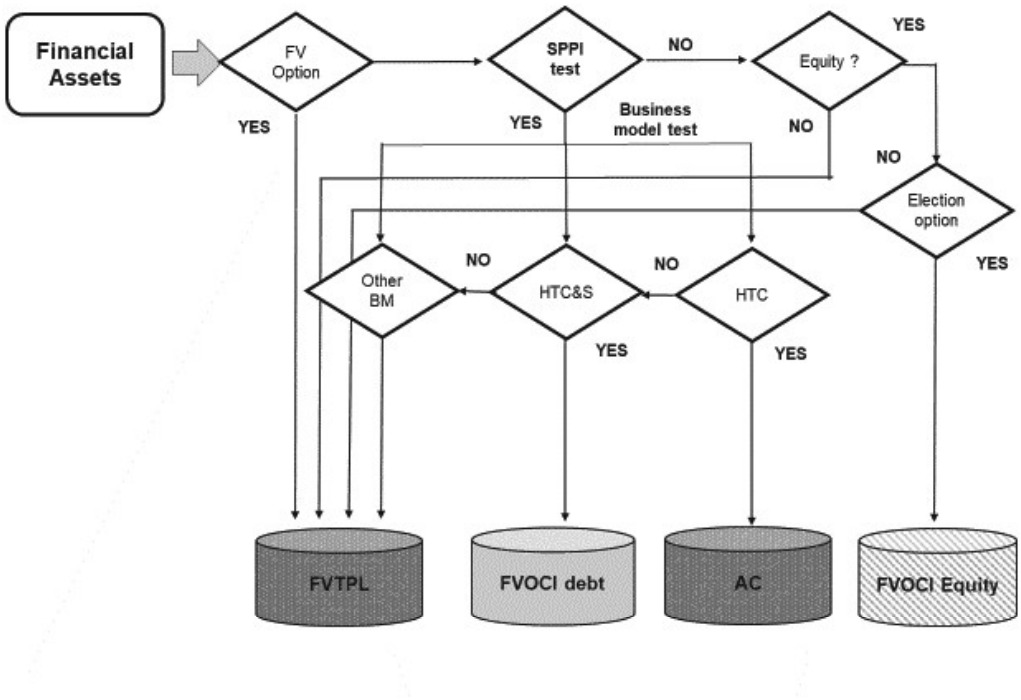

Figure 2: Classification of financial assets under IFRS 9

Source: our elaboration

Table. 1

Applications of the SPPI test to financial assets
Example A – Entity X has a deposit with bank Y that resets the interest monthly. The interest rate is reset based on a 12-month Euribor rate plus a spread.
In this case, there is significant evidence that the deposit interest rate reflects a **modified** time value of money, as the frequency by which the interest rate is periodically reset (one month) does not match the term of the interest rate (one year).
Example B – Company Z invests in a corporate bond that pays a floating coupon interest semiannually. The coupon (C) consists of a fixed rate (FR) minus the Euribor 6 MN, in a formula: C = FR – Euribor 6 MN.
If in the period taken as reference the FR and the spread are equal respectively to 3% and 1.25%, the result will be: C = 3% - 1,25% = 1,75%. It follows that the coupon does not vary in the same direction as the rates used for indexation, but in the opposite direction: if the rates go down the coupon goes up, and vice versa.

Whenever there is significant evidence that the interest rate reflects a modified time value of money (cfr Example A, Table 1) or there are other clauses that change 'plain vanilla' lending agreement, an additional test is necessary to verify the compliance with the SPPI condition. A hypothetical financial asset, identical to the one tested, except for the feature that modifies the interest rate (e.g., a financial asset which reset interest rate montly, using a one month Euribor) is selected as a "benchmark" tool, and its non-discounted contractual cash flows are estimated. Then the non-discounted contractual cash flows of the real instrument are compared with those of the benchmark instrument, and if the difference in cash flows is significant, the SPPI test will fail (Note 15).

In addition to the contractual terms that modify the nature of interest, financial assets may contain contractual terms that change the timing or the amount of cash flows, such as prepayment and extension options (Note 16). Also in these cases, the SPPI test should be carried out to assess whether the asset's cash flows are consistent with a basic lending arrangement. To this end the standard requires banks to evaluate the contractual flows before and after the change in the contractual terms, as well as taking into consideration possible trigger events

that may change the time and amount of the cash flows.

As a default requirement, IFRS 9 assumes that both the prepayment and extension option will meet the SPPI test if, respectively, the prepayment amount substantially represents unpaid amounts of principal and interest on the principal amount outstanding, which may include reasonable additional compensation for the early termination of the contract. On the other hand, the extension option results in contractual cash flows during the extended period which are solely payments of principal and interest, and may include reasonable additional compensation for the extension of the contract (IASB, 2014).

The main consequence of this requirement is that whenever the prepayment option is combined with the acquisition or issue of a loan at a premium or discount, the SPPI test will fail. In fact, in these cases the difference between the contractual paramount payment and the asset fair value at initial recognition determines an extra profit or loss, that goes beyond the basic return of a plain vanilla lending agreement (Dezzani, Biancone, Busso, 2016). Thus, normally, these financial assets would fail the test and would be measured at FVTPL. Yet, IFSR 9 has introduced an exception to this, permitting the use of AC/FVOCI for these agreements if the following conditions are met: (a) if the entity acquires or originates the financial asset at a premium or discount to the contractual paramount, (b) if the prepayment amount substantially represents the contractual paramount and accrued (but unpaid) contractual interest, which may include reasonable additional compensation for the early termination of the contract, and (c) if the fair value of the prepayment feature at initial recognition is insignificant (IASB, 2014) (Note 17).

Table. 2

Applications of the SPPI test to financial assets pre-payable at par
Example C – Entity X has purchased a corporate bond for 120 euros with a par value of 100 euros when interest rates have declined sharply. The bond is prepayable at par value, plus accrued but unpaid interest rates, at the option of the issuer only if a specified change in tax laws occurs. In this case, it is unlikely that the specified change of tax will occur and thus the fair value of the prepayable option is insignificant. A hypothetical financial asset, identical to the one tested, except for the lack of the prepayable option, has been selected as a "benchmark" tool, and its non-discounted contractual cash flows have been estimated to value the prepayable option. This test confirms that the bond passes the SPPI test, as the fair value of the prepayable option is insignificant.

This exception has been criticized since the last condition, the assessment of significance of the fair value option, adds complexity to the IFRS 9 classification model, since banks will need to develop a policy to measure and evaluate the significance of the fair value of prepayment options. Conversely, under IAS 39 these options were not considered, since they were not regarded as closely related to the host contract and thus not measured separately from the hybrid contract at FVTPL (PWC, 2017).

The practical implication of the SPPI test is that loans, receivables and debt instruments will usually pass it and thus be subject to the Business model test, whereas equity investments and derivative instruments will be mandatorily measured at FVTPL, since they will fail the SPPI test.

Concerning loans, receivables and debt instruments, the bank shall carry out the Business model test to determine how it uses these financial assets. In order words, the objective of this second test is to determine the way banks manage their financial assets to generate cash flows (IASB, 2014) (Note 18). IFRS 9 identifies three options in this regard: i) “a business model whose objective is to hold assets in order to collect contractual cash flows (HTC&S), ii) a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets (HTCS), iii) other business models (OTHS).

In the first model, the bank holds an asset with the purpose of collecting the contractual payments that it generates over its life. A typical example of HTC, could be a portfolio of loans granted to retail customers. The standard recognizes that in this business model sales can occur, and can also be expected to occur, yet they are only an incidental part of the bank’s business model. More specifically, IFRS 9 defines specific circumstance under which sales are consistent with the HTC model: i) if they are carried out after a significant deterioration in the asset’s credit risk, ii) if the sale is made at a date which is very close to maturity, and thus the proceeds from the sale are almost equal to the remaining contractual cash flows that the asset would have generated, iii) if sales are not significant in value, but frequent, iv) if they are not frequent, but significant in terms of value. It is

important to point out that a level of sales not consistent with the HTC policy does not automatically cause reclassification to another business model. Thus, unlike the tainting rule of IAS 39, sales out of a HTC portfolio policy will not result in losing the right to apply the AC model but will only require a reassessment of the business model for new instruments.

In the second model (HTC&S), the entity holds financial assets both in order to collect contractual cash flows and to sell them. The main feature of HTC&S is that the selling of financial assets is integral to achieving the objective of the business model. Namely, IFRS 9 specifies reasons for which the selling of financial assets is a typical activity consistent with this business model. For instance, these reasons could be the necessity to manage everyday liquidity, to maintain a specific interest yield target or to match the duration of financial assets to those of financial liabilities. The main difference between the HTC and the HTC&S portfolio policy will be the frequency of financial assets' sales and their magnitude. In the latter case, sales will be much more frequent and of greater magnitude, since they are an essential element of this bank portfolio policy. Nevertheless, the definition of both models still requires some judgment since companies will have to define a specific threshold to distinguish financial assets between the two portfolios.

Finally, there may be cases in which the bank's business model does not fall into either of the two categories mentioned above. Usually, this happens when the objective of the business model is to trade the financial assets, or to manage them according to the fair value or to maximize sales (IASB 2014) (Note 19).

The business model test recalls another classification of financial instruments that banks have to comply with for regulatory purposes. In particular, under the Capital Risk Regulation (CRR), Regulation EU 575/2013, banks have to include financial instruments held with trading intent, or in order to hedge positions held with trading intent, in their trading book.

Trading book positions are subject to a specific set of provisions under the CRR, including the calculation of minimum capital requirements for market risk.

The outcomes of the two classifications should be coherent and banks are expected to justify potential misalignments. It should be noted, however, that some FVTPL assets do not fall within the regulatory trading book definition, notably derivatives held to hedge banking book positions and instruments that do not pass the SPPI test but are held without trading intent.

Concerning financial assets that do not pass the SPPI test, the bank will mandatorily measure them at FVTPL, unless they are particular equity investments elected to OCI, upon initial recognition. Namely, to determine the accounting treatment of equity instruments, banks should assess three circumstances.

After having verified that financial instruments meet the definition of equity (see figure 2), banks should determine whether they are held for trading, or they represent contingent consideration recognized by an acquirer in a business combination (IASB, 2014) (Note 20). If this is the case, equity instruments are measured at FV with changes in value reported in profit or loss (FVTPL). Otherwise, banks can choose the irrevocable option of presenting FV changes in OCI on an instrument-by instrument basis (IASB, 2014). In this latter case, gains and losses from fair value measurement will never be recycled to profit and loss, and it will be no longer necessary to assess these instruments for impairment.

It is also worth remembering that IFRS 9 has removed the IAS 39 cost override requirement for equity investment. Thus, under IFRS 9 it is no longer possible to maintain a capital instrument at cost, as before with IAS 39: all equity securities will have to be valued at fair value according to the provisions of IFRS 13 (IASB, 2014) (Note 21). Finally, as far as the reclassification of financial assets is concerned, IFRS 9 replaces the complex IAS requirements with one general condition, valid for all the categories. The bank can reclassify financial assets only when it changes the business model used for managing a group of financial assets.

In summary, IFRS 9 has introduced a model which is not less complex than IAS 39 classification system due to the combination of the business model test with the SPPI test. Financial assets are classified according to i) the business model used by banks for their management, as documented by public policy, instead of the mere intention of realizing a single financial asset, and to ii) a stringent SPPI test on the return associated with the financial asset.IFRS 9 also restricts the option to designate assets at FVTPL or FVOCI, as compared to IAS 39. In fact, the FV option is provided only in the case of accounting mismatching, whereas the options to designate loans and debt instruments to FVOCI (the AfS category under IAS 39) have been eliminated in IFRS 9. Also, reclassification of financial assets will be possible only when an entity decides to change its business model, which is unlikely to occur. As a result, it has been argued that this model is simpler and clearer than the IAS 39 classification system (Deutsche Bundesbank, 2019).

IFRS 9 has been subject to different criticisms. Firstly, there is the threat that IFRS 9 will increase volatility in the profit and loss account, since, after the initial recognition, the subsequent measurement may ascribe the majority of financial instruments to FVTPL (PwC, 2017). In fact, except for those financial assets recorded as HTC and HTC&S, under restrictive criteria, the residual accounting treatment in IFRS 9 is the measurement of financial assets at FVTPL, thereby increasing the number of gains and losses that are charged to profit and loss. It is also possible that assets that are subject to factoring and securitization programs, previously measured at AC under IAS 39, may be now recorded at FVTPL.

