

## Reconsidering the Prudential Filter for the Cash Flow Hedge Reserve in View of the Purpose of Banking Regulation

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### Abstract

Common Equity Tier 1 capital of credit institutions is adjusted by the prudential filter for the cash flow hedge reserve according to art. 33(1)(a) CRR. Thereby, fair value changes of hedging instruments, especially of derivatives, are neutralized by imputed fair value changes of future cash flows that are part of a cash flow hedge. However, these future cash flows are (mostly) expected to occur under market conditions and, thus, imputed fair value changes are not reflected in changes of present values derived from real transactions that exist at the time of the regulatory capital calculation. As a result, positive effects on Common Equity Tier 1 capital can be viewed critically in regard to the prudence principle of banking supervision if an initial reduction in Common Equity Tier 1 capital due to losses from hedging instruments is corrected. Furthermore, the adjustment is case specific and depends on the hedge effectiveness, which is questionable because of consistency reasons. To solve these weaknesses, we suggest to eliminate the prudential filter for the cash flow hedge reserve as a whole. This would lead to a better quality of Common Equity Tier 1 capital by improving its loss absorbency and as a side effect to a reduction in complexity enhancing supervision through regulatory authorities and market discipline. Furthermore, we demonstrate the impact that the proposed abolishment of the prudential filter for the cash flow hedge reserve would have on the Common Equity Tier 1 capital ratios of the largest European banks in 2014–2019.

*Keywords:* Cash flow hedge reserve, prudential filter, regulatory capital

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## I. Introduction

Credit institutions or groups of institutions are subject to the minimum capital requirements defined in Regulation (EU) No 575/2013 (CRR).<sup>1</sup> The regulatory capital ratios to be determined refer to the (consolidated) financial statements usually prepared either in accordance with IFRS or national GAAP.<sup>2</sup> In the first case, the IFRS fundamentally influence both the amount of regulatory capital available for risk coverage and the amount of the respective exposure to risk, and thus also the regulatory capital ratios themselves.<sup>3</sup> In order to assess the loss absorbency of available regulatory capital as independently of the underlying accounting framework as possible, the CRR defines special adjustments (so-called prudential filters) to regulatory capital.<sup>4</sup>

Regulatory capital ratios play an important role in the regulatory framework and support its goal to preserve financial stability. This is because in order to comply with regulatory capital ratios, institutions have to control their risk-taking behavior and follow proper conduct of banking transactions and financial services. Although prudential filters were implemented to increase comparability of regulatory capital ratios between institutions, they still have to serve the supervisory framework's goal in general. This means that the application of prudential filters should only affect regulatory capital in such a way that is justified from the perspective of financial stability. This holds true especially for increases in regulatory capital because they allow institutions to take on more risk. Increases in regulatory capital and of regulatory capital ratios should be avoided if they do not add to loss absorbency and do not represent higher solvency, respectively. Otherwise, the regulatory framework's goal to limit risk and to protect financial stability as a whole is undermined.<sup>5</sup> Furthermore, in such a case, the regulatory authorities as well as the recipients of regulatory information are misguided which distorts supervision.

In this paper, we analyze the prudential filter according to art. 33(1)(a) CRR for the cash flow hedge reserve in terms of its adequacy with the purposes of the regulatory framework on the basis of a conceptual analysis. We argue that increases in regulatory capital due to the prudential filter for the cash flow hedge

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<sup>1</sup> See art. 6–17 CRR on the scope of the CRR. Countries can expand the scope independently.

<sup>2</sup> See art. 4(1)(77) CRR in regard to the applicable accounting framework. For publicly traded companies, consolidated financial statements in accordance with IFRS are mandatory, see art. 4 Regulation (EC) No 1606/2002.

<sup>3</sup> See *Bushman/Landsman* (2010), 267.

<sup>4</sup> See *Wahrenburg* (2019), 88.

<sup>5</sup> See similarly in the context of regulatory capital arbitrage *Agarwal/Chomsisengphet/Liu/Rhee* (2007), 430; *Jones* (2000), 36, 50–51.

reserve do not have characteristics that are necessary to absorb losses and, thus, do not serve the regulatory framework's goal. Furthermore, we elaborate on inconsistencies in the current framework that occur when applying the prudential filter for the cash flow hedge reserve and that also contradict this goal. These inconsistencies relate to the recoverability and, thus, the potential for loss absorbency that is assigned to the hedging instrument and the hedged item within a cash flow hedge as well as outside of a cash flow hedge. The question of how hedge accounting affects regulatory capital ratios and how these effects should be viewed in the context of the regulatory framework's goal to achieve financial stability have, to the best of our knowledge, only been covered by *Sopp* (2010).<sup>6</sup> However, he does not touch on the current regulatory framework and the prudential filter for the cash flow hedge reserve but suggests certain corrections to regulatory capital in general. Furthermore, he only focuses on the subject of loss absorbency from a critical viewpoint on fair value measurement while we focus on the respective inadequacy of the underlying hedged item and discuss inconsistency issues that appear when applying the prudential filter for the cash flow hedge reserve. Thus, we draw different conclusions on how to deal with fair value changes of the hedge components within the regulatory framework.

We do not only investigate the way the prudential filter for the cash flow hedge reserve affects the regulatory capital ratios but also how these effects should be evaluated from a regulatory perspective. Thus, regulatory authorities can draw insights from our results in order to improve quality of supervision. A deeper understanding of this subject also helps external recipients of regulatory information, like analysts and investors, who discipline institutions' risk-seeking behavior by applying market forces, to interpret regulatory capital ratios.<sup>7</sup> Overall, we come to the conclusion that the prudential filter for the cash flow hedge reserve should be eliminated.

The amount of the prudential filter for the cash flow hedge reserve refers to the cash flow hedge reserve according to IFRS 9. This is why the relevant accounting context applicable to the prudential filter for the cash flow hedge reserve is presented at first (section II.). Subsequently, the implications for regulatory capital resulting from the application of the prudential filter for the cash flow hedge reserve are examined (section III.). Finally, these effects are subject to a critical review in regard to the regulatory purpose whereby numerical examples are used for illustration purposes (section IV.). In addition, we illustrate the relevance of the prudential filter for the cash flow hedge reserve and the impact that its proposed abolishment would have by using regulatory figures which major European banks disclose for the years 2014–2019 (section V.).

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<sup>6</sup> See *Sopp* (2010), 196 (see section IV.3.).

<sup>7</sup> See *Jones* (2000), 49; *Bushman/Williams* (2012), 4–5.

## II. The Cash Flow Hedge Reserve According to IFRS 9

### 1. Concept and Nature of the Cash Flow Hedge Reserve

The fundamental objective of hedging is to create an overall position that is (as much as possible) risk-free in regard to the risks under consideration by holding a hedging instrument against the corresponding risks associated with the hedged item.<sup>8</sup> The risks may refer to (significant) changes in value or cash flows. If the components of such a hedge were accounted for separately according to the mixed measurement model of IFRS 9, i. e. partly at amortized cost and partly at fair value, the economic reality would not be reflected correctly.<sup>9</sup> The measurement at historical costs which makes use of a lower-of-cost-or-market test contrasts fundamentally with the symmetrical concept of fair value measurement. As a result, the amounts presented in the balance sheet and in the statement of comprehensive income may not reflect the economic relationship properly. Hedge accounting in form of cash flow hedges and fair value hedges is intended to avoid accounting asymmetry, particularly in the statement of profit or loss. Since there is no prudential filter for fair value hedges within the regulatory framework, our focus lies on cash flow hedges which are accounted for in accordance with IFRS 9 by institutions.

In the context of a cash flow hedge, derivatives and non-derivative financial instruments measured at fair value through profit or loss can serve as hedging instruments.<sup>10</sup> The hedged item is the risk exposure which, in regard to the risk factor to be hedged, results from the uncertainty of future cash flows that are associated with a recognized asset or liability or with a highly probable forecast transaction that could affect the statement of profit or loss.<sup>11</sup> In contrast to firm commitments which, besides recognized assets and liabilities, can be the subject of fair value hedges,<sup>12</sup> forecast transactions are not based on closed contracts, but are merely expected to result in future contracts (e. g. future purchase con-

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<sup>8</sup> On hedge accounting according to IFRS 9 in general, see *Ernst & Young* (2021), 4173–4398.

<sup>9</sup> A mismatch may also result from a mutual fair value measurement if fair value changes are presented differently, on the one hand in the statement of profit or loss and on the other hand in the other comprehensive income (OCI).

<sup>10</sup> See IFRS 9.6.2.1–6.2.2. Financial liabilities that are designated as at fair value through profit or loss and for which fair value changes from changes in own credit risk are recognized in the OCI according to IFRS 9.5.7.7 are exempted; see IFRS 9.6.2.2 and IFRS 9.BC6.140–BC6.141.

<sup>11</sup> See IFRS 9.6.5.2 (b).

