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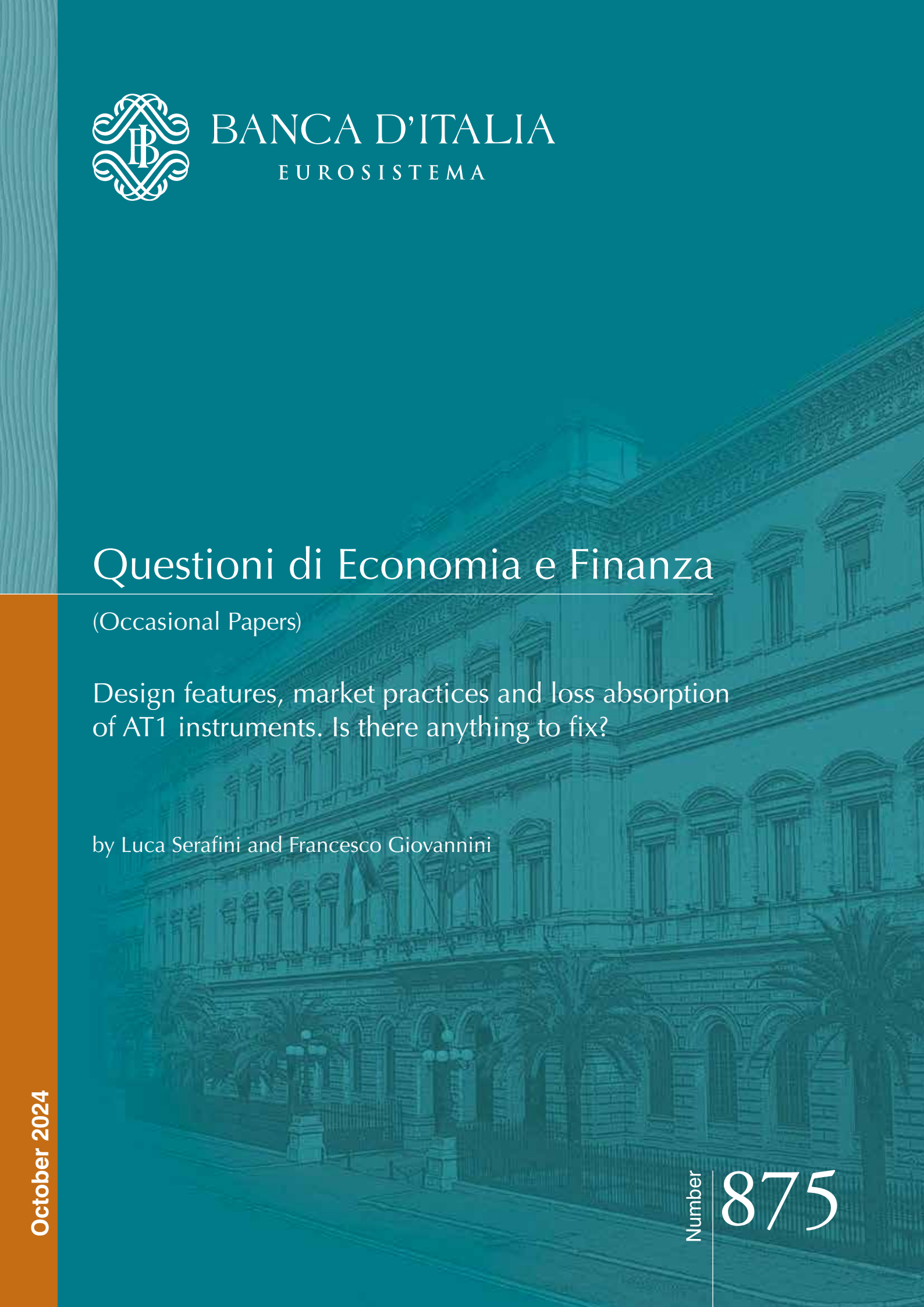

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The series is available online at www.bancaditalia.it .

ISSN 1972-6643 (online)

Designed by the Printing and Publishing Division of the Bank of Italy

DESIGN FEATURES, MARKET PRACTICES AND LOSS ABSORPTION OF AT1 INSTRUMENTS. IS THERE ANYTHING TO FIX?

by Luca Serafini* and Francesco Giovannini*

Abstract

The Credit Suisse case, where Additional Tier 1 (AT1) instruments absorbed losses only at the bank's point of non-viability, has reignited discussions about the ability of these instruments to serve as going-concern capital. Based on the lessons learned from this and previous bank crises for which almost no instances of loss absorption of AT1s on a going-concern basis have been observed, this paper examines the different features of AT1s, with a specific focus on Contingent Convertible bonds (CoCos). Areas of analysis include: the effectiveness of current Principal Loss Absorption Mechanism (PLAM) triggers, particularly in liquidity crises; the reluctance of banks to cancel AT1 coupon payments, irrespective of their financial condition; the lack of permanency of these instruments, due to the banks' practice of redeeming them at the first call date; and the seniority of AT1 holders over shareholders in all circumstances. The paper then discusses policy options to address a number of observed weaknesses, also considering the potential effects on issuers and investors' behaviour. While a number of changes to the current framework of AT1s seem necessary to enhance the loss absorption features on a going-concern basis (a principle stated in the Basel Accord for Tier 2 hybrid debt capital instruments since 1988), such changes should be carefully assessed against potential unintended effects, including in terms of regulatory complexity. In this respect, as an alternative, a more radical rethinking of the regulatory capital stack may be considered, also taking into account the requirements introduced in the meantime regarding loss absorption and the recapitalization capacity of banks in resolution.

JEL Classification: G01, G21, G28, G32.

Keywords: Additional Tier 1, going-concern, Basel framework, 2023 banking turmoil, CoCos.

DOI: 10.32057/0.QEF.2024.875

* Bank of Italy, Directorate General for Financial Supervision and Regulation.

1. Introduction[2]

On 19 March 2023, the Swiss government announced the merger of UBS and Credit Suisse as a 'commercial solution' to avoid the formal resolution proceeding of Credit Suisse. This deal required several emergency measures, including the granting of extraordinary liquidity assistance through loans secured by public guarantees. The granting of public support triggered a clause in Credit Suisse's Additional Tier 1 (AT1) instruments empowering the Swiss financial market authority (FINMA) to fully write down the AT1[3] and indeed, over the weekend, a nominal value of CHF 16 billion of AT1s was fully written down. After the write-down, the merger with UBS was concluded and Credit Suisse's shareholders received one share of the acquiring company for every 22.48 of shares in Credit Suisse.[4] The full write-down of Credit Suisse's AT1 instruments without first wiping out Core Equity Tier 1 (CET1) significantly affected the AT1 market. Following the merger, there was a sharp increase in yields for AT1 instruments, and planned issuances were delayed. Moreover, the decision by the Swiss authorities also led to legal suits from AT1 bondholders as well as Credit Suisse staff, whose bonuses were linked to these instruments; the suits disputed the inversion of hierarchy that occurred between shareholders' and bondholders' claims.

Although the AT1 market has stabilized since then, also thanks to public statements by various authorities reaffirming that AT1 instruments in their jurisdictions would rank senior to CET1 in liquidation,[5] the Credit Suisse events reignited an ongoing debate about the role of AT1s in the capital stack. In particular, doubts have been raised about the ability of AT1 instruments to absorb losses in going-concern, as originally intended. In fact, following the Great Financial Crisis the Basel Committee reinforced the requirements for regulatory capital and introduced strict conditions on AT1 instruments in an effort to ensure their ability to absorb losses while banks are still viable. With specific reference to Contingent Convertible bonds (CoCos),[6] these mechanisms are represented by the possibility for the issuer to cancel coupon payments without triggering a default (flexibility of payments) and by the automatic conversion or write-down of the instrument when the issuer's CET1 ratio breaches a certain threshold (Principal Loss Absorbing Mechanism – PLAM). Nevertheless, the evidence shows that Credit Suisse did not cancel any coupon payments on its AT1s despite experiencing financial difficulties; moreover, the write-down of the AT1s was not activated by the PLAM but by the Swiss authority's intervention at the Point of Non-Viability (PONV) of the bank, after an injection of public money.

This paper aims to contribute to the debate, by focusing on the role of AT1s as going-concern capital, with no consideration of the effects that any potential change to the applicable framework could also have on the gone-concern capital stack. Section 2 retraces the evolution of the capital framework

[2] The authors wish to thank Giuseppe Siani, Andrea Pilati, Ida Mercanti and Francesco Cannata, for their very useful comments on earlier versions of this paper. The views expressed are those of the authors alone and should not be attributed to Banca d'Italia. Any error or omission is the sole responsibility of the authors.

[3] For the purposes of this paper, the term 'write-down' will be used for both the principal loss absorption activated by automatic capital triggers and the one required by the relevant authorities at the PONV.

[4] FINMA (2023).

[5] ECB, SRB and EBA (2023), BoE (2023), HKMA (2023), MAS (2023), OSFI (2023).

[6] CoCos are a specific type of bond issued by banks that are converted into equity or written down when a pre-defined capital trigger is reached. Depending on their features (e.g. perpetual or not) they can be eligible either as AT1 or Tier 2 capital. For the sole purposes of this paper, we consider all AT1 instruments issued in the form of debt instruments to be CoCos, regardless of how they are considered in the jurisdiction where the issuer operates. Therefore, this paper divides AT1 instruments between preferred shares and CoCos.

provided by the Basel Accord, which ultimately led to the introduction of AT1. Section 3 analyses the main characteristics of AT1 instruments, with particular reference to CoCos, while Section 4 analyses the events that led to the write-down of Credit Suisse's AT1s. Section 5 summarises the main concerns about the loss absorption features of AT1s and discusses potential policy options. Section 6 concludes.

2. AT1 instruments in the Basel framework

Global banking regulation began with the Basel I Accord in 1988, a framework focused on setting a common definition of regulatory capital as well as minimum capital requirements to offset credit risk, for which banks were mandated to maintain an amount of capital equal to at least 8% of their risk-weighted assets (RWAs).

The framework introduced a two-tiered capital structure (which became three-tiered in 1996): Tier 1 and Tier 2. Only Tier 1 capital was close to the conventional definition of equity, since it comprised ordinary shares, reserves, and non-cumulative preferred shares. Tier 2 capital (supplementary capital) included hybrid capital instruments and subordinated debt instruments and was capped at a maximum of 100% of total Tier 1 capital.[7] Hybrid capital instruments, blending traits of equity and debt, were supposed to absorb losses in going-concern; for this reason, hybrid capital instruments were required to have mechanisms to defer debt service payments (similar to cumulative preference shares) where the profitability of the bank would not support them. Subordinated term debts, instead, were meant to absorb losses in gone concerns and encompassed traditional unsecured subordinated debts with a minimum fixed term of over five years.[8] Thereafter, with amendments introduced in 1996, Tier 3 capital was defined as a form of gone-concern loss absorbency capital, consisting of short-term subordinated debt with the purpose of covering market risk requirements.[9]

In the 1990s, banks started issuing new capital instruments with innovative features that were designed to lower the cost of capital, by expanding the investor base and/or achieving tax deductibility. Among these features, step-up clauses – which increase the coupon increase if the bank does not call the instrument at some predefined future date – created a *de facto* maturity date for instruments that were otherwise perpetual. As a result of this market development, in 1998 the Basel Committee issued a statement (as part of the 'Sidney press release') that formally recognized instruments with innovative features in regulatory capital, provided they did not exceed 15% of total Tier 1.[10]

In June 2004, the Basel Committee released the Basel II Accord, legitimizing the role of hybrid capital by confirming the eligibility of Tier 1 instruments other than CET1 and by introducing a stronger

[7] Within Tier 2, the amount of eligible subordinated term debt was limited to a maximum of 50% of Tier 1 capital.