A further issue is related to the subjectivity inherent in IFRS 9. This may persist because the application of the business model concept and the decision on whether cash flows are solely interest and payment may not rely only on quantitative or qualitative observable measurement. Instead, a considerable level of managerial discretion will be required to set banks' financial policies. For instance, the classification of pre-payable instruments, issued at a premium or a discount, involves a lot of judgments at the initial recognition of the asset in assessing whether or not the fair value of the prepayment feature is 'insignificant'.

Also, the OCI election option for equity instruments has raised a lively and inconclusive debate (Note 22). Firstly, it can be highlighted that the new requirements introduce two FV-OCI categories with two different accounting treatments: the FV-OIC debt instruments, with recycling and impairment tests, and the FV-OCI equity category, where holding gains and losses are no longer reversed to loss and profit even when the instrument is sold. The IASB motivation that income should be recorded only once (Van Cauwenberge and De Beelde, 2010) is also valid in the former category, as well. Other critics suggest that financial statements users will oversee OCI components, since changes in fair value of equity instruments will never find their way to profit and loss (PWC, 2017). Conversely, proponents for the OCI election argue that if recycling does not provide better information to users, then this complex accounting method should be abandoned in favour of a more straightforward practice of reporting comprehensive income in one performance statement (Rees & Shane, 2012). From a conceptual point of view, others have stressed that before eliminating recycling IASB should define what is intended for financial performance (Alexander et al. 2017).

2.2. Impairment of financial assets

This section analyses the IAS 39 and IFRS 9 accounting models for the impairment of financial assets. In the case of each standard, we first describe the key features of the impairment requirements and then the micro-macro implications for the banking sector and the financial system. In this analysis we have considered the four levels for decisions that the IASB had to face in setting an accounting model for impairment losses (e.g., Camfferman, 2015; Hashim *et al.*, 2016; Novotny-Farkas, 2016): i) the basis for the recognition of losses; ii) the measurement of losses and interest income; iii) the impairment of portfolios of financial assets, and iv) other issues, under the last of which we consider the case of restructured loans and purchased or originated credit-impaired assets (POCI-assets). Table 1 provides a summary of the choices made by the IASB under IAS 39 and IFRS 9, regarding the above topics.

2.2.1. IAS 39 impairment model

i) The basis for the recognition of losses

Under IAS 39 the impairment of financial assets, assigned to the HtM and the AfS categories, was based on the concept of incurred loss. An eventual loss of value was taken into consideration only if, and only if, there was 'objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset (a 'loss event') and that loss event (or events) had an impact on the estimated future cash flows of the financial asset or group of financial assets that could be reliably estimated (IASB, 2008) (Note 23). A central feature of IAS 39 model was the occurrence of a trigger event, as the main requirement for the impairment of financial assets. Losses would have been registered only when an event, such as a *default or delinquency* in interest or principal payments, could prove clearly the inability to collect a financial asset in whole or in part. In IAS 39, expected losses were never taken into consideration (IASB, 2008). At the date of the initial recognition, any probable loss would have already been considered in the pricing of the financial assets, via an *interest premium*, covering expectations about borrower's default (Novonty-Farkas, 2016) (Note 24).

Tab. 3. Summary of impairment of financial assets in IAS 39 and IFRS 9

Design issue	IAS 39	IFRS 9
Basis for the recognition of losses	Objective evidence of impairment. Credit deterioration is considered only if combined with other impairment evidence.	Significant changes in credit risk.
Measurement of losses and interest income	Amortized cost assets - normal loan loss tests: Difference between assets' carrying amount and the PV of estimated cash flows, discounted at the EIR based on contractual payments at origination.	**General model:** different basis for measurement depending on financial assets' credit quality:
	Financial assets measured at cost - unquoted equity instruments: Difference between assets' carrying amount and the PV of estimated cash flows discounted at interest market rate.	**Stage 1**: Assets without credit deterioration: 12 months expected credit losses computed as ECL12months=PD12 months * EAD* LGD* D Interest revenue is calculated by applying the EIR on the gross carrying amount of the asset at the beginning of the period.
	Financial assets Afs: Difference between acquisition cost (net of any principal repayment and amortization) and the asset's current fair value less any previously recognized impairments.	**Stage 2**: Assets with significant credit deterioration: Lifetime expected losses computed as: Lifetime= Σ PDt * EADt* LGDt*Dt Interest revenue is calculated by applying the EIR on the gross carrying amount of the asset at the beginning of the period.
	Basel valuation: Portfolio expected losses computed based on 12-month probability default and lost identification period (LIP): ECLs= Σ PDt * EADt* LGDt*LIP*Dt	**Stage 3**: Credit-impaired assets: Lifetime credit losses computed as ECLs = EAD* LGD*D Interest revenue is calculated by applying the credit-adjusted EIR on the carrying amount of the asset at the beginning of the period after allowance for ECLs
The impairment of portfolios of assets	Interim process. Significant assets are impaired individually if not impaired tested collectively.	If forward-looking information is not available to assess credit risk changes individually, impairment is undertaken on a collective basis.
	Significant assets characterized by objective evidence of loss of value are excluded by portfolios and impaired individually. Application guidance explicitly excludes expected losses from the calculation of cash flow estimates	IFRS 9 explicitly considers forward-looking information to assess changes in credit risk, whenever this information is available without undue cost or effort.
Modified financial assets	A non-substantial modification of financial assets, measured at AC, results in the recognition of the directly attributable costs and the cash paid or received from the counterparty.	A non-substantial modification of assets measured at AC results in the recognition of a modification gain or loss plus the directly attributable costs and the cash paid or received from the counterparty.

POCI-investments	The cumulative changes in lifetime expected credit losses had to be accounted for as a credit loss allowance since the date of initial recognition; EIR is based on expected cash flows, including expected losses.	Life ECLS recognized since its origination as in IAS 39. No need for stage 1.

Source: our elaboration.

In deciding the list of trigger events (Note 25), IAS 39 did not contemplate changes in the *credit quality* of financial assets. The downgrade in borrower's creditworthiness was not a sufficient criterion to hypothesize a loss of value. Only if there was complementary information did IAS 39 allow recording an impairment loss (IASB, 2008) (Note 26).

ii) The measurement of losses and interest income

In addition to the concept of incurred loss, IAS 39 distinguished three specific methods to impair financial assets: i) the first for assets measured at amortised cost (AC) - *L&R* and *HtM*, ii) the second for assets measured at cost; equity securities that cannot be recorded at fair value, and iii) the third for assets measured at FV-OCI - AfS.

As for financial assets at AC, if there was evidence of impairment, the amount of the loss incurred was measured as the difference between the asset's carrying amount and the recoverable amount, calculated as the present value of estimated future cash flows discounted at the effective interest rate. The latter rate was computed considering the asset's contractual-cash-flows as known at the date of the initial recognition, contemplating the estimated credit losses. Impairment losses incurred on these financial assets were reversible up to the amortised cost that would have been recorded without impairment (IASB, 2008) (Note 27).

For the second category of assets, unquoted *equity instruments* that were measured at cost, because their FV could not be reliably determined due to the lack of an active market for them, credit losses were computed in the same way as for financial assets at AC, except for the fact that the interest rate used to discount the cash flows corresponded to the current *market interest* rate and not to the *effective interest rate*. Impairment losses incurred on these instruments were irreversible (IASB, 2008) (Note 28).

The third category, the AfS, covered loans, debt and equity instruments measured at FV with changes in FV recognised in OCI and recycled to profit and loss as soon as realised. In the case of negative reserve, if there was an *objective evidence* of impairment, the *cumulative net loss* (Note 29), recognised in *Equity*, had to be removed in the *Income Statement*, even though the asset had not yet been derecognised. Namely, it was necessary to follow different impairment process for *AfS debt instruments* and *AfS equity instruments*. In the former case (*AfS debt instruments)*, if the decrease in FV was determined by severe credit deterioration, only the cumulative net loss attributable to the downgrading of creditworthiness had to be transferred to the *Income Statement* and could be reversed, as a gain from recovery of value. In the latter case (*AfS equity instruments)*, the total reserve could be recycled to the Income Statement, when there was objective evidence of impairment. The impairment losses incurred on *equity instruments* could never be reversed (IASB, 2008) (Note 30).

iii) The impairment of portfolios of financial assets

A further central aspect of IAS 39 discipline concerned the impairment of portfolios of financial assets. IAS 39 defined specific conditions under which the impairment could be carried out individually, for a single asset, or collectively, for a group of assets. The impairment test followed an interim process (IASB, 2008) (Note 31). Firstly, all *significant* and non-significant assets, for which there was information about the existence of losses, had to be assessed individually for impairment (IASB, 2008). If an entity determined that there was *no objective evidence* of impairment for the single asset, whether significant or not, this had to be included in a group of financial assets with similar credit risk characteristics and collectively assessed for impairment. Afterwards, if the asset revealed evidence of impairment, it was removed from the reference portfolio and evaluated exclusively on an individual basis (IASB, 2008) (Note 32). The category of financial assets impaired collectively could include: retail loans, managed on an aggregate basis, for which no objective evidence of impairment was available individually, although losses on the entire portfolio of such assets would be still reasonable (e.g., Camfferman, 2015), problematic loans of insignificant amount and corporate loans, managed on an individual basis, for which it was not possible or convenient to estimate individually the *recoverable amount* (EY, 2014).

IAS 39 provided credit risk similarity as the principle for the aggregation of financial assets into portfolios (IASB, 2008) (Note 33). Any criterion could be adopted (e.g., geographical location, collateral type past due status etc..), as long as it was able to capture a correlation of unfavourable trends in the instruments that made up the portfolio.

In compliance with the above requirements, credit institutions have undertaken their portfolio impairments on the basis of assets' default status (performing, past due, probable default, bad debt) and considering the amount of exposure used by the client. Performing positions with utilization levels above defined thresholds would be normally evaluated analytically; for past due/ unlikely to pay exposures, lower limits would be identified to distinguish whether to use the analytical/collective impairment. Non-performing exposures, instead, would be assessed analytically regardless of the amount. It must be highlighted that under IAS 39 some objective evidence of impairment at portfolio level was always necessary to impair financial assets collectively. Namely, IAS 39 referred to: i) disadvantageous changes in the state of payments of debtors (for example an increase in late payments) and ii) the local or national trend of the economy connected with the default of the asset under assessment, as the main motivations for undertaking the impairment of portfolios (IASB, 2008) (Note 34).

For the identified portfolios banks estimated collective provisions adjusting their credit risk models, used for regulatory purposes, following this expected loss calculation:

$$ECL_{12months} = PD_{12\ months} * EAD * LGD * D * LIP \qquad (1)$$

where PD corresponds to the *probability of default* occurring in the next 12 months, EAD, *exposure at default*, stands for the level of credit exposure at the time of default, and LGD, *loss given default*, represents the amount of credit losses which should occur as a default, D is the discount rate used to actualise the *credit loss* and LIP is the *lost identification period*, that is the average delay between the deterioration of the financial assets and the recognition of losses.

As illustrated by (1), banks in practice have been using an expected loss model that contradicts what was required by IAS 39. Indeed, an instructive example provided in the standard application guidance (IASB, 2008) (Note 35) clarified that the impairment had to refer only to the losses already occurred. The standard took the case of credit card loans, for which borrowers' death rates were unchanged from one year to the next. While under this condition it was appropriate to record a collective loss, since it was not possible to identify which borrowers would die, the guidance explicitly prevented recognising an impairment loss based on expected changes in death rates.

iv) Other issues:

Modified financial assets

The renegotiation of the contractual terms of bad loans, can also lead to the recalculation of the asset's carrying amount, without the recognition of a new credit-impaired instrument. In this case, IAS 39 did not require the measurement of a modification gain or loss for the changed asset. Whenever the difference between the present value of the contractual cash flows under the original and modified terms was not significant (e.g., less that 10 per cent test), it was common practice to revise the asset's carrying amount only for the direct attributable transaction costs and for any consideration received or paid to the counterparty. The EIR was then re-estimated and used to amortise any modification gain or loss over the life of the modified asset.