<sup>12</sup> See IFRS 9.6.5.2 (a). The hedge of a foreign currency risk of a firm commitment may also be accounted for as a cash flow hedge (see IFRS 9.6.5.4). However, we do not discuss this further.

tracts or expected revenues). Since forecast transactions are not yet legally binding, their execution is a priori subject to a higher degree of uncertainty compared to firm commitments. For this reason, it must be demonstrated that there is a high probability for the hedged transaction to occur, both at the start of the hedge and during the hedge in order to qualify for a cash flow hedge; a high probability can be considered to be at least 90%.<sup>13</sup> The verification of the probability should go beyond a mere declaration of intent and be made comprehensible on the basis of internal company planning which should be checked for plausibility by means of comparative analyses based on past experiences.<sup>14</sup> For example, the extent to which the company is financially able of carrying out the transaction or possible negative effects of not executing the transaction on the company should also be taken into consideration. The result is always a case-by-case assessment, which takes into account all circumstances that allow a conclusion in regard to the probability of the forecast transaction to take place.<sup>15</sup>

General documentation requirements must also be met. For example, the underlying transaction and the hedging instrument must be clearly identified at the start of hedge accounting and the objectives and intentions of the hedge and the hedged risk must be presented.<sup>16</sup> In the case of cash flow risks of forecast transactions, the documentation requirements are generally stricter than for underlying transactions that already have a contractual basis; the requirements usually relate to the type and subject of the forecast transaction, the expected quantity and currency, as well as the time or period of expected execution.<sup>17</sup>

In addition, the method used to assess the hedge effectiveness must be explained.<sup>18</sup> The assessment of the hedge effectiveness is mandatory as hedge accounting may only be applied if there is an economic connection between the underlying transaction and the hedging instrument in regard to risk compensation in such a way that a systematic opposite development of the respective values can be expected. A merely statistically determined negative correlation of the underlying variables does not meet the requirement. Furthermore, the compensation effect must not be impaired by a dominant credit risk and the hedge ratio must not indicate any ineffectiveness.<sup>19</sup> The assessment of the hedge effec-

<sup>13</sup> See e.g. *Lüdenbach/Hoffmann/Freiberg* (2021), § 28a, para. 30; without quantitative specification of the probability requirement see *Hartenberger* (2020), para. 1150.

<sup>14</sup> On this and on the following as well as on further verification possibilities see IDW RS HFA 48, para. 344; *Hartenberger* (2020), para. 1150.

<sup>15</sup> See also *Lüdenbach/Hoffmann/Freiberg* (2021), § 28a, para. 31–32.

<sup>16</sup> See IFRS 9.6.4.1 (b).

<sup>17</sup> See *Lüdenbach/Hoffmann/Freiberg* (2021), § 28a, para. 78.

<sup>18</sup> See IFRS 9.6.4.1 (b).

<sup>19</sup> See IFRS 9.6.4.1 (c) in conjunction with IFRS 9.B6.4.4–B6.4.6. The hedge ratio as the relationship between the hedged item and the hedging instrument must be rebalanced during the hedging relationship if necessary; see IFRS 9.6.5.5.

tiveness should be based on information provided by the institution's risk management.<sup>20</sup>

It should be noted that the aim of cash flow hedges is to eliminate income risks and not, as in the case of fair value hedges, to hedge against fair value changes.<sup>21</sup> In this respect, the hedge basically relates to future payments whose uncertainty affects the amount of future earnings. Insofar as the future payments are adjusted to current market conditions, there is no risk of a present value change of the transaction or the assets or liabilities that are subject to the cash flow uncertainty. In contrast, an exposure to fair value changes usually arises for hedged items of fair value hedges where future claims to be fulfilled (on the assets' or liabilities' side) – including those from firm commitments – are fixed in terms of their amount. Then, their present value changes in line with current market conditions according to a general present value assessment. Because there is typically no (or only a low) risk of fair value changes in the context of a cash flow hedge in regard to the underlying transactions, assets or liabilities, the question arises what the nature of the income or cash flow risk to be hedged is. In particular, this applies to forecast transactions with no enforceable right to anything and no contractual basis. Apparently for forecast transactions, but also for recognized assets and liabilities that are subject to a cash flow hedge, an appropriate interpretation is required for what the hedged item really is. For a forecast transaction, the exposure to be hedged is ultimately the difference between the value expressed in domestic (functional) currency of the transaction's cash flows when it is executed in the future and the value that can be asserted to the transaction at the time of the hedge designation, even if or because the target transaction is not yet executed at that time. This means that the hedged item represents only an opportunity advantage or disadvantage.<sup>22</sup> This applies analogously to hedging the cash flow risks of recognized assets or liabilities. The cash flow- and not present value-related risk in underlying transactions of cash flow hedges is revealed by referring to the (possible) application of the hypothetical derivative method for measuring hedge (in)effectiveness.<sup>23</sup> The value change of the cash flow to be hedged is measured by the value change of a fixed future condition (e.g. forward, swap) to which the capital market assigns the same present value as to the cash flow to be hedged at the time of designation.<sup>24</sup> The

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<sup>20</sup> See IFRS 9.B6.4.18.

<sup>21</sup> According to IFRS 9.6.5.2 (b), the cash flow hedge represents a “hedge of the exposure to variability in cash flows”, while the fair value hedge, according to IFRS 9.6.5.2 (a), represents a “hedge of the exposure to changes in fair value”.

<sup>22</sup> Although the IASB makes a clear distinction in IFRS 9.BC6.372–BC6.373 between existing (fair value hedges) and non-existing hedged items (cash flow hedges), the IASB only draws a conclusion in regard to the treatment of the ineffective part of the hedge.

<sup>23</sup> See IFRS 9.B6.5.5 for the method; see also section IV.3.

<sup>24</sup> See on the method also *Kuhn/Hachmeister* (2015), F.I., para. 427–429.

transformation into a fixed condition with the same net present value at that time allows to determine changes of the hedged item in terms of its net present value and to declare them as value changes of a cash flow to be hedged (quasi by definition) even if this is not reflected in the actual fair value change of a recognized asset or liability.<sup>25</sup>

## 2. Accounting for the Cash Flow Hedge Reserve

In case of a cash flow hedge, fair value changes of the hedging instrument are no longer recognized fully in the statement of profit or loss, but only to the extent that the hedge is ineffective; the effective part is recognized in the OCI. This results in a cash flow hedge reserve at an amount of the effective part which is the lower of the cumulative fair value changes of the hedging instrument and the cumulative fair value changes of the hedged item, i. e. the hedged expected cash flows.<sup>26</sup> If the amount of the fair value changes of the hedging instrument are less than or equal to the respective amount of the hedged item, these changes determine the amount of the cash flow hedge reserve (under hedge or perfect hedge). Conversely, the fair value change of the hedging instrument that, again in terms of amount, exceeds the (imputed) fair value changes of the hedged item is still recognized in profit or loss (over hedge).<sup>27</sup>

If the hedged item is a forecast transaction that results in the recognition of a non-financial asset or a non-financial liability, the cash flow hedge reserve is dissolved and its amount is added to the initial cost or carrying amount of the asset or liability.<sup>28</sup> In other cases, e. g. if the hedge results in financial assets or financial liabilities or for other forecast transactions, the cash flow hedge reserve is dissolved when the expected cash flows from these items affect the statement of profit or loss.<sup>29</sup> It can be noted that a loss that is not expected to be recovered is reclassified immediately from the cash flow hedge reserve to the statement of

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<sup>25</sup> The hypothetical derivative method is described in IFRS 9.B6.5.5 as only one possible way to measure hedge effectiveness (for the method see also IFRS 9.BC6.284–BC6.299). However, other alternative procedures to calculate present value changes of future cash flows that are not resembled by value changes of existing assets for example are not mentioned.

<sup>26</sup> See IFRS 9.6.5.11 (a).

<sup>27</sup> See IFRS 9.6.5.11 (c). Due to the distinction between an effective and an ineffective part of the hedge, a retrospective measurement of hedge effectiveness is (still) required; see also *Lüdenbach/Hoffmann/Freiberg* (2021), § 28a, para. 87–88.

<sup>28</sup> See IFRS 9.6.5.11 (d) (i). This also applies if such a hedged forecast transaction results in a firm commitment as part of a fair value hedge. In all these cases, the OCI is not affected.

<sup>29</sup> See IFRS 9.6.5.11 (d) (ii).

profit or loss.<sup>30</sup> However, it seems to be questionable how such a loss can be identified given that the character of the hedged item represents an opportunity advantage or disadvantage.

