The changing role of macroprudential policy in Austria after World War II

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The need for and implementation of macroprudential supervision was a key lesson from the global financial crisis of 2008. However, historical protocols, legislation, policy agreements as well as the literature bear witness of a longer history of macroprudential policy in Austria: it predates the crisis by about 60 years during which it gradually evolved. We argue that careful analysis of this history provides interesting insights for current policymakers. We identify the following key lessons from analyzing the changing legal nature, motivation and effectiveness of macroprudential policy in Austria: first, macroprudential policy requires a sound legal basis; second, measures have to be quite intrusive to effectively curtail the build-up of systemic risk. Less intrusive measures become effective above all by increasing the shock-absorbing capacity of the financial system, once sytemic risks materialize.

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Macroprudential supervision was formally introduced in Austria in 2014 as a key lesson from the financial crisis of 2008. Macroprudential supervision is a mainly national responsibility within an increasingly harmonized and centralized system of financial supervision in the European Union (EU) and, even more so, the euro area. The Oesterreichische Nationalbank (OeNB) is entrusted with a major responsibility for macroprudential supervision in Austria. Expectations regarding the impact of macroprudential policy on reducing the frequency and costs of financial crises are high, but skeptics have warned that the high hopes in the new tools of macroprudential supervision might be overstated as little is known about their effectiveness and transmission channels (Dudley, 2015).

We argue that although the term "macroprudential" itself denotes a rather recent concept, macroprudential policy as such does have a history from which we can learn. This paper summarizes the history of the changing role of macroprudential policy in Austria from the end of World War II (WW II) in 1945 to 2016 and draws lessons for the future.

This paper is structured as follows: Section 1 defines macroprudential policy for the purpose of this paper. In section 2, we discuss the conceptual framework for macroprudential policy in Austria. Section 3 outlines the evolution of the relevant legal framework. Section 4 and section 5 provide a chronology of macroprudential measures taken between 1945 and 2016. Finally, section 6 concludes.

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1 Definition of macroprudential policy

The term *macroprudential* – as it is used today[2]– was coined by the Bank for International Settlement's Cooke Committee, which mentioned the term for the first time in the minutes of its meeting on June 28 and 29, 1979 (Clement, 2010). In the EU, a legal definition of macroprudential supervision was introduced only in 2013 with the implementation of the Capital Requirements Directive IV (CRD IV) in response to the global financial crisis of 2008. Macroprudential supervision was set up to supplement microprudential supervision and monetary policy by promoting financial stability and reducing systemic and procyclical risks to the financial system and the real economy.[3] The European Systemic Risk Board (ESRB, 2013) specified five intermediate objectives to operationalize its ultimate objective of preserving financial stability: (1) mitigating and preventing excessive credit growth and leverage, (2) mitigating and preventing excessive maturity mismatches, (3) limiting direct and indirect exposure concentration within the financial system, (4) limiting the systemic impact of misaligned incentives, and (5) strengthening the resilience of the financial infrastructure.

We use these intermediate objectives to retrospectively classify macroprudential policy measures taken after 1945. Objectives similar to the abovementioned intermediary objectives (1) and (2), in particular, played an important role in Austrian economic policy after WW II. The underlying motivation at the time was to achieve the overarching objective of price stability – financial stability considerations played a secondary role. These objectives were addressed predominantly by credit policy, and this approach gave rise to macroprudential policy long before its formal introduction. This happened not only in Austria, but in several developed economies.

In the following sections, we analyze the most relevant instruments that were used to meet the macroprudential policy objectives of mitigating and preventing excessive credit growth, leverage and maturity mismatches. We study credit control agreements (including credit ceilings) in section 4.1, the 1970s Limes, a bank lending limit, in section 4.2, and the Gentlemen's Agreement between banks and the OeNB regarding the sterilization of short-term capital inflows in section 4.3, the predecessors of modern macroprudential measures (e.g. measures that curbed foreign currency loans) in section 5.1, the sustainability package in section 5.2, and finally the instruments of modern macroprudential supervision in section 5.3.

2 The conceptual framework of macroprudential policy after WW II

Up to the 1980s, macroprudential policy in Austria consisted of credit control agreements (comprising qualitative and quantitative credit controls), the Gentlemen's Agreement between Austrian banks and the OeNB, and a limit to bank lending called the Limes.

The first objective associated with this toolset was to *complement monetary policy*. If policymakers expected that raising interest rates and/or minimum

[2] *Macroprudential supervision refers to the supervision of the financial system as a whole. See Eidenberger et al. (2014, p. 84.): "The objective of macroprudential supervision is to contribute to the stability of the financial system as a whole, which requires strengthening the resilience of financial intermediaries and of the financial infrastructure, and limiting the build-up of systemic risks in the economy (e.g. house price bubbles)."*

[3] *Article 13 (1) of the Federal Act on the Institution and Organisation of the Financial Market Authority.*

reserve requirements would be insufficient to fight inflation, excessive credit expansion, the misallocation of credit in the economy and/or excessive maturity transformation (Klauhs, 1971) or if they feared these instruments would weigh too heavily on bank profitability (Ministry of Finance, 1969, p. 23), they turned to macroprudential policy to provide additional instruments that would allow them to curb the growth of credit, monetary aggregates and inflation.

The second objective was to *prevent short-term disturbances to the financial system caused by volatile short-term capital flows*; these could induce an excessive increase or decrease of money and credit supply and/or excessive currency and maturity mismatches in the economy, which would endanger price stability or economic growth (Schmitz, 1969).[4] For example, the central bank disincentivized banks from attracting new foreign currency deposits by nonresidents by imposing high minimum reserve requirements on such deposits rather than by reducing interest rates.

Macroprudential policies in the form of credit control agreements and lending ceilings were common between 1945 and the 1980s across the developed economies (Goodhart, 1989). The policy toolset often included quantitative credit ceilings and the qualitative steering of credit expansion toward exporting and manufacturing sectors at the expense of consumer credit. Schmitz (1969) provides an overview of the measures implemented to curb short-term capital flows (similar to the 1971 Gentlemen's Agreement, see below) in various developed countries.

The conceptual framework of qualitative credit controls rested on the *neoclassical theory of growth* that was driven by capital accumulation and productivity growth (Solow, 1956; Swan, 1956). Austria had a very low capital stock after WW II (Seidel, 2005). Income and savings were low, too. As a consequence, capital – and often capital goods, too – had to be imported. Qualitative credit controls aimed at shifting the allocation of scarce capital toward productive, growth-enhancing investment at the expense of consumption and speculative investment (including speculative inventories). To address the ensuing current account deficits, qualitative credit controls also favored tourism and export credit. The controls were justified by the belief that the state was better able to allocate funds toward productive investment than the financial markets. Monetary policy complemented qualitative credit controls through preferential liquidity provision for investment and export loans.

The objectives of macroprudential policy measures during that period were closely linked to those of monetary policy (Kelber and Monnet, 2014). Banks were considered to be able to create money through the extension of credit or shifts from time to sight deposits. As a consequence, the terms "money supply" and "credit growth" were used interchangeably, and it was not considered necessary to distinguish monetary policy objectives from systemic risk considerations.

Regarding the *transmission channel*, the conceptual framework applied by economists and policymakers rested on a quantitative perspective of bank balance sheet management (Goodhart, 1989). An increase of the share of highly liquid assets in total assets would imply a reduction of the share of less liquid assets (loans). In aggregate per-

[4] *In the period from 1958 to 1968, increases in international reserves accounted for 80% of the increase of central bank money in Austria (Schmitz, 1969).*

spective, considerations were based on the money multiplier.

Bankers, in contrast, based their conceptual framework on price-based dynamic balance sheet optimization (Klauhs, 1964, p. 40): ceteris paribus, liquidity and capital requirements that constitute economically binding constraints would increase the input costs of bank intermediation and reduced bank profitability. Bank management would react by adapting the structure of assets and liabilities as well as their pricing.[5]

After the financial crisis of 2008, the close link between macroprudential policy and monetary policy was abandoned and *systemic risk* became the new focus.[6] The new macroprudential policy framework builds on the insight that the soundness of individual financial institutions – i.e. their fulfillment of microprudential capital requirements – is not sufficient to ensure systemic stability (Eidenberger et al., 2014). The conceptual framework distinguishes the cross-sectional and time dimensions of systemic risks. Examples of the former include direct and indirect contagion due to the interconnectedness of financial institutions, and incentive problems of financial institutions (e.g. problems caused by emergency liquidity assistance, implicit government guarantees and the tax subsidy of debt). Along the time dimension, excessive credit growth and the procyclicality of credit growth constitute the dominant forms of systemic risk. The main instruments used to address these risks are capital buffers that are added on top of microprudential capital requirements.