POCI – investments

A further category of financial assets examined by IAS 39 related to bad loans that are considered to be credit-impaired on purchase or origination. This category may be relevant for financial institutions specialized in the acquisition of non-performing-loans (NPLs) at a deep discount or for the restructuring of loans in favour of a borrower already in a state of default. Namely, the latter circumstance means that after the modification of the original loans, the financial institution has recognised a new asset, against the one de-recognised, which is regarded as credit-impaired since its initial recognition. Events that must be considered to prove that the renegotiated loan is impaired at origination are the same as the trigger events specified by IAS 39 and already analysed above.

IAS 39 required for these credit-impaired assets the inclusion of the initial expected losses in the computation of the effective interest rate (EIR). Then, at each reporting date, the entity had to recognise single changes in the expected credit losses as impairment gains or losses, whereas the cumulative changes in lifetime expected credit

losses had to be accounted for as a credit loss allowance since the date of initial recognition (IASB, 2008).

2.2.2. IFRS 9 impairment model

i) The basis for the recognition of losses

IFRS 9 introduces a new impairment model, based on expected and incurred credit losses. There are some differences between IAS 39 and IFRS 9 regarding the scope of impairment accounting. The new standard applies to all debt instruments measured at AC or at FV-OCI, to lease receivables, contract assets and loan commitments, and financial guarantees contracts that are not recorded at fair value through profit and loss (IASB 2014) (Note 36). Yet, for equity investments, which are measured at FV-OCI, IFRS 9 has eliminated the impairment test, as indicated earlier (Note 37).

The IFRS 9 impairment model is based on the principle that credit quality of financial instruments improves or deteriorates during their lifetime, and entities must be able to recognise these changes and the related losses before a financial instrument becomes past due (IASB, 2014) (Note 38). Instead of waiting until a specific event indicates that an asset is in default, IFRS 9 prescribes that the instruments must be assessed at each reporting date in order to check whether there have been significant changes in credit risk since initial recognition. Specifically, the emphasis on this criterion implies that in determining the impairment for credit loss, banks should also consider forward-looking information (e.g., the adverse changes in macro-economic conditions), whenever this information is available without undue cost or effort to assess the deterioration of credit quality (IASB, 2014) (Note 39).

Based on this premise the IASB has specified three different impairment methodologies for financial assets: the general approach, the simplified approach and the purchased or originated credit-impaired approach. The first method shall be applied to debt instruments measured at amortised cost and fair value through other comprehensive income. The second and the third specify an alternative approach for certain assets with maturity less than one year (the simplified approach) and for POCI investments. In the following analysis we will refer in detail to the general model and to POCI investments, as the simplified approach is not regarded relevant for banks.

ii) The measurement of losses and interest income

The key feature of the general model is the segmentation of financial assets into three categories, depending on the relative credit risk assigned to a single asset during its life. This classification is key, since it leads to a different measurement of credit losses and to the recognition of different interests. The categories are as follows:

- **Stage-1** includes financial instruments for which there have not been a significant deterioration in the credit quality since initial recognition, or financial instruments whose credit risk is low at the reporting date (IASB, 2014) (Note 40). Generally, this category comprises performing loans, for which an entity must measure 12-months expected credit losses decoupling it from the interest revenue. The latter is computed by applying the EIR to the gross carrying amount of the asset (EY, 2014), whereas the impairment loss is accounted for via a loan loss allowance (LLA). The basic formula showed in section 2.2.1, can be adapted to compute the ECL of stage 1, as follows:

$$ECL_{12months} = PD_{12\ months} * EAD * LGD * D \quad (2)$$

where the variable PD, reflects the probability that the financial assets under assessment default in the following 12 months after the balance sheet date, whereas EAD and LGD have the same meaning as in (1).

- **Stage-2** includes financial instruments that have undergone a significant increase in credit risk since initial recognition. This category comprises loans, normally referred as underperforming, which are at an intermediate stage between performing loans and NPLs. Despite the fact that the default of these loans has not occurred, they have already showed a significant increase in credit risk (Lionzo, 2017). The standard also provides a rebuttable presumption for the assessment of credit deterioration: financial instruments with contractual payments more than 30 days past due must be assessed as if they had a significant increase in credit risk (IASB, 2014) (Note 41). In this stage banks must measure the lifetime expected credit loss, which corresponds to the present value of all expected losses that can occur throughout the life of the credit. Namely, IFRS 9 specifies that the lifetime expected credit loss is the weighted average of the expected losses (LGD*EAD), with the estimate of default (PD) used as the weights.

$$ECL_{lifetime} = \sum_{t=0}^{n} PD_t * EAD_t * LGD_t * D_t \quad (3)$$

where PD_t, LGD_t and EAD_t refer to each future period (t) of the asset expected life.

• **Stage-3** encompasses financial instruments whose credit quality has deteriorated to the point where there is objective evidence that the instrument is credit-impaired. Also for this category, lifetime expected credit losses must be recognised (Novotny-Farkas, 2016). Yet, given that at this stage the instrument will be in default, the above formula can be adapted as follows:

$$CL = EAD * LGD * D \quad (4)$$

Furthermore, the basis of calculation for interest revenue is different from that required for stage 1 and 2. In this case there is no decoupling of interest revenue and impairment. Interest revenue is computed on the net carrying amount rather than the gross amount (Ernst & Young 2014).

This 3-stage impairment model has raised some concerns from both a practical and a conceptual point of view. From a practical perspective, it has been pointed out that the segmentation of banks' portfolios in fully and partially impaired assets introduces undesirable subjectivity and therefore space for earnings-management practices (Hashim et al., 2016). In fact, the assessment of whether there has been a significant increase in credit risk (SICR) may be based on different drivers that range from external market indicators (e.g., changes in credit spreads and or in external credit ratings, adverse changes in the regulatory or economic environment of the borrower) to internal factors (internal rate downgrades, significant changes in the collaterals supporting the instruments, past due information). In this assessment banks must also consider qualitative factors such as a significant change in financial support from a parent company or changes in the borrower's expected performance, behaviour and have to define material thresholds for the selected drivers (IASB, 2014).

In addition to the source of discretion determined by the fact that banks must define their approach to SICR, the new standard adds further subjectivity in the impairment of financial assets, since it does not prescribe any specific requirements for estimating ECLs. Thus, under IFRS 9 banks are responsible for making different judgments to determine ECLs, such as the definition of default, the application of a specific approach to credit modelling and the setting of multiple macro-economic scenarios with the associated probability-weights.

iii) The impairment of portfolios of financial assets

As previously emphasised, IFRS 9 involves the segmentation of financial instruments into three categories based on financial assets' credit quality. Yet, many trigger events are not suitable to assess credit risk changes individually, for a single asset (EY, 2014). In these cases, banks may carry out impairment tests considering assets with similar characteristics, or on sub-portfolios (IASB, 2014) (Note 42). The criteria provided for the aggregation of financial assets are quite similar to those proposed by IAS 39.

The point to highlight here is that the rationale of this assessment is to approximate the result that would have been obtained at an individual level, taking into account not only past due data but also forward-looking economic information (IASB, 2014) (Note 43). This choice, along with the introduction of stage 2, represents the main difference with IAS 39 portfolio impairment. In fact, under IAS 39 it was typical to set the loss identification period (LIP) in equation (1) equal to one year. In this case there is no difference between portfolio impairment of IAS 39 and stage 1 of IFRS 9, except the fact that, under the latter model, banks should measure expected loses also taking into account forward-looking information. For instance, going back to the former case of retail credit loans, the assessment of loans impairment would have required recognising also potential losses on the expected changes in death rates of credit card owners. Thus, the main difference between IAS 39 and IFSR 9 is related to stage 2. This is the main change that has been introduced in the accounting of impairment of financial assets that has received a lot of attention by banking supervisors to assess the impact of IFRS 9 on loan losses provisions and banks capital regulatory resources.

Along with debate related to the transfer criteria for financial assets classification, the IFRS 9 model has been criticised from a conceptual point of view. The introduction of an allowance based on a 12 month ECL has been criticised, since it is a choice without a sound conceptual justification (EY, 2018). It is simply a pragmatic solution introduced to achieve a compromise between the initial IASB 2009 proposal in order to recognise initial expected credit losses over the life of financial instruments and operational challenges related to the implementation of this proposal (Hashim et al., 2016).

iv) Other issues:

Modified financial assets

IFRS 9 accounting treatment for modified assets, not de-recognised, is different from the one provided by IAS 39. IFRS 9 explicitly requires the recognition of a modification gain or loss for the changes of contractual terms, which do not result in assets' de-recognition. At the modification date the carrying amount of the financial asset is revised to reflect the new cash flows (discounted by the original EIR) and the direct attributable costs and the consideration paid or received from the counterparty. Thus, the main difference with IAS 39 is that gain or loss arising from the modifications is recognised immediately in the profit and loss account and charged to the financial assets, whereas under IAS 39 the gain or loss is amortised over the assets' life through the EIR.

POCI – investments

Similarly to IAS 39, the new standard requires for purchased or originated credit-impaired financial assets that '[. . .] the entity shall apply the credit adjusted effective interest rate to the amortized cost of the financial asset from initial recognition' (IASB, 2014) (Note 44). This means that for POCI investments allowance is now recorded for 12-month ECLs, since these assets are born already impaired, with credit-losses reflected in the fair value at which they are recognised (EY, 2018).

3. Implications for the banking sector and the financial system

The adoption of IFRS 9 has raised different issues for the banking sector and has posed challenges for the financial system. On the one hand, many financial institutions report that they intend to exploit the synergies between regulatory and IFRS 9 impairment models by estimating accounting ECLs with the same data used for Basel capital purposes (EBA, 2017) (Note 45). Yet, the adoption of rating models for the computation of accounting ECLs is not a straightforward process, since there are fundamental differences between the two approaches to credit risk. On the other hand, credit institutions should transpose all IFRS 9 data into their business model to assess the real impact of IFRS 9 on Regulatory Capital resources and if it can influence banks' investment strategies. Although a significant decrease in Tier 1 Capital ratios, driven by the upsurge of banks' provisioning levels is widely expected (ECB, 2017), the first empirical evidence available reveals that the overall impact of IFRS 9 on regulatory capital ratios has not been substantial, due the combination of different side effects that moderate the influence of provision upsurge at the transition date (Deloitte, 2016). Furthermore, the current COVID 19 pandemic has stressed the threats that the IFRS 9 models can have on pro-cyclicality. After a brief overview on how banks calculate regulatory capital requirements for credit risk and the interdependencies between accounting provisions and prudential regulations, this section discusses the main implications of IFRS 9 for the banking sector.

3.1 Basel capital requirements for credit risk

EU credit institutions are subject to the Capital Requirements Directive CRD IV 2013/35 EU and the Capital Risk Regulation (CRR), Regulation EU 575/2013 that implement the framework set at international level by the Basel Committee for Banking Supervision (BCBS). Under EU Regulations, banks have to hold a minimum amount of capital to absorb losses arising from "Pillar 1" risks (credit, market and operational). In order to comply with Pillar 1 requirements, capital cannot be lower than 8% of Risk Weighted Assets (RWAs), which are obtained multiplying banks' assets by their respective risk weights. In other words, each asset is weighted according to its underlying risks; a higher risk asset is associated with a higher risk weight than a lower risk asset.

Banks can calculate (Pillar 1) capital requirements for credit risk according to two methodologies: the Standardised Approach (SA) and the Internal Ratings-Based (IRB) Approach. Exposures are allocated to different portfolios according to the type of counterparty (e.g. corporate, retail, sovereigns) and specific risk weights are assigned to each portfolio. Banks do not necessarily apply the Standardized or the IRB approach to all credit portfolios. As a general principle, banks that decide to adopt the IRB approach commit themselves to applying it to their whole credit portfolio. However, a gradual phase-in is allowed by regulators and, even more importantly, IRB banks can be authorized to use the SA for a limited portion of their portfolio permanently (permanent partial use – PPU).

Under the Standardised Approach, RWAs are calculated applying predefined risk weights to Exposure at Default (EAD). Risk weights are set by the Regulation and depend on the external rating of the borrower, as provided by an External Credit Assessment Institution (ECAI). For corporate exposures, for instance, risk weights can be

20%, 50%, 100% or 150%. For unrated exposures, a fixed 100% risk weight is used.

The exposure value of an asset is represented by its accounting value net of specific credit risk adjustments. For off-balance sheet items the exposure is obtained multiplying the nominal value and net of specific credit risk adjustments, by a regulatory conversion factor.