Hedge accounting is terminated before maturity only if the qualifying criteria for the hedge are no longer met.<sup>31</sup> The termination has only prospective effects.<sup>32</sup> In particular, it must be terminated in cases where a hedged forecast transaction is no longer expected to occur with a high probability.<sup>33</sup> If the transaction is still expected to occur, but no longer with a high probability, the cash flow hedge reserve is not dissolved until the future cash flows occur.<sup>34</sup> A high probability of occurrence is therefore not necessary for the cash flow hedge reserve to continue to exist.<sup>35</sup> If, on the other hand, the transaction is not expected any more or at least not with a probability that is still regarded as sufficiently high, the amount of the cash flow hedge reserve must be reclassified to the statement of profit or loss immediately.<sup>36</sup> During its existence however, the cash flow hedge reserve is important for determining the institution's own funds. In view of the accounting treatment described above, the resulting consequences for regulation will be discussed in the following.

### III. Regulatory Treatment of the Cash Flow Hedge Reserve

The regulatory capital of an institution that is available for risk coverage, the institution's own funds, is comprised of Tier 1 capital and Tier 2 capital.<sup>37</sup> Tier 1 capital consists of Common Equity Tier 1 capital (CET 1) and Additional Tier 1 capital,<sup>38</sup> with CET 1 representing the higher quality component.<sup>39</sup> Both CET 1 and Additional Tier 1 capital serve the absorption of current losses, thereby safeguarding the going concern principle.<sup>40</sup> Tier 2 capital is primarily intended to cover further losses in the event of liquidation.<sup>41</sup> The comprehensive income

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<sup>30</sup> See IFRS 9.6.5.11 (d) (iii).

<sup>31</sup> See IFRS 9.6.5.6, where, if applicable, any rebalancing has been taken into account. A de-designation is no longer possible; see IFRS 9.6.5.6; IFRS 9.B6.5.23; contrary to the former rule in IAS 39.91 (c).

<sup>32</sup> See IFRS 9.B6.5.22.

<sup>33</sup> See IFRS 9.6.4.1 in conjunction with IFRS 9.6.3.3.

<sup>34</sup> See IFRS 9.6.5.12 (a).

<sup>35</sup> See IFRS 9.6.5.12 (b).

<sup>36</sup> See IFRS 9.6.5.12 (b).

<sup>37</sup> See art. 4(1)(118), art. 72 CRR.

<sup>38</sup> See art. 25 CRR.

<sup>39</sup> On the main characteristics of the different components see *Wahrenburg* (2019), 83.

<sup>40</sup> See *Andrae/Krösl* (2016), 472.

<sup>41</sup> See *Andrae/Krösl* (2016), 472.



calculated in accordance with IFRS is allocated to CET 1 before regulatory adjustments.<sup>42</sup>

Then, this capital is corrected by the prudential filter for the cash flow hedge reserve, yielding – with other adjustments as well – CET 1.<sup>43</sup> Accordingly, in the case of a positive cash flow hedge reserve corresponding to positive cumulative fair value changes of the hedging instrument, an amount equal to the cash flow hedge reserve is deducted from CET 1 before regulatory adjustments. In the case of a negative cash flow hedge reserve which indicates negative cumulative fair value changes of the hedging instrument, however, an amount equivalent to the cash flow hedge reserve is added to CET 1 before regulatory adjustments.

The cumulative fair value changes of the hedging instrument – allocated via the OCI to the cash flow hedge reserve and, if necessary, partly through the statement of profit or loss – are initially recognized fully in equity according to IFRS and thus in CET 1 before regulatory adjustments. Subsequently, CET 1 is adjusted for the effective part of these cumulative fair value changes which may be limited by the cumulative fair value changes of the hedged item, i.e. the hedged expected cash flows, and which is recognized in the cash flow hedge reserve using the prudential filter for the cash flow hedge reserve. Overall, i.e. taking into account the prudential filter, only ineffective fair value changes of the hedging instrument have a net impact on CET 1. Consequently, in cases of perfect hedges and under hedges, the associated fair value changes of the underlying hedging instruments do not contribute to the amount of CET 1 on a cumulative basis, as there are no ineffective fair value changes of the hedging instrument. However, the assets that serve as hedging instruments contribute to the risk-weighted exposure amounts.

#### IV. Critical Evaluation on the Basis of the Regulatory Purpose

##### 1. Regulatory Objectives and the Role of the Regulatory Capital Ratios

The aim of the supervisory framework in general is to reduce risks which creditors of credit institutions are exposed to and to enforce the proper conduct of banking transactions and financial services in order to avoid significant negative impacts on the economy as a whole and, thus, to preserve financial stability.<sup>44</sup> The aim is further to prevent institutions from leaving the market or to

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<sup>42</sup> See art. 26(1)(c) and (d) CRR; art. 36(1)(a) CRR. On the role of the statement of comprehensive income calculated in accordance with IFRS for CET 1 see *Krauß* (2019a), 43–44 with further references.

<sup>43</sup> See art. 33(1)(a) CRR.

<sup>44</sup> See *Fischer/Boegl* (2017), para. 23.

ensure that they do so in such a way that disadvantages for the economy as a whole are avoided.<sup>45</sup> Once an institution is in difficulties, it should not jeopardize the solvency of other market participants.<sup>46</sup> This is why the CRR lays down uniform rules concerning general prudential requirements that institutions shall comply with.<sup>47</sup>

For achieving the aforementioned goals, banking regulation is based upon three pillars.<sup>48</sup> The first pillar defines regulatory capital requirements that require institutions to comply with regulatory capital ratios in order to limit their risks to such a ratio in respect to available own funds that is acceptable from a regulatory perspective.<sup>49</sup> This limits the amount of risk institutions are allowed to assume in relation to the available risk-covering regulatory equity. This way, institutions have to control their risk and monitor their own funds. High qualitative requirements are placed on CET 1 in particular, that it must be available at all times and be able to absorb ongoing losses.<sup>50</sup> The prudential filter for the cash flow hedge reserve directly affects the amount of CET 1 either positively or negatively.

The second pillar allows regulatory authorities to directly supervise individual institutions and judge their risk profile separately. Depending on that supervisory review, regulatory authorities can put additional capital requirements on different institutions. Regulatory authorities are supposed to not only take numerical key figures into consideration but take a broader approach when investigating institutions. This is why regulatory authorities need to understand the composition of CET 1 and to what extent the individual components actually add to the loss absorbency of the institution. This also applies to the prudential filter for the cash flow hedge reserve.

The third pillar aims to discipline institutions in regard to their risk-taking behavior through market forces. Institutions have to publish regulatory information, including the regulatory capital ratios, so that market participants, for example investors or creditors, can integrate them into their decision-making process and by doing so impose market discipline. As the regulatory capital ratios are highly relevant to the market participants, the prudential filter for the cash flow hedge reserve also affects the way these decision makers evaluate the institutions' financial or regulatory condition and are thus able to ease or apply additional market pressure.

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<sup>45</sup> See *Hartmann-Wendels/Pfingsten/Weber* (2019), 321.

<sup>46</sup> See *Brown/Dinç* (2011), 1395, with further references.

<sup>47</sup> See art. 1 CRR.

<sup>48</sup> On the three pillars in the context of Basel II see BCBS (2006). On the following, see also *Bushman/Landsman* (2010), 267.

<sup>49</sup> See art. 92(1) CRR.

<sup>50</sup> See art. 26(1) CRR.

In the following, it is evaluated to what extent the prudential filter for the cash flow hedge reserve serves the idea of these three pillars. The results are also evidence of how the prudential filter for the cash flow hedge reserve fulfills the fundamental goals of the regulatory framework as a whole. This regulatory fit is in our opinion the most important criteria to evaluate the prudential filter.

## 2. Consistency Issues Within CET 1 due to the Prudential Filter for the Cash Flow Hedge Reserve

From a balance sheet perspective, a cash flow hedge only results in the effective part of the cumulative fair value changes of the hedging instrument being recognized in the OCI instead of the statement of profit or loss. It is therefore only a question of presentation, but not a question of amounts in regard to the comprehensive income as a total. This means that the hedge does not change the amount of equity reported under IFRS as all fair value changes of the hedging instrument continue to be shown in equity. Thus, the fair value changes of the hedging instrument are fully reflected in CET 1 at first (before regulatory adjustments) because equity according to IFRS is fully reflected in CET 1. Although the adequacy of fair values for regulatory purposes is questioned by some,<sup>51</sup> it appears justifiable, in respect to the reporting date approach, to capture (thus far) unrealized fair value changes of contractually backed and thus legally secured financial instruments on the basis of a current valuation also for regulatory purposes. This should apply in particular if the hedging instrument can be closed or sold (economically, if applicable) in order to realize a net present value.