The *transmission channel* of modern macroprudential policy instruments is based (1) ex ante on price-based dynamic balance sheet optimization and (2) ex post on containing the system-wide effects of shocks. Additional layers of binding macroprudential measures create opportunity costs by forcing banks to deviate from their individually optimal asset and liability pricing and balance sheet structure. This, in turn, should internalize negative externalities and avoid systemic risk. If risks materialize nonetheless, the additional buffers aim at containing the repercussions within the financial system by increasing the shock absorption capacity of individual institutions.

3 The legal framework for macroprudential policy after WW II

The *first legal framework* for macroprudential policy, the *Kreditwesengesetz* (*KWG*, Austrian credit services act), was introduced in Austria in 1979, almost 30 years after the first credit control agreement had entered into force in Austria in 1951. The Reichskreditwesengesetz (RKWG, Reich Banking Act), which had been introduced in Austria by regulation after the Anschluss (RKWG, 1938), remained in force in Austria after the end of WW II (as amended by RKWG, 1939). Constitutional concerns rendered the RKWG 1939 all but inapplicable, however.[7] In fact, Austria had no capital and liquid-

[5] *Bankers also feared that the relative increase in the costs of bank loans would drive up the market shares of nonbank funding sources, such as insurance companies, instalment payments and promissory notes. Later macroprudential measures also encompassed the first two alternatives. Market-based funding remained very low in Austria until the early 2000s.*

[6] *The literature on systemic risk has grown substantially since the financial crisis; see Galati and Moessner (2011) for a literature survey.*

[7] *The explanatory notes on the first draft of the Austrian KWG (Ministry of Finance, 1955) offer two explanations for these constitutional concerns: first, the regulatory powers of the supervisory authority (i.e. the Ministry of Finance in consultation with the OeNB) to define specific capital and liquidity ratios were regarded excessive under Austrian constitutional and administrative law; second, the way the RKWG 1938 had been introduced in 1938 contributed to constitutional concerns.*

ity regulation until 1979; the voluntary credit control agreements between Austrian banks and the Ministry of Finance in consultation with the OeNB aimed at filling this void from 1951 onward (Heller, 1980). In addition to constitutional concerns the poor state of the Austrian banking sector further hampered the execution of the RKWG. After 1945, the share of nonperforming assets in total banking assets was so high and bank capitalization was so low (effectively negative in aggregate) that banks were not even required to publish balance sheets until 1955.[8] Two attempts, in 1955 and 1969, to regulate Austrian banks failed (Ministry of Finance, 1955; 1969). The latter attempt would also have included legal foundations for macroprudential policy.

The KWG 1979 finally provided a sound legal basis for macroprudential policy in Austria.[9] The explanatory notes on the KWG 1979 explicitly mention the objective of establishing legal foundations for credit control agreements to maintain economic stability (Nationalrat, 1979). Article 12 KWG 1979 specified minimum capital requirements (4% of total liabilities minus covered bonds and very highly liquid assets). Article 11 provided the legal foundations for minimum liquidity requirements, which had to be defined by the Minister of Finance within certain qualitative and quantitative limits (up to 35% of total assets) specified in Article 11. Curbing excessive credit growth constituted one of the motivations for this provision. Article 22 finally laid the legal foundations for macroprudential policy. It empowered the Ministry of Finance – in consultation with the OeNB – to temporarily impose limits on the growth of credit extended by domestic credit institutions to domestic nonbanks, if credit growth was deemed excessive and, if restrictive monetary policy had proved insufficient in addressing the problem of excessive credit growth. Article 22 specified quantitative limits for ministerial discretion in terms of ratios of loan expansion to increases in liabilities or capital (liability-side credit control). However, first the Ministry of Finance had to seek a voluntary agreement with the various associations of Austrian credit institutions and the OeNB. If these voluntary agreements were not reached within one month, the Ministry of Finance, in consultation with the OeNB, was entitled to issue a directive on the matter in question. Similarly, if consent on an extension to existing credit control agreements was not reached within four weeks, the Ministry of Finance could issue a corresponding directive. Such directives could remain in force for a maximum of 16 months, and banks were fined for noncompliance with the provisions. In addition, Article 22 (10) included provisions for asset-side credit controls (e.g. explicit limits on the growth rates of certain assets). These were subsidiary to liability-side measures, however – the explanatory notes argued that asset-side measures have an immediate effect on aggregate demand and the money

[8] *The Reconstruction Act 1955 required banks to publish their balance sheets for the first time since 1945 as of year-end 1954 and an aggregate profit and loss statement for the entire decade from 1945 to 1954. Banks had to reach a capital-to-liabilities ratio of 10% by 1964. However, banks whose capitalization was below 4% of liabilities were given additional time until 1980 in the 1969 draft of the KWG (Ministry of Finance, 1969).*

[9] *The OeNB would have preferred the legal framework for macroprudential policy to be included in an amendment to the Nationalbank Act 1955; the OeNB's subcommittee on open market operations and minimum reserve policy suggested a draft of a new Article 43a NBG 1955 that assigned the power to issue directives to the OeNB in consultation with the Ministry of Finance (OeNB, 1968).*

supply (rather than a lagged effect like liability-side measures) (Nationalrat, 1979, p. 49).

It is a historical irony that the last credit control agreement expired in June 1981, only two years after a sound legal foundation for these instruments had finally been established. The expiry came about because no agreement on the extension could be reached between the Ministry of Finance, the OeNB and the Austrian credit institutions. The Ministry of Finance had never made use of its new macroprudential powers under the KWG 1979. At the end of the three decades it had taken to establish legal foundations for macroprudential policy in Austria, macroprudential policy measures fell out of favor around the world with both central bankers and policymakers (Goodhart, 1989; Elliot et al. 2013). As a consequence, Article 22 of the KWG 1979 was deleted in the 1986 amendment to the KWG, only seven years after it had been introduced. Lawmakers did not even consider it necessary to provide arguments for its deletion in the explanatory notes on the amendment (Nationalrat, 1986, p. 36).[10]

It was only 28 years later, in 2014, that Austria introduced a comprehensive legal and institutional framework for macroprudential policy. In the aftermath of the financial crisis of 2008, macroprudential policy gained renewed attention in international policy fora (Financial Stability Board, BIS and IMF, 2011) and in academia (Galati and Moessner, 2011, for an overview). In the EU, the Capital Requirements Directive IV (CRD IV, Directive 2013/36/EU) and the Capital Requirements Regulation (CRR, Regulation No 575/2013) provided a new legal framework for macroprudential policy. The former was transposed into Austrian law with the 2013 amendments to the Austrian Banking Act (section 5 on macroprudential supervision), the Financial Market Authority Act, and the Nationalbank Act.[11] The reform assigned the Austrian Financial Market Authority (FMA) as macroprudential authority, established the Financial Market Stability Board (FMSB) as policy forum and delegated the tasks of prospective systemic risk analysis, policy development and FMSB administration to the OeNB.[12]

Beyond the Austrian Banking Act and its forerunner versions, the *Nationalbank Act* and the Foreign Exchange Act helped shape the legal framework of macroprudential policy in Austria after WW II. The Nationalbank Act 1955 provided the legal foundations for monetary policy in Austria and was additionally used for targeting intermediary objectives of macroprudential policy. First, in Article 43, it empowered the OeNB to require banks to hold minimum reserves, which in composition resembled the liquidity requirements of the previous credit control agreements. Article 43 was inter alia intended as a

[10] *The KWG 1986 granted the Ministry of Finance the power to increase minimum capital requirements for all banks if this were in the economic interest of a well-functioning banking system (Article 12 (2) KWG 1979, as amended by Federal Law Gazette No. 325/1986). In preparation for Austria's accession to the European Economic Area (1994), the new Austrian Banking Act 1993 (Bankwesengesetz – BWG) transposed the European Community banking directives into Austrian law. The BWG 1993 restricted the Ministry of Finance's power to raise minimum capital requirements for all banks by setting an upper limit of 0.5 percentage points. This power could be interpreted as a macroprudential instrument, but it was never used.*