[8] Moreover, in the final five years to maturity, these instruments were subject to an amortization rate of 20% annually, reflecting their reduced value as a consistent source of capital.

[9] Tier 3 capital under Basel I was required to be held to cover foreign exchange risk, commodities risk, and interest rate risk on trading. It consisted mainly of short-term subordinated debt with a minimum original maturity of at least two years and was intended to provide a supplementary buffer to absorb losses arising from the trading book.

[10] BCBS (1998).

distinction between what were referred to as Upper and Lower Tier 2 instruments.[11] The new accord specified Tier 2 capital might include ' *[…] capital instruments which combine certain characteristics of equity and certain characteristics of debt. […] where these instruments have close similarities to equity, in particular when they are able to support losses on an on-going basis without triggering liquidation*'. These capital instruments represented the Upper Tier 2 (UT2) capital, which predominantly comprised perpetual subordinated hybrids meeting the following eligibility criteria: i) unsecured, ii) subordinated, iii) fully paid-up, iv) non-callable, except with prior supervisory approval, v) capable of absorbing losses in going-concern, and vi) capable of deferring service obligations in case of insufficient profitability of the bank. The condition under point vi) was particularly crucial for the instruments to function as expected, since even in financial distress, distribution decisions for hybrid UT2 instruments remained at the discretion of financial institutions. By contrast, Lower Tier 2 (LT2) instruments were confirmed as non-perpetual subordinated debt instruments, with at least five years to maturity (or to the first call date) and subject to proper amortization arrangements. Since LT2 instruments were not designed to absorb losses in going-concern, coupons were to be paid on a mandatory basis. As regards Tier 3 capital, the Basel II Accord left its adoption to national discretion.

The Great Financial Crisis of 2008–09 revealed significant shortcomings in the Basel II capital framework. In particular, it showed the inability of some instruments included in Tier 1 to absorb losses as intended and highlighted the central importance of the common equity component of Tier 1 (CET1). Therefore, one of the highest priority issues of the Basel Committee was to strengthen the quality, consistency and transparency of the regulatory capital base. Prior to the crisis, common shares in many banks accounted for just 1% to 3% of RWAs.[12] In November 2010, the Basel III framework introduced strengthened capital regulations and requirements, including a minimum CET1 ratio. Basel III also led to the phasing-out of most Basel II hybrid Tier 2 capital due to its bond-like nature and insufficient loss-absorbing capacity. Indeed, the need for bail-outs during the Great Financial Crisis arose in part from banks' reluctance to defer UT2 coupons and the impossibility to defer LT2 coupons. Moreover, banks which were strongly relying on Tier 2 capital did not have any tool to convert these instruments into more loss-absorbing ones, when needed. In light of this, a significant development in the Basel III framework was the introduction of Additional Tier 1 (AT1) capital as a component of Tier 1, which largely replaced UT2 notes as going-concern loss absorbing instruments. For this purpose, the framework required AT1s, among other eligibility criteria, to have contingent conversion into common equity and the possibility to cancel payments and distributions to instruments' holders. Furthermore, under Basel III any distinction between UT2 and LT2 was abolished, and Tier 3 instruments were discontinued.

In terms of capital requirements, Basel III confirmed a minimum capital ratio of 8% in terms of RWAs but with the following composition: a minimum 4.5% CET1 ratio; a total Tier 1 of 6%; and the remaining 2% met by Tier 2. The minimum 4.5% CET1 ratio explicitly acknowledged that the going-concern loss

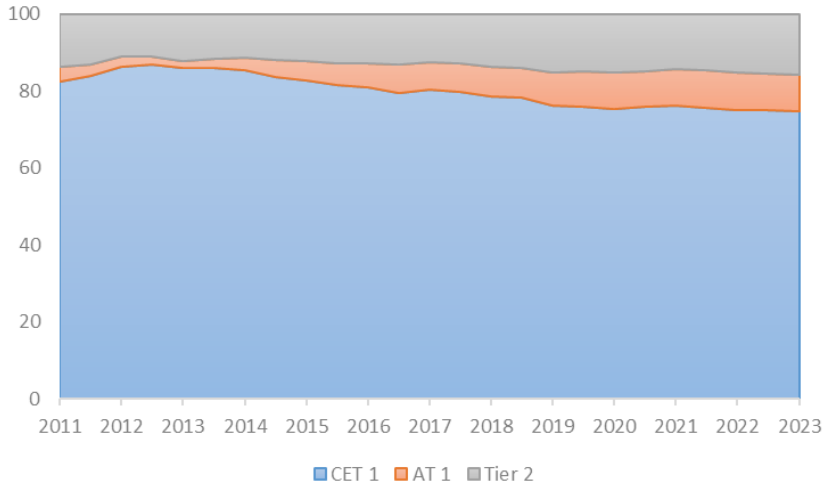
[11] To note, the terminology Upper Tier 2 and Lower Tier 2 has never been used by the BCBS.

[12] Liberadzki and Liberadzki (2019).

absorbing capacity of AT1 instruments was lower relative to CET1 and therefore their weight within Tier 1 had to be limited.[13]

Figure 1 presents the evolution of the capital stack for internationally active banks with a Tier 1 capital of more than €3 billion (i.e. Group 1 banks) since the introduction of Basel III. While CET1 remains the main component of regulatory capital, after the implementation of the framework by most of the member jurisdictions (between 2013 and 2014), AT1 capital has started to increase its materiality within Tier 1 capital.

Figure 1 - Composition of regulatory capital since Basel III



Source: Authors' calculations based on BCBS (2024) data

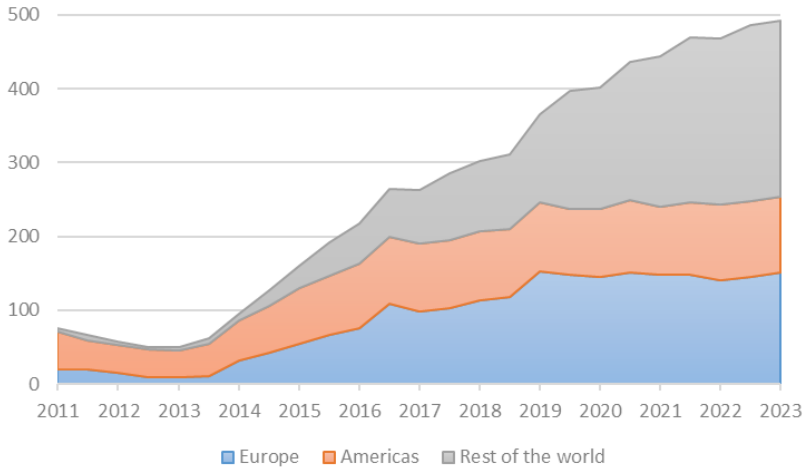
As shown in **Figure 2**, since the implementation of Basel III, the amount of AT1s issued by Group 1 banks increased from approximately €50 billion in December 2012 to €492 billion in June 2023. The lowest relative increase was observed for jurisdictions[14] in the Americas which, however, had a higher starting point before the implementation of Basel III, since these countries commonly issued preferred shares even before those were considered AT1 instruments. Conversely, jurisdictions in the rest of the world had issued very few hybrid capital instruments before the publication of the Basel III Accord, resulting in the highest relative increase after the introduction of AT1s. Jurisdictions in the European region also show a substantial increase of these instruments since the implementation of Basel III,

[13] In addition to minimum risk-based capital requirements, the capital framework also includes several buffers that must be satisfied with CET1 capital: i) the capital conservation buffer (CCoB), set at 2.5% of RWAs and applicable to all banks; ii) the G-SIB buffer (ranging between 1% and 3.5% of RWAs) for the most systemically important banks; iii) an additional buffer for domestic systemically important banks (D-SIBs) that national authorities can set; iv) the countercyclical capital buffer (CCyB) that can range from 0% to 2.5% of RWAs and is applicable to banks operating in jurisdictions that implement the buffer.

[14] Based on the sample used for the Basel monitoring report, jurisdictions are defined as follows: i) Americas include Argentina, Brazil, Canada, Mexico and the United States; ii) rest of the world includes Australia, China, India, Indonesia, Japan, Korea, Saudi Arabia, Singapore and South Africa; iii) Europe includes Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

resulting in the most extensive use of AT1s, in terms of RWAs, compared with other jurisdictions.[15] Regardless of the jurisdictional differences, the trend observed since the introduction of AT1 signals the attractiveness of these instruments for issuers, since they represent a cheaper source of capital to cover Tier 1 requirements.

Figure 2 - Amount of AT1s issued by Group 1 banks (€ billion - exchange rates as of 31 March 2024)



Source: Authors' calculations based on BCBS (2024) data

2.1 Definitions and eligibility criteria

The consultation paper for Basel III emphasized that Tier 1 capital is essential for a bank remaining in a going-concern status. Therefore, it was considered crucial that non-common equity elements, such as AT1 instruments, be capable of absorbing losses during a crisis without worsening the bank's situation. The proposed changes therefore included a phasing-out of innovative features, such as the combination of step-up clauses and call options, in order to prevent banks from creating the expectation that a call of the instrument would be exercised; such an expectation would contradict the perpetual nature of the instruments. As a result of the new requirements for Tier 1 capital, approximately 80% of the value of Tier 1 instruments other than CET1 from Basel II was ineligible under Basel III.[16]

Under Basel III, the main criteria for the classification as AT1 instruments include:

a) *Perpetuity and permanency*. The instruments shall have no fixed maturity date, step-up clauses, or any other incentives to redeem. However, the terms and conditions of the instruments may allow for a call option,[17] subject to regulatory approval;[18]

[15] Based on data collected within the Basel monitoring report, as of June 2023 AT1 accounted for 1.91% of European banks' RWAs, versus 1.71% and 1.49% for banks in the Americas and the rest of the world, respectively. The reason for a wider use of AT1 in Europe may be found in the tax deductibility of coupon payments.

[16] BCBS (2022).

[17] Call options can only be exercised starting from 5 years after issuance, except in cases of tax or regulatory events that the bank was not in a position to anticipate at issuance.

[18] Permission is granted by the competent authority when: i) the redeemed AT1 instruments are subsequently replaced with capital instruments of equal or higher quality at terms that are sustainable for the income capacity of the institution; or ii) the

b) *Flexibility of payments*. Coupons/dividend distributions shall be paid out of distributable items (i.e. profits and reserves) and the issuer has full discretion to cancel such payments for an unlimited period of time and on a non-cumulative basis, without triggering a default event. Therefore, clauses that oblige the issuer to pay a discretionary coupon/dividend if a payment is made on another, typically more junior, instrument ('dividend pusher'), are not consistent with the flexibility of payment. On the contrary, the Basel framework does not prohibit clauses obliging the issuer not to make payments on more junior instruments when AT1 coupons/dividends are cancelled ('dividend stopper');
c) *Subordination*. In the event of liquidation of the issuer, AT1 instruments rank below T2 instruments and senior to common equity;
d) *Principal loss absorption mechanism (PLAM)*. Instruments classified as liabilities for accounting purposes must have a mechanism generating CET1 through either conversion to common shares or a write-down mechanism at a pre-specified trigger point of at least a 5.125% CET1 ratio; [19]
e) *Possibility of conversion/write-down at the Point of Non-Viability (PONV)*.[20] The terms and conditions must include a provision that requires, at the option of the relevant authority, the instrument to either be permanently written down or converted into common equity, upon the occurrence of a trigger event. For this purpose, the trigger event must be the earlier of: (i) a decision by the relevant authority that a write-down, without which the firm would become non-viable, is necessary; and (ii) the decision to make a public-sector injection of capital, or equivalent support, without which the firm would become non-viable in the opinion of the relevant authority.