Considering the cash flow hedge reserve reported in accordance with IFRS, the prudential filter results in CET 1 changing in the opposite direction. In regulatory terms, a cash flow hedge is therefore not only of significance for presentation as in IFRS accounting, but also has material consequences for CET 1. Assuming that the hypothetical derivative method is used, fair value changes of merely a constructed fixed term equivalent to the cash flows to be hedged change CET 1, whereas changes of the expected cash flows to be hedged themselves, especially in the case of forecast transactions, unlike the hedging instrument, cannot be reflected in the balance sheet during the term of the hedging relationship. It is noteworthy that the constructed fair value changes of the cash flows to be hedged do not always affect CET 1 completely, but only partially de-

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<sup>51</sup> On the limited adequacy of fair values in the context of supervisory regulation in general see *Laux/Leuz* (2009), 829–830, summarizing the arguments. In the regulatory framework, fair values are subject to a separate prudent valuation according to art. 105 CRR.

pending on their relation to the fair value changes of the hedging instrument. This inconsistency shall be explained in more detail.

A fundamental distinction must be made between the different treatments of the effective and the ineffective part of the hedge, i. e. the distinction between an over hedge (case I) and an under or perfect hedge (case II). In the first case, only the ineffective part of the cumulative fair value changes of the hedging instrument that, in terms of amount, exceeds the cumulative construction based fair value changes of the hedged expected cash flows is recognized in CET 1. This implies the full recognition of the constructed fair value changes of the hedged expected cash flows in CET 1 by using the prudential filter.

Consider first such an over hedge (case I). Figure 1 illustrates the accounting and regulatory effects of a cash flow hedge in this case where positive cumulative fair value changes of the hedging instrument are offset, but only partially, by negative cumulative construction based fair value changes of the hedged cash flows. Thus, the amount of the former (15 currency units [CU]) exceeds the amount of the latter (10 CU). The components of the cash flow hedge contribute to CET 1 only with the ineffective amount of the over hedge (5 CU), while the imputed cumulative fair value changes of the hedged cash flows entirely determine the regulatory adjustment due to the prudential filter and neutralize a corresponding amount of the cumulative fair value changes of the hedging instrument. Given the same components on a stand-alone basis, CET 1 would be higher by that neutralized amount.

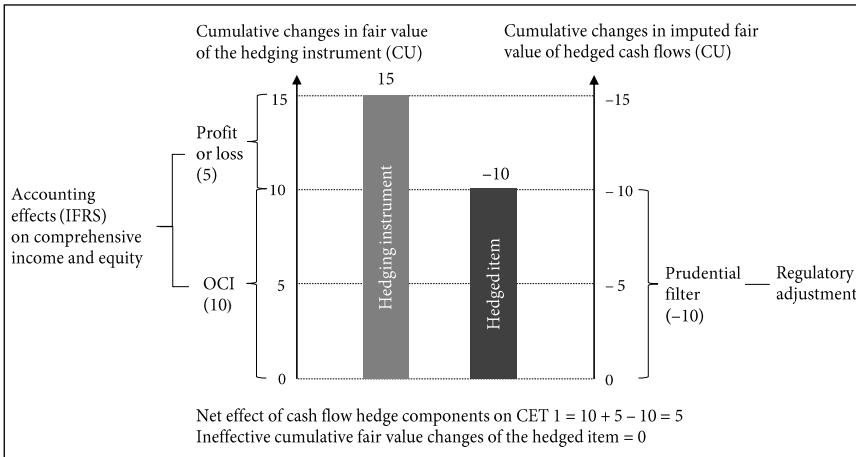


Figure 1: Accounting and Regulatory Effects of an Over Hedge

Consider now the situation in which the fair values of the components had the same amounts but with opposite signs. Then, cumulative negative fair value changes of the hedging instrument (-15 CU) would be compensated by positive cumulative fair value changes of the hedged item (+10 CU) according to the effective part of the hedge. As a consequence, a loss of the fair value of a contracted hedging instrument would not be recognized in CET 1 to the extent it is compensated by fair value changes of the hedged item that are calculative in nature and as such not contractually enforceable at the time the regulatory capital is calculated. Conversely, outside of a hedging relationship, the loss of the fair value of the hedging instrument would be fully reflected in CET 1.

In the case of an under or perfect hedge (case II), the cumulative fair value changes of the hedging instrument in CET 1 are fully offset by the imputed fair value changes of the hedged item due to the prudential filter, so that CET 1 does not comprise any part of these fair value changes. Furthermore, only that part of the constructed fair value changes of the hedged expected cash flows that amounts to the cumulative fair value changes of the hedging instrument affects CET 1. The remaining part that exceeds the cumulative fair value changes of the hedging instrument is taken into account neither for accounting nor for regulatory purposes. Figure 2 shows the different effects of an under hedge on reported equity according to IFRS and CET 1, given, as in figure 1, positive cumulative fair value changes of the hedging instrument. If the components had the same values outside of a hedging relationship, CET 1 would comprise the total amount of the positive fair value changes of the hedging instrument.

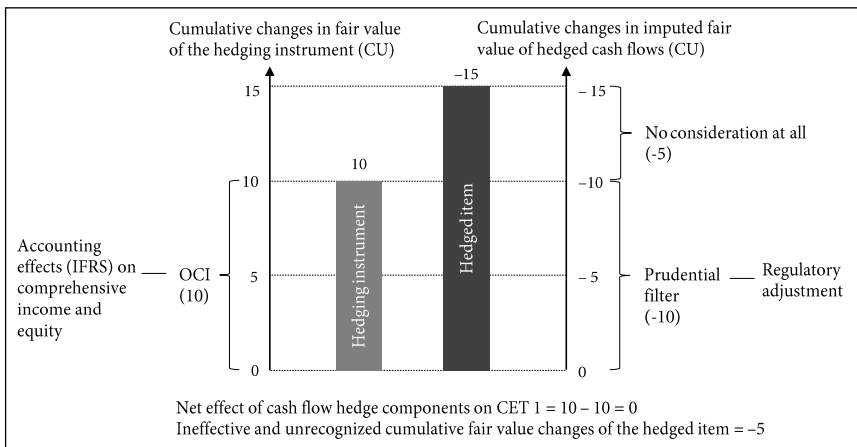


Figure 2: Accounting and Regulatory Effects of an Under Hedge

However, consider again the same amounts for the components but with opposite signs. Then, in the context of the hedging relationship, the cash flow hedge reserve would represent a deductible item to IFRS equity corresponding to the negative fair value change of the hedging instrument (-10 CU). For CET 1, this deduction would be reversed by the prudential filter due to the positive imputed fair value changes of the hedged item. The effect of the latter on CET 1 would be limited to only the effective part of the hedge, whereas the excess amount would be completely irrelevant. Again, the same situation outside of a hedging relationship would result in a different amount of CET 1. CET 1 would be lowered reflecting the negative cumulative fair value changes of the hedging instrument which would not be mitigated by merely imputed positive fair value changes of the hedged item. The latter would be completely irrelevant not only in respect to IFRS equity but also to regulatory capital.

Figure 1 shows that in the case of an over hedge, the constructively determined fair value changes of the hedged expected cash flows, e.g. from a forecast transaction, are fully taken into account in CET 1. In contrast, in the case of an under hedge – as figure 2 illustrates – only the effectively hedged part is considered, while the remaining amount of the cumulative fair value changes is not taken into account. In our opinion, there is no reason why an over hedge and an under hedge should result in different CET 1 in regard to these fair value changes. The cumulative fair value changes of the hedging instrument, which are decisive among other things for whether an over hedge or an under hedge exists, should not influence the extent to which the hedged expected cash flows are taken into account, especially since the fair value development of the hedging instrument itself already influences CET 1 via equity reported under IFRS. Furthermore, comparing the situation in which the components are part of a hedging relationship with their treatment on a stand-alone basis, we cannot see any reason why this should make a difference in respect to the institution's ability to absorb losses. Within a cash flow hedge relationship, the imputed fair value changes of the hedged item are asserted a recoverability that is assigned to them neither outside of hedge accounting nor, at least in respect to their total amount, in case of an under hedge within a cash flow hedge.<sup>52</sup> Also, the recoverability of the fair value of the hedging instrument is implicitly assumed to depend on the specific underlying hedging relationship. In our view, all of this leads to an inconsistent regulatory treatment depending on the individual case constellation, which is all the more disconcerting as CET 1 plays an important role within the regulatory framework.<sup>53</sup>

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<sup>52</sup> See similarly *Fülbier/Gassen* (2007), 2610–2611, for a critical view on the implicit assertion of asset characteristics in regard to hedge components under German GAAP.

<sup>53</sup> See also *Graf-Tiedtke* (2005), 1065, in regard to the importance of CET 1 within the regulatory framework.

This inconsistency needs to be seen critically also because it adds to the complexity of calculating CET 1 and the regulatory capital ratios. This complicates not only the supervisory review of the second pillar but also weakens market discipline by making it more difficult for market participants to interpret institutions' CET 1 and the regulatory capital ratios.<sup>54</sup> Furthermore, because the effects of the prudential filter for the cash flow hedge reserve depend on the underlying hedge, comparability between institutions is compromised which ironically counteracts one of the original purposes of prudential filters.