For banks applying the SA, provisions (credit risk adjustments - CRAs) can be considered general (GCRAs) or specific (SCRAs). SCRAs reduce the exposure value and are not added back to any part of the Regulatory Capital. GCRAs do not reduce the exposure value and are included in Tier 2 capital up to 1.25% of credit risk RWAs.

The EBA has clarified that all IFRS 9 provisions should be considered SCRAs, because under IFRS 9, provisions need to be allocated to individual exposures or groups of exposures, therefore they cannot be considered as freely and fully available.

Under the IRB approach credit risk is estimated using a set of parameters: probability of default (PD), loss given default (LGD), exposure at default (EAD) and maturity (M). The PD is the probability that the counterparty defaults on its obligations within 1 year, LGD is the amount that the bank should expect to lose in case of default, EAD is the exposure towards the counterparty when default occurs gross of specific provisions and write-offs, and M is the maturity of the loan.

The PD is an outcome of the internal rating system of the bank, which needs to be validated by the supervisory authority. LGD, EAD and M are either provided by the regulation (Foundation IRB) or estimated by the bank through internal models that need to be validated by the supervisory authority (Advanced IRB). Regulatory risk weights are calculated combining the credit risk parameters in an analytical formula based on the Asymptotic Single Risk Factor (ASRF) model, which allows estimating the credit risk of a portfolio on a loan by loan basis, assuming a large number of relatively small exposures.

An essential feature of regulatory RWAs in general, and in particular of credit risk RWAs under the IRB approach, is that they are calculated assuming that capital should cover unexpected losses, while expected losses should be covered by accounting provisions.

Banks are required to check such assumptions comparing expected losses as calculated under the IRB approach with all provisions (e.g. specific provisions, partial write-offs, portfolio-specific general provisions such as country risk provisions or general provisions) that are attributed to exposures treated under the IRB approach. If expected losses exceed provisions, the difference must be deducted from Common Equity Tier 1 Capital. On the other hand, if provisions are larger than expected losses, banks can recognise the difference in Tier 2 capital, up to a maximum of 0.6% of credit RWAs calculated under the IRB approach.

3.2 Basel vs. IFRS 9 risk parameters

This section describes the features of Basel risk parameters that do not allow them to be directly used for IFRS 9 purposes. It also provides an overview of how banks leverage on those parameters to calculate loan loss provisioning, after adjusting them to be compliant with IFRS 9 requirements.

The introduction and application of the IFRS 9 impairment framework in banking institutions presents additional complexities and constraints with respect to other firms. Banks are required to comply not only with the accounting principles and related documents, but also with the guidance issued by banking regulatory and supervisory authorities (BCBS 2015 and EBA 2017). Moreover, impairment models may come under scrutiny during both onsite and offsite supervisory activities.

Basel risk parameters are calculated not only by IRB banks but also by most non-IRB banks, which use them for managerial purposes, like credit granting, monitoring and loan loss provisioning. The degree of sophistication of such estimates reflects the size and the underlying risks of the bank's credit portfolio, but when risk parameters are estimated applying the Basel requirements, some adjustments are also required to be consistent with IFRS 9.

Rating systems used by financial institutions for credit risk management purposes, including the assignment of PDs to their credit counterparties, can be divided into two broad categories: point-in-time (PIT) and through-the-cycle (TTC).

PIT rating systems use all currently available information to assign borrowers to rating classes, therefore a borrower's rating can be expected to change according to current economic conditions. TTC rating systems are not affected by changes in macro-economic conditions, therefore individual ratings can change because of idiosyncratic factors, but the distribution of ratings across borrowers remains stable over the business cycle. In

practice most rating systems are hybrid, including elements of both PIT and TTC philosophies in the rating assignment process. However, the "degree of hotness" of an individual borrower's PD depends not only on the rating philosophy, but also on the calibration process.

The Basel Regulation does not require use of a specific rating philosophy for the rating assignment process, but is more inclined towards a TTC calibration of PDs, as it requires that PD estimates should reflect the long run average of one-year default rates in order to ensure that they are relatively stable over time. As for the LGD parameter, Basel 2 requires that estimates of recovery rates reflect economic downturn conditions. When loss severities show cyclical variability, this means relying mainly on data observed during periods of high credit losses.

IFRS 9 expected credit losses must be calculated using point-in-time (PIT) estimates, reflecting all available information and forecasts on future economic conditions. Therefore, banks that apply the IRB approach, or estimate risk parameters for managerial purposes applying the IRB logics, use those estimates as a starting point, but then need to adjust them to reflect forward looking information. As previously clarified, the new accounting principle requires expected credit losses to be calculated as unbiased and probability-weighted amounts over a range of possible scenarios. Thus, any margin of conservatism or other prudential adjustment applied in the Basel estimation process of risk parameters should be eliminated.

Future macroeconomic and financial scenarios are commonly incorporated into risk parameters using "satellite models", i.e. econometric models that link default rates or recovery rates to a set of economic and financial explanatory variables. Based on such models, forecasts on future economic conditions can be used to calculate expectations on future default rates and recovery rates.

Finally, in order to allow the calculation of lifetime ECLs for Stage 2 exposures, the outcome of satellite models is used to convert TTC PDs into PIT (forward-looking) parameters, not only with a 1-year horizon, but covering all future time periods until final maturity of all credit exposures. On the other hand, LGD does not require a lifetime adjustment as it is already estimated over a multi-year horizon in order to take into account all observed recoveries.

As for EAD, for the first year, the exposure value is usually represented by the current book value (amortised cost), except for undrawn commitments where the exposure is obtained multiplying the off-balance amount by a Credit Conversion Factors (CCF). The CCF should not include any margin of conservatism but represent an unbiased estimate, therefore CCFs used for regulatory purposes should be adjusted to exclude conservative components. In order to calculate EAD for future time periods (until maturity), it is necessary to distinguish between products with a predefined repayment plan and other exposures. In the first case, EAD can evolve according to the contractual repayment plan, possibly adjusted to include forecasts on prepayments. In the second case, future drawn and undrawn amounts should ideally reflect forward looking information, or they can be kept constant if specific information is not available or reliable.

The IFRS 9 forward looking risk parameters play an essential role in the new impairment framework. Firstly, they are used for staging purposes, as the change in lifetime PD between reporting and origination dates (together with qualitative information and backstop indicators) is required to assess significant credit risk deterioration. Secondly, they are used for ECL calculation purposes, to estimate 1-year and lifetime expected losses. As for Stage 3 exposures, in particular, forward-looking LGDs are used to evaluate small exposures on a statistical basis, while forecasts on future economic conditions and on collateral values are incorporated into the evaluation of medium-large exposures.

3.3 Regulatory Capital impact of IFRS 9

Preliminary evidence on the first application of IFRS 9 shows that, as expected, the impact of the new accounting principle on Regulatory Capital is mainly due to the new impairment framework (EBA, 2017).

The most important reclassifications are from AC to FVTPL, due to the results of the SPPI test, and from AFS to AC, probably because IFRS 9 only allows reclassifications from FVOCI with a change in the business model. In both cases the impact on Regulatory Capital is mostly not significant.

As anticipated in all impact assessments conducted before FTA, banks reported a significantly negative impact on their fully-loaded CET1 ratio, arising from new loan loss provisions required by IFRS 9. Such impact is substantially mitigated by the transitional arrangements provided by Regulation (EU) 2017/2395. The results show a significant variability among financial institutions, because the increase in provisions may depend on various factors, like the quality of the bank's portfolio (e.g., exposures in Stage 2), and its composition (e.g.,

long-term exposures). Moreover, the new accounting principle allows a significant flexibility in its application, and different modelling assumptions and approaches may increase the variability of impairment estimates.

In general, the average impact on Regulatory Capital is lower for (mostly) IRB banks, since the new provisions can compensate any shortfall with respect to Basel expected loss, and only the exceeding part has a negative impact on CET 1 capital. On the other hand, portfolios under the SA approach can only benefit from a reduction in EAD, but this cannot compensate the total impact of new provisions on CET 1.

3.4 The pro-cyclicality of IFRS 9 and the COVID-19 economic crisis

The introduction of IFRS 9 was expected to contribute to financial stability, because the new impairment framework allows an earlier recognition of credit losses with respect to the IAS 39 incurred loss model, thus addressing the G20's concerns about the issue of 'too little, too late' recognition of such losses. The implications of the new accounting principles for financial stability, in particular on its potential to reduce the procyclicality of IAS 39, have been discussed by supervisors and practitioners since the publication of its earlier drafts. A pro-cyclical accounting regime is considered a threat for financial stability, because it creates an incentive to reduce credit supply during economic downturns, thus exacerbating the negative effects of recessions.

The IFRS 9 expected loss framework allows the anticipation of some provisioning with respect to IAS 39, but the new impairment model remains inherently (maybe inevitably) procyclical, as it is based on point-in-time information. During economic downturns migrations of exposures from Stage 1 to Stage 2 increase and credit risk parameters used to calculate ECL deteriorate, thus the room for granting new loans is smaller. Recent research (Abad and Suarez, 2017) suggests that IFRS 9 may be even more pro-cyclical than IAS 39, through a sort of self-fulfilling expectations mechanism. Due to their forward-looking nature, loan loss provisions under IFRS 9 concentrate at the beginning of economic contractions, when the final magnitude of the downturn is still uncertain and could be reduced providing credit supply to the real economy.

The potential pro-cyclicality of loan loss provisioning remains a major concern for regulatory and supervisory authorities, which have issued statements and guidelines regarding the application of IFRS 9 during the pandemic, aimed at reducing negative spillovers for the economy. The key message of all authorities is that banks should not apply SICR criteria and ECL methodologies mechanically, but rather utilize all options allowed by the accounting principle, in order to avoid sharp increases in provisioning that may be overestimated in the medium-long term (EBA and ECB 2020).

The EBA statement is mainly aimed at avoiding a large transition of exposures from Stage 1 to Stage 2, therefore it is mainly focused on SICR criteria. The EBA has expressed the view that public and private moratoria allowed as a response to COVID-19 epidemic do not have to be automatically classified as forbearance measures. This has immediate consequences for IFRS 9, as forbearance measures are typically considered as Stage 2 triggers. Moreover, the EBA recommends distinguishing borrowers whose credit quality is unlikely to be restored, and those who are expected to recover in the medium term. Moreover, the outcome of such evaluation should take into account the current economic uncertainty.

The ECB guidance recommends expanding the application of collective assessment to evaluate SICR, using a top-down approach, given that the current economic uncertainty makes it very difficult to assess credit deterioration on an individual basis. The ECB also provides guidance on how to include forward-looking information into ECL models. In particular, when building their baseline macroeconomic scenario, banks are expected to build forecasts for specific years using ECB projections as anchor points, and taking into account a potential rebound of the economy. For longer time horizons, when specific forecasts lose relevance, the ECB recommends using long term macroeconomic projections, covering at least one economic cycle in order to avoid any bias due to current economic conditions.

4. Empirical evidence on Financial Instruments and Accounting Standards

In order to shed light on the possible economic consequences of the new IFRS 9 classification, measurement and impairment model, we have reviewed the main literature about financial assets in the banking sector. According to Zeff (1978) and Holthausen and Leftwich (1983), economic consequences can be understood to mean the impact of financial reporting (changes) on the decision making of businesses and on firm value, or the wealth of those who use accounting information for decision making.

Research on the economic consequences of changes in impairment models of financial assets falls mostly into

the former category because it investigates the discretionary use of accounting provisions and its consequences on the banks' financial position. Conversely, research on classification and measurement of financial assets falls mostly in the latter category of studies, namely in the value relevance strand, since it investigates if specific accounting measurement bases (e.g, fair value) add value for investors or regulators. These two broad streams of research are analysed in the next sections.

4.1 The value relevance of fair value

Value relevance studies on banks' financial accounting can be defined as those empirical studies which address and measure the relationship between the information provided by banks in their financial statements and their market value (Holthausen and Watts, 2001).

This stream of literature is extensive and tracks back to the late 1980s. Until the early 2000s, the attention was mostly directed towards the US. This is because the FASB, the Standard Setter for US Generally Accepted Accounting Principles (US GAAP), has been the first to comprehensively address the issue of accounting for financial instruments, in a time when European and non-European countries that adopted IFRS in 2005 still applied their own national GAAP. Subsequently, the attention has shifted more and more towards the value relevance of accounting information provided by IFRS, but the studies on such matters are still very limited.