The abovementioned were aimed at ensuring that AT1, similarly to CET1, absorbs losses on a going-concern basis. On the contrary, T2 was meant to absorb losses only in gone concerns, meaning at the PONV and in resolution. By absorbing losses at this stage, gone-concern capital helps to ensure that bank failures take place in a more orderly way, that depositors and non-subordinated creditors are protected, and that public-sector capital injections are not (or are less likely to be) needed.

It is worth noting that both T2 and AT1 capital shall be subject to write-down or conversion into common equity at the PONV;[21] as such, the possibility of conversion/write-down at the PONV cannot be

issuer demonstrates to the satisfaction of the competent authority that such redemptions would not lead to a breach of the applicable capital requirements.

[19] For the purposes of the PLAM, the write-down of the instrument can be temporary. In this sense, following the write-down, the issuer can 'write up' the instrument to its full nominal amount using its distributable items.

[20] Basel III defines the PONV as the moment when an AT1 or T2 instrument must either be written off or converted into common equity, at the option of the relevant authority. Due to this discretion, the PONV differs across jurisdictions and does not always coincide with the entry into resolution of a bank, as the latter often includes elements such as a public-interest assessment and absence of a private-sector solution.

[21] BCBS (2010): '*The Basel Committee is of the view that all regulatory capital instruments must be capable of absorbing a loss at least in gone-concern situations. […] To achieve this objective the Basel Committee has developed a proposal that would ensure all regulatory capital instruments are able to absorb losses in the event that a bank is unable to support itself in the private market including situations when the public sector steps in to recapitalize a bank that would otherwise have failed*.'

considered per se a going-concern loss absorbency mechanism, even when it can be activated before the formal entry into resolution. Therefore, in order to be eligible as Tier 1, AT1 instruments shall allow loss absorption prior to the PONV. Such going-concern loss absorbing capacity is provided by the flexibility of payments: by cancelling coupons/dividend payments, the issuer of an AT1 instrument can reinforce its capital position and, potentially, avoid reaching the PONV. Moreover, for AT1s classified as liabilities for accounting purposes, the PLAM is also meant to provide a further loss absorption mechanism in going-concern.

2.2 Implementation across jurisdictions

Basel standards are internationally accepted principles which are then to be translated into national laws and regulations by member jurisdictions; this sometimes can take place with some adjustments by the respective lawmakers. Furthermore, with specific reference to AT1, the standards themselves provide some degree of flexibility, thus leading to differences in the way AT1s are designed across jurisdictions.

In this respect, a main distinction can be made between jurisdictions that allow only instruments classified as equity for accounting purposes to be classified as AT1 and those where AT1s can also be debt instruments. This difference has led to two main categories of AT1 instruments: preferred shares and CoCos.

Preferred shares are mainly issued by banks in the US and Canada.[22] These instruments are normally perpetual, although often callable after five years, and subject to supervisory approval, in line with the Basel standards. In liquidation, preferred shares rank junior to senior and subordinated debt, and senior to common shares. Although they may provide a stated dividend and have preferential treatment in distribution compared with common shares, any payment on these instruments is not cumulative; it is at management's discretion and can only be paid out of distributable items (i.e. profits and available reserves). Moreover, preferred shares typically have dividend-stopper clauses, meaning that if the dividend on a preferred share is not paid, the dividend on the common equity cannot be paid either. Lastly, in order to comply with Basel standards, preferred shares need to have a mechanism to be either converted into common shares or written down at the PONV.

CoCos are perpetual subordinated hybrid securities and their issuance is more common in Europe and in the Asia-Pacific region. They provide a coupon calibrated on the notional amount of the instrument, the payment of which is fully discretionary in order to guarantee loss absorption of the instruments in going concerns. Moreover, when these instruments are classified as financial liabilities for accounting purposes, they are featured with PLAM mechanisms, which are activated when the CET1 ratio of the bank falls below a certain threshold (5.125%, or higher) and cause the automatic write-down of the instrument or its conversion into common shares. Lastly, CoCos are also subject to write-down or conversion into common shares by the relevant authority at the PONV.

[22] Canadian banks also issue other more debt-like AT1 instruments, such as notes that can be converted into CET1 at the PONV.

3. Specificities of Contingent Convertible Bonds

The idea of automatically converting distressed debt into equity as a means to avoid bankruptcy costs was not novel when CoCos were introduced. This approach was introduced with the distress-contingent convertibles (DCCs) in 1991, a class of securities meant to mitigate the high costs associated with the default of overleveraged junk bonds issued by US corporations at that time. Unlike standard convertibles, which are typically converted by holders during favourable economic periods, DCCs were designed to automatically convert into equity when a company's stock price fell below a predetermined threshold, thereby reducing debt during financial distress.[23]

Another similar solution, represented by the reverse convertible debentures (RCDs), was proposed in 2002.[24] These instruments were designed to automatically convert into common equity if a bank's capital ratio dropped below a specified level. This feature was aimed at absorbing losses while the bank was still operational (i.e. in going-concern); by doing so, these instruments were intended to offer a solution to financial stability issues stemming from the failure of systemically important banks, since the conversion would have helped prevent bankruptcy, at the expense of the bondholders.[25] Similarly, Marquardt and Wiedman in 2005 explored convertible bonds that become eligible for conversion into common stocks only after the stock price falls below a certain threshold, and in their work they used the term CoCos for the first time.[26]

The researchers' increasing interest for the benefits that this type of instruments could bring to the financial system, eventually contributed to their adoption in the banking sector. In fact, the first issuance of a potentially Basel III compliant CoCo bond was by Lloyds Bank in late 2009 and the instrument had a contingent conversion trigger of 5% in terms of CET1 ratio. Following Lloyds, Rabobank issued its Senior Contingent Notes in 2010, a unique variation of CoCos that included a write-down trigger instead of equity conversion, due to Rabobank's lack of publicly traded shares. In this case, the trigger was set at a 7% CET1 ratio; if reached, the bonds would suffer a 75% principal reduction.[27] Other issuances followed before the Basel III Accord, demonstrating that the popularity of CoCos was at first driven by market demand for high-yield options in an environment of low interest rates. With Basel III and its implementation across member jurisdictions, further clarity was brought on these instruments and the market for CoCos started developing globally.

3.1 Main features across jurisdictions

As mentioned above, CoCos have been used widely in Europe and Asia, also due to the fact that in those jurisdictions coupon payments on these instruments are tax deductible. By contrast, the US does not

[23] Merton R. (1991).

[24] Flannery (2002).

[25] Liberadzki and Liberadzki (2019).

[26] Marquardt and Wiedman (2005).

[27] Buergi (2013).

consider CoCos as debt for tax deduction purposes and this has contributed to the issuance by American banks of preferred shares to cover AT1 requirements.[28]

While being compliant with the Basel standards, CoCos issued across the globe have different characteristics due to the implementation choices made by individual jurisdictions. The main differences involve the type of loss absorbing mechanism and its triggers.

As regards the latter, the primary distinction is between CoCos with and without PLAM triggers, which ultimately depends on the classification of the instruments for accounting purposes. Among the major issuers of AT1 bonds, Canada and, starting from 2019, China account these instruments as equity and therefore, they do not have capital-based PLAM triggers. In these jurisdictions, the loss absorbency mechanism is only triggered by the supervisory decision at the PONV.[29] By contrast, CoCos issued in other jurisdictions, such as Switzerland, Japan, the UK and the EU, are classified as liabilities and as such have PLAM triggers based on the CET1 ratio.

As mentioned above, the Basel standards require a minimum trigger of 5.125% CET1 ratio for AT1 instruments classified as liabilities for accounting purposes. Although the Basel framework does not provide an explicit explanation for this minimum level, a hint can be found in the provisions on the capital conservation buffer,[30] which introduce the concept of minimum capital conservation ratio, meaning the percentage of earnings that a bank is required to retain based on its CET1 ratio. As shown in **Figure 3**, a 5.125% CET1 ratio is the threshold that triggers a 100% capital conservation ratio, meaning that the bank needs to recapitalize and cannot distribute its earnings. On the contrary, when the CET1 ratio is above 7%, the bank has not breached its overall CET1 requirement (i.e. a 4.5% minimum CET1 ratio and a 2.5% capital conservation buffer). The idea that PLAM triggers might be related to the capital conservation ratio is also reinforced by market practice. In fact, in December 2013 the UK Prudential Regulation Authority (PRA) issued a policy statement indicating a preference for a trigger higher than a 5.125% CET1 ratio, arguing that otherwise it would be difficult to activate it in time to prevent a bank's failure. While the policy did not provide for an alternative threshold, banks started issuing CoCos with a trigger of 7% in terms of CET1 ratio.[31]

Figure 3 – Banks' minimum capital conservation ratios based only on the Capital Conservation Buffer

CET1 ratio	Minimum Capital Conservation Ratios (expressed as a percentage of earnings)
4.5% - 5.125%	100%
>5.125% - 5.75%	80%
>5.75% - 6.375%	60%
>6.375% - 7.0%	40%
> 7.0%	0%

Source: Basel Framework

[28] FSOC (2012).

[29] Coelho R., Taneja J. and Vrbaski R. (2023).

[30] Liberadzki and Liberadzki (2019).

[31] Ramirez J. (2017).

So far, the main market practice has been either issuing CoCos with a trigger of 5.125% CET1 ratio ('low-trigger CoCos') or CoCos with a 7% CET1 ratio trigger ('high-trigger CoCos'). The choice between low- and high-trigger CoCos currently varies both across and within jurisdictions, as follows: i) Japanese banks only issue low-trigger CoCos; ii) EU banks issue both types of CoCos, predominantly with low triggers; iii) in Switzerland and in the UK, banks issue both types of CoCos, but high-trigger CoCos are the majority.[32]

A further divergence in practice relates to the choice between write-down and conversion as loss absorption mechanism, both at the PONV and as a consequence of the PLAM trigger. As regards the loss absorption at the PONV, AT1 bonds issued by Canadian banks only provide for conversion into CET1,[33] while in Switzerland and China write-down is the only option. By contrast, in the UK, Japan and the EU, at the PONV the competent authority can choose between converting the instruments into CET1 or writing them down. Divergent practices are adopted also for loss absorption following the PLAM trigger: while instruments issued in the UK and Japan only provide for conversion into CET1, the market practice in Switzerland is to issue CoCos with a write-down loss absorbency mechanism; in Europe, although instruments with write-down mechanisms are more common, the market offers instruments with both features.[34]

Figure 4 summarizes the divergent practices adopted across jurisdictions with regard to trigger levels and the type of loss absorption mechanism.