As a result, we believe that the question of regulatory consideration of fair value changes allocated to cash flows should be answered independently of fair value changes of the associated hedging instruments. In regard to the obligation to provide evidence of the hedge effectiveness which already exists in IFRS accounting, the determination of the cumulative fair value changes of the expected cash flows to be hedged, determined per constructionem, could also be required for regulatory purposes, so that the corresponding amount is available. If we assumed the significance of the constructed fair value changes of the hedged expected cash flows, these would always have to fully affect CET 1 in order to avoid the inconsistency described above. In the case of an under hedge, this also applies to the amount in excess of the cash flow hedge reserve. For such an adjustment however, the question has to be deepened whether fair value changes allocated to the hedged item are fundamentally appropriate to serve as regulatory capital.

### 3. *Should the Hedged Item of a Cash Flow Hedge Influence CET 1?*

Regardless of the described inconsistency issues in connection with the recognition of the hedged item in CET 1, the recognition of cumulative constructed fair value changes of hedged expected cash flows must still be questioned against the background of the regulatory purpose fundamentally. This holds true particularly if these fair value changes lead to an increase in CET 1 compared to a situation in which only fair value changes of the hedging instrument are taken into account. This is because the cumulative fair value changes of the hedged item, i. e. of future cash flows, as they are mathematically assigned, do not have the characteristics that are necessary to count as CET 1. Rather, the character of real future cash flows, that are assumed to be in line with future market conditions, requires a constructed calculation (preferably) via a mirror image at the time of designation in the form of a fixed condition that is only equivalent to the cash flows expected at that time. Although positive cumulative fair value changes of the hedging instrument have not been realized and are therefore not directly available to cover losses, they nevertheless constitute a contractually secured

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<sup>54</sup> See also *Krauß* (2019b), 406; on this subject in general *Bushman/Williams* (2012), 4–5.

position that is enforceable and could possibly be closed or liquidated or otherwise utilized. In contrast, the hedged item of cash flow hedges, i. e. the expected cash flows do not have comparable characteristics.

Considering future transactions, exceptional circumstances can lead to the situation in which an execution that was previously expected with a high probability becomes unlikely before maturity and/or finally fails completely, for example because the intended contractual partner will refrain from an expected contract due to changed market conditions with the entity not being entitled to compensation.<sup>55</sup> As a result, depending on the constellation, an increase in CET 1 at a point in time before the maturity of the underlying transaction, at which the capital adequacy is to be determined, may result in a higher solvency being indicated solely on the basis of a transaction that is only planned and therefore has no contractual foundation. In addition, even if the occurrence of the future transaction is no longer considered highly probable but still probable, the amounts already recognized in the cash flow hedge reserve remain and must therefore continue to be taken into account as an adjustment to CET 1.<sup>56</sup> Only if the occurrence of the future transaction is no longer considered sufficiently probable, the cash flow hedge reserve has to be dissolved, so that there is no longer any offsetting in CET 1, which would otherwise compensate for fair value changes of the hedging instruments. In view of the rigorousness of the regulatory capital determination, in respect to the prudential filter for the cash flow hedge reserve, it appears necessary to specify the probability of occurrence for a future transaction to continue to be part of a cash flow hedge and how it is differentiated from a highly probable transaction. The currently required discretion to define these probability thresholds offer possibilities for earnings management that, if necessary, could be used to influence CET 1, which would be contrary to the regulatory idea that regulatory capital should not be influenceable by earnings management.<sup>57</sup>

Going beyond the case of future transactions, the adjustment of CET 1 with amounts allocated to the cash flow hedge reserve appears questionable even if the cash flows to be hedged are based on recognized financial assets or financial liabilities. Such an approach would only be appropriate if the amount of the cash flow hedge reserve – that affects CET 1 due to the prudential filter and compensates for fair value changes of the hedging instruments that are not yet realized but are at least based on contracts – were of value. However, this amount con-

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<sup>55</sup> For example, the Corona crisis may constitute such circumstances.

<sup>56</sup> This applies at least to the extent that a loss cannot be anticipated.

<sup>57</sup> On earnings management in the context of regulatory capital ratios see *Krauß* (2019a), 201–202 with further references. In view of the discussion in section IV.2., the decision to designate a cash flow hedge (IFRS 9.6.5.1) may itself be the subject of accounting and regulatory policy considerations.



sists of only constructed fair value changes of the hedged expected cash flows and cannot be considered to be of value before the cash flows are realized or at least secured contractually. Therefore, the fair value changes of the cash flows first and foremost have an opportunity character. By contrast, the value change of the hedging instrument must be regarded as fundamentally recoverable due to its legal basis.

Consider, for instance, the hedge of interest payments of a plain vanilla floating interest rate financial asset by a plain vanilla receive-fixed interest rate swap,<sup>58</sup> where we abstract from influences of possible credit default risks and associated credit spreads. Then, the price of the floating-rate asset – without accrued interest – will approximately be equal to the principal.<sup>59</sup> Since the person who enters into a receive-fixed interest rate swap can be considered to be long in a fixed rate bond and short in a floating rate bond, the price of the latter will (also) not vary significantly so that the value of the swap is primarily determined by the value changes of the fixed rate leg.<sup>60</sup> In the same way, the hypothetical derivative method may be applied by referencing the changes of the cash flows to be hedged to the fair value changes of an interest rate swap with the same variable payments.<sup>61</sup> The interest on the fixed rate leg of this mirroring swap is then determined by the condition according to which the swap value is nil at the time of designation. Therefore, the fair value changes of the cash flows to be hedged are identified by the fair value changes of the mirroring swap which in turn will (mostly) be determined by the fair value changes of its fixed rate leg. Assuming perfect conditions, it may be possible that the hedging swap has the same terms as the hypothetical swap. Then, real fair value changes on the hedging instrument will be neutralized by hypothetical fair value changes calculated with the help of the hypothetical derivative in CET 1 by the prudential filter. Changes of the variable interest payments resemble the cash flows to be hedged (the hedged item) and are essentially not reflected in corresponding changes of fair values of the underlying financial instrument (floating rate asset) – this is shown by the recourse to the hypothetical derivative. Even more, the variable interest payments adjust to current market conditions in the course of time. As a consequence, the swap, i.e. the hedging instrument, causes the overall position to be fixed at the level of the hedged payments at the designation date. Changes compared to this reference interest rate level are then (essen-

<sup>58</sup> “Plain vanilla” describes an instrument with standard terms; see *Hull* (2018), 831.

<sup>59</sup> In respect to the carrying amount, this is even stated in IFRS 9.B5.4.5. Differences may arise from changes of market interest rates until the reference rate for the interest payments will be fixed for the next interest period; see *Albrecht/Maurer* (2016), 592–594.

<sup>60</sup> See *Kolb/Overdahl* (2007), 701–702, 752; *Albrecht/Maurer* (2016), 909–911; *Hull* (2018), 157. See *Hull* (2018), 165–169, on the valuation of swaps.

<sup>61</sup> For the method to be applied, the terms of the hypothetical derivative must match the critical terms of the hedged item. See IFRS 9.B6.5.5.

tially) reflected only in changes of the fair value of the hedging swap which can potentially be realized at any time by entering into an offsetting pay-fixed interest rate swap.<sup>62</sup> In our opinion, compensating the results of the hedging instrument with an “opportunity profit or loss” (derived from the hypothetical derivative) should therefore be viewed critically and, in the event of a loss in the hedging instrument, not been taken into account as it would undermine the prudential idea of banking regulation. In this context, it should be pointed out that an increase of CET 1 caused this way always leads to an increase of the CET 1 ratio – which is often regarded as the decisive indicator for the solvency of institutions by regulatory supervisors –, because a change in CET 1 through the prudential filter for the cash flow hedge reserve does not result in a change of risk-weighted exposure amounts.<sup>63</sup>

Overall, an increase of CET 1 due to the prudential filter for the cash flow hedge reserve does not add to the loss absorbency in a way that should be expected from CET 1. As a result, this effect undermines the intention of the first pillar to limit institutions’ risk to a ratio of own funds. Additionally, it decreases the explanatory power of CET 1 and the CET 1 ratio which is relevant not only to regulatory authorities but also to market participants. Due to the limited loss absorbency of increases of CET 1 caused by the prudential filter for the cash flow hedge reserve, regulatory authorities are required to properly understand and to neutralize the respective effect in the context of the second pillar in order to determine the institutions’ risk profiles correctly. Furthermore, the effect weakens the intended market discipline of the third pillar, because market participants cannot trust in the explanatory power of CET 1 and the CET 1 ratio. For these reasons, we believe that an increase of CET 1 due to the prudential filter for the cash flow hedge reserve should be avoided.

If, on the other hand, the prudential filter should lead to a reduction in CET 1, the resulting situation would in principle be compatible with the prudence concept of the regulatory framework.<sup>64</sup> However, in our opinion, there is no reason to object to a complete waiver of the prudential filter given the otherwise normal accounting treatment of fair value changes of the hedging instrument especially outside of hedging relationships assuming its recoverability.<sup>65</sup> It should

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<sup>62</sup> Assuming exactly offsetting variable interest payments of both swaps, the fair value should equal the net present value of the difference of the fixed rate payments of each swap that correspond to prevailing market conditions at the different times entered into the swaps. See also *Kolb/Overdahl* (2007), 708–710.