The review of this literature is divided into three main sections. In the first one, the value relevance literature analyzing the relevance of fair value under the US GAAP regime will be discussed. Then, the value relevance under IFRS will be also explored even if the literature is still not well developed. In the last section, the findings on fair value in the period of the financial crisis will also be presented.

4.1.1. The value relevance of fair value in the US GAAP regime

One of the most tackled subjects in the value relevance literature is whether fair value accounting is value relevant and whether it provides valuable information for investors that are correctly reflected in the banks' share prices. The first point of discussion in the value relevance literature is whether fair value provides a better measurement basis for financial instruments with respect to historical cost (Note 46), in that this valuation has explanatory power on the banks' market value. Empirical works published in the 1990s and early 2000s only focus on the US banking system and in particular, on the effects that the SFAS 107 had on the relevance of fair value information. This standard is part of the US GAAP and is related to the matter of disclosure. Specifically, it requires firms to disclose the fair value of the financial instruments they own either directly in the financial statements or in the accompanying notes (Nelson 1996, p. 163). These instruments must instead be recognized at historical cost in the financial statements.

Barth (1994) analyzes whether the fair value disclosures of investment securities and their gains and losses result in increased reflection of these values in the stock price of the banks, specifically regarding whether they had been measured at historical cost. In order to do so, the author considers a sample of US banks between 1990 and 1994. The findings of the study demonstrate that fair value measurement for investment securities provides an incremental explanatory power of stock values with respect to historical cost. The opposite is true for realized gains and losses on these securities. In fact, historical cost accounting provides a superior outcome with respect to these items, and this effect is probably due to the large measurement error that results from the consideration of the fair value changes over multiple years. Similar findings are proposed by Barth, Landsman and Wahlen in 1995, which examine the effects of fair value measurement on earnings' volatility by considering a sample of US banks over a much larger time span with respect to the above-mentioned study. Their findings indicate that banks' earnings based on the valuation of gains and losses on investment securities at fair value show a higher degree of volatility with respect to earnings computed through the use of historical cost accounting for gains and losses. This increase in volatility can be attributed, as in the previous case, to the measurement error that is generated when estimating the realized gains and losses at fair value. However, this higher volatility is not reflected in the banks' stock prices. Ahmed and Takeda (1995) partially support the view of the aforementioned studies, showing how that only if the risk-sensitivity of other financial assets and investment securities is controlled are realized gains and losses value relevant.

In 1996, Barth, Beaver and Landsman use a sample of listed US banks between 1992 and 1993 in order to observe whether the fair value disclosures on loans, investment securities and long-term debt are better reflected in share prices with respect to the case in which measurement was carried out at historical cost. Evidence points towards the fact that fair value estimates of investment securities and loans in particular explain a large part of

the stock prices of banks. The loans' high explanatory power depends on the fact that the use of fair value as a measurement basis makes the loan reflect the underlying credit and interest rate risks.

While the findings on investment securities confirm what has been observed by prior studies, the evidence obtained by the authors on the value relevance of loans clashes with the study performed by Nelson (1996). In fact, the latter considers a sample of US banks in 1992 and 1993 and his findings indicate that the fair value of loans is not reflected in stock prices, while he observes an increase in the explanatory power of the fair value disclosures of investment securities. However, after checking for the effects of Return on Equity and the growth in the Book Value of Equity, this effect is eliminated. According to the author, these findings indicate that the results of previous studies like Barth (1994) and Barth et al. (1996) are biased. In fact, the large measurement error that characterizes these models undoubtedly derives from the omission of relevant variables that, if included, could have demonstrated that fair values of gains and losses are not actually value relevant. The findings exposed by Nelson are reinforced by the study performed by Eccher *et al.* (1996), which provides evidence on the fact that value relevance of loans and investment securities is higher if historical cost is used, when the market-to-book ratio (Note 47) is added in the model. Beaver and Venkatachalan (2003) study the value relevance of loans fair value by assuming that loans are made up of a discretionary and non-discretionary component. In order to test whether and how investors value discretionary behaviour in the determination of loans' fair value, the authors divide the fair value of the loan in a discretionary, non-discretionary and noise component, and consider them in relation to the Market Value of Equity. By using a sample of 320 American Commercial Banks over the period 1992 to 1995, the authors find that the non-discretionary component is priced dollar-per-dollar, while the discretionary component is priced with a higher pricing multiple. These findings can be interpreted as supportive of the signalling hypothesis, meaning that managers communicate private information through the fair value of loans and that, for this reason, this information is actually value relevant.

If compared, it is evident that these studies lead to inconsistent results, and it is therefore impossible to generalize their conclusions. The reasons for this failure have largely been discussing by Barth, Beaver and Landsman (2010) and Holthausen and Watts (2001), which although sustaining opposing positions most of the times agree on one issue: the weak specifications included in the models. First of all, both reviews contend that researchers have failed to distinguish stock price levels from stock price changes and this has led them to draw wrong inferences. Another commonly recognized problem is that only book values are used in the value relevance studies of the 1990s, except for a few examples like Nelson (1996) and Eccher (1996) presented above. Taking market values into account is essential if one wants to infer the value relevance of fair values correctly, since market conditions are direct determinants. This can also be extended to credit and interest rate risks, which should have undoubtedly been included in the models' specifications due to their high correlation with fair values.

Holthausen and Watts (2001) also advocate that firm-specific characteristics should have been included in the regressions since they could have improved the significance of the results. This view is also shared by Beatty and Liao (2014), which specifically sustain that the consideration of capital requirements would have been essential for these studies to provide more significant results. In addition, the latter authors also point out that the value relevance literature in this period merely described the mechanisms tied to fair value measurement but did not discuss how fair value impacted the issues of asymmetric information among banks and managers.

Two later studies which have the same subject of Barth (1994), Barth et al. (1995) and Ahmed and Takeda (1995) are those performed by Dong et al. (2014) and Baht et al. (2015), which include risk-specific and company-specific variables and effectively reach different results with respect to the previous literature.

Specifically, unrealized gains and losses are also value relevant if market and credit risks are controlled (Bhat and Ryan 2015). However, Dong et al. (2014) find that realized gains and losses have incremental explanatory power above unrealized gains and losses. This becomes evident by comparing the value relevance of unrealized gains and losses in Other Comprehensive Income and their value relevance when they are recognized in the Income Statement as realised gains and losses.

There is a large body of literature that examines whether fair values computed according to the fair value hierarchy decrease or exacerbate asymmetric information between banks' managers and investors, due to the possibility that managers may exercise their judgement in determining these measures. It has been seen that fair values under IAS 39 are computed according to a three-level hierarchy, which provides that observable market prices should be used to compute fair values. Should it be impossible to rely on this kind of inputs, one can use valuation techniques.

The FASB provides the same hierarchy of inputs for the measurement of fair values in the SFAS 157 - Fair Value

Measurement issued in September 2006. The aim of the value relevance research in this setting is to analyze whether fair value results in reliable information to investors in light of the possible use of judgement in the determination of the inputs employed in its computation. Reliability, in this context, can be considered as a determinant of relevance.

From a theoretical point of view, fair value is considered to be an efficient measurement basis for financial instruments, since it can be used by managers in order to convey private information to investors and may results in a higher informative power for investors when deciding whether or not to invest in a given bank. However, the inherent characteristics of this methodology may also provide scope for manipulation of both Net Income and Regulatory Capital. In addition, the measurement error that may be generated if unobservable inputs are used in the derivation of fair values may significantly affect the relevance and the reliability of such information (Landsman 2006; Penman 2007)

These claims are confirmed by the empirical results obtained by Kolev (2008), who analyses the data contained in the disclosure on the fair value measurement for financial assets of American banks for the first two quarters of 2008. Specifically, the author tests whether there are differences in the value relevance of Level 1, Level 2 and Level 3 fair value estimates and whether there are factors that may influence it. The results show that all the three Levels of estimates are value relevant in that they are positively associated with the market value of the banks' Equity. However, while Level 1 estimates are correctly priced by investors, Level 2 and Level 3 estimates are under-priced, probably because they are perceived to be more susceptible to measurement errors or the possibility of manipulation by the banks' managers. However, only the difference for Level 3 estimates is statistically significant. These findings are corroborated by those of Goh et al. (2009). In a similar fashion, the author collects quarterly data for 1,993 US banks for the first nine months of 2009 and tests whether and in which way the market prices of these banks are associated with the three Levels of fair value estimates. The findings indicate that investors positively price Level 1, Level 2 and Level 3 estimates, but they tend to under-price the latter two categories. In particular, Level 2 and Level 3 estimates appear to be equally priced by investors, but they are perceived as significantly less valuable with respect to Level 1 estimates. These discrepancies are justified, according to the authors, by the fact that during the financial crisis, investors were particularly concerned by the lack of liquidity and the information risks associated to assets measured using Level 3 inputs.

Both studies perform a cross-sectional analysis in order to test whether there are any factors that influence how investors price the fair value estimates. Kolev et al. (2008) and Goh et al. (2009) find that the extent of the reliability of the fair value estimates increases for banks that have higher Regulatory Capital and high-quality auditing. The fact that Regulatory Capital is higher may provide investors with the impression that banks are sounder, and that the liquidity risk is low. At the same time, the quality and knowledge of auditors can be perceived as a deterrent to informational risk since significant measurement error could be detected and corrected by the auditors and the possibility of manipulation of the estimates is extensively reduced.

Finally, a similar study has been performed by Song et al. (2010) and the findings are essentially the same as those of the previous two works. Also, in this case, the sample is made up of US banks with available quarterly data for the first three quarters of 2008. Concerning value relevance, the results obtained by Song et al. (2010) are slightly different. In fact, there is evidence that value relevance is lower for Level 3 estimates of assets' fair values, while Level 1 and Level 2 estimates appear to be on a similar grade. However, Level 3 assets are under-priced with respect to the two superior Levels, probably because the investors perceive that the lack of observability of the inputs used in their computations may result in measurement errors and a subsequent reporting bias. Nonetheless, all three Levels are value relevant to investors and are positively associated with the market value of the sample banks.

A cross-sectional test is also performed by Song et al. (2010), but instead of testing for the influence of Capital Adequacy Ratios and auditor's reputation on the fair value estimates, the work relates value relevance to different degrees of governance strength. As one may have expected, Level 3 assets under weak governance regimes are not value relevant and the value relevance of Level 1 and Level 2 estimates significantly decreases. On the contrary, when governance is strong, investors perceive less information asymmetry and a lower risk of measurement error. For this reason, all three Levels of estimates have increased value relevance with respect to the plain case.

Departing from the empirical works examined up to now, Goh et al. (2015), in an extension of the aforementioned 2009 study, tested how the fair value hierarchy value relevance changed after the financial crisis. In addition to testing the fair values of assets as in the previous study, Goh et al. (2015) also take into account

financial liabilities in this case. Data is collected for US banks for all quarters from 2008 to 2011. As in the 2009 study, there is evidence that Level 3 estimates are priced lower than Level 1 and Level 2 fair values during the four years considered. However, these pricing differences decrease as one moves from 2008 to 2011. Confirming the findings of the prior studies by Song et al. (2010) and Kolev (2008), higher Capital Adequacy determines a higher pricing for all the three Levels of estimates. In summary, the results obtained in a period of stability are not very different from those achieved during the financial turmoil. In fact, investors still price Level 3 estimates lower than the other two Levels, probably because investors perceive a higher degree of information asymmetry.

4.1.2. The value relevance under IFRS

Evidence on the relevance of fair values under IFRS in the banking sector is very limited, while more studies have been performed in other industries. However, given the focus of this work on banks and considering the special nature of their activities and financial reporting, it is not suitable to take the studies performed in other industries into account, because the findings cannot be generalized to this specific setting.

Basically, studies on the value relevance of accounting information of IFRS in the banking industry focus on two main aspects: the variation in the value relevance before and after the adoption of IAS 39 and the differences in value relevance of the classifications of financial instruments under IAS 39.