[11] *See Federal Law Gazette No. 184/2013.*

[12] *For details concerning the legal and institutional setup of macroprudential supervision in Austria, see Eidenberger et al. (2014).*

legal foundation for macroprudential policy (Nationalrat, 1955). In case voluntary agreements could not be reached, the OeNB had the legal power to impose similar measures. In addition, the OeNB had strong arguments to nudge banks toward a voluntary agreement; it could exclude credit institutions without giving reasons from discount transactions and lombard loans. This discretion also allowed the OeNB to sanction credit institutions for breaches of the Limes agreements. The 1969 amendment to the Nationalbank Act introduced specific rules on minimum reserve requirements for foreign currency deposits by nonresidents (Federal Law Gazette No. 276/1969). The relatively high ratios of up to 25% of the stock volume and up to 50% of the increase in such liabilities was motivated by the then-applicable Gentlemen's Agreement that aimed to contain the negative effects of high short-term capital inflows via the banking sector. During the 1980s, market- and price-based monetary policy instruments replaced arm-length or quantitative instruments (including the selective allocation of liquidity by the OeNB to commercial banks). When the Nationalbank Act was adapted to the requirements of the Economic and Monetary Union (EMU) in 1998, the amendments reflected this development. The OeNB's monetary policy instruments at that time consisted of the toolset which had been developed by the European Monetary Institute (EMI). It interpreted minimum reserve requirements solely as instruments to ensure a stable demand for central bank money and to smooth money market interest rates (ECB, 2011).

In addition, the *Foreign Exchange Act* 1946 (Devisengesetz) imposed strict capital controls in Austria starting from 1946 (Mooslechner et al., 2007): the OeNB had to be notified of foreign currency imports and exports as well as of the disposal of foreign currencies above a specific value, and all foreign currency had to be offered for exchange to the OeNB. All foreign currency transactions were subject to approval by the OeNB. After 1953, the OeNB commenced a gradual and stepwise liberalization process, making the approvals less restrictive. In the first phase (1954–59), it liberalized current account transactions with countries of the Organisation for European Economic Co-operation (OEEC), Canada and the U.S.A. In the second phase (1959–63), the OeNB granted a general approval for capital account transactions to nonresidents and eased the approval practice for Austrians. The OeNB implemented the liberalization process by issuing official announcements according to the Foreign Exchange Act 1946 without seeking changes to the Act itself, which ensured a high degree of flexibility for the OeNB in tightening capital controls if and when necessary. This was the case in May 1971, when the OeNB reintroduced the requirement of individual OeNB approval for bank deposits by nonresidents, and in November 1972, when it did so for other forms of capital imports (requirement in place until 1976). However, vis-à-vis banks, the OeNB largely refrained from imposing quantitative limits on capital imports or exports and from tightening its approval practice significantly. Instead, it aimed at driving a wedge between the interest paid on deposits in Austria and that paid on deposits abroad through the Gentlemen's Agreement. Similarly, quantitative restrictions on capital imports via purchases of domestic bonds and equity by nonresidents from Austrian residents were implemented in the form of amendments to the (voluntary)

credit control agreements (October 1972). Moreover, the OeNB required individual OeNB approval for purchases of real estate and for loans provided by nonresidents (November 1972). The voluntary measures proved effective, and the number of applications for approval of capital imports remained low. The third and final liberalization phase commenced in 1981 and ended in 1991, when capital controls were finally abolished in Austria. In principle, capital controls can still be used as macroprudential tools by countries outside the EU (Habermeier et al., 2011). However, we do not include them in our account of macroprudential policy measures in Austria after 1945, because the Gentlemen's Agreement was the main instrument used to avoid short-term capital inflows via banks. The tightening of capital controls merely imposed notification requirements that enabled the OeNB to monitor compliance with the Gentlemen's Agreement and prevented the circumvention of macroprudential policy measures via capital imports by nonbanks.

4 Macroprudential measures from 1945 to 1982

This section provides a chronology of macroprudential policy milestones from 1945 to 1982 in Austria.[13] It describes the economic nature of each measure, its motivation (e.g. to avoid excessive credit growth or a currency mismatch) and an ex post assessment of its effectiveness.

4.1 Credit control agreements

Credit control agreements addressed systemic risks in terms of *excessive total credit growth*[14] and *misallocation of credit in the economy*. They were in force between 1951 and 1982 and consisted of three components. Component (1) included *qualitative* credit controls, which e.g. allowed banks to lend only for sustainable purposes or imposed restrictions on the advertising of consumer loans. In contrast, components (2) and (3) were often referred to as *quantitative* credit controls. They comprised liability-side controls either in the form of *minimum liquidity requirements* (component (2)) and/or a *credit ceiling* (*Kreditplafond*, component (3)). Additionally, as of 1973, the OeNB pushed through more intrusive asset-side controls (i.e. the Limes), which were formally not part of the credit control agreements (see section 4.2). These policies targeted the banking sector, above all, but their scope and the quantitative requirements were adapted when necessary to also include insurance companies and instalment companies.

Qualitative credit controls targeted the sustainability of credit supply by avoiding a misallocation of credit in the economy. They stipulated that banks were only allowed to grant loans for economically justified purposes, i.e. productivity-enhancing investments or exports, and not for speculative use (excessive inventories or foreign currency speculation) or unsustainable consumption (OeNB, 1951, April 6).

[13] *This section does not deal with the activities of the commission for the allocation of credit in the economy (Kommission zur Lenkung des öffentlichen und privaten Kredits), which was established in July 1945 (Kreditlenkungsgesetz 1945), as the authors consider this commission the instrument of a postwar command economy rather than a macroprudential policy instrument.*

[14] *The scope of the definition of credit narrowed over time; initially, all loans were included except short-term interbank loans. In 1957, the reformulation also excluded all interbank loans to banks covered by the agreement, export loans and some other smaller categories.*

The first type of credit policy implemented in Austria along these lines comprised an agreement the Ministry of Finance, in consultation with the OeNB, reached with two banking sectors, namely joint stock banks (Aktienbanken) and smaller private banks (Verband der Banken and Bankiers). It took until 1960 for credit control agreements to cover all Austrian banking sectors.[15]

An ex post assessment of qualitative credit controls is difficult, but it is unlikely that they were particularly effective. The OeNB did not gather data regarding banks' compliance with these controls. Early critics pointed out that it was almost impossible to assess to what extent loans were economically justified, and even banks were said to be overburdened with the qualitative criteria regarding credit controls (e.g. Tichy, 1965). However, over time a consensus emerged that loans for productivity-enhancing investments and for promoting exports were sustainable, while consumer loans and loans for speculative purposes were not. In 1975, qualitative controls for consumer loans were partly repealed to spur consumption and reintroduced in 1977 in the light of sharply increasing import-based consumption. That indicates that policymakers expected some effectiveness in terms of allocating credit. However, as the effect on excessive credit growth remained negligible, the OeNB complemented the qualitative controls with quantitative credit controls only eight months after the first credit control agreement had entered into force.

Quantitative credit controls aimed at mitigating excessive credit growth, leverage and maturity mismatches. Initially they consisted only of minimum liquidity requirements (April 1951), but later they also included provisions regarding a credit ceiling (October 1951) and capital-based limits on credit growth (1957).

The minimum liquidity requirements were defined as a specific ratio of liquid assets to bank liabilities (liability-side credit controls) and thus also had an impact on maturity transformation in the banking system. The affected banks had to hold 30% of their liabilities in certain classes of liquid assets as of January 1952: 10% of first-grade liquidity, e.g. cash or deposits with the OeNB; 20% of second-grade liquidity, e.g. checks, rediscountable bills of exchange or discountable government bonds (OeNB, 1951, April 6). Supporting government financing was no explicit objective of the minimum liquidity requirements, because discountable government bonds were only covered by the second-grade liquidity requirements and the requirements covered many other asset classes. Banks circumvented the credit control agreements by substituting loans by bills of exchange, which they rediscounted at the OeNB to increase their first-grade liquidity. This, in turn, provided additional scope for credit expansion without breaching the agreement. Liquidity distribution across decentralized sectors and banking groups constituted another implementation challenge. The centralization of liquidity incentivized the apex or parent institutions to intensify maturity transformation and expand their loan portfolios. They could profit from double liquidity leverage (interbank loans counted toward liquid assets) and gained a competitive advantage over less complex banking organizations (Klauhs, 1964).