<sup>63</sup> See *Steffen/Steinruecke* (2015), 429–430.

<sup>64</sup> Again, in the context of earnings management see *Krauß* (2019a), 202, with further references.

<sup>65</sup> We omit a discussion on whether recoverability for regulatory purposes is fulfilled by the definition of fair value measurement according to IFRS 13. Furthermore, the prudent valuation of art. 105 CRR applies (see fn. 51).

merely be noted that such a complete waiver would also contribute to a reduction of complexity in regard to regulatory capital determination.

In regard to an asymmetric treatment, if viewed prudently, the result derived here can be considered similar to that of *Sopp* (2010).<sup>66</sup> He contemplates that a positive capital correction for regulatory purposes is dispensable in case of a negative cash flow hedge reserve due to the regulatory prudence principle. In case of a positive cash flow hedge reserve however, he deems necessary to apply a negative capital correction because the loss compensation of the hedging instrument is already reserved for the hedged future cash flows. Thereby, he does not recognize the potential of the fair value changes for loss compensation or considers it to be neutralized by the calculated fair value changes of the hedged item. In our opinion, in the former case of a negative cash flow hedge reserve, we deem an omission of the prudential filter to be necessary and appropriate due to the lack of an intrinsic value of the hedged item, and only in the latter case of a positive cash flow hedge reserve, the concept of prudence could be applied. In the light of our elaborations above however, we think that a complete waiver of the prudential filter, resulting in no corrections at all, is a more consistent and a more practical way of dealing with fair value changes of the hedging instrument that is also in line with the regulatory framework.

## V. Effects on European Banks

The relevance of the proposed abolishment of the prudential filter for the cash flow hedge reserve shall be illustrated by the effect it would have on the regulatory figures of European top banks in 2014–2019. Thereby, we refer to the S&P Global-ranking of Europe's largest banks according to total assets of the respective banking groups at year end 2019.<sup>67</sup> Table 1 shows the key figures for the top eleven banks. Unless otherwise stated, the total assets [line 1 for each bank] are taken from the annual reports (in the respective currency), whereas actual CET 1 [2], the inherent adjustment due to the prudential filter for the cash flow hedge reserve [CFHR; 3] and the risk-exposure amounts [REA; 5] are taken from the banks' disclosures according to the Commission Implementing Regulation (EU) No 1423/2013 (regulatory pillar 3 reports), where, unless not available and correspondingly marked, we refer to the non-transitional disclosures

<sup>66</sup> See *Sopp* (2010), 196.

<sup>67</sup> See <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/europe-s-50-largest-banks-by-assets-2020-57901087>. The Intesa Sanpaolo group is ranked 10 by adjusting for a pending purchase of Italy-based Unione di Banche Italiane SpA. In order to cover all top 10 banks also without such an adjustment, we include the ING Group which is ranked 11.

for all years.<sup>68</sup> From here, we calculate the actual CET 1 ratios [ $6 = 2/5$ ],<sup>69</sup> revised CET 1 [ $4 = 2 - 3$ ] according to the proposed abolishment of the prudential filter for the cash flow hedge reserve, the difference from the revised to the actual CET 1 ratio [ $7 = 4/5 - 6$ ] and the percentage share of the cash flow hedge reserve in actual CET 1 [ $8 = -3/2$ ], indicating an increase (+) or a decrease (-) of CET 1 if the prudential filter is not applied.<sup>70</sup>

For the period under review, the abolishment of the prudential filter for the cash flow hedge reserve would have notable effects for a couple of the largest banks. British banks show very large adjustments for CET 1 [8] – for the Lloyds Banking Group in the range of 2.55 % to 7.29 %, for Barclays between 1.66 % and 4.65 %. The respective differences in the CET 1 ratios [7] range from 0.33 % to 0.99 % for Lloyds and from 0.21 % to 0.58 % for Barclays. However, for both banking groups, the adjustment would have resulted in higher CET 1 – for these banks the adjustment may thus be considered to have created hidden reserves with respect to regulatory capital. This also holds true for the ING Group and BNP Paribas on a lower, but nonetheless material level: the adjustments to CET 1 range for the ING Group from 0.58 % to 2.64 % and for the BNP Paribas from 1.08 % to 2.42 %. The corresponding ranges of the differences in the CET 1 ratios are from 0.08 % to 0.37 % (ING Group)<sup>71</sup> and from 0.13 % to 0.25 % (BNP Paribas). These differences are approximately 0.25 %, which is the amount of the countercyclical capital buffer set by the German banking authority before the Corona crises.<sup>72</sup> The proposed abolishment of the prudential filter would have more significant effects for the group Intesa San Paolo with changes in CET 1 in the range of -3.73 % to -2.21 % and a corresponding range between -0.50 % and -0.29 % for differences with respect to the CET 1 ratios.<sup>73</sup> The negative values indicate that for this group, CET 1 and the CET 1 ratio would be reduced according to our proposal. Thus, in our opinion, the potential for loss absorption was not as high as the actual figures indicate.

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<sup>68</sup> See art. 4 and Annex IV of Commission Implementing Regulation (EU) No 1423/2013. This is often referred to as “fully loaded”. We point out if only transitional values are available; see art. 5 and Annex VI of Commission Implementing Regulation (EU) No 1423/2013. This is often referred to as “phased-in”.

<sup>69</sup> Regulatory reports show CET 1 ratios often with only one decimal.

<sup>70</sup> For the latter, we refer to actual CET 1 to highlight the share of the adjustment under consideration of the currently relevant number. Instead, one might also refer to revised CET 1 since it represents the figure before the regulatory adjustment under consideration.

<sup>71</sup> The upper bounds of the ranges do not refer to the same year. The CET 1 adjustment refers to 2014 and the difference in the CET 1 ratios refers to 2019.

<sup>72</sup> See Bundesanstalt für Finanzdienstleistungsaufsicht (2019), applicable until 1 July 2020 at the latest. In reaction to the Corona crises the buffer was reset to the former value of nil; see Bundesanstalt für Finanzdienstleistungsaufsicht (2020).

<sup>73</sup> However, see fn. 79.

*Table 1*  
**Impact of the Proposed Abolishment of the Prudential Filter for the Cash Flow Hedge Reserve on Regulatory Key Figures for 2014–2019 in Respect to the Eleven Largest European Banks at Year-End 2019**

| <i>Group</i><br><i>[CU; amounts in mn. CU]</i> | <i>Key figure</i>             | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|--|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| HSBC Holdings [\$]                             | [1] Total assets              | 2,634,139 | 2,409,656 | 2,374,986 | 2,521,771 | 2,558,124 | 2,715,152 |
|  | [2] actual CET 1              | 135,953   | 130,863   | 115,984   | 126,144   | 121,022   | 123,966   |
|  | [3] thereof CFHR              | -57       | -52       | -52       | 208       | 135       | -41       |
|  | [4] revised CET 1             | 136,010   | 130,915   | 116,036   | 125,936   | 120,887   | 124,007   |
|  | [5] REA                       | 1,219,765 | 1,102,995 | 855,762   | 871,337   | 865,318   | 843,395   |
|  | [6] actual CET 1 ratio        | 11.15 %   | 11.86 %   | 13.55 %   | 14.48 %   | 13.99 %   | 14.70 %   |
|  | [7] revised – actual ratio    | 0.00 %    | 0.00 %    | 0.01 %    | -0.02 %   | -0.02 %   | 0.00 %    |
|  | [8] % of CFHR in actual CET 1 | 0.04 %    | 0.04 %    | 0.04 %    | -0.16 %   | -0.11 %   | 0.03 %    |

*(continue next page)*

(Table 1 continued)

| Group<br>[CU; amounts in mn. CU] | Key figure                    | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|----------------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| BNP Paribas [€] <sup>74</sup>    | [1] Total assets              | 2,077,759 | 1,994,193 | 2,076,959 | 1,960,252 | 2,040,836 | 2,164,713 |
|                                  | [2] actual CET 1              | 63,662    | 68,867    | 73,562    | 75,741    | 76,131    | 81,204    |
|                                  | [3] thereof CFHR              | -1,541    | -1,353    | -1,154    | -1,141    | -825      | -1,072    |
|                                  | [4] revised CET 1             | 65,203    | 70,220    | 74,716    | 76,882    | 76,956    | 82,276    |
|                                  | [5] REA                       | 619,827   | 633,527   | 640,673   | 642,070   | 647,001   | 668,828   |
|                                  | [6] actual CET 1 ratio        | 10.27 %   | 10.87 %   | 11.48 %   | 11.80 %   | 11.77 %   | 12.14 %   |
|                                  | [7] revised – actual ratio    | 0.25 %    | 0.21 %    | 0.18 %    | 0.18 %    | 0.13 %    | 0.16 %    |
|                                  | [8] % of CFHR in actual CET 1 | 2.42 %    | 1.96 %    | 1.57 %    | 1.51 %    | 1.08 %    | 1.32 %    |