Regarding the value relevance before and after the adoption of IFRS, Agostino et al. (2011) have constructed a sample with banks listed in the 15 EU countries (Note 48). They have done so in order to investigate the partial effects of earnings and the Book Value of Equity on banks' share prices provisional on the adoption of IFRS. Despite the fact that they do not specifically address IAS 39, it can be inferred that the focus is on this standard, given that banks' financial assets and liabilities constitute the greater part of the banks' Balance Sheet and are the main object of their activities. The findings indicate that the value relevance of earnings increases in the whole sample and the strongest incremental effects were in Germany and Italy, while the UK displayed the lowest impact. On the contrary, the effects of IFRS adoption on the value relevance of the Book Value of Equity are not clear, because the results vary according to whether the sample is balanced or unbalanced. No straight conclusions can be gathered. The authors continue the analysis by using a cross-sectional check in which they test whether there are differences in the value relevance of small versus large banks. For smaller banks, the results are similar to the first case. Namely, earnings acquire more explanatory power and are positively associated with stock prices after the introduction of IFRS, while the Book Value of Equity is negatively associated with stock prices, and its relevance tends to decrease across the years. Conversely, for large banks, both earnings and the Book Value of Equity are value relevant and are positively associated with the market value of the bank. This difference may be explained by the fact that small banks tend to be opaquer, even after the adoption of IFRS, because their owners are usually local investors that require less information regarding those who invest in larger banks.

Some years later, Manganaris *et al.* (2015) carried out a similar study. The sample used in this paper is constructed in the same way as Agostino et al. (2011), but the time span over which observations are collected is much wider than in the previous study. Also, the model used to test the value relevance of earnings and of the Book Value of Equity after the introduction of IAS 39 is different. In fact, the authors use both a price and return model to investigate the matter. In the first case, the authors test whether the Market Value of Equity reflects its Book Value and Net Income. In the second case, value relevance is tested by observing whether returns actually represent the current and future levels of earnings per share. Country-specific variables are added to both models in order to control for environmental differences. The results obtained from the price model are quite similar to those of Agostino et al. (2011) in the case of large banks. Specifically, evidence exists that the value relevance of earnings significantly increases after the adoption of IFRS, while that of the Book Value of Equity shrinks. The return model confirms that the value relevance of earnings increases, as it can represent the current and future level of earnings. Significant differences also exist among different countries, depending on their degree of legal enforcement of the accounting standards. Countries with a larger degree of enforcement have experienced a rise in the value relevance of both earnings and equity, meaning that, if properly applied, IFRS may lead to a significant reduction in the information asymmetry between banks and investors.

To sum up, these two studies show that the value relevance of earnings increases after the introduction of IAS 39. However, substantial differences exist if the country and bank-specific characteristics are taken into account. This suggests that national differences persist in the application of IFRS, despite 12 years having passed since the date of initial application in most European countries. In addition, IAS 39 and the extensive use of the fair value that it brings increase earnings volatility, which is reflected both in the Income Statement and in Other

Comprehensive Income (Duh, Hsu and Pimenta Alves 2012), in line with the findings of previous research (Barth, Landsman and Wahlen 1995).

As already said, there is another stream of research on the value relevance of IAS 39 that deals with the classification of financial instruments. Although the studies in this area are very limited, it will be possible to note some relevant links to the US GAAP literature presented above.

Fiechter and Novotny-Farkas (2017) have examined whether the reported fair values of the assets classified as Held-for-Trading, Available-for-Sale and designated at fair value through profit and loss upon initial recognition are value relevant to investors. A global sample of 907 banks located in 46 countries, for which data from 2006 to 2009 are collected, is used in order to test whether these classifications are value relevant, in the sense that they are able to communicate to investors the value that they may create, as reflected in the banks' share prices. In the second part of the study, the authors also test whether there are country-level differences in the ability of investors to perceive fair value information. To perform this task, countries are categorised as either bank-based or market-based, since the degree of information flow among investors between the two systems is significantly different. In the first case, investors can rely on much less information with respect to those in the market-based system.

The first interesting finding is that assets designated at fair value are generally less value relevant than assets classified as Held-for-Trading and as Available-for-Sale. This difference is exacerbated in bank-based countries, where investors are less informed and the fact that managers voluntarily decide to classify financial assets at fair value may be considered as opportunistic behaviour. The value relevance of Held-for-Trading and Available-for-Sale financial assets does not vary between the two systems. The results change, however, when the researchers add a control variable for the level of transparency of the information provided by banks. In this case, the value relevance of the assets designated at fair value increases considerably, even in a bank-based environment. This finding is in line with the view offered by Fiechter (2011a), which finds that the use of the fair value option, which consists of the designation of financial assets at fair value through profit and loss, is not used by managers as a discretionary tool, but it is mostly employed as a way to reduce earnings' volatility due to accounting mismatches. This practice is correctly perceived by investors everywhere, but it is even more relevant in countries where there is a high-quality normative environment.

In accordance with the evidence provided by Song et al. (2010, 2015), Goh et al. (2009) and Kolev (2008), the Level of inputs used in the computation of the fair values has some effects on the value relevance of the different categories of financial assets. Specifically, even if the fair values of Available-for-Sale securities are those derived from the higher proportion of Level 3 inputs, only Level 1 fair value estimates for assets designated at fair value through profit and loss are under-priced by investors, and this discount is higher in the bank-based system. This effect was stronger in 2008, when markets were more illiquid (Fiechter and Novotny-Farkas 2017).

Drago at al. (2013) also investigate the fair value and the amortized cost value relevance of loans for a sample of 83 European limited banks from 2005 to 2008. They find that fair values of loans are value relevant since they have an incremental explanatory power for banks' stock prices with respect to loan book values. Their findings confirm the previous results by Barth et al. (1996), but are opposed to Eccher et al. (1996) and Nelson (1996). This study is the first to analyze the value relevance of fair values for loans in the context of IFRS and is characterized by great limitations. In fact, the sample used for the analysis is unbalanced in that disclosed data on the fair value of loans is not available for all banks, and both individual and consolidated balance sheets have been used.

Another study which confirms that the financial assets measured at fair value are value relevant is that performed by Paananen et al. (2012). The authors analyze whether the reclassification of financial assets out of the categories measured at fair value and into amortized cost, as provided for under the amendments to IAS 39 issued in 2008, determines a change in the value relevance of earnings and of the Book Value of Equity. The findings indicate that the value relevance of these two financial figures is lower for banks that have elected to reclassify their financial assets with respect to non-reclassifiers. This finding may have two interpretations. On the one hand, it can be argued that securities measured at fair value are more value relevant than those measured at amortized cost, as proposed by Barth (1994) and Barth et al. (1996). On the other hand, the decision of banks to opt into the reclassification possibility may be considered as opportunistic behaviour in the eyes of an investor, who might then consider the resulting information as not representative of the real market value of the entity. Paananen et al. (2012) do not give a precise answer to this question, but their results show that reclassification has been used by banks to increase their Capital Adequacy Ratios and reduce the volatility of earnings due to the high exposure to fair value measurement. Thus, it can be inferred that banks used this option in good faith, in

order to reduce accounting mismatches and attenuate the detrimental effects of the crisis. Opposing views exist, which instead state that the reclassification option was used in a discretionary way in order to meet certain earnings thresholds (Fiechter 2011).

Essentially, the value relevance literature of fair values for different types of financial assets confirms the findings obtained by US researchers to a large extent. In general, fair values of financial assets classified as Held-for-Trading or as Available-for-Sale are value relevant. At the same time, fair values of loans may have incremental explanatory power for investors as already anticipated in the value relevance research for US GAAP. Moreover, the findings of the IFRS value relevance research confirm that when valuations are opaque and perceived by investors as not being representative of the underlying value of the securities, they are discounted by these constituencies. Although interesting, the research on the value relevance of IFRS is still extremely limited and the samples used in the studies are quite small, especially in the banking sector. For this reason, results should be examined with caution.

4.1.3. The impact of fair value on banks financial statements and Regulatory Capital

In addition to their informative power to investors, fair values were also investigated from a financial stability point of view during the financial crisis.

Although many researchers and practitioners advocate that fair value accounting properly reflects the true value of the financial instruments on banks' and other financial institutions' Balance Sheets, opponents argue that fair values can only do so when markets are liquid and market prices are clearly observable. In general, fair values are influenced by short-term fluctuations in the market. For this reason, they do not reflect the fundamental valuation of the financial instruments and introduce excessive artificial volatility in banks' financial statements (Allen & Carletti 2008). The same view is proposed by Plantin et al. (2008). The authors recognize the limitation of historical cost accounting, which is insensitive to current price levels, but they also point out that fair values may be inadequate for long-lived assets like loans and debt securities, which are also not very liquid per se.

In times of market illiquidity, the price of these financial assets may be eroded and short-sighted firms might engage in their sale in order not to be forced to bear the resulting losses that may have a detrimental impact on both earnings and Regulatory Capital. Such actions may nonetheless turn out to be counterproductive as they could amplify the price fall. In particular, fair value accounting may generate endogenous volatility in this context and prices may not serve the purpose of attaining correct allocation of resources (Plantin, Sapra e Shin 2008).

It is true that fair values can signal a deterioration in the market conditions earlier with respect to historical cost (Acharya and Ryan 2016), but the so-called fire-sales, which correspond to the mechanism of selling assets when they lose value, may generate negative externalities that contribute to the amplification of systemic risk and to the downgrading of the assets' quality for the whole banking sector, posing serious risks to its future viability (ESRB 2017).

These claims are in part dismantled by other researchers. In fact, evidence exists that shows that while fair values actually introduce some degree of pro-cyclicality in banks' Balance Sheets and Income Statements due to the recognition of higher losses on financial assets measured at fair value, their contribution to the financial crisis has been only marginal (Novoa, Scarlata & Solé 2009). The prudential filters applied under Basel II prevented Regulatory Capital from being affected by gains and losses on financial instruments measured at fair value. Thus, the pro-cyclicality of fair value was largely mitigated in this way and it is extremely improbable that it has had any detrimental effect on the stability of the banking sector (Barth and Landsman 2010).

During the financial crisis, banks followed a mixed-attribute model for the measurement of financial assets, as in the case of IAS 39. The same was true for US GAAP. Provided that loans make up for the greatest part of banks' financial assets (Laux & Leuz 2010; Beatty & Liao 2014), it is the impairment of financial assets measured at amortized cost that had the major detrimental impact on banks' capital and that dramatically increased the credit risk of banks (Badertscher, Burks and Easton 2012; Laux 2012).

The mechanism through which impairment affect banks' capital will be explained in the next section, together with empirical evidence that provides interesting examples of how relevant the correct application of impairment provisions is for the financial stability of banks.

In addition, Fiechter (2011) investigates the effects of the amendment to IAS 39 of 2008, which permitted entities to reclassify financial assets out of the categories measured at fair value. The reclassification exercised an impact on the value relevance of financial information provided by the banks that chose to apply it. They also

yielded considerable consequences on the financial statements' figures of banks. The author constructed a sample of 219 European banks that applied IFRS and were located in 37 countries. Among them, 76 entities voluntarily chose to reclassify financial assets. The methodology used in this study consists of the use of a simple ratio analysis, which, nonetheless, provides significant conclusions on the impact of the reclassification option on two profitability measures, Return on Equity (ROE) and Return on Assets (ROA), as well as on three capital measures, Tier 1 capital, Capital Adequacy and Leverage.

The entities could choose among three types of reclassifications. First, they could reclassify financial assets out of the Held-for-Trading and into the Loans and Receivables or Held-to-Maturity categories. This reclassification affected Net Income. Alternatively, it was Available-for-Sale financial assets that could be moved to one of the two categories measured at amortized cost. In this case, the reclassification would have affected Other Comprehensive Income, with an ultimate effect on Regulatory Capital. Last, Available-for-Sale financial assets could be reclassified as Held-for-Trading. In this case, assets would have continued to be measured at fair value, but changes in their value were recognized in the Income Statement rather than in Other Comprehensive Income.

The results show that banks massively recurred to the possibility of reclassifying financial assets out of the categories measured at fair value and that the largest reclassification performed was the one from the Held-for-Trading to the Loans and Receivables and Held-to-Maturity categories. The mean total amount of assets reclassified in this way corresponded to 3.9% of Total Assets and 131% of the Book Value of Equity of the reclassifying banks included in the sample.

In economic terms, the reclassification option provided relief to banks in the financial crisis period, in that it generated a mean total increase of EUR bln 22.9 in Net Income and EURbln 16.6 in Other Comprehensive Income for the sample banks.

These positive effects are reflected in the results of the ratio analysis. The differences between the pre- and post-classification measures are statistically significant for both the profitability and capital measures. Tier 1 and Capital Adequacy ratios both increased by 0.5% with respect to the mean ratios without reclassification. The effect of the reclassification on ROE is impressive. In fact, while the mean ROE before the reclassification was negative (-1.4%), the positive effects of the amendment were equal to 1.3%.