[15] *The arrangement with the regional mortgage banks and the Raiffeisen credit cooperatives was only implemented in 1960.*

If minimum liquidity requirements were binding, i.e. had prevented banks from achieving their individually optimal pricing and balance sheet structure, they would have caused opportunity costs. Banks could either react by accepting declining profit margins or charging higher interest rates for loans. This mechanism should help curb credit expansion (Klauhs, 1964).

In October 1951, the OeNB pushed for an extension of the credit control agreements by specifying a *credit ceiling* (OeNB, 1951, October 10), which constituted a more stringent form of liability-side quantitative credit growth restriction. It also aimed at limiting excessive credit growth, leverage and maturity mismatches. In view of the limited impact of minimum liquidity requirements, it limited banks' credit expansion to a specific percentage (e.g. 70%) of the increase of their debt; this was classified as a period-of-time approach (Zuwachsregelung) as the ratio referred to a change in debt over time.[16] In case of a reduction of eligible debt, loans had to be reduced by the same amount within an adequate time period. Certain types of loans supportive of sustainable economic development were excluded from the credit ceiling, which strengthened the qualitative credit controls (e.g. export loans, agricultural loans, investment loans and reconstruction loans).

The OeNB regularly monitored compliance with the quantitative provisions of the credit control agreements (minimum liquidity requirement and credit ceilings). Banks which did not comply with the minimum liquidity requirements had to reduce lending until compliance was restored.[17] In addition, they had to pay a fine of 2% of the liquidity gap to the Treasury.[18] In the beginning of the 1970s, the rules for fines were loosened for the first time. In case of noncompliance with the credit ceiling caused by a lowering of the ceiling, fines were suspended. The authorities also promised to deal generously with any unforeseen breaches of the agreements until fines were finally lifted in October 1975.

In 1955, the OeNB expanded the scope of the credit control agreements by including insurance companies and instalment companies. The move was motivated by the desire to avoid a shifting of credit supply to sectors outside banking, i.e. shadow banking. Instalment companies had to reduce their outstanding loans by 10% (OeNB, 1955, November 30). Insurance companies were not allowed to grant loans anymore and had to stop lending to credit instalment institutions. From 1972 to 1981, they were again allowed to grant loans, but only to a limited extent.[19]

As of 1957, capital-based limits on credit growth complemented the debt-based limits in effect for the credit ceiling. In addition, the credit control agreements with the different banking sectors were consolidated into one

[16] *As the bulk of bank debt consisted of bank deposits and savings accounts, the period-of-time approach was similar to a loan-to-deposit rule in flows rather than stocks. In contrast, the ratio under the point-in-time approach referred to the stock of credit and debt at a certain point in time.*

[17] *In contrast, those that did not reach the credit ceiling were given additional room for providing credit supply (Krediterteilungsreserve). This stipulation was discontinued in 1955.*

[18] *The fine for excessive credit supply beyond the limits of the credit ceiling corresponded to the bank rate times the amount of credit growth exceeding the limits. Besides the discount and lombard rate, the bank rate was another rate at which banks could refinance themselves with the OeNB.*

[19] *Insurance companies were only allowed to increase loan supply by 6% of their credit stock as of November 30, 1972. The level, calculation base and reference period were changed several times.*

agreement that aligned the minimum liquidity requirements across banking sectors and effectively lowered the credit ceiling by shifting from a period-of-time to a point-in-time approach (Stichtagsregelung). This move limited the stock of outstanding loans to 45% to 75% of the stock of debt plus 75% of the stock of bank capital.[20] Again, certain types of loans (e.g. export loans, loans for agricultural purposes and investment loans, reconstruction loans) were exempted from these limits in support of a qualitative credit policy.

In the following years, credit control agreements were frequently tightened (1962, 1965, 1972 and 1973) or loosened (1966, 1975). These changes were components of more comprehensive stability packages that included fiscal, income, monetary and capital account policy measures. While the credit ceiling in terms of debt and the corresponding period of time was changed frequently, the credit ceiling in terms of capital remained the same (75%) from 1957 until the termination of the credit control agreements in 1981. For example, in 1966 the credit ceiling was raised by 2 percentage points in the context of somewhat muted credit expansion on the back of poor investment and moderate economic growth (WIFO, 1966a). In particular, banks which easily complied with the minimum liquidity requirements but had already reached the credit ceiling profited from this somewhat expansionary policy measure. However, monetary policy was restrictive at the same time, as e.g. the lombard rate was raised to contain inflation pressures (WIFO, 1966b).

Six years later, in 1972, the OeNB pushed for a significant lowering of the credit ceiling: it cut the loan-to-deposit ratio (point-in-time approach) by up to 12 percentage points to between 43% and 68% and the ratio of loan growth to deposit growth (period-of-time approach) to between 35% and 37% as of November 1972.[21] The move was part of a stability package which aimed at slowing down the overheating economy, excessive credit growth and a substantial current account deficit (WIFO, 1972). The OeNB also required banks to curb consumer loan growth, to be more conservative in extending real estate loans to residents and to refrain from advertising consumer loans (Personalkredite) from 1972 to 1975. In addition, banks agreed to refrain from selling domestic bonds and equity to nonresidents. However, the lowering of the credit ceiling remained ineffective and year-on-year credit growth accelerated to about 20%. Therefore, another stability package in 1973 lowered the credit ceiling further by 10 percentage points and introduced the Limes (see below).

Contemporary assessments of the various components of the credit control agreements differed. Bankers were more in favor of qualitative credit controls and minimum liquidity requirements, which were less intrusive. However, these measures were also less effective. In contrast, policymakers preferred the credit ceiling, which was both more restrictive and more effective. This was the case because the agreements included specific limits for each banking sector, so that differences in banks' business structure could be

[20] *The latter share varied between banking sectors from 45% (head institution of savings banks) to 75% (smaller private banks, Volksbank credit cooperatives and head institution of Raiffeisen credit cooperatives).*

[21] *The authorities also took further measures to contain regulatory arbitrage as banks substituted credit provision by granting excess credit lines. As of 1972, banks had to charge a fee of 0.5% on outstanding open credit lines.*

taken into account. But they were also more difficult to calibrate – particularly in times when the economic and financial environment was changing quickly (Tichy, 1965; Klauhs, 1963). Also, the impact on the respective objective could only be assessed with a lag – which, however, is the case for any economic policy. Bankers feared that the credit ceiling would distort competition, as banks with a history of loose credit policies were affected less (as they started from higher initial values) than those with conservative policies. In addition, Austrian banks were at a disadvantage compared with foreign banks that were not bound to the credit control agreements (Klauhs, 1964).

Altogether, credit control agreements are found to have ambiguous impacts on credit growth in Austria between 1951 and 1981. It is not obvious whether the respective objective of curbing or strengthening credit growth was obtained, particularly in light of the generous exemption clauses and wide-geared thresholds that were in place (Barfuss, 1975). This raises the questions of whether banks complied with the credit control agreements and whether the specified thresholds were tight enough.

For most banks, the minimum liquidity requirements stipulated in the credit control agreements were not binding economically. Banks held large amounts of excess liquidity above and beyond the minimum requirements, and only very few banks ever had liquidity shortfalls, so the requirements were unlikely to have been very effective. They were regarded too loose for the respective banks to effectively slow down excessive credit expansion – particularly as deposit growth was strong (Tichy, 1965).

Similarly, the stipulations of the credit ceiling had only limited impact on stemming credit growth. Until end-1972 banks did not exceed the credit ceiling and could have lent much more as the amount of granted loans was below the potential ceiling (with some smaller exceptions within the savings bank sector (Neudörfer, 1968)). When credit growth became excessive in 1972 despite the tightening of the credit control agreements, the OeNB convinced banks to accept the inclusion in the credit control agreements of a new type of credit policy, namely the Limes (section 4.2.).

Credit subsidies played an important role after 1945, but their interaction with the credit control agreements is difficult to assess.[22] The OeNB found that subsidized loans amounted to 38.5% of outstanding loans in 1977 (compared with 41.3% in 1965). About 55% of the loan volume was granted to promote residential real estate development, 5% targeted agriculture and forestry and 36% focused on industrial and commercial investment or exports. Banks predominantly handled the latter, while public sector entities focused on the first two areas. This seems to be in line with the objectives of qualitative credit controls, which also prioritized industrial and commercial investment or exports. An assessment of the costs and benefits of these subsidies is beyond the scope of this paper.