Figure 4 - Practices* across jurisdictions for AT1s other than preferred shares

	PLAM trigger		Loss absorption mechanism			
			PLAM		PONV	
	Low	High	Write-down	Conversion	Write-down	Conversion
Canada	N.A.	N.A.	N.A.	N.A.		x
China **	x		x		x	
EU	**x**	x	**x**	x	x	x
Japan	x			x	x	x
Switzerland	x	**x**	x		x	
UK	x	**x**		x	x	x

** Where more options are available in a jurisdiction, the predominant one, when existing, is presented in **bold***

*** Starting from 2019, in China only AT1s classified as equity are isued and therefore there are no PLAM triggers*

Source: Authors' adaptation from Coelho R., Taneja J. and Vrbaski R. (2023)

3.2 Market characteristics

[32] Coelho R., Taneja J. and Vrbaski R. (2023).

[33] Moreover, the Canadian framework provides for conversion at market prices in order to guarantee the dilution of CET1 holders.

[34] Coelho R., Taneja J. and Vrbaski R. (2023).

The CoCo market has grown substantially since its inception in 2009. In 2014, with the majority of member jurisdictions implementing Basel III, the CoCo market experienced explosive growth with a total issuance amount four times larger than in 2013. By the end of 2020, the cumulative issuance was more than $1.6 trillion, over 30 times the level recorded at the end of 2013.[35]

Market demand for AT1 CoCos has also evolved significantly over the years. Initially, subscriptions were driven by retail investors and small private banks, particularly in Asia and Europe, which were attracted by the high yields offered by CoCos in the context of a low interest rate environment. Data collected by the Basel Committee in 2013 showed that private banks and retail investors were dominating the market, making up 52% of the demand in a sample of CoCo issuances, while asset management companies accounted for 27%. Hedge funds, commercial banks, and insurance companies were instead less active, contributing 9%, 3%, and 3% respectively. In that period, the investor base was limited by several factors, including the lack of comprehensive and consistent credit ratings for most CoCos. In fact, by the end of 2013, more than half of the CoCos on the market were unrated. The lack of a comprehensive set of credit ratings for CoCos had significantly hindered the growth of the market, since many institutional investors are restricted by mandates from holding unrated instruments and investment-grade ratings are required for inclusion in major bond indices. There are three primary reasons for the initial reluctance of credit rating agencies to rate CoCos. First, their regulatory treatment varied across jurisdictions, making it challenging to develop consistent rating methodologies. Second, credit rating agencies were concerned that certain high-trigger CoCos could disrupt the traditional hierarchy of investors.[36] Lastly, the presence of discretionary triggers, such as the PONV, introduced valuation uncertainties, further complicating the rating process.[37]

As the market matured and the jurisdictions applying the framework started issuing more detailed guidelines clarifying the regulatory treatment of CoCos, investor confidence grew and the investor base evolved. Retail investor holdings of bank capital instruments, including AT1s, declined in some jurisdictions, mainly due to changes in local regulatory requirements on investor protection, aimed at discouraging the sale of banks' non-equity capital instruments to retail investors due to concerns about their ability to understand the associated risks. At the same time, the lower participation of retail investors in the AT1 market also responded to the need to reduce the risk of public-sector intervention to avoid repercussions following the instruments' write-down or conversion. Another effect of the implementation of Basel III is that the stricter rules on cross holdings, aimed at reducing contagion risk, resulted in a reduction in the holdings of bank regulatory capital instruments by other banks and insurance companies. Lastly, due to the better clarity provided by regulators, credit rating agencies started covering the new issuances and this led to an increase in institutional investors' market share.[38]

[35] Shan C., Tang D. Y., Xie M. and Zhu F. (2013).

[36] The write-down of the instruments following the breach of a high trigger could in principle lead to holders of CoCos incurring losses ahead of CET1 holders.

[37] Avdjiev S., Kartasheva A. and Bogdanova B. (2013).

[38] BCBS (2022).

A common feature of investors in AT1 CoCos is that they normally perceive these instruments as fixed income. The market practices of avoiding coupon cancellation and calling the instruments at their first call date have reinforced this expectation, with CoCos seen as offering scheduled coupon payments and a defined maturity structure, similarly to any other fixed income securities despite their loss absorbing features.[39]

Calling CoCos at their first call date has been a widespread market practice across all jurisdictions. In this regard, an emblematic example is represented by European banks, which, since the market started, have repurchased (mainly in the context of a replacement) circa 95% of their AT1 CoCos at the first call date.[40] Since almost all CoCos reset to a coupon based on five-year mid-swaps plus the initial spread, one could think that the choice between calling at the first call date or not might depend solely on whether the reset coupon will be higher or lower than the implied cost of issuing a new AT1, which in turn also depends on the interest rate cycle. Nevertheless, other factors come into play, such as the market signal conveyed by not exercising the call option. Since exercising the call might be seen as a sign of financial strength of the issuer, the possibility to boost investor confidence and avoid negative market stigma by calling the instruments at the first call date influences banks' decisions to do so.

The idea of CoCos being fixed income instruments has also been reinforced by the very limited cases of coupon cancellation. In Europe, the only case to date has been by the medium-sized German bank Bremer Landesbank (Bremer LB), which in 2017 announced its discretionary decision to cancel coupon payments on its €150 million CoCos.[41] Similar to what has been said for exercising the call option at the first possible date, the choice whether or not to cancel coupons can have strong market signaling power. Since AT1 coupons can only be paid out of distributable items, a coupon skip might send a signal of financial difficulties of the issuer, and therefore create market turbulence. Evidence of the relevance of market turbulence stemming from coupon cancellation could be found in the supervisory distribution restrictions applied in light of Covid-19. To ensure an appropriate flow of resources to support the real economy, supervisors recommended that banks use their capital buffers, by relaxing capital requirements and imposing restrictions on distributions. Nevertheless, in many jurisdictions, among which those participating in the Single Supervisory Mechanism (SSM), such restrictions were limited to CET1 (i.e. dividend distributions are share buybacks), while no limit was applied to AT1 coupon payments. A reason for the relevance of AT1 coupon cancellation is that such payments are non-cumulative and therefore, unlike with shareholders, the bondholders' loss cannot be offset by future higher payments. Nevertheless, the experience under Basel II has shown that banks were reluctant to defer coupons on UT2 instruments notwithstanding their cumulative nature, mainly due to concerns that the negative consequences on funding costs would overwhelm the short-term benefits.[42]

[39] Milanov K., Kounchev O. and Fabozzi F.J. (2019).

[40] Risk.net (2024).

[41] In this case, the market reaction was limited, since two thirds of the instruments were held by the bank's parent company; moreover, the instruments held by third parties were repurchased shortly after, when Bremer LB was merged into its parent.

[42] Yu P. and Van Luu B. (2009).

In light of the above, investors expect CoCo coupons to be cancelled not by a discretionary choice of the issuing bank but by means of regulatory provisions or supervisory discretion. While the latter can apply in the context of an individual and comprehensive analysis of the banks, the former applies once a certain capital threshold is breached. In fact, under Basel III, discretionary distributions are automatically capped at the so called Maximum Distributable Amount (MDA) when a bank fails to comply with its combined buffer requirement (CBR).[43] In this sense, the breach of the CBR is often referred to as MDA trigger. Such limitations do not apply only to payments of AT1 coupons, but also to distributions to CET1 holders (e.g. dividends and share buybacks) and payments of variable remuneration to employees. The term MDA is not directly used in the Basel standards, but it is a direct consequence of the minimum capital conservation standards presented in **Figure 3**. In fact, as shown in **Figure 5**, its quantification is equivalent to one minus the minimum capital conservation ratio set for each quartile of the CBR.[44]

Figure 5 – Banks' minimum capital conservation ratios and related MDAs

CET1 ratio	Minimum Capital Conservation Ratios (expressed as a percentage of earnings)	Maximum Distributable Amounts (expressed as a percentage of earnings)
Within first quartile of CBR	100%	0%
Within second quartile of CBR	80%	20%
Within Third quartile of CBR	60%	40%
Within Fourth quartile of CBR	40%	60%
Above CBR	0%	100%

Source: Authors' adaptation from the Basel Framework

3.3 Market shocks

Throughout the years, the CoCo market has experienced several shocks. Apart from the pressures from the Covid-19 crisis, the main events that influenced the AT1 CoCo market until 2022 were related to Deutsche Bank (2016) and Banco Popular (2017).

As regards the former, the market shock was triggered by the bondholders questioning Deutsche Bank's ability to pay its AT1 coupons, after it announced a significant loss for the 2015 financial year. The news, coupled with the uncertainty about the bank's available distributable items and its capital position relative to the MDA trigger, raised dramatically the concerns on its ability to meet the forthcoming payments on its CoCos. With the price of Deutsche Bank's CoCos falling from 93% to 72% of the par value, the prices of AT1s issued by other European banks also fell sharply, irrespective of any situations of financial distress. The fact that there was no significant divergence in price performance between CoCos issued by riskier banks and those issued by safer institutions suggested the existence of non-fundamental factors affecting the CoCo market. In particular, contagion appeared to be driven by investors' expectations that coupons on CoCos would always be paid and therefore uncertainty on what could cause coupon cancellation negatively affected the market. In order to provide certainty for AT1 investors, in the

[43] The CBR represents the aggregate of the capital requirements related to the capital conservation buffer, the countercyclical buffer and, where applicable, the higher of systemic risk, G-SIB or D-SIB buffer.

[44] Therefore, for banks that are only subject to the capital conservation buffer, the MDA trigger will be equal to a 7% CET1 ratio.

summer of 2016 the European Central Bank (ECB) clarified that the potential capital shortfall under the adverse scenario resulting from the stress test would not be an input of the Pillar 2 Requirement (P2R). Since investors expected the MDA trigger to be the only case of coupon cancellation, by doing so, the ECB reduced uncertainty in a dimension that is crucial for investors to understand the repayment behaviour of CoCos. This intervention paid off, and when Deutsche Bank announced further losses in September, the magnitude of the contagion to other banks' AT1s was limited.[45]

The second major AT1 market upheaval coincides with the first incident of any sort of principal loss in AT1 CoCos: the write-down of all of Banco Popular's AT1s in June 2017, after the ECB declared the bank had reached the PONV due to liquidity issues. The resolution scheme adopted by the Single Resolution Board (SRB) required the full write-down of AT1s and existing common shares of the bank, while the T2 instruments were converted into newly issued shares. The new shares including the entire business of Banco Popular and its subsidiaries were then transferred to Banco Santander for €1. While it represented the first write-down event, the resolution of Banco Popular had limited spillover on the AT1 market, compared with what happened one year before with Deutsche Bank. In fact, within six months from Banco Popular resolution, Nordea Bank issued an AT1 with the lowest coupon rate ever seen in the market. The main reason could be that the market perceived the resolution as an isolated and idiosyncratic event that by default leads to a 100% Loss Given Default (LGD) of any instrument. Moreover, the fact that CET1 and AT1 were fully wiped out and T2 converted (although at a symbolic value), in line with the loss absorbency hierarchy, helped preserve market confidence. Overall, the main effect of Banco Popular's resolution was to widen the spreads of AT1s issued by smaller and less capitalized banks vis-à-vis healthier issuers, resulting in higher funding costs for the former.[46]

4. The Credit Suisse collapse

4.1 Reasons for the crisis

The development of the crisis at Credit Suisse, which culminated in March 2023, was largely due to a series of incidents and management failures stretching back to 2018. During this period, the bank was frequently at the centre of various scandals,[47] which pointed to a deeply flawed corporate culture and ineffective risk management. Furthermore, the frequent turnover in the bank's leadership, especially from 2021 onwards, undermined the bank's stability and eroded investor and customer confidence. Nevertheless, capital and liquidity ratios remained solid throughout this period and the bank's credit ratings by major agencies remained relatively stable until the spring of 2022. It was only in May and August 2022 that significant downgrades occurred, driven by the bank's continued weak profitability and deficiencies in risk management and culture, which, among other consequences, drove up liquidity costs. Notwithstanding the period of financial distress, Credit Suisse continued to service its AT1 instruments, despite having the flexibility to cancel coupons. Moreover, in an attempt to avoid market stigma, the bank engaged into expensive replacements of its AT1 instruments, following the widespread

[45] Bologna P., Miglietta A. and Anatoli S. (2018).