4.2 The literature on accounting discretion: loan losses provisions as an earnings and capital management tool

Despite the differences in credit exposure taken into consideration and the time horizon over which this risk must be considered, the role of loan loss provisions under both IAS 39 and IFRS 9 is to provide a buffer to absorb losses due to the impairment of financial assets. However, the IAS 39 and the US GAAP counterparty, FAS 5, provided for the use of an incurred losses model that has been long criticized for the possibility it left to managers to use their discretion as regards the timing of losses recognition.

Loan loss provisions are the most important accrual in banks' financial statements and, for this reason, they have a significant impact on the reported earnings of banks. Also, after the introduction of Basel III they directly affect Regulatory Capital via retained earnings, while under Basel II they only sorted an indirect effect on it (Gebhardt and Novotny-Farkas 2011). Thus, it should not come as a surprise that a large body of literature addresses this subject.

4.2.1 The timeliness of loan loss provisions recognition and its implications on earnings and Regulatory Capital

The delayed recognition of loan loss provisions during the financial crisis has probably been the main factor that has harmed the financial stability of the banking sector.

Prior literature has documented an extensive use of loan loss provisions as a tool to smooth earnings (Greenawalt and Sinkey 1988; Kanagaretnam, Lobo and Yang 2004; Anandarajan, Hasan and McCarthy 2007; Ma 1988; Pérez, Salas-Fumàs & Saurina 2008; Beatty, Ke and Petroni 2002; Curcio and Hasan 2015) and, to a lesser extent, smooth capital (Moyer 1990; Ahmed, Takeda and Thomas 1999; Beatty, Chamberlain and Magliolo 1995; Collins, Shackelford and Wahlen 1995).

According to the IASB, the introduction of the incurred losses approach to impairment as the one used under FAS 5 in the US GAAP should have improved the quality of accounting information provided by banks thanks to the principle-based, market oriented rules demanding extensive disclosure for impairment practices that could have limited earnings management (Leventis, Dimitropoulos & Anandarajan 2011). Indeed, this aim has been reached at least in the countries applying IFRS. Leventis et al. (2011) find evidence that earnings management

has been reduced after the introduction of IFRS, both for early adopters and for those who applied the standard on the effective date in 2005. Moreover, also risky banks, for which earnings smoothing through loan loss provisions was a common practice, seem to have reduced their opportunistic behaviour after the implementation of IFRS. This is also confirmed by Fonseca and Gonzàles (2008), who state that the requirements for extensive disclosure on impairment practices reduced the incentives of banks to use loan loss provisions for earnings smoothing.

Despite the increase in the earnings quality that the incurred losses model for impairment has entailed, is it a deterrent for income smoothing. Evidence shows that the application of this approach resulted in a less timely recognition of loan losses (Gebhardt & Novotny-Farkas 2011).

The main criticism concerns the fact that incurred losses did not reflect all expected credit losses that may have been generated by a loan portfolio (Gebhardt and Novotny-Farkas 2011). Another point against the incurred losses model is the fact that losses on a deteriorated asset had to be recognised only after evidence of a trigger event, and this resulted in a prevention for banks to accumulate appropriate provisioning to face upcoming increases in credit risk. As a consequence, if banks had to deal with the deterioration of financial assets all at once, like during the financial crisis, they might have needed to take immediate action to cover for the losses, but that may, at the same time, have resulted in harm to the Regulatory Capital (Cohen and Edwards 2017). In fact, when banks have to record excessive provisions during economic downturns, they usually hinge on Regulatory Capital (Laeven & Majnoni 2003) because of their inability to raise external capital (Acharya and Ryan 2016).

As stated by Barth and Landsman (2010), the incurred losses model for impairment may generate a certain degree of pro-cyclicality in periods of economic downturn because impaired loans can only be written down if evidence of impairment exists. A less timely and asymmetric recognition of the relative losses may hinder the ability of the market to allocate capital efficiently, as the process is entirely based on financial reporting information, which becomes less representative of the financial assets' value. All in all, it can be stated that the incurred losses model may be responsible for the lower effectiveness of market discipline in periods of economic distress (Barth and Landsman 2010, p. 415).

This accounting practice is therefore totally inconsistent with the claim of the IASB and the FASB, who state that provisioning for credit losses works as a cushion for containing the detrimental effects on Regulatory Capital and on Net Income of sudden losses in assets' values (Balla and McKenna 2009).

Vyas (2011) uses quarterly data for 2007 and 2008 for a sample of 159 US financial companies, in order to examine whether the timeliness of the loan losses recognition aligned with the devaluation schedule as provided for by the credit risk profile of the financial assets that were subject to impairment. The author shows that recognition of loan losses is delayed regarding the timing of the decline in the assets' value, and this delay is higher for firms that are highly leveraged and for those that have Regulatory Capital constraints. Moreover, holding complex credit-exposures is also a determinant of delayed recognition. Huizinga and Laeven (2012) confirm these findings and they provide additional insight into the matter. Specifically, they find that banks tended to overstate the value of their distressed assets, especially those of mortgage-backed securities, and their Regulatory Capital during the US mortgage crisis. As a consequence of this, they provisioned less and later for loan losses. Bouvatier and Lepetit (2008) also question the efficacy of the incurred losses impairment provisions by recognising that the non-discretionary component of loan loss provisions, which is computed by taking into account past levels of non-performing loans and credit risk, tends to be lower in periods of economic upturn and much higher during downturns, implying that loan losses are recognised in a delayed manner. This means that loan loss provisions as computed by banks are the reverse of what is established by the incurred losses model as "contrary to the incurred losses model", in that they anticipate future losses when economic conditions get worse and drastically reduce them when they are in a sound position (Morris, Kang and Jie 2016). This effect, as shown by the previous two studies is stronger for poorly capitalised banks (Bouvatier and Lepetit 2008).

The consequences of delayed loan losses recognition are detrimental to the Capital Adequacy Ratios of banks and this damage can condition their behaviour with respect to both lending (Laeven and Majnoni 2003; Beatty and Liao 2011) and risk-taking (Huizinga and Laeven 2012; Bushman and Williams 2012).

Laeven and Majnoni (2003) found that delays in loan loss provisions until periods of the economic downturn are negatively associated with the ability of banks to issue loans, and that this pattern is common to banks across the world. These findings are confirmed by Beatty and Liao (2011). In their study, the authors propose the so-called capital crunch theory, which posits that lending is particularly sensitive to Regulatory Capital constraints during periods of recession, when Regulatory Capital may be lower and the possibility of obtaining external financing is inhibited. The capital crunch effect is stronger for banks with higher delays in loan losses recognition which have

to rely on Regulatory Capital to make up for the upcoming losses. On the contrary, banks who register higher pre-provision Equity, meaning that they accumulate loan loss provisions in favorable economic times, are less sensitive to the decrease in the lending ability.

In addition to the contraction of lending, the late recognition of loan losses may also determine an excessive increase in the risk exposure of banks. Bushman and Williams (2012) posit that if loan loss provisions are used in a discretionary manner, it is more probable that banks will engage in risky practices that dampen market discipline and endanger the soundness of the banks. An example of this risk-taking behaviour is proposed by Huizinga and Laeven (2012), who show that instead of recognising the losses in the value of mortgage-backed securities, US banks tended to inflate their Book Value in order to avoid the detrimental consequences on Regulatory Capital driven by the need to cover loan losses.

To sum up, the incurred losses model for impairment is a double edge sword.. On one side, it has helped in the reduction of the use of discretion on the part of managers to smooth earnings. On the other side, the fact that impairment losses had to be recognised as a consequence of a trigger event which indicated that the asset was impaired led managers to postpone the recognition of such events until it was too late. The unintended consequences of this behaviour are mostly reflected in erosion of the banks' Capital Adequacy.

4.2.2. Preliminary evidence on the use of loan loss provisions under the expected credit l losses approach

John Dugan (2009) in front of the Institute of International Banks observed that the accumulation of a loan loss reserves in times of economic well-being for banks may have macroeconomic benefits for the banking system as a whole. The expected credit losses model has the benefit of being counter-cyclical. Such an approach could be highly beneficial vis-à-vis the incurred losses approach, as it may not only result in a timelier recognition of loan losses but also in a higher accumulation of loan loss reserves when the economy is prosperous. This may serve as a buffer when the economic cycle starts to follow a downward spiral and loan losses must be recognised. Dugan also states that during the financial crisis, banks have acted in an inverse way. In fact, when the economic cycle was growing, banks tended to accumulate less loan loss reserves, while they suddenly recognised massive amounts of losses when the economic trend was descending. As already seen, this mechanism seriously undermined the earnings of banks and destroyed their capital reserves. This situation, according to Dugan, suggests that a more forward-looking approach to impairment may be desirable, which allows for the recognition of expected losses over a more realistic time horizon.

The vision of Dugan has been mirrored by both the IASB and FASB, who have taken action to implement impairment standards based on the recognition of expected losses rather than incurred losses (Note 49). However, there are some differences among the standards issued by the two Standard Setters, the most notable of which is the difference in the computation of credit losses. While IFRS 9 requires expected credit losses to be computed based on the change in the credit quality of the financial asset over its life, the FASB requires expected credit losses to be equivalent to the present value of the cash flows which will not be collected over the life of the financial assets (Hashim, Li and O'Hanlon 2016).

Very limited empirical work exists on the expected effects of the expected credit losses model. As far as IFRS 9 is concerned, in a simulation on the impairment of a specific Greek Bond held by a fictitious bank under IAS 39 and IFRS 9, Gebhardt (2016) shows that credit losses are recognised earlier under the latter standard with respect to the former. The same findings are exposed by Novotny-Farkas, who theorises that, according to the analytical foundations of both impairment models, the expected losses model will result in earlier recognition of losses (Novotny-Farkas 2016). The findings of this study find approval among Bank regulators (EBA 2017) and can also be generalized to the US (Balla and McKenna 2009).

By anticipating the recognition of losses, it is plausible to assume that IFRS 9 will foster the stability of the banking sector. In fact, the anticipation of upcoming impairment losses may help banks to build real reserves to cover for these losses as they occur (ESRB 2017). In this way, the pro-cyclicality of the loan loss provisions encountered when IAS 39 was applied could be mitigated (Cohen and Edwards 2017). The computation of expected credit losses under IFRS 9 will in fact be based on a similar model as the one used to compute the credit risk of a bank under the Basel III framework. The use of these parameters will produce point-in-time estimates, which will still fluctuate with the business cycle, but to a much lesser extent than under the incurred losses model, where the pro-cyclicality was exacerbated by the late recognition loan losses (Novotny-Farkas 2016). In addition, the capital crunch theory (Beatty and Liao 2011) would be avoided because the timelier recognition of loan losses will increase the transparency of information on the interaction between assets' quality and debt overhangs, and would reduce the impossibility of raising equity capital from external markets in periods

of downturn (ESRB 2017).

5. Conclusions

This paper provides an analysis of the principle differences between IAS 39 and IFRS 9 and examines the main impacts of the new standard on banks' Regulatory Capital. It also undertakes a critical review of the main literature about the economic consequences of classification, measurement and impairment of financial assets. The main arguments of the accounting analysis correspond to: i) the treatment of FVTPL assets as a residual category, ii) the introduction of Stage 2 for the impairment of financial assets which have experience a significant deterioration in credit quality.

The literature review on the value relevance of fair values and on LLPS has led to some key findings. Fair values are generally value relevant. Both the literature on US GAAP and the smaller body of related literature for IFRS have demonstrated that fair values are a reliable measurement basis for debt and equity securities. In fact, this measurement ensures that the value of the asset is correctly perceived by investors and is reflected in the stock prices of banks. As far as loans are concerned, the evidence is mixed and no straight conclusions can be gathered. Also, the relevance of fair values to investors critically depends on the quality of the inputs used in their computation. If observable variables are used, then investors perceive fair value as perfectly reliable. However, when less observable inputs or estimates are used, investors tend to discount this information because they perceive a greater information asymmetry. Moreover, fair values inevitably make banks' earnings more volatile and pro-cyclical. This is because they are substantially based on market prices and these variables tend to reflect the market conditions and to follow their variation. However, these effects have been shown not to be particularly threatening to the banks' financial viability, especially during the financial crisis. This fact can be attributed to the low reliance of banks on fair value measurement that directly derives from the use by banks of a mixed-attribute model, as the one provided for under IAS 39 and kept in the new IFRS 9, which provides for the measurement of the majority of the banks' financial assets – loans - at amortized cost.