The era of credit control agreements ended in 1981, when the parties involved could not agree on how to adapt the phased-out agreement of 1979. Credit policy fell out of favor with policymakers and central bankers

[22] *In 1965 and in 1977, the OeNB conducted two surveys on subsidized loans, which were defined as loans that can be granted below market rates because of interest rates subsidies, contributions to principal repayment or guarantees by public sector entities or institutions founded by the public sector for these purposes (OeNB, 1978).*

alike (Greisinger, 1975; Elliot et al., 2013). In December 1981, the OeNB's General Council discussed the prolongation and adaptation of the agreements in line with the new legal foundations that had been laid down in 1979 (OeNB, 1981). Ultimately, however, the OeNB and the Ministry of Finance decided to adopt a wait-and-see approach. They would have agreed to a prolongation, if – and only if – banks' unused additional lending capacity of ATS 60 billion had been fully utilized. Over the years, the liability-side credit controls had not constituted economically binding constraints for most banks. Given banks' high excess lending capacity, the authorities did not expect a prolongation to be effective unless it entailed a substantial tightening of the agreements.

4.2 The Limes

The introduction of *asset-side credit controls* in 1973,[23] the so-called Limes, was a more intrusive measure of macroprudential policy. The Limes addressed excessive credit growth and leverage, and it was intended to surpass the low effectiveness of the much less intrusive liability-side measures. However, there was no legal framework for the Limes. The OeNB communicated a target growth rate for the growth of credit to nonbanks, which was 1% per month of the stock of loans extended to domestic nonbanks as on November 30, 1972. The OeNB incentivized compliance with its target by excluding noncompliant banks from its refinancing operations. In the following years, the reference date was updated regularly, and it referred to the end-of-year target stock of credit instead of the realized credit volume. The Limes was modified several times; it was loosened from 1% to 1.3% per month in 1978, while it was tightened twice in 1980 to 1% and 0.5%, respectively, given strong credit expansion.

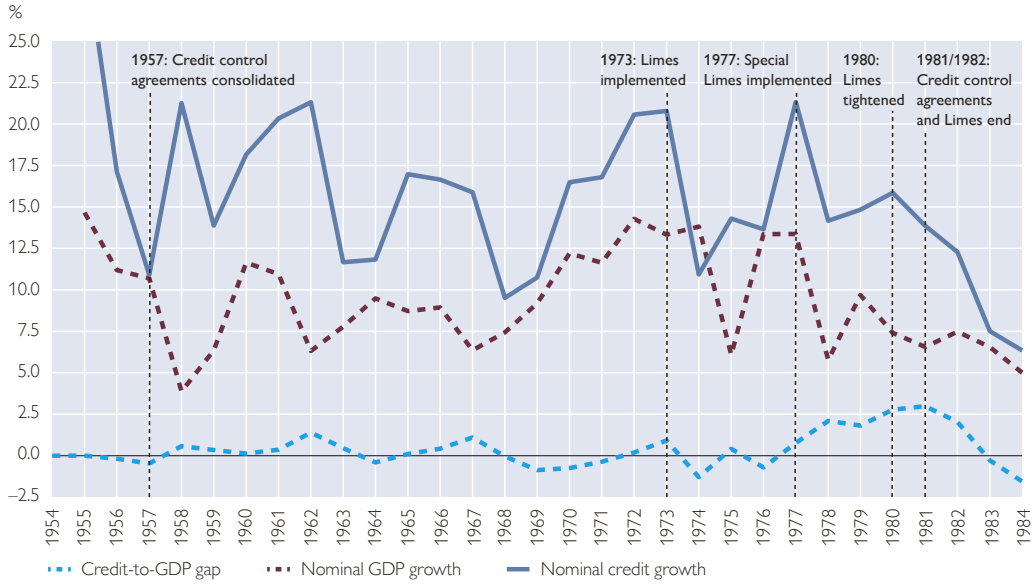
A special Limes was introduced in the fall of 1977 to counteract *strong growth in consumption*. It reduced the limit of consumer loan growth to 0.55% per month (Chronik der Währungspolitik). Consumption had increasingly shifted toward imported goods, which was a drag on the current account. Economic and monetary policymakers saw a need to balance these developments by supporting investment, exports and tourism. Monetary policy complemented the measure through preferential liquidity provision for these activities (WIFO, 1978; WIFO, 1981).

The Limes offered the advantage of providing a very severe quantity restriction with an immediate impact on credit supply, but it had a number of unintended side effects. First, the date that served as a starting point for credit growth in the following periods was chosen arbitrarily. This rewarded banks that had expanded loans more aggressively before that date than more disciplined banks, as the former were allowed to lend more after the Limes had entered into force. Second, measures that refer to a certain target date do not take into account structural and seasonal developments in the market, which makes it harder for banks to deal with seasonal variations in loan demand. Thus, especially bankers argued that such strict quantity measures should only be implemented for short time periods (Klauhs, 1979).

[23] *The overarching objective of the Limes was to fight inflation by pursuing the intermediary objective of curtailing excessive credit growth. Other countries, e.g. the Netherlands, Sweden and Switzerland, had already introduced asset-side credit controls before 1973 (OeNB, 1969).*

Chart 1

Credit-to-GDP gap in Austria from 1954 to 1984



Source: OeNB.

Note: The credit-to-GDP gap is defined as the difference between the credit-to-GDP ratio and its long-term trend (calculated with a Hodrick-Prescott time series filter with a large smoothing parameter). The chart also shows the nominal credit and nominal GDP growth rates to better track whether the change of the credit-to-GDP gap was caused by a greater change in nominal credit or in nominal GDP growth rates. The ESRB recommends the credit-to-GDP gap as an early warning indicator for excessive unsustainable (real) credit growth and thus also for banking crises.

The Limes largely fulfilled the OeNB's high expectations. Asset-side credit controls effectively limited credit growth, even if banks had accumulated excess liquidity and capital. To illustrate the effectiveness of the Limes, we look at nominal credit growth and the credit-to-GDP gap in Austria between 1954 and 1984 (chart 1). The latter is an indicator of excessive credit growth recommended by the European Systemic Risk Board (ESRB, 2014).

Chart 1 shows that the Limes was effective in addressing its intermediary objective of mitigating excessive credit growth in nominal terms. After its introduction in 1973, the credit-to-GDP gap narrowed sharply due to a strong decline in nominal credit growth, while nominal GDP growth remained relatively unchanged.[24] When the special Limes was launched to limit consumer loan growth in 1977, nominal credit growth dropped in Austria. The subsequent tightening of the Limes in 1980 was also successful in reducing nominal credit growth, but the credit-to-GDP gap widened until the abolishment of the Limes in 1981/82 as nominal GDP growth decreased.

When the Limes was implemented, the concept of a credit-to-GDP gap had not been developed yet. However, there are some interesting insights we can draw from its retrospective application. First, between 1954 and 1980, the credit-to-GDP gap was below 2.5% – the threshold defined by the Basel Committee of Banking Supervision (BCBS, 2010) for excessive credit growth (see section 5.3). But one has to consider that the Limes and the credit

[24] *The slowdown of nominal GDP growth in 1974, after the first oil price shock, is likely to have contributed to the deceleration of nominal credit growth via a reduction of loan demand.*

control agreements ultimately targeted inflation and therefore focused on nominal excessive credit growth. Nominal credit growth rates of 22% at the time the Limes was introduced justified policy action in light of the ultimate objective of price stability (chart 1). The different target variables reflect the emancipation of macroprudential supervision from monetary policy and the definition of different, though often interdependent objectives. Macroprudential supervision focuses on financial stability and monetary policy on maintaining price stability.

Finally, in 1981, the OeNB decided to discontinue the general Limes for the sole purpose of removing the structural distortions that had resulted from the application of the instrument over many years. The OeNB's restrictive monetary policy stance remained unaffected. If the economic situation had required it, the OeNB would immediately have made full use of the instrument again (OeNB, 1980). However, the decision was made easier – like in the case of credit controls – by the observation that the Limes had ceased to be an economically binding constraint for banks. The OeNB discontinued the ban on the advertising of consumer loans and the special Limes in 1982. Demand for consumer loans was low and was expected to remain so in the foreseeable future. In addition, credit policy fell out of favor due to a paradigm change toward the greater liberalization of financial markets, which had started in the late 1960s. The liberalization of the capital account and of the financial sector was expected to increase productivity and innovation in the real economy and the financial sector (Braumann, 2002). Nowotny (2007) argues that the gradual and coordinated liberalization contributed to maintaining financial stability in Austria, while abrupt liberalizations in other countries contributed to twin crises (Kaminsky and Reinhart, 1999).