<sup>74</sup> Data on disclosures according to the Commission Implementing Regulation (EU) No 1423/2013 are taken from the annual reports. The CFHR figures for 2014–2018 are taken from phased-in disclosures.

|   |                               |           |           |           |           |           |           |
|---|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Crédit Agricole Group [€] <sup>75</sup> | [1] Total assets              | 1,762,763 | 1,698,859 | 1,722,849 | 1,763,169 | 1,854,763 | 2,010,966 |
|   | [2] actual CET 1              | 64,712    | 69,669    | 75,467    | 77,599    | 81,739    | 89,894    |
|   | [3] thereof CFHR              | -839      | -566      | -544      | -421      | -296      | -533      |
|   | [4] revised CET 1             | 65,551    | 70,235    | 76,011    | 78,020    | 82,035    | 90,427    |
|   | [5] REA                       | 494,934   | 509,403   | 520,963   | 521,516   | 542,093   | 559,368   |
|   | [6] actual CET 1 ratio        | 13.07 %   | 13.68 %   | 14.49 %   | 14.88 %   | 15.08 %   | 16.07 %   |
|   | [7] revised – actual ratio    | 0.17 %    | 0.11 %    | 0.10 %    | 0.08 %    | 0.05 %    | 0.17 %    |
|   | [8] % of CFHR in actual CET 1 | 1.30 %    | 0.81 %    | 0.72 %    | 0.54 %    | 0.36 %    | 1.30 %    |

(continue next page)

<sup>75</sup> The figures in the Amendment A01 to the Universal Registration Document – Crédit Agricole Group financial statements differ from the figures from pillar 3 reports, as presented in the table, with respect to CET 1: 89,052 (2019), 80,999 (2018) and to the REA: 559,009 (2019), 541,770 (2018) with corresponding CET 1 ratios of 15.9% (2019), 15.0% (2018).

(Table 1 continued)

| Group<br>[CU: amounts in mn. CU]  | Key figure                    | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|-----------------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Banco Santander [€] <sup>76</sup> | [1] Total assets              | 1,266,296 | 1,340,260 | 1,339,125 | 1,444,305 | 1,459,271 | 1,522,695 |
|                                   | [2] actual CET 1              | 56,282    | 58,705    | 62,068    | 65,563    | 66,904    | 70,497    |
|                                   | [3] thereof CFHR              | -186      | -145      | -455      | -139      | -162      | -316      |
|                                   | [4] revised CET 1             | 56,468    | 58,850    | 62,523    | 65,702    | 67,066    | 70,813    |
|                                   | [5] REA                       | 583,366   | 583,893   | 588,088   | 605,064   | 592,319   | 605,244   |
|                                   | [6] actual CET 1 ratio        | 9.65 %    | 10.05 %   | 10.55 %   | 10.84 %   | 11.30 %   | 11.65 %   |
|                                   | [7] revised – actual ratio    | 0.03 %    | 0.02 %    | 0.08 %    | 0.02 %    | 0.03 %    | 0.03 %    |
|                                   | [8] % of CFHR in actual CET 1 | 0.33 %    | 0.25 %    | 0.73 %    | 0.21 %    | 0.24 %    | 0.33 %    |

<sup>76</sup> For CET 1 and REA fully loaded figures for 2014, 2015 and 2018 are taken from the annual reports. The remark in fn. 74 applies to the CFHR figures for 2014, 2015, 2018 and 2019 analogously.



|                                    |                               |           |           |           |           |           |           |
|------------------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Société Générale [€] <sup>77</sup> | [1] Total assets              | 1,308,170 | 1,334,391 | 1,382,241 | 1,275,128 | 1,309,428 | 1,356,303 |
|                                    | [2] actual CET 1              | 35,792    | 38,865    | 40,937    | 40,227    | 41,154    | 43,830    |
|                                    | [3] thereof CFHR              | -23       | -86       | -73       | 1         | 105       | -59       |
|                                    | [4] revised CET 1             | 35,815    | 38,951    | 41,010    | 40,226    | 41,049    | 43,889    |
|                                    | [5] REA                       | 353,197   | 356,725   | 355,478   | 353,306   | 376,049   | 345,010   |
|                                    | [6] actual CET 1 ratio        | 10.13 %   | 10.89 %   | 11.52 %   | 11.39 %   | 10.94 %   | 12.70 %   |
|                                    | [7] revised – actual ratio    | 0.01 %    | 0.02 %    | 0.02 %    | 0.00 %    | -0.03 %   | 0.02 %    |
|                                    | [8] % of CFHR in actual CET 1 | 0.06 %    | 0.22 %    | 0.18 %    | 0.00 %    | -0.26 %   | 0.13 %    |

(continue next page)

<sup>77</sup> The CFHR figure for 2015 is taken from the regulatory report 2016 due to a reclassification.

(Table 1 continued)

| Group<br>[CU: amounts in mn. CU] | Key figure                    | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|----------------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Barclays [£]                     | [1] Total assets              | 1,357,906 | 1,120,012 | 1,213,126 | 1,133,248 | 1,133,283 | 1,140,229 |
|                                  | [2] actual CET 1              | 41,453    | 40,741    | 45,204    | 41,565    | 39,815    | 39,687    |
|                                  | [3] thereof CFHR              | -1,814    | -1,231    | -2,104    | -1,161    | -660      | -1,002    |
|                                  | [4] revised CET 1             | 43,267    | 41,972    | 47,308    | 42,726    | 40,475    | 40,689    |
|                                  | [5] REA                       | 401,900   | 358,376   | 365,649   | 313,033   | 311,798   | 295,016   |
|                                  | [6] actual CET 1 ratio        | 10.31 %   | 11.37 %   | 12.36 %   | 13.28 %   | 12.77 %   | 13.45 %   |
|                                  | [7] revised – actual ratio    | 0.45 %    | 0.34 %    | 0.58 %    | 0.37 %    | 0.21 %    | 0.34 %    |
|                                  | [8] % of CFHR in actual CET 1 | 4.38 %    | 3.02 %    | 4.65 %    | 2.79 %    | 1.66 %    | 2.52 %    |

|                              |                               |           |           |           |           |           |           |
|------------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Group BPCE [€] <sup>78</sup> | [1] Total assets              | 1,223,298 | 1,166,535 | 1,235,240 | 1,259,850 | 1,273,926 | 1,338,064 |
|                              | [2] actual CET 1              | 47,300    | 51,600    | 56,000    | 59,300    | 60,600    | 65,992    |
|                              | [3] thereof CFHR              | 826       | 572       | 504       | 401       | 292       | 218       |
|                              | [4] revised CET 1             | 46,474    | 51,028    | 55,496    | 58,899    | 60,308    | 65,782    |
|                              | [5] REA                       | 392,887   | 391,382   | 390,981   | 386,331   | 392,420   | 421,599   |
|                              | [6] actual CET 1 ratio        | 12.04 %   | 13.18 %   | 14.32 %   | 15.35 %   | 15.44 %   | 15.65 %   |
|                              | [7] revised – actual ratio    | -0.21 %   | -0.15 %   | -0.13 %   | -0.10 %   | -0.07 %   | -0.05 %   |
|                              | [8] % of CFHR in actual CET 1 | -1.75 %   | -1.11 %   | -0.90 %   | -0.68 %   | -0.48 %   | -0.33 %   |

<sup>78</sup> Fully loaded CET 1 figures are taken from the annual reports (for 2014 and 2015 from the 2016 annual report). CET 1 figures for 2015 and 2016 from the 2017 annual report differ from figures reported as of end of year 2016 (2015: 50.5 bn., 2016: 55.5 bn.); the 2018 and 2019 reports are compatible with the 2017 report. We stick on the higher values of the 2016 report since it provides a more conservative estimation of the effect than the other figures. The CET 1 figures are given only in billions with one decimal place; for 2019 we refer to the more accurate figure from the pillar 3 report. The remark in fn. 74 applies to the CFHR figures for 2014–2019 analogously. CET 1 ratios from fully-loaded figures are reported in the annual reports and comply with the calculated figures presented in [6] except for rounding differences. REA figures are only available as phased-in.