As for the impairment of financial assets, the late recognition of losses incurred on financial assets measured at amortized cost seems to have been the main disruptive factor in the exacerbation of the crisis. In fact, although the tight rules provided for under the incurred losses model helped to reduce the incentives to use loan loss provisions for income smoothing practices, this model led to unexpected consequences on the financial stability of banks. In fact, the late recognition of loan losses reduced the ability of banks to lend or raise external equity capital, and led them to undertake risk-taking activities, which collectively determined an erosion in their Regulatory Capital. These dangers will probably be limited under the new IFRS 9 through an expectation-based approach to promptly identify potential losses. This uncertain impact of IFRS 9 on the pro-cyclicality represents a topic for future research, and it will have to be carefully evaluated in light of the experience of the current economic recession induced by the Covid pandemic.

The IFRS 9 accounting treatment of financial assets provides opportunities for further research.

Another area worth examining is the impact of IFRS 9 on banks' reporting practices. For instance: i) what are the main reclassifications due to the results of the SPPI test and Business model test?, ii) what is the impact on reported numbers and on Regulatory Capital?, iii) how many entities make use of the FVOCI election and what are the characteristics of these entities? After having clarified the outcome of the new classification model, researchers could test whether this outcome would be a natural consequence of the SPPI and BM requirements, a discretionary maneuver of managers to avoid the restrictions of Basel requirement or to achieve some earnings' management, or simply misapplication of the model. Paananen et al. (2012) and Fiecther (2011) provide some indirect advice on how to develop such an analysis. In general, this research may generate relevant standard-setting implications. A finding that points towards the use of judgments on the part of banks may indicate that the IASB has not fully attained the main aim of reducing the subjectivity involved in the standard's requirements and may need to re-work it once again.

A further relevant issue to investigate could be the effects of the new classification model on market participants. Are any investor or market impacts observable? How do investors respond to FVOCI election? In general, the value relevance of financial information provided under the new asset categories would be needed. If IFRS 9, although theoretically simpler and more accurate than that used under IAS 39, results in the generation of less relevant information, standard setters would have to face an interesting trade-off between relevance and reliability. Analyzing the value relevance of IFRS 9 classification and measurement may also be an interesting step forward for the literature concerning value relevance under IFRS (Agostino, Drago and Silipo 2011; Drago, Mazzucca and Trinca Colonel 2013; Manganaris, Spathis and Dasilas 2015), extending both a price and a return

model to investigate the matter and controlling for environmental differences between the countries.

As for the new impairment model, it might be interesting to see whether loan loss provisions are higher than those reported under IAS 39, and the relevance of stage 2 impairments. Furthermore, it could be useful, to assess the determinants and the value relevance of IFRS 9 loan loss provisions. Namely, to examine whether impairment provisions are related to economic fundamentals. Such an analysis would shed light on how banks have understood their credit risk exposure and whether the introduction of the new expected losses model could actually lead to the generation of a superior outcome with respect to the incurred losses model. If banks erroneously attribute financial assets to the wrong credit risk stages, then the expected credit losses model would not solve the problem of the too little and too late recognition of loan loss provisions. In this context, an interesting exercise would be to analyse the association between level and change of credit risk, and the stage of credit risk to which financial assets have been allocated across different banks that have applied IFRS 9. An example of such a study is the one performed by Vyas in 2011, which compares the devaluation schedule of financial assets according to their credit risk with the timing of the recognition of loan losses incurred on the same assets. In the latter case, insights into the timing of loan losses recognition were drawn since it was the most problematic matter under IAS 39. In the case of IFRS 9, the comparison of the different allocations of financial assets to different credit risk stages may provide relevant information about the level of subjectivity and of complexity involved in the process. Should differences exist in the allocation of assets in the same risk class to different credit risk stages among banks, corrective action will have to be taken by standard-setters. This is because such an outcome may stand for too high a degree of subjectivity in the determination of credit risk according to the IFRS 9 provisions. Alternatively, this may be a sign that banks have not been able to establish appropriate mechanisms that allow them to be precise in computing credit risk and subsequent credit losses on financial assets.

Appendix A – Glossary

Amortized Cost (AC): The amount at which the asset or liability is measured upon initial recognition, minus principal repayments, plus or minus the cumulative amortisation of any premium or discount, and minus any write-down for impairment or uncollectibility.

Basel Committee on Banking Supervision: The global regulatory framework that sets standards for banking regulation, including capital requirements, stress testing, and liquidity.

Credit Conversion Factor (CCF): A factor used to calculate the exposure at default (EAD) for off-balance sheet items (like undrawn loans), when estimating credit losses under both Basel regulations and IFRS 9.

Expected Credit Losss (ECLs): ECLs are a probability-weighted estimate of credit losses. A credit loss is the difference between the cash flows that are due to an entity in accordance with the contract and the cash flows that the entity expects to receive discounted at the original effective interest rate.

Fair Value Through Other Comprehensive Income (FVOCI): A category for financial assets where fluctuations in fair value are recorded in other comprehensive income (OCI) instead of profit and loss, unless the asset is sold.

Fair Value Through Profit or Loss (FVTPL): One of the five categories for classifying financial assets under IFRS 9. Assets within this category are valued at fair market price, with any changes in value being immediately reflected in profit and loss statement.

IAS 39 (International Accounting Standard 39): The former accounting standard for the classification, measurement and accounting of financial instruments.

IFRS 9 (International Financial Reporting Standard 9): The accounting standard that replaced IAS 39 in 2018,

Impairment: impairment refers to the reduction in value of a financial asset based on expected and incurred losses.

Internal Ratings-Based (IRB) Approach: A method banks use to estimate their own credit risk parameters (e.g., Probability of Default - PD, Loss Given Default - LGD) for regulatory purposes.

Loan Loss Provisions (LLP): An expense set aside by banks to cover potential losses from defaulted loans.

Point-in-Time (PIT): A point in time refers to a specific moment when a company recognizes its financial transactions or events, usually at the end of an accounting period.

Pro-Cyclicality: A concern with both IAS 39 and IFRS 9. It refers to the tendency for credit loss provisions to amplify economic cycles—by requiring higher provisions during economic downturns, potentially restricting

lending when it's most needed.

Regulatory Capital: The amount of capital a bank must hold as a regulatory requirement, to cover risks such as credit risk and operational risk.

Risk-Weighted Assets (RWA): Bank assets, adjusted according to their risk, used to determine regulatory capital requirements. Higher risk assets have a higher weighting, requiring more capital to be held.

Solely Payments of Principal and Interest Test (SPPI Test): A test under IFRS 9 used to determine whether a financial asset can be classified at amortized cost or fair value through other comprehensive income (FVOCI). This test evaluates whether the contractual cash flows are solely made up of principal and interest payments on the remaining balance.

Tier 1 Capital: The core measure of a bank's financial strength, consisting mainly of common stock and retained earnings. IFRS 9 affects Tier 1 capital by changing how credit loss provisions impact a bank's balance sheet.

Through-the-cycle(TTC) is a technical characterization (design choice) of a Credit Rating System. Through-the-cycle ratings aim to evaluate the Credit Risk of a borrower by taking into account only permanent (static, slowly varying) characteristics.

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Notes

Note 1. Guiding principles for the replacement of IAS 39, Basel Committee on Banking Supervision, August 2009.

Note 2. The standard is effective from January 1st, 2018, and is supposed to limit the issues created by IAS 39 by introducing more straightforward and prudent provisions.

Note 3. See IAS 39, para. 9, 2008.

Note 4. See IAS 39, para 9, 2008.

Note 5. See IAS 39, para 9, 2008.

Note 6. See IAS 39, para 9, 2008.

Note 7. See IAS 39, para 10, 2008.

Note 8. See IAS 39, para 9, 2008.

Note 9. See IFRS 9, para 4.1.1, 2014.

Note 10. IFRS 9, para. 4.1.2, 2014

Note 11. See IFRS 9, para. 4.1.2A, 2014.

Note 12. See IFRS 9, para. 4.1.4, 2014.

Note 13. See IFRS9, para B. 4.1.7A, 2014.

Note 14. A further element to be considered is the currency in which the financial asset is denominated (see IFRS 9, para. B.4.1.9B).

Note 15. The comparison is made for each reporting period and cumulatively throughout the life of the instrument, only considering reasonably possible scenarios and not every possible scenario (see IFRS9, 5.5.18).

Note 16. A prepayment option allows the lender to collect a loan before its maturity, whereas the extension option permits the issuer of a debt instrument to postpone the end of contract term (see IFRS9 B4.1.12).

Note 17. See IFRS 9, para. B4. 1.12, 2014.

Note 18. See IFRS 9, para. B4.1.2a, 2014.

Note 19. See IFRS 9, Appendix B, Para. B4.1.2C – B4.1.6, 2014.

Note 20. See IFRS 9, Para. 5.7.5, 2014.

Note 21. See IFRS 9, Paras. 4.1.4, 5.7.5 and 5.7.6, 2014.

Note 22. Barone and Gullkvist (2019) provides a detailed analysis of IFRS 9 requirements to remove the recycling of holding gains and losses for equity instruments available for sale.

Note 23. See IAS 39 para. 59, 2008.

Note 24. See IAS 39 para. 59. The rationale for this impairment model is that at initial recognition expected losses are already included in the pricing of financial assets within the interest rate that the lender requires for the risk of default.

Note 25. IAS 39 provided a non-exhaustive list of possible loss events that could determine a financial asset to be impaired. In addition to the breach of a contract, such as a default or delinquency in interest or principal payments, evidence of impairment also existed when an issuer of an equity investment found him or herself operating in such bad economic, legal or technological conditions that the adverse effect made it impossible for the issuer to recover the cost of the investment. A significant and enduring decline in the *fair value* of an instrument below its cost was a further indicator of impairment.

Note 26. See IAS 39, para. 60, 2008.

Note 27. See IAS 39, para. 66, 2008.

Note 28. See IAS 39, para. 66, 2008.

Note 29. The cumulative net loss is computed as amortised cost minus current fair value without considering any impairment loss previously recognized in the income statement (PwC, 2009).

Note 30. See IAS 39, paras. 67 – 70, 2008.

Note 31. See IAS 39, para. 66.

Note 32. See IAS 39, para. AG 88, 2008.

Note 33. See IAS 39, para. AG 87, 2008.

Note 34. See IAS 39, 2008.

Note 35. See IAS 39, para. AG89, 2008.

Note 36. See IFRS 9 para. 5.5.1, para BC5.118. In the case of debt-instruments measured at FV-OCI, ECLs must be presented directly in OCI as part of the changes in fair value of financial assets (IASB, 2014, para 5.5.2).

Note 37. See IFRS 9, para 4.1.4, 5.5.1. As clarified in section 2, debt instruments measured at FV-OIC are subject to impairment, whereas equity instruments held for strategic purposes are not, as the IASB contends that OCI option without recycling will make it easier to assess changes in the FV of equity instruments not held for trading.

Note 38. See IFRS 9, Appendix B. para. 5.5.2, 2014.

Note 39. See IFRS 9, para. 5.5.17 (c), 2014.

Note 40. See IFRS 9, para. 5.5.10 and para B5.5.22, 2014.

Note 41. See IFRS 9, para. 5.5.11, 2014.

Note 42. See IFRS 9, Appendix B, para. B5.5.16, 2014.

Note 43. See IFRS 9, Appendix B. para. 5.5.4, 2014.

Note 44. See IFRS 9, para. 5.4.1 (a), 2014.

Note 45. See EBA (2017), Report on results from the second EBA impact assessment of IFRS 9.

Note 46. Historical cost is *"the amount of cash paid or the cash equivalent value of other forms of payment to acquire an asset"* (Weil, Schipper and Francis 2014).

Note 47. The market-to-book ratio, also called price-to-book ratio, *"links the stock/share price of a company with the book or accounting value of shareholders' equity per share. It reflects how many times book value investors are ready to pay for a share"* (Financial Times 2017).

Note 48. Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom (Agostino, Drago and Silipo 2011)

Note 49. On the part of the IASB, the process of change has led to the development of IFRS 9, which is the subject of this work. Under a similar approach, the FASB has published its provisioning standard based on "current expected credit losses" (CECL) in 2016, which come into effect between 2018 and 2021 (Cohen and Edwards 2017).