4.3 The Gentlemen's Agreement

As a complement to the credit control agreements, the OeNB concluded a Gentlemen's Agreement with the Austrian banks in May 1971 to prevent and/or sterilize speculative short-term capital inflows.[25] The Gentlemen's Agreement was a voluntary agreement in which banks committed themselves to depositing 40% of the value (in Austrian schillings) of their capital inflows in unremunerated accounts with the OeNB and to refrain from importing foreign capital to improve their liquidity. The OeNB could have imposed higher minimum reserve requirements unilaterally due to the amendment of Article 43 Nationalbank Act in 1969. The agreement aimed at mitigating risks arising from an excessive maturity mismatch in the banking system and from foreign currency funding mismatches in the economy, as they prevented banks from providing longer-term Austrian schilling-denominated loans funded by short-term U.S. dollar-denominated wholesale deposits. In August 1971, the OeNB briefly raised that ratio from 40% to 100%. In response to calls from exporters to reduce the costs of hedging against exchange rate risk, the share was reduced again to 75% in September 1971 (OeNB, 1971b). The agreements played an important role in Austria's exchange rate policy (Mooslechner et al., 2007; Handler, 2016; Schmitz, 2016). They were prolonged frequently and comple-

[25] *Other countries such as Belgium, Denmark, Italy, the Netherlands and Switzerland introduced similar Gentlemen's Agreements before 1971 (Schmitz, 1969).*

mented the temporary reversal of the liberalization of capital controls which took place between 1971 and 1976 (Mooslechner et al., 2007). The Gentlemen's Agreement was finally discontinued in 1980 (OeNB, 1980).

The Gentlemen's Agreement (in combination with capital controls) was effective in limiting foreign capital inflows via banks, thereby mitigating risks arising from maturity transformations in the financial system. The share of new deposits that had to be held as unremunerated reserves at the OeNB was very high, which drove a wedge between the interest rates paid on deposits in Austria and those paid on deposits by nonresidents in foreign currency (predominantly in U.S. dollars). The measure was very intrusive. Between 1971 (when the Gentlemen's Agreement was first introduced) and 1978, short-term capital flows were contained quite well despite the strongly growing European dollar market and developments in the international exchange rate system. We regard this as a contribution to avoiding twin crises in Austria. Such concurrent banking and currency crises were frequent in other European countries and especially Latin America. Twin crises often accompanied a parallel liberalization of the capital account and a deregulation of the banking sector. In many cases, excessive maturity mismatches combined with foreign currency mismatches due to volatile short-term capital flows were associated with twin crises.[26]

5 Modern macroprudential measures and their forerunners in Austria

It took until 2003 for the Austrian authorities to take their first tentative steps to again implement macroprudential policy measures to tackle specific financial stability issues. In Austria, both measures to curb foreign currency lending and the 2012 sustainability package constitute predecessors to contemporary macroprudential measures. The latter were a response to the increasing connectivity and complexity of the financial system and a key lesson from the 2008 financial crisis. In addition, the single monetary policy fostered the need for national macroprudential policy as financial cycles were not synchronized across the euro area (Constâncio, 2015). In 2013, the ESRB introduced five intermediary objectives of macroprudential policy as outlined in section 1, which aim at supporting the general objective of promoting financial stability and reducing systemic and procyclical risks to the financial system and the real economy (ESRB, 2013).

5.1 Measures to curb foreign currency lending

In 2003, the Austrian authorities turned to macroprudential policy to curb foreign currency lending. The related policies aimed at mitigating or preventing excessive foreign currency credit growth and excessive maturity mismatches and at limiting the concentration of direct foreign currency exposure with Austrian banks as well as the systemic impact of misaligned incentives.

At the time, the portfolio of foreign currency loans held by Austrian banks was large by international standards, which regulators identified as a potential source of systemic risk (Waschiczek, 2002; Auer et al., 2012). The FMA (which had replaced the Ministry of Finance as banking supervisor in Austria in 2002) issued Minimum Standards,

[26] *See Kaminsky and Reinhart (1999) for data on twin crises.*

which aimed at improving banks' risk management practices concerning foreign currency lending and repayment vehicle loans and at avoiding the excessive growth of foreign currency loans. In 2006, these measures were supplemented by information folders intended to improve the risk awareness of foreign currency borrowers. However, these legally nonbinding soft-law measures failed to achieve the intended goal, as neither banks nor borrowers fully grasped the risks related to foreign currency lending (refinancing risk, concentration risk and political risk for banks; exchange rate risks, etc. for borrowers).

As the global financial crisis led to heightened risk awareness, the FMA strongly recommended in 2008 that the banking sector should no longer extend foreign currency loans to households.

The latest measures were the 2013 FMA Minimum Standards (FMA, 2013a, b) which integrated the ESRB recommendations concerning the granting of foreign currency loans (ESRB, 2011). The new recommendation effectively limited the issuance of euro-denominated consumer and mortgage loans to those households and SMEs that were effectively hedged (e.g. via euro-denominated income or revenue). In addition, Austrian banks were discouraged from granting new repayment vehicle loans denominated in foreign currency. While the Minimum Standards of 2008 and 2013 are legally nonbinding, they have increased banks' legal risks, and subsequently costs, associated with these products. The FMA expects credit institutions to comply with the restrictive interpretation of the Minimum Standards with regard to banks' legal due diligence obligations (Article 39 Austrian Banking Act).

The measures to curb foreign currency lending were not effective until 2008. The volume of foreign currency loans extended to Austrian households increased constantly from EUR 18.3 billion in December 2003 to EUR 40 billion in October 2008.[27]

Only the more intrusive supervisory efforts in 2008, 2010 and 2013 proved to be effective, as the share of exchange rate-adjusted foreign currency loans extended by Austrian banks to customers in Austria and Central, Eastern and Southeastern Europe (CESEE) decreased significantly thereafter. Still, also the financial crisis of 2008 (including the appreciation of the Swiss franc against the euro and the losses associated with repayment vehicles) is likely to have had an impact on the demand for foreign currency loans, which makes it difficult to assess the effectiveness of the supervisory measures. In absolute terms, foreign currency loans to Austrian households declined from EUR 40 billion in October 2008 to less than EUR 24 billion at the end of 2015. In exchange rate-adjusted terms, foreign currency loans and particularly Swiss franc-denominated loans extended to Austrian households decreased by over 50% over the same period (OeNB, 2015b). Since mid-2014, new foreign currency loans supplied by CESEE subsidiaries have been almost entirely denominated in euro in compliance with macroprudential policy provisions.

5.2 The sustainability package

In 2012, the FMA and the OeNB introduced a sustainability package (FMA, 2012) to address potential contagion effects emanating from Austrian banks' CESEE subsidiaries and to improve the resilience of Austrian banks' business

[27] *The same trend was observed for loans to nonbank financial intermediaries (+EUR 1.6 billion) but not for loans to nonfinancial corporations (–EUR 10 billion).*

models. From today's perspective, its intermediate objectives were mitigating or preventing excessive maturity mismatches.

The package covered Austria's three largest banks, Erste Group, Raiffeisen Zentralbank Österreich AG and UniCredit Bank Austria, which committed in a voluntary agreement to frontloading the Basel III common equity tier 1 (CET1) requirement of holding 4.5% of risk-weighted assets as minimum capital requirements at the consolidated level by January 2013. In addition, the three banks also agreed to frontload the capital conservation buffer of 2.5% CET1 of risk-weighted assets so that their target CET1 ratio amounted to 7%. The agreement also included a monitoring tool focused on the local funding capacity of Austrian banks' CESEE subsidiaries. The OeNB closely monitors this loan-to-local stable funding ratio (LLSFR) – the ratio of local loans in CESEE to local deposits and other sources of stable funding – to reduce the excessive buildup of foreign currency mismatches in CESEE and to avoid excessive loan growth at these three banks.