[46] Davies T. (2018).

[47] Such as the Mozambique loan scandal and the mishandlings in the Greensill and Archegos cases.

market practice of calling such instruments at the first possible call date. Due to its deteriorating financial position, replacements of AT1 CoCos took place with higher spreads, which then further increased funding costs. For example, in June 2022 Credit Suisse replaced a $1.5 billion AT1 debt instrument with a new AT1 CoCo issuance worth $1.65 billion; the spread widened from 510 bps to 638 bps, resulting in a funding cost until the next cancellation opportunity (in five years' time) that was higher by approximately $100 million in total.[48] This increase in funding costs put further pressure on the bank's profitability and ratings.

In a crucial move in July 2022, the bank replaced its CEO and initiated a comprehensive restructuring of its investment banking arm, the specifics of which were to be disclosed in October. While the market initially responded positively to announcements of accelerated cost and risk reductions targeted for completion by 2025, the high risks associated with these plans were flagged by S&P in a November 2022 downgrade. Even before the downgrade, in October 2022 the bank faced unprecedented client deposit withdrawals, that it was able to withstand thanks to the high liquidity buffer required by FINMA since 2020. Despite raising CHF 4 billion in new capital in early December to fund the restructuring, the bank reported a significant year-end loss of CHF 7.3 billion, anticipating further quarterly losses.

On 9 March 2023, Credit Suisse announced a technical delay in the publication of its 2022 annual report due to unresolved issues with the US Securities and Exchange Commission (SEC). This contributed to exacerbating the financial turmoil initially triggered by the failures of Silicon Valley Bank and First Republic Bank, along with troubles at Signature Bank in the US. The annual report was eventually published five days later, on 14 March. In it, the bank admitted to material weaknesses in its internal control over financial reporting. The following day, on 15 March, media circulated a statement from the chairman of Credit Suisse's major shareholder, Saudi National Bank, reporting that they would not make any further investments in the bank. These events severely undermined confidence in Credit Suisse. As a result, its stock price plummeted along with the value of its AT1 instruments. Since these developments led to further significant liquidity outflows, on 15 March 2023 the Swiss authorities issued a joint statement where FINMA confirmed that Credit Suisse was still meeting capital and liquidity requirements and the Swiss National Bank stated its intention to provide emergency liquidity assistance (ELA) to Credit Suisse, as needed. The following announcement by Credit Suisse of its intention to draw up to CHF 50 bn from ELA did not reassure the markets: the bank's stock price (which had already lost 70% of its value since January 2023) came under further pressure and the CDS spread peaked at 1082 bps on 16 March (**Figure 6**). The persisting deposit outflows made it clear that the bank would not be able to restore market confidence and that it was approaching a point of non-viability.

In this context, the Swiss Federal Council adopted emergency measures that prevented Credit Suisse from becoming non-viable and ultimately led to UBS taking over the bank. These emergency measures, aimed at protecting financial stability and the Swiss economy, included the provision of additional emergency liquidity and the granting of public guarantees.[49] After this injection of public resources, the

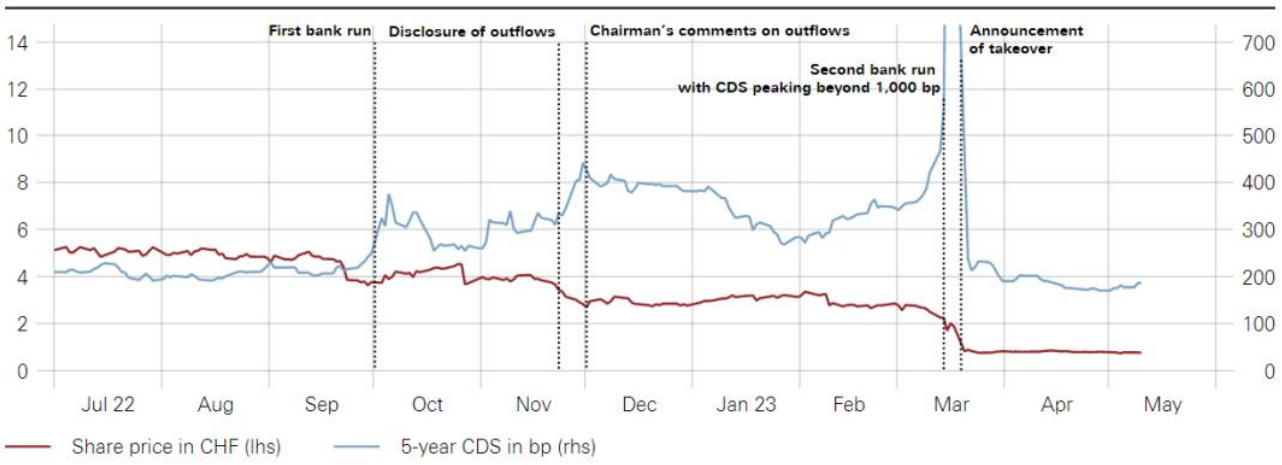
[48] BCBS (2023).

[49] The main liquidity injections for Credit Suisse and UBS were: i) CHF 100 bn ('ELA+'), assisted by a preferred seniority status in case of bankruptcy, and ii) an additional CHF 100 bn injection into Credit Suisse, secured by a public guarantee

Swiss authorities intervened on Credit Suisse's capital. AT1 instruments issued by Credit Suisse had a contractual PONV clause stating that they would be fully written down in case of extraordinary government support or when FINMA ordered to do so to avoid insolvency. Therefore, the extraordinary liquidity assistance secured by a federal default guarantee triggered the PONV clause and FINMA was authorized by the Swiss Federal Council to order Credit Suisse to write down all its AT1 bonds. Lastly, the emergency measures enacted by the Government allowed for the merger with UBS to be concluded without being approved by the respective shareholders at their general meetings. In the context of the merger, Credit Suisse's shareholders received one UBS share for 22.48 of their shares; based on the share prices on 17 March 2023, this resulted in a residual equity value of CHF 3 billion for Credit Suisse shareholders. Therefore, there was a residual value transferred to shareholders, while AT1 instruments were fully wiped out. This situation led to legal disputes by bondholders and Credit Suisse staff whose bonuses were tied to these instruments; moreover, it created turbulence on the market for AT1, due to investors' uncertainty over their seniority in the hierarchy of claims.

Notwithstanding the effects on the AT1 market, the extraordinary measures taken by the Swiss authorities over the weekend of 19 March 2023 achieved their objective of ensuring financial stability in Switzerland and globally. Between 20 March and 24 April 2023, Credit Suisse's market share price stabilized and its Credit Default Spreads decreased significantly (**Figure 6**). Moreover, by tapping the liquidity it had been granted, Credit Suisse was able to stabilize its liquidity position, while still observing some cash deposit outflows, though at much lower levels.

Figure 6 - Credit Suisse share price and CDS



Source: BCBS (2023)

4.2 Impact on the AT1 market

The full write-down of Credit Suisse's instruments was a disruptive event for the global AT1 market, with investors losing confidence on their position in the hierarchy of claims in insolvency. This impact

issued by the Swiss Confederation. Then, the Swiss Confederation provided UBS with a CHF 9 bn public guarantee on losses that might materialize with reference to specific assets on Credit Suisse's balance sheet, which UBS intended to sell in the integration process.

was more pronounced in Asia and Europe, where CoCos are the predominant form of AT1, while the performance of the US AT1 market seemed to be more influenced by other factors. Indeed, the performance of AT1 eligible preferred shares issued by US banks suggests that the market impact was attributable more to negative sentiment towards smaller banks – such as the regional banks that failed in March 2023 – than to a crisis of the asset class itself. In the first two months since Silicon Valley Bank's failure, preferred shares issued by large banks were able to withstand the negative market sentiment spread, while those issued by smaller banks were not. As shown in **Figure 7**, exchange-traded preferred shares issued by banks with a market capitalization lower than $10 billion experienced the sharpest average price decline (approximately -17%), while the decline was smaller (approximately -8%) for instruments issued by banks with a higher market capitalization (between $10 billion and $100 billion). By contrast, preferred shares issued by banks with a market capitalization higher than $100 billion (such as Bank of America, Morgan Stanley, and Goldman Sachs) had modest price increases (approximately +0.4%) over the same period.

Figure 7 - US banks' preferred shares performance since SVB's failure

Source: Reddy R. (2023) - Bloomberg, average daily data from 8 March 2023 to 2 May 2023

As regards the AT1 CoCo market, in March 2023 it was worth approximately $275 billion, half of which issued by European institutions. Since Credit Suisse's instruments accounted for 7% of this market, their full write-down had disruptive consequences on the entire asset class, regardless of the issuers' size. Yields increased substantially and the prices of AT1 instruments issued by other European banks went down by approximately 10%: UBS AT1s traded at 84 cents on the dollar, while Deutsche Bank bonds were at roughly 72 cents on the dollar and BNP Paribas ones went down 8 cents to 70 cents on the dollar. Similarly, in the Asian market, AT1 CoCos issued by major banks (Hong Kong's Bank of East Asia and Thailand's Kasikornbank) fell to 80 cents on the dollar, a level rarely seen for such issuers.[50] Due to the lower market confidence, the market for AT1 bonds froze on a global scale: in Europe there was no new issuance until June 2023, while in the Asian market there was a significant slowdown, due to issuers' desire to sound out investors' demand before restarting issuances. In this regard, an example was provided by one of the major Japanese banks, Mitsubishi UFJ Financial Group (MFUG), which in the

[50] Financial Times (2023).

aftermath of the Credit Suisse case announced the postponement of its AT1 issuance originally planned for the beginning of April.[51]

As a response to investors' uncertainty, authorities from several jurisdictions issued public statements to reaffirm the seniority of AT1 over CET1 in resolution.[52] These statements contributed to re-establishing market confidence and paved the way to a reopening of the primary market for AT1s.

The first issuance since the Credit Suisse case was made in the Asian market, where on 19 April Japan's Sumitomo Mitsui Financial Group (SMFG) issued a yen-denominated CoCo bond for an amount of approximately $950 million. Then, on 25 May, MFUG completed the issuance it had previously postponed, tripling the amount originally planned, in response to investor appetite. These issuances showed the absence of structural changes in pricing spreads in the Asian market as a result of any perceived change in subordination or loss severity. Nevertheless, after what happened with Credit Suisse, Asian investors have become more selective, favouring AT1s issued by large international banks, including overseas, as they are perceived as being under greater regulatory scrutiny, stress-testing, and higher capital requirements.[53]

As regards AT1s in Europe, while the primary market was frozen during the first months after the Credit Suisse events, the secondary market showed a significant amount of sales due to a temporary panic among market operators. This context provided an important opportunity for speculative investors, with hedge funds starting to buy significant amounts of CoCos. This strategy paid off,[54] since by the beginning of 2024 the performance of AT1s reached higher levels than before the Credit Suisse crisis (**Figure 8**). Moreover, this resulted in a higher share of AT1 instruments held by hedge funds, which typically have shorter holding periods relative to other institutional investors.[55]

Figure 8 - Wisdom Tree AT1 CoCo Bond ETF (January 2023 – March 2024)

Source: Morningstar

[51] Nikkei (2023).