(Table 1 continued)

| Group<br>[CU: amounts in mn. CU] | Key figure                    | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|----------------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Deutsche Bank [€]                | [1] Total assets              | 1,708,703 | 1,629,130 | 1,590,546 | 1,474,732 | 1,348,137 | 1,297,674 |
|                                  | [2] actual CET 1              | 46,076    | 44,101    | 42,279    | 48,300    | 47,486    | 44,148    |
|                                  | [3] thereof CFHR              | -181      | -196      | -195      | -28       | -25       | -21       |
|                                  | [4] revised CET 1             | 46,257    | 44,297    | 42,474    | 48,328    | 47,511    | 44,169    |
|                                  | [5] REA                       | 393,969   | 396,714   | 357,518   | 344,212   | 350,432   | 324,015   |
|                                  | [6] actual CET 1 ratio        | 11.70 %   | 11.12 %   | 11.83 %   | 14.03 %   | 13.55 %   | 13.63 %   |
|                                  | [7] revised – actual ratio    | 0.05 %    | 0.05 %    | 0.05 %    | 0.01 %    | 0.01 %    | 0.01 %    |
|                                  | [8] % of CFHR in actual CET 1 | 0.39 %    | 0.44 %    | 0.46 %    | 0.06 %    | 0.05 %    | 0.05 %    |

|                          |                               |         |         |         |         |         |         |
|--------------------------|-------------------------------|---------|---------|---------|---------|---------|---------|
| Lloyds Banking Group [£] | [1] Total assets              | 854,896 | 806,688 | 817,793 | 812,109 | 797,598 | 833,893 |
|                          | [2] actual CET 1              | 30,689  | 28,505  | 29,284  | 29,647  | 30,167  | 27,744  |
|                          | [3] thereof CFHR              | -1,139  | -727    | -2,136  | -1,405  | -1,051  | -1,504  |
|                          | [4] revised CET 1             | 31,828  | 29,232  | 31,420  | 31,052  | 31,218  | 29,248  |
|                          | [5] REA                       | 239,734 | 222,747 | 215,534 | 210,919 | 206,366 | 203,431 |
|                          | [6] actual CET 1 ratio        | 12.80 % | 12.80 % | 13.59 % | 14.06 % | 14.62 % | 13.64 % |
|                          | [7] revised – actual ratio    | 0.48 %  | 0.33 %  | 0.99 %  | 0.67 %  | 0.51 %  | 0.74 %  |
|                          | [8] % of CFHR in actual CET 1 | 3.71 %  | 2.55 %  | 7.29 %  | 4.74 %  | 3.48 %  | 5.42 %  |

(continue next page)

(Table 1 continued)

| Group<br>[CU: amounts in mn. CU]   | Key figure                    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|------------------------------------|-------------------------------|---------|---------|---------|---------|---------|---------|
| Intesa San Paolo [€] <sup>79</sup> | [1] Total assets              | 646,427 | 676,496 | 725,100 | 796,861 | 787,721 | 816,102 |
|                                    | [2] actual CET 1              | 36,547  | 36,908  | 35,926  | 38,051  | 33,072  | 38,952  |
|                                    | [3] thereof CFHR              | 1,362   | 1,145   | 1,146   | 1,000   | 814     | 862     |
|                                    | [4] revised CET 1             | 35,185  | 35,763  | 34,780  | 37,051  | 32,258  | 38,090  |
|                                    | [5] REA                       | 269,790 | 284,319 | 283,918 | 286,825 | 275,533 | 300,510 |
|                                    | [6] actual CET 1 ratio        | 13.55 % | 12.98 % | 12.65 % | 13.27 % | 12.00 % | 12.96 % |
|                                    | [7] revised – actual ratio    | -0.50 % | -0.40 % | -0.40 % | -0.35 % | -0.30 % | -0.29 % |
|                                    | [8] % of CFHR in actual CET 1 | -3.73 % | -3.10 % | -3.19 % | -2.63 % | -2.46 % | -2.21 % |

<sup>79</sup> Fully loaded figures for CET 1, CFHR and REA are not available for 2014–2017, thus we refer to phased-in figures. For CET 1 and REA the fully loaded figures for 2018 and 2019 are taken from the annual reports. However, the CFHR figures for 2018 and 2019 are only available as phased-in from the pillar 3 reports. Since the differences to the cash flow hedge reserves from the annual reports are not significant (2018: -816; 2019: -882) we refer to the phased-in figures.

|                             |                               |         |         |         |         |         |         |
|-----------------------------|-------------------------------|---------|---------|---------|---------|---------|---------|
| ING Group [€] <sup>80</sup> | [1] Total assets              | 992,856 | 841,769 | 845,081 | 846,216 | 887,030 | 891,744 |
|                             | [2] actual CET 1              | 31,512  | 40,788  | 44,568  | 45,550  | 45,443  | 47,552  |
|                             | [3] thereof CFHR              | -832    | -666    | -777    | -263    | -604    | -1,208  |
|                             | [4] revised CET 1             | 32,344  | 41,454  | 45,345  | 45,813  | 46,047  | 48,760  |
|                             | [5] REA                       | 300,758 | 321,151 | 314,325 | 309,887 | 314,149 | 326,414 |
|                             | [6] actual CET 1 ratio        | 10.48 % | 12.70 % | 14.18 % | 14.70 % | 14.47 % | 14.57 % |
|                             | [7] revised – actual ratio    | 0.28 %  | 0.21 %  | 0.25 %  | 0.08 %  | 0.19 %  | 0.37 %  |
|                             | [8] % of CFHR in actual CET 1 | 2.64 %  | 1.63 %  | 1.74 %  | 0.58 %  | 1.33 %  | 2.54 %  |

<sup>80</sup> Fully loaded figures for CET 1 (ratio), CFHR and REA for 2014–2016 are taken from the annual reports.

## VI. Summary and Conclusion

In the context of accounting for cash flow hedges in accordance with IFRS 9, a cash flow hedge reserve is formed amounting to the effective part of the cumulative fair value changes of the hedging instrument. CET 1 is adjusted by this amount via the prudential filter for the cash flow hedge reserve. As a result, the cumulative fair value changes of the hedged expected cash flows which are arithmetically determined are recognized in CET 1 to varying degrees depending on whether the underlying cash flow hedge is an over hedge or an under/perfect hedge. This means that there is an inconsistency directly affecting the regulatory purpose of capital adequacy. Instead, the relative amount of the cumulative fair value changes of the hedging instrument should not be taken into account when considering the hedged expected cash flows in regulatory capital. In addition, in regard to the ability to absorb losses, it is more than questionable that the grouping of instruments in a cash flow hedge results in a different amount of regulatory capital than their treatment on a stand-alone basis. Instead, increases of CET 1 that are based on future, contractually unfixed transactions – the payments of which are thus uncertain, but will, at least approximately, be in line with market conditions at maturity – must be rejected in view of the regulatory purpose. They do not contribute to the potential for debt coverage at the point in time the regulatory capital is calculated. In the interest of prudence at least an increase of CET 1 by a de facto compensation for a negative cumulative fair value change of the hedging instrument should be avoided. According to the current procedure, this (unrealized) loss of the hedging instrument is offset by only a calculated opportunity advantage from the hedged item which is not legally secured at the time the capital adequacy is calculated. Given that the fair value changes of the hedging instrument are fundamentally recoverable, it should be possible to dispense with the prudential filter in general, i.e. also in those cases where, at the moment, it neutralizes a positive fair value change of the hedging instrument.

By abolishing the prudential filter for the cash flow hedge reserve, the quality of CET 1 improves which enhances the regulatory capital ratios as a risk-limiting instrument in the first pillar. Furthermore, the regulatory authorities can use CET 1 and the CET 1 ratio more purposefully as a supervisory element in the second pillar. Also, the explanatory power of CET 1 and of the CET 1 ratio increases while at the same time, complexity decreases. This helps market participants to use regulatory information in their decision process to apply market pressure in line with the third pillar.

Having no prudential filter for the cash flow hedge reserve brings the institutions' own funds more in line with the IFRS balance sheet again. The use of regular financial reporting as a basis helps institutions to avoid or mitigate expenses that arise whenever regulatory requirements differ from accounting require-



ments.<sup>81</sup> However, this comes at the cost of comparability.<sup>82</sup> A new discussion of a complete separation of regulation and accounting is beyond the scope of this paper however. Irrespective of the measurement approach, the components that influence regulatory capital have to be carefully considered. For the fair value changes underlying the cash flow hedge reserve, an adjustment by the prudential filter has to be rejected. Therefore, the prudential filter for the cash flow hedge reserve should be abolished improving supervision throughout all three pillars of regulation.

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<sup>81</sup> In the context of the implementation of the Banking Directive (Directive 2000/12/EC) and the Capital Adequacy Directive (Council Directive 93/6/EEC), in Germany for instance, the legislator expressed that introducing consolidated financial statements as the basis for regulatory capital measurement via § 10a German Banking Act was in the interest of the banking industry, see Bundesregierung (2006), 54.

<sup>82</sup> In Germany for instance, the opinions on accounting for hedges of forecast transactions differ significantly due to principle-based accounting rules (see Knobloch/Osinski (2016), 526–531) thus creating additional uncertainty to the interpretation of regulatory capital figures that are based on consolidated financial statements according to German GAAP.

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