According to the Austrian supervisors' ex ante analysis, Austrian banks' subsidiaries which before the recent financial crisis had recorded high loan growth that was not backed by strong local stable funding (which translates into stock and flow LLSFR exceeding 110%) were more likely to exhibit higher loan loss provisioning rates (due to their higher vulnerability to credit risks and write-offs) during the ensuing crisis. Thus, to improve the refinancing structure of selected subsidiaries, the Austrian supervisors agreed on using the LLSFR as a monitoring tool and an early warning indicator for nonsustainable, excessive credit growth.

The sustainability package has been effective in improving the local refinancing structure of Austrian banks' subsidiaries in CESEE. Their loan-to-deposit ratio decreased from 117% in 2008 to 90% in the third quarter of 2015 due to the strong growth (by over 30%) of savings deposits of local nonbanks in CESEE. Loan growth is now considered to be more sustainable as it is mainly financed on a local basis. However, the contribution of the sustainability package to improving Austrian banks' CESEE subsidiaries' business models is hard to assess, as the financial crisis has led to a substantial decrease of current account imbalances, and thus of capital imports, in CESEE. Loan demand has also declined as a result of the financial crisis.

5.3 Modern macroprudential measures

In contrast to their predecessors, modern macroprudential measures are embedded in the comprehensive legal and institutional framework of macroprudential supervision that was introduced in 2014 in Austria and the EU. In Austria, all relevant national financial stability stakeholders are represented on the Financial Market Stability Board[28] (FMSB) (for details, see Eidenberger et al., 2014). The FMSB may issue recommendations to the FMA, which is the designated national macroprudential authority. The OeNB plays a pivotal role within the Austrian framework for macroprudential supervision: it is responsible for identifying potential systemic risks and for providing the analytical underpinning of macroprudential measures (including impact assessments of policy measures). In addition, it provides the secretariat to the FMSB.

[28] *The activities and deliberations of the FMSB are documented on its website (www.fmsg.at).*

In 2015, the FMSB issued a recommendation to the FMA as Austria's macroprudential authority to activate the *systemic risk buffer (SRB)* to protect the Austrian financial system and the Austrian economy against long-term noncyclical systemic risks.[29] The FMSB advocated the SRB as the Austrian banking sector was exposed to a specific combination of systemic risks arising from the above-average size of its banking sector in a European comparison, a high exposure to emerging economies in Europe, insufficient preparation for the reduction (or removal) of the implicit state guarantee, relatively low capital ratios and specific ownership structures (OeNB, 2015a; FMSB, 2015c).

In June 2016, the rules on the *buffer for other systemically significant institutions (O-SII buffer)* entered into force.[30] Of the SRB and the O-SII buffer, only the higher one is binding. All banks that are subject to the O-SII buffer are also subject to a higher SRB, so that the former does not increase their CET1 ratios. The O-SII buffer aims at reducing the systemic risk stemming from the failure of a systemically significant institution.

The *capital conservation buffer (CCB)* aims at shielding banks' minimum capital requirements from bank losses. In good times banks accumulate a buffer which they can draw on under stress to absorb losses without endangering their viability. The respective requirement entered into force in 2016 and is phased in until 2019 when it will reach 2.5% of CET1 capital relative to risk-weighted assets.

Also in 2016, the *countercyclical capital buffer (CCyB)* framework entered into force. It aims at mitigating or preventing excessive credit growth and leverage. Until its most current meeting on June 1, 2016, the FMSB recommended setting the CCyB rate at 0% of risk-weighted assets. The CCyB aims at smoothing the pronounced cyclicality in the financial system by implementing a buffer in a phase of excessive credit growth which is then released in a downturn to absorb loan losses without impeding banks' access to funding markets. As such, it aims at reducing the procyclical effects of asset write-downs, loan losses and market expectations regarding bank capital ratios (FMSB, 2015b; FMSB, 2016).

In 2016, the FMSB discussed the need for additional macroprudential instruments in line with the ESRB recommendation (ESRB, 2013). The OeNB initiated the discussion and has advocated the extension of the macroprudential toolkit by borrower-based (asset-side) instruments, such as limits on loan-to-value-ratios (LTVs), debt-to-income ratios (DTIs), and debt service-to-income ratios (DSTIs). These macroprudential real estate instruments are expected to contribute to dampening credit growth during the upswing of the credit cycle by moderating the credit cycle and thereby strengthening banks' and borrowers' resilience. Consequently, the FMSB suggested in February 2016 to establish the legal basis for these essential macroprudential instruments (FMSB, 2016).

There are not yet any ex post studies on the effectiveness of the SRB as it

[29] *The SRB entered into force on January 1, 2016, with a phase-in period until 2019. It amounts to up to 2% of risk-weighted assets held in CET1, in addition to the minimum capital requirement of 4.5% of risk-weighted assets in CET1 under Pillar 1 plus the applicable Supervisory Review and Evaluation Process (SREP) ratio (FMSB, 2015a; FMSB, 2015b).*

[30] *A similar buffer applies to globally systemically important institutions. However, no such institutions are domiciled in Austria.*

was introduced only on January 1, 2016, for selected Austrian banks; however, the OeNB conducted a comprehensive ex ante impact assessment, which estimates the SRB's net impact on the economy in Austria by comparing its costs and benefits and finds that the activation of the SRB would have a positive net effect on the economy. The SRB increases banks' weighted average cost of capital as it induces banks to substitute debt capital by more expensive equity capital. The analysis assumes that banks would pass on these additional opportunity costs to borrowers by increasing the interest rate on new loans to nonbanks (Kopp et al., 2010). This would lead to an average widening of credit spreads by a mere 0.08 basis points in the medium term (between 0.05 basis points and 0.13 basis points depending on the target return on equity (ROE) of 10% to 15%). Consequently, the additional SRB-related capital requirement for 2017 would result in a minor increase of credit costs for the real economy which would, in turn, result in rather insignificant negative short- and medium-term gross effects on GDP growth (below 0.01% of GDP accumulated from 2016 to 2018). In terms of long-term benefits, the OeNB analysis finds that these outweigh the costs of the SRB activation, as it would reduce the probability and the social costs of banking crises in Austria. The overall net impact on the economy in Austria is therefore found to be positive.

6 Conclusions

We find that macroprudential policy in Austria has a long and changeful history that started as early as in 1951. It evolved in three phases. The first phase, from 1951 to 1982, was dominated by an expansion of the macroprudential toolset based on an active trial-and-error learning process. Policymakers' ultimate objective was to maintain price stability by addressing the intermediate objectives of mitigating or preventing excessive credit growth, leverage and maturity mismatches. There was no sound legal basis for macroprudential policy in place in that period; Austrian authorities had to rely on voluntary agreements with the banking industry. The Kreditwesengesetz (KWG) of 1979 eventually introduced a legal basis, but macroprudential policy measures (e.g. credit control agreements) fell out of favor with policymakers and central bankers at that time as capital account liberalization and the deregulation and internationalization of finance gained momentum – a period we refer to as the second phase (from 1982 to 2014). Austrian authorities never made use of their new legal macroprudential powers, which were abolished in 1986, only seven years after their introduction. It took another 28 years until macroprudential supervision was formally introduced in Austria in 2014 (third phase from 2014 to present). This time, financial stability as distinct from price stability has been the ultimate objective of macroprudential supervision.

Looking at the employed tools in greater detail, the first credit control agreements in 1951 included both qualitative and quantitative credit controls. Initially, the latter comprised minimum liquidity requirements only; over time, these were complemented by capital-based limits on credit growth, credit ceilings (liability-side credit controls) and the Limes (asset-side credit controls). The measures were implemented in the form of voluntary agreements between banks and policymakers as there was no legal basis for macroprudential policy in place in Austria at the time. The liability-side credit controls were

nonintrusive measures; they hardly ever constituted economically binding constraints, and their impact on credit growth was low. However, asset-side credit controls (the Limes agreements) were quite intrusive and effective in curtailing excessive loan growth.

In 1971, the Gentlemen's Agreement was introduced with the aim of curtailing short-term capital inflows. It was very intrusive and effective at the same time.

In 2014, a sound legal basis for macroprudential supervision was introduced – a key lesson from the 2008 financial crisis. In 2016, the first legally binding macroprudential measures since 1945 entered into force in Austria. The systemic risk buffer was designed to effectively reduce the systemic risk potentially associated with the operations of Austrian banks eligible for the systemic risk buffer by improving their capitalization.