[52] ECB, SRB and EBA (2023), BoE (2023), HKMA (2023), MAS (2023), OSFI (2023).

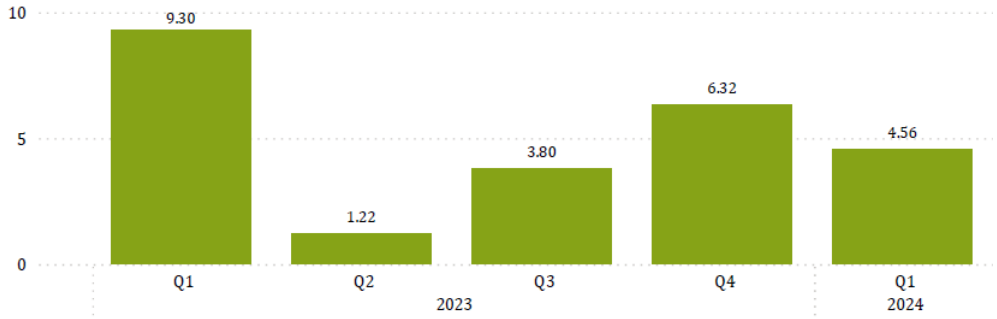
[53] The Banker (2024).

[54] Risk.net (2023a).

[55] Reuters (2023).

As regards the primary market, the first issuances of AT1s by European banks were only made in June. When looking at European Global Systemically Important Banks (G-SIBs),[56] the 2023 CoCo issuance represented the lowest amount in the last decade, with a 14.5% decrease compared with 2022. Moreover, around 45% of the issuances were made in the first quarter of the year, while it was only in the last quarter that the amounts issued pointed to a resurgence in market confidence. As regards 2024, based on data collected until mid-March, the amount of AT1 issuance is lower than in both Q1 2023 and Q4 2023 (**Figure 9**).

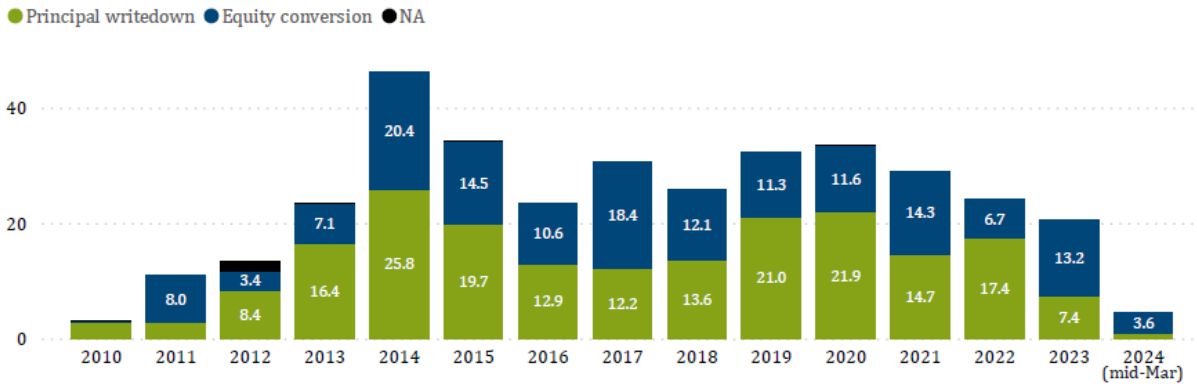
Figure 9 - EU G-SIBs CoCos issuance by quarter (2023-2024) (€bn)



Source: AFME (2024)

The trend observed in new issuances by European G-SIBs indicates an increasing preference for equity conversion over principal write-down. This evidence contrasts with the preference for write-down loss absorption mechanisms observed for most years since the introduction of AT1s (**Figure 10**). One explanation for this trend could be a change in investors' preferences after the Credit Suisse events, where the write-down of AT1 instruments was made without wiping out CET1.

Figure 10 - European G-SIBs' CoCo issuance by loss absorption mechanism (2010 – 2024) (€bn)

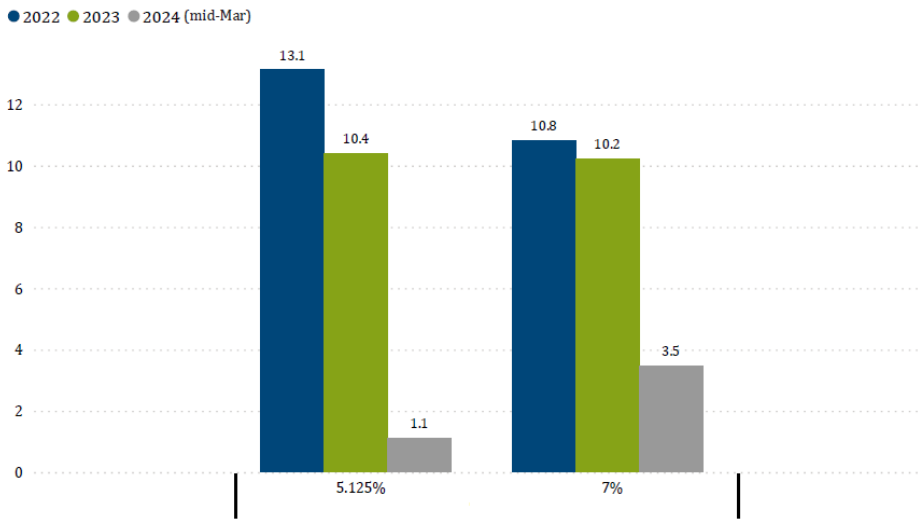


Source: AFME (2024)

[56] A global systemically important bank is a bank whose systemic risk profile is deemed to be of such importance that the bank's failure would trigger a wider financial crisis and threaten the global economy. The Basel Committee has developed a formula for determining which banks are G-SIBs, deploying criteria including size, interconnectedness and complexity. National regulators subject banks classified as G-SIBs to stricter prudential regulation such as higher capital requirements and extra surcharges, or more stringent stress tests.

Furthermore, recent issuances by European G-SIBs show an increased preference for high PLAM triggers. While in 2022 the majority of instruments were issued with a 5.125% capital trigger, issuances in 2023 were almost evenly divided (50.4% issued with a 5.125% capital trigger and 49.6% with a trigger of 7.0%) and those to March 2024 mainly had a 7% trigger (76.1% of the amount issued, **Figure 11**). Such evidence could be a sign of the growing doubts of investors and issuers on whether the Basel minimum PLAM trigger could actually be activated while the bank is still in going-concern.

Figure 11 - European G-SIBs CoCo issuance by trigger (2022 – 2024) (€bn)



Source: AFME (2024)

Lastly, the Credit Suisse events led to a great shock on the Option-Adjusted Spread (OAS) of European AT1s, second only to the surge occurred in Q1 2020 following the onset of the Covid-19 pandemic. Following the Credit Suisse shock, the OAS consistently decreased throughout 2023 and in the first quarter of 2024 it stood slightly above pre-March 2023 turbulence levels, at 4.24% (**Figure 12**).

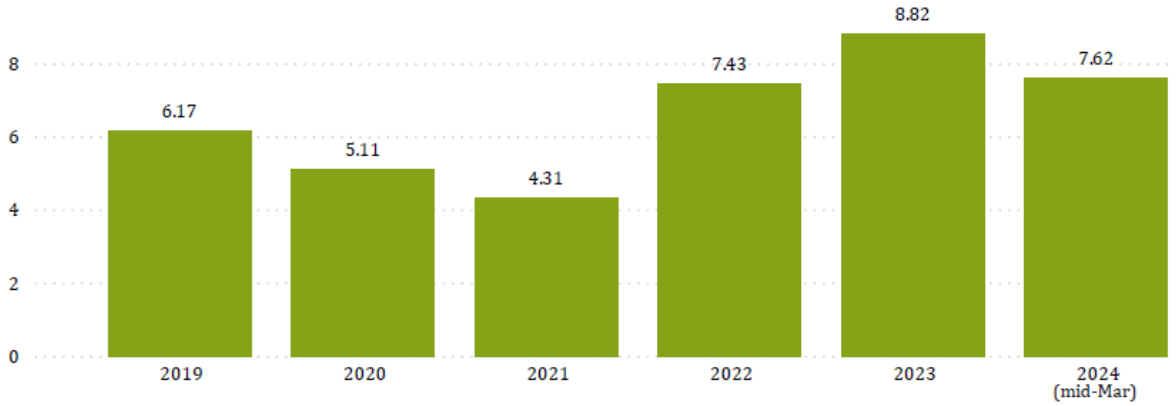
Figure 12 - European CoCos' Option-Adjusted Spread (OAS) (%)

Source: AFME (2024)

The trend observed in the OAS partially explains the increase in the weighted average coupon for fixed rate European CoCos observed throughout 2023. Indeed, the weighted average coupon rate reached 9.51% in Q4, from 8.24% in Q1; this resulted in an average value for 2023 139bps higher than the 7.43%

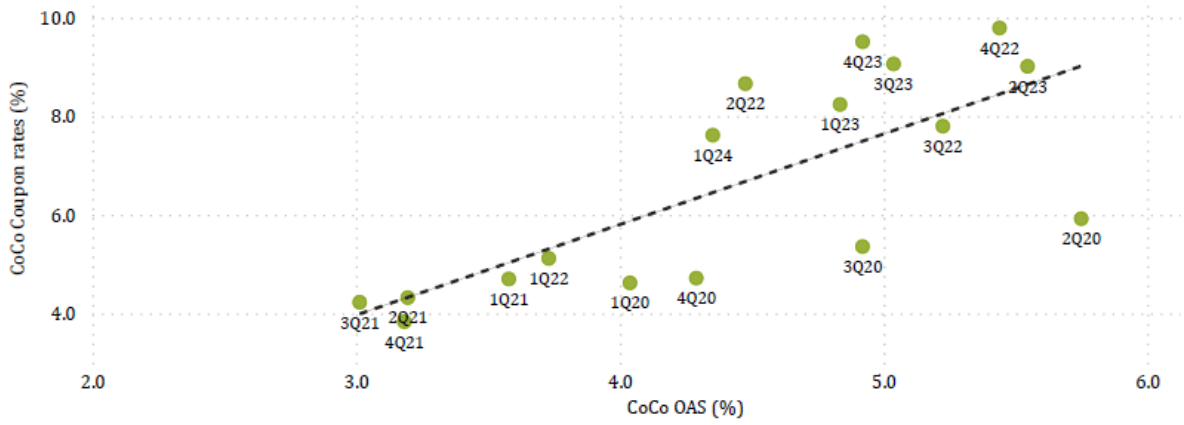
observed in 2022. In 2024, coupon rates started decreasing, with an average of 7.62% in Q1 (**Figure 13**). Nevertheless, despite the strong positive correlation between CoCos' coupon rates and their OAS (**Figure 14**), the trend observed in coupon rates can be explained also by other macroeconomic factors, such as the level of official interest rates set by Central banks for monetary policy purposes.

Figure 13 - Weighted average coupon of fixed rate European CoCos (2019-2024) (%)



Source: AFME (2024)

Figure 14 - Correlation between CoCos' coupon rates and their Option-Adjusted Spread



Source: AFME (2024)

5. Takeaways from the crisis

Credit Suisse's AT1 instruments absorbed losses only after the activation of the PONV trigger, following the liquidity injection by the Swiss government. While the write-down helped restore the bank's viability and prevented its resolution, none of the going-concern loss absorption mechanisms provided for by the Basel standards were activated.

As regards the flexibility of payments, the bank kept servicing its AT1 instruments, despite being in financial distress. Indeed, cancelling AT1 coupon payments would have allowed the bank to save approximately CHF 1 billion expenses, partially improving its financials; furthermore, the bank engaged in an uneconomic replacement of an AT1 instrument at its first call date.

Lastly, the PLAM triggers were not activated. Notwithstanding Credit Suisse's AT1s provided for an automatic permanent write-down if the CET1 ratio fell below 7%, the crisis in market confidence and the subsequent liquidity outflows occurred well before that point. In fact, when FINMA ordered the AT1s' write-down, the bank had a 14% CET1 ratio.

5.1 Lessons learned

With Credit Suisse's AT1s absorbing losses only at the PONV, the previous conclusions of the Basel Committee[57] on the lack of material evidence of going-concern features for these instruments remain unchanged. Nonetheless, some elements of the Credit Suisse case can contribute to better framing the discussion on this issue and to identifying possible policy options.

First, the PLAM clause for Credit Suisse's AT1 instruments provided for a 7% CET1 ratio. Despite this being a 'high-trigger' CoCo, the PLAM was not activated, since the non-viability was triggered by liquidity issues, while the bank's CET1 ratio was still double the trigger level. This seems to suggest that an increase in the PLAM trigger (from the 5.125% minimum requirement to 7% or even higher) would not necessarily reinforce loss absorption in going-concern. The role of the capital trigger is indeed impaired when a bank is facing liquidity issues, an aspect that should not be underestimated, also given the evidence observed for some distress cases in the EU market. Indeed, out of the six cases for which the ECB has so far determined that a supervised entity has reached the PONV, three resulted from liquidity issues.[58]

Second, similarly to past observations (including for UT2 under Basel II), the Credit Suisse case has further confirmed the reluctance of banks to cancel AT1 coupon payments. This can be largely attributed to AT1 investors seeing these instruments as fixed income assets, with the result that a coupon cancellation, although not formally representing a default event, could be perceived as a strong signal of financial difficulty of the issuer. Banks' reluctance to cancel coupons is likely reinforced by considerations on the actual benefits brought by this decision. In fact, considering that these instruments can be included in regulatory capital up to 1.5% of RWAs,[59] the financial relief arising from coupon cancellation is in general limited and potentially offset by the increase in funding costs triggered by the negative signal sent to the market. This aspect is possibly reinforced by the non-cumulative nature of AT1 coupons, which leaves no possibility for issuers to offset the cancellation with potential future higher payments on the instruments. A potential consequence is that banks might prefer suspending or reducing dividend distributions, while keeping coupon payments on AT1s, since any reduced payment to shareholders can be offset with a future increase in dividends.[60]

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[57] BCBS (2022).

[58] These are the cases of Banco Popular (dated 6 June 2017), ABLV Bank AS and its subsidiary ABLV Bank Luxembourg SA (both dated 23 February 2018), and Sberbank Europe AG with its subsidiaries Sberbank dd and Sberbank banka dd (all dated 27 February 2022).

[59] For the sake of simplicity, the amount of AT1 eligible to cover Pillar 2 Requirements is not taken into account here.

[60] As also highlighted in BCBS (2022), the non-cumulative nature of payments on AT1 instruments led most jurisdictions to avoid not imposing sector-wide restrictions on AT1 coupons before or during the Covid-19 pandemic.

Third, and similarly to the previous consideration, market expectations affected the permanency of Credit Suisse's AT1 instruments, since the bank, despite its financial distress, engaged in an uneconomical replacement at their first call date. As discussed in Section 3, replacing AT1s at their first call date has always been a widespread practice among banks. While this practice could be partially justified by the fact that interest rates were falling in the past years, the trend continued even after the macroeconomic environment changed. In fact, 20 out of 23 AT1 instruments were called at their first call date in 2022, an evidence that seems to support the conclusion that issuers prefer avoiding potential market stigma, even when the coupon for a replacing instrument would be higher. Moreover, since Credit Suisse's collapse, around 15 European banks have asked and obtained supervisory approval to refinance their AT1s even before 5 years from issuance, with the twofold objective of benefitting from positive market windows and reassuring investors.[61]

Last, further concerns arose from the full write-down of Credit Suisse AT1 instruments, which ultimately resulted in a value transfer to the bank's shareholders. In this regard, the Credit Suisse events raised awareness that under certain circumstances CoCos could, in substance, rank junior to bank's CET1 instruments. This possibility would ultimately depend on whether an isolated write-down of AT1s is allowed by the applicable legal framework. For instance, while in the European Union and in the UK the law clearly states that CET1 must be written down before any write-down of AT1s, in other jurisdictions, such as China, Switzerland and Japan, an isolated write-down of AT1s would be feasible if it happened at the PONV with the bank not going into resolution.[62]

5.2 Potential policy options

Based on the lessons learned from the Credit Suisse case, potential improvements in AT1 requirements in order to enhance their loss absorbency in going concerns may cover the definition of (PLAM) triggers, the flexibility of payments, permanency and hierarchy.

Triggers

Since the Credit Suisse case provided further evidence that current triggers might be unable to activate a conversion or write-down while the bank is still in going-concern, one could see raising the minimum trigger level as a potential solution. Indeed, it is unlikely that the current 5.125% CET1 ratio minimum requirement would be triggered while the bank is in going-concern, since on top of the 4.5% minimum CET1 ratio a bank normally also is required to hold CET1 to cover the Pillar 2 requirement (P2R). As this is a binding requirement at least in some jurisdictions (e.g. in the EU), a breach of the P2R is ground for the supervisor to revoke a bank's license and, therefore, for the PONV to be reached. Data on the P2R imposed by the ECB for the period 2022-2024 clearly show that a breach of the minimum CET1 requirement would occur before the minimum PLAM trigger is set off. In fact, in this period the ECB's P2R was on average between 2.20% and 2.26%, while for 95% of the banks it was higher than 1.29% in 2022, and 1.50% in 2023 and 2024. Therefore, considering that in the EU P2Rs shall be held in the form

[61] Risk.net (2023b).

[62] Coelho R., Taneja J. and Vrbaski R. (2023).

of a minimum of 56.25% of CET1 capital, 95% of EU banks under the direct supervision of the ECB would breach their minimum CET1 requirement before the minimum PLAM trigger is set off (**Figure 15**).

Figure 15 - P2R applicable to EU banks under the direct supervision of the ECB (2022-2024)

	2022	2023	2024
Average	*2.20%*	*2.22%*	*2.26%*
Corresponding minimum CET1 ratio	*5.74%*	*5.75%*	*5.77%*
5th percentile P2R	*1.29%*	*1.50%*	*1.50%*
Corresponding minimum CET1 ratio	*5.22%*	*5.34%*	*5.34%*

Source: Authors' calculations based on ECB (2023) data

Based on these data, high-trigger CoCos (7% in terms of CET1 ratio), which as shown in Section 4 have indeed become more common in Europe after the Credit Suisse's collapse, would theoretically result in the PLAM being triggered before a breach of the minimum CET1 requirement; however, it may be too simplistic to conclude that merely raising the bar to that level would solve all problems. In fact, the Credit Suisse case clearly has shown that the possibility of a bank reaching the PONV while its CET1 ratio is abundantly over 7% is far from remote. The vast majority of banks have higher capitalizations, and the reason for that is at least threefold. First, banks are also subject to capital buffer requirements, the breach of which would trigger the MDA and result in restrictions on distributions to holders of AT1 instruments and shareholders or on granting bonuses to senior management. Second, in addition to complying with the P2R, banks also can be required to follow a Pillar 2 guidance (P2G), which, although not legally binding, represents the supervisor's expectations for how much capital the bank should have in excess of its minimum requirement. Third, banks typically adopt managerial buffers, which consist in an additional amount of capital to avoid breaching the regulatory requirements, buffers and guidance. This results in banks generally presenting double-digit CET1 ratios. For instance, banks included in the 2023 EBA stress test reported a 15% weighted CET1 ratio as of December 2022, which was in line with the starting point of the previous year's stress test.[63] Given such a high starting point, a decrease in the CET1 ratio would likely be considered significant well before the 7% threshold is hit, potentially leading to a loss of confidence by investors and short-term depositors, as demonstrated in the Credit Suisse case, which could ultimately trigger the PONV when the capital levels are still robust.

One could then conclude that the minimum triggers for the PLAM should be set even beyond 7%; however, this could have side effects. First, AT1 bondholders would face a higher risk of conversion or write-down, which would likely result in an increased level of scrutiny by the market on the managements' behaviour but also lead to a demand for higher risk premia, making AT1 instruments costlier and potentially less attractive for banks to issue. Second, setting high triggers potentially leading to frequent write-downs or conversions may, ceteris paribus, erode confidence among AT1 investors

[63] EBA (2023).

regarding their expected position in the loss absorption sequence.[64] Furthermore, simply increasing the trigger level would not address situations where a bank's crisis is triggered by issues not directly reflected in its capital endowment. In light of the above, an alternative or complementary solution could be represented by changing the nature of the trigger, for instance by introducing a PLAM mechanism based on a more comprehensive assessment of the AT1 issuer.

The literature[65] classifies the write-down/conversion triggers into three groups: market triggers, accounting triggers, and regulatory triggers. Market triggers are in principle the simplest and most straightforward, since they rely on variables such as stock prices or credit spreads that are defined by the market and readily available. Under the assumption of liquid and efficient markets, these variables are assumed to be forward-looking indicators of a bank's financial health. However, in critical situations, this assumption may not hold true; this would be the case, for example, when market liquidity becomes very low, making prices prone to high volatility even as a result of small trades, which may not reflect the actual economic situation of the issuer. Additionally, market triggers are in principle vulnerable to manipulation, as both issuers and CoCo holders might force conversion if considered beneficial. Accounting triggers, instead, use balance sheet indicators (and derived regulatory data such as capital ratios) as signals of a bank's financial state. Since they are based on accounting figures, manipulation should be prevented by the audit of accounting figures (and by the supervisory assessment of derived prudential figures). Nevertheless, as these data are mostly backward-looking, they could represent lagging indicators of a bank's financial health. Lastly, regulatory (or, better say, supervisory) triggers are those giving supervisors the discretionary power to enforce CoCos' conversion or write-down, such as at the PONV. While these triggers can act independently of market or accounting indicators, supervisors still rely on such metrics, which present the abovementioned limits. Moreover, their discretionary nature makes predicting conversions/write-downs and pricing CoCos challenging, with potential effects on the market.