This analysis identifies key criteria for the effectiveness of macroprudential policy: first, macroprudential policy requires a sound legal basis, and second, macroprudential policy measures have to be quite intrusive to effectively curtail the buildup of systemic risk. Less intrusive measures become effective above all by increasing the shock-absorbing capacity of the financial system once risks materialize.

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Table 1

Annex: Milestones of macroprudential policy in Austria since the 1950s

Qualitative credit controls		
Ultimate objective	Contain inflation	
Intermediate objective	Avoid the misallocation of credit in the economy, support sustainable domestic investment, export and tourism	
Legal basis	Voluntary joint credit control agreements between the Ministry of Finance (in accordance with the OeNB) and the banking sectors	
Duration	Provision	Targeted banking sector
1951/04 to 1981/06	– Credit supply only for sustainable purposes	Step-by-step inclusion of other banking sectors until 1960s except for
1957/04 to suspension	– Provisions remained in place during the consolidation of credit control agreements	specialized banks, e.g. Oesterreichische Kontrollbank (OeKB)
1972/09 to 1982/09	– Ban on advertising of consumer loans until suspension in 1982	All banking sectors except specialized banks, e.g. OeKB
1981/06	– Suspension	All banking sectors except specialized banks, e.g. OeKB
Minimum liquidity requirements (liability-side quantitative credit controls)		
Ultimate objective	Contain inflation and avoid tensions in the foreign exchange market	
Intermediate objective	Avoid excessive credit growth and excessive maturity transformation in the banking system	
Legal basis	Voluntary joint credit control agreements between the Ministry of Finance in accordance with the OeNB and the banking sectors	
Duration	Provision	Targeted banking sector
1952/01	– 10% of liabilities to be held as first-grade and 20% as second-grade liquidity	Step-by-step inclusion of other banking sectors until 1960s except for
1957/04 to suspension	– Specific provisions (e.g. the percentage share) varied across banking sectors	specialized banks, e.g. OeKB
1981/06	– Consolidation of credit control agreements: 15% of liabilities to be held as first-grade and 25% as second-grade liquidity	All banking sectors except specialized banks, e.g. OeKB
Credit ceiling (Kreditplafond) (liability-side quantitative credit controls)		
Ultimate objective	Contain inflation, avoid tensions in the foreign exchange market and limit regulatory arbitrage by insurance and instalment companies	
Intermediate objective	Avoid excessive credit growth and excessive maturity transformation in the banking system	
Legal basis	Voluntary joint credit control agreements between the Ministry of Finance (in accordance with the OeNB) and the banking sectors	
Duration	Provision	Targeted banking sector
1951/10 to major amendment	– Credit growth restricted to 70% of banks' liability increase (excluding equity)	Joint stock banks and smaller private banks → step-by-step inclusion of other banking sectors except specialized banks, e.g. OeKB
1952/04 to major amendment	– Bank-specific ratio tightened to 50% of banks' liability increase (excluding equity)	
1955/11 to major amendment	– Prohibition of credit supply by insurance companies	Insurance companies
1955/12 to major amendment	– 10 % reduction of the credit stock and strict quality checks for new loans	Instalment companies
1957/04 to major amendment	– Consolidation of credit control agreements: credit stock restricted to 75 % of equity and 45 % to 75 % of liabilities	
1962/08 to major amendment	– Same as in 1951 – Lowering of the credit ceiling by 3 percentage points – Monthly credit growth restricted to 43% to 72% of liability increase	All banking sectors except specialized banks, e.g. OeKB)
1966/07 to major amendment	– Credit ceiling raised by 2 percentage points	All banking sectors except specialized banks, e.g. OeKB
1972/10-12 to major amendment	– Credit ceiling lowered by 5–7 percentage points – Monthly credit growth restricted to between 35% and 37% of liability increase	All banking sectors except specialized banks, e.g. OeKB
1972/12 to major amendment	– Credit stock may be expanded by 6% only	Insurance companies
1973 to major amendment	– Credit ceiling lowered by 10 percentage points	All banking sectors except specialized banks, e.g. OeKB
1975 to suspension	– Credit ceiling raised by 10 percentage points	All banking sectors except specialized banks, e.g. OeKB
1981/06	– Suspension	All banking sectors except specialized banks, e.g. OeKB

Table 1 continued

Annex: Milestones of macroprudential policy in Austria since the 1950s

Limes (asset-side quantitative credit controls)		
Ultimate objective	Contain inflation	
Intermediate objective	Contain excessive credit growth and misallocation of credit in the economy (in particular too much credit-financed consumption)	
Legal basis	Policy guidance published by the OeNB	
Duration	Provision	Targeted banking sector
1973/06 to major amendment	– Growth of credit to nonbanks limited to 1 % per month	All banking sectors except specialized banks, e.g. OeKB
1977/11 to major amendment	– Special Limes: consumer loan growth limited to 0.55 % per month, phasing-in until 1978	All banking sectors except specialized banks, e.g. OeKB
1980/03 to suspension	– Tightening of the Limes to 0.5 % and tightening of the special Limes to 0.35 %	All banking sectors except specialized banks, e.g. OeKB
1981/03	– Suspension of the Limes	All banking sectors except specialized banks, e.g. OeKB
1982/04	– Suspension of the special Limes	All banking sectors except specialized banks, e.g. OeKB
Gentlemen's Agreement		
Ultimate objective	Avoid excessive build-up of foreign capital inflows and excessive maturity transformation	
Intermediate objective	Prevent and/or sterilize speculative short-term capital inflows and support exports	
Legal basis	Voluntary agreements between the OeNB and Austrian banks	
Duration	Provision	Targeted banking sector
1971/05 to 1980	Banks committed to depositing 40 % of foreign capital inflows on unremunerated accounts at the OeNB (August 1971: rate was raised to 100 %; in September 1971: rate was lowered to 75 %)	All Austrian banks
Measures to curb foreign currency lending		
Ultimate objective	Contain foreign currency credit growth	
Intermediate objective	Improve risk management practices of foreign currency and repayment vehicle loans of Austrian banks	
Legal basis	Guiding principles of the FMA and the OeNB	
Duration	Provision	Targeted banking sector
2003 to 2013	FMA Minimum Standards (improvement of risk management practices)	All Austrian banks
2010	Extension of FMA Minimum Standards	All Austrian banks and in particular those operating in CESEE
2013 to present	New FMA Minimum Standards	All Austrian banks
2006, 2011	Publication of information folders on foreign currency risks	All Austrian banks
Sustainability package		
Ultimate objective	Strengthen the shock-absorbing capacity of Austrian banks' subsidiaries operating in CESEE	
Intermediate objective	Avoid a dry-up of liquidity and improve refinancing options at the subsidiary level as well as strengthen banking groups' capital adequacy	
Legal basis	Guiding principles of the FMA and the OeNB	
Duration	Provision	Targeted banking sector
2013/01 to present	Loan-to-local stable funding ratio (LLSFR) of below 100 % for subsidiaries Full implementation of the Basel III rules in respect of CET1 capital at the consolidated level	3 Austrian banks: Erste Group, Raiffeisen Zentralbank Österreich AG, UniCredit Bank Austria
Macroprudential capital buffers		
Ultimate objective	Strengthen the risk-bearing capacity of banks and financial stability	
Intermediate objective	Contain excessive credit growth (CCB), address systemic vulnerability and systemic cluster risk (SRB) and idiosyncratic banking risks for the system (O-SIIB)	
Legal basis	EU Capital Requirements Regulation (CRR) and Austrian Banking Act (Bankwesengesetz – BWG)	
Duration	Provision	Targeted banking sector
2016/01 to present	Countercyclical capital buffer (CCB) of 0 %	Any banks' loan exposure located in Austria
2016/01 to present	Systemic risk buffer (SRB) of up to 2 %, phasing-in 2016–19	12 Austrian banks
2016/06 to present	Other systemically important institutions buffer (O-SIIB) of up to 2 % phasing-in 2016–19	7 Austrian banks

Source: OeNB (1951–1983) and Chronik der Währungspolitik.

Note: The table does not contain any credit control agreement or related amendments but only identifies milestones. "[year] to major amendment" indicates that the provision was or will be in place until the next major amendment listed here (minor changes may have been implemented in the meantime).