According to this distinction, the current Basel standards for CoCos are based on a combination of accounting (the capital-based PLAM triggers) and regulatory/supervisory triggers (the PONV provision). While the introduction of market-based triggers can be considered not advisable because of the described risks of volatility and manipulation, further considerations could be made on the accounting and regulatory/supervisory triggers currently in use. With regard to the latter, the supervisory discretion to convert or write down AT1s is conditioned on the bank being non-viable; in this respect, the supervisory power to activate AT1 loss absorbency is limited to a situation where the gone-concern border has been reached. Here, granting more discretion to the competent authority to act more timely could be an improvement. For instance, the supervisor could be entitled to require conversion or write-down of AT1s based on the results of a comprehensive assessment of the issuer, which takes into account a wide set of factors, ranging from governance to more quantitative measures such as the bank's liquidity and leverage. Indeed, past evidence has proven that leverage ratios in particular are leading indicators of financial

[64] For instance, the write-down of the instruments following the breach of a 'too high' trigger could in principle lead to holders of CoCos incurring losses generally ahead of CET1 holders.

[65] Maes K. and Schoutens W. (2010).

crises. During the Great Financial Crisis, the very high leverage ratios of Bear Stearns, Lehman Brothers and others, put them at risk of bankruptcy even in the event of relatively moderate shocks to their earnings or the value of their assets.[66] Given their effectiveness as early warning indicators, by complementing the framework with leverage ratio based triggers, regulators could enhance the ability of CoCos to absorb losses through write-down or conversion in going-concern.

Increasing supervisory discretion would, on the other hand, result in lower predictability of the conversion or write-down of the instruments, with potential reputational issues for the supervisor, risks of litigation and detrimental effects on the market. A 'constrained discretion' supervisory framework would then be crucial to mitigate these risks.

In summary, simply increasing the level of the current capital-based PLAM triggers could either be ineffective or lead to an inversion of the loss absorbency hierarchy. Therefore, a more practical solution could be complementing the nature of the trigger by adding other elements (e.g. the leverage ratio of the issuer) or granting the competent authority the power to activate the PLAM based on its comprehensive assessment of the issuer. Nevertheless, any increase in supervisory discretion should be counterbalanced by adequate mitigants to avoid detrimental effects on the market.

Flexibility of payments

The idea behind the flexibility of payments is to provide banks facing financial distress with the possibility to avoid liquidity outflows that could otherwise trigger or contribute to a crisis. The major obstacle to this mechanism is the current market expectation that banks will keep servicing their AT1s, which in turn is reinforced by the banks' willingness to avoid any potential market stigma. While from a theoretical standpoint a solution could be replacing AT1 cancellation with a discretionary deferral, thus making AT1 payments cumulative, the experience with UT2 bonds discussed in Section 3 has shown that this would hardly change banks' behavior. Further options aimed at changing market expectations should be discussed.

A possibility could be to allow only AT1 payments as a percentage of the distributable items,[67] rather than as a percentage of the principal amount of the instrument. Such a change, which would probably result in the instruments being accounted as equity, would help remove the perception that an AT1 is a fixed income instrument and that the coupon is always due. At the same time, it would make AT1 remuneration strongly linked to the profitability of the issuing bank, in line with that of CET1 capital, likely making the instruments less attractive for the current investor base.

Another possibility could be strengthening the supervisors' power to fully or partially cancel payments on AT1s before the MDA limitations apply. As already discussed for the supervisory discretion to write down or convert the instrument, in this case too, the decision could follow a transparent process to the

[66] Bolton P. and Samama F. (2012).

[67] Meaning previous year's profits and reserve that are distributable pursuant to the applicable legislation.

extent possible, for example with a graduated payment cancellation scheme based on the SREP results, which would help investors to anticipate the conditions for a coupon cancellation.

In summary, introducing cumulative coupons might not improve the flexibility of payments, since cancellations were not commonly observed for UT2 either. More effective solutions may be either having AT1 coupons expressed as a percentage of distributable items or strengthening the supervisory power to partially or fully cancel payments on AT1s. Nevertheless, these options should be assessed against their effects on the market attractiveness of these instruments, since their risk profiles would be strongly affected.

Permanency

Permanency of AT1 instruments is meant to ensure that they are available to absorb losses when these occur. In this respect, the instruments must be perpetual and provide no incentive for their redemption; moreover, the possibility to call them is subject to supervisory approval and can be exercised only after 5 years from issuance, except for extraordinary circumstances. Nevertheless, the predominant market practice of calling AT1s at their first call date has in substance turned a perpetual instrument into one with a defined maturity, hence reinforcing the market perception that an AT1 is a fixed income instrument.

Currently, supervisors will approve the call of an AT1 instrument when the instrument is replaced with capital of equivalent or higher quality, at conditions that are sustainable for the income capacity of the bank, or if the bank demonstrates that once the call is exercised the bank will still remain well above its capital requirements. Market evidence shows that these conditions might not be sufficient to ensure AT1 permanency. In particular, the condition of sustainability of the replacement appears highly judgmental and difficult to oppose unless a bank has already started showing weaknesses. In this regard, one option could be to clarify that the call is only possible when the instrument is either replaced by CET1 or by another AT1 with a lower coupon.

Another aspect that could potentially enhance permanency is the frequency of calls after the fifth year from issuance. Since the Basel standards are silent on this, banks have set subsequent calls with a very high frequency, most commonly anchoring them to coupon payment dates. This hampers the permanency of the instruments and reinforces the market expectation that they will be called shortly after the fifth year from issuance. A potential intervention on this aspect could be to require a five-year frequency for subsequent calls too.

In summary, while introducing such changes might improve the permanency of AT1s, it would also affect market expectations and therefore have an impact on investor demand. For instance, allowing AT1s to be replaced only with instruments having lower coupons could strongly affect market liquidity in situations of increasing interest rates, where issuers' ability to replace issuances would be limited. Similarly, introducing a minimum frequency for subsequent calls could enhance the theoretical perpetuity of AT1s, but it should also be assessed against the risk that it might result in all the instruments being called after 5 years.

Hierarchy

Once the trigger is activated, CoCos can either be converted into equity or subjected to a principal write-down. As demonstrated by the Credit Suisse case, a write-down outside of resolution could result in a transfer of value from AT1 holders to shareholders. Therefore, equity conversion may be seen as more attractive to investors, at least because it would leave a potential upside when the trigger is activated in going-concern; also, it could be considered as being more in line with the Basel framework itself which states that CET1 must take the first and proportionately greatest share of any losses as they occur. In this respect, the recent evidence of European banks issuing more CoCos with equity conversion features could be seen as a signal of increased investor awareness of the risks stemming from CoCo write-downs.

CoCos can also be classified based on the direction of the wealth transfer when their loss absorption mechanism is activated. If this translates into a gain for shareholders, CoCos are non-dilutive; otherwise they are dilutive. While it is clear that CoCos with a write-down PLAM are always non-dilutive, in case of equity conversion, being or not being dilutive would depend on the conversion price.[68] With a variable conversion price, CoCo bondholders receive a number of shares that depends on the market value at the time of conversion. This prevents any value transfer between investors and shareholders and therefore makes CoCos always dilutive. An alternative approach is to combine a variable conversion price with a floor, which protects existing shareholders from excessive dilution. In this case, if the share price at conversion is above the floor, CoCo holders receive the full nominal amount in shares, mirroring the outcome of a pure variable conversion price; if the share price instead falls below the floor, conversion happens at the fixed conversion price set by the floor, resulting in a value transfer to shareholders. Therefore, in this case the floor level in combination with the market value at the time of conversion determines the dilutive nature of the instrument. A further mechanism, which currently represents the most common market practice, entails fixed conversion prices, defined at issuance (often taking the stock price at the time of issuance).[69] If the market price at conversion is lower than this fixed price, the investor receives an amount of shares worth less than the nominal amount converted and, therefore, value is transferred to shareholders. If the market price is instead higher than the conversion price, the opposite occurs, with the investor receiving more value. Consequently, under this approach the difference between the pre-defined conversion price and the share price at conversion determines to what extent the instrument is dilutive.

Being or not being dilutive also has an impact in terms of risk-taking incentives for the issuing bank. It is generally argued that non-dilutive CoCos increase risk-taking behaviour, while dilutive ones reduce it.[70] Non-dilutive CoCos, and in particular those having a write-down PLAM, can potentially encourage risk taking behaviour by managers who are acting in the interest of shareholders, as loss absorption occurs at the bondholders' expense rather than through equity dilution. This mechanism may prompt managers to take on more risk, knowing that bondholders will bear the initial losses, thereby aligning their actions

[68] In fact, in the context of conversion, the CoCo bondholders will receive a number of shares equal to the nominal amount of the CoCos divided by the conversion price.

[69] Avdjiev S., Kartasheva A. and Bogdanova B. (2013).

[70] Fatouh M., Neamtu I. and van Wijnbergen S. (2021).

with shareholders' interests but increasing overall risk in the financial system.[71] In this respect, equity conversion could potentially have more benefits in reducing risk-taking incentives for banks. Nonetheless, this would hold true as long as CoCos are dilutive, which cannot be taken for granted, since the most common market practice is to have fixed conversion prices. Recent studies[72] have demonstrated that in this situation dilutive CoCos are rarely, if ever, observed in practice because the share price of a bank close to breaching the triggers for the PLAM activation would likely be lower than the conversion price set at inception, resulting in a value transfer to shareholders.

In summary, allowing only CoCos with a dilutive equity conversion mechanism could be a solution to avoid, or at least reduce, value transfer to shareholders when the PLAM is triggered or the PONV is reached. Moreover, by reducing the issuers' risk taking incentives, it could also contribute to enhancing financial stability.

6. Conclusions

The Credit Suisse case has shown the significant limitations in the ability of AT1 instruments to act as going-concern capital, confirming the experience from previous bank crises for which almost no instances of loss absorption of AT1s on a going-concern basis have been observed.

While, in the Credit Suisse case, the Point of Non-Viability (PONV) clause worked as intended and provided the necessary loss absorption to finance the merger with UBS, there were limitations in terms of the intended timely loss absorbency of AT1s.

Indeed, several design features of these instruments proved to be ineffective: the Principal Loss Absorbency Mechanism was not activated (despite the 'high trigger' set at a 7% CET1 ratio); AT1 coupon payments were not cancelled (notwithstanding clear signals of financial distress); the permanency of AT1 instruments was impaired by the practice of replacing instruments at their first call date; the write-down of AT1s caused an inversion of hierarchy between shareholders' and bondholders' claims.

The areas for potential improvement of the current framework are numerous, ranging from increasing the effectiveness and comprehensiveness of triggers for write-down/conversion, to better aligning coupon payments to banks' profitability and/or only allowing instruments with dilutive conversion mechanisms. Moreover, enhancing supervisory discretion also seems crucial to allow for pre-emptive interventions.

The different policy options discussed in this paper are not mutually exclusive; on the contrary, a mix of them might be more effective. Nevertheless, such substantial changes, whose effectiveness should in all cases be confirmed in practice, would likely affect the market appetite for AT1s as well as the level of complexity of the Basel framework. This may suggest considering, as an alternative, a more radical rethinking of AT1s' role in the regulatory capital stack, also taking into consideration the requirements

[71] Bolton P., Jiang, W. and Kartasheva A. (2023).

[72] Gamba A., Gong Y. and Ma K. (2024).

introduced in the meantime in terms of loss-absorbing and recapitalization capacity for banks in resolution.[73]

[73] FSB (2014